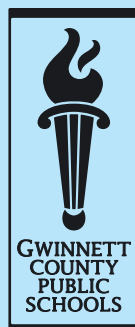




# AKS

ACADEMIC KNOWLEDGE AND SKILLS

**2021-22 HIGH SCHOOL**





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## Character Education

The school system supports a mandate from the Georgia General Assembly requiring all schools to teach character education. Society and culture are tied together through common threads that guide the way we live, work, and learn. These common beliefs are taught at home and reinforced by the community, schools, religious institutions, and youth service groups. These basic tenets guide the way Gwinnett County teachers teach and the way the school system conducts the business of teaching and learning. Character education is thoroughly embedded in the AKS curriculum. Traits emphasized in the curriculum include the following:

courage	respect for	self-control	generosity	respect for	creativity
patriotism	others	courtesy	punctuality	environment	sportsmanship
citizenship	cooperation	compassion	cleanliness	respect for	loyalty
honesty	kindness	tolerance	cheerfulness	creator	perseverance
fairness	self-respect	diligence	school pride	patience	virtue

## Parent Involvement

Research shows that when parents are involved in their student's education at home, their student does better in school. When parents are involved at school, their student's achievement increases and the school becomes even stronger. Teachable moments are everywhere. You can be your student's favorite teacher by connecting in meaningful ways as you go through the ordinary routines of the day... driving in the car, preparing a meal, shopping, or doing chores. Below, you will find tips for helping your student have a successful high school experience. Look for more helpful tipsheets and other resources on the school system website and your local school website.

## Suggestions for Helping Your Student Achieve Academically

The school system encourages parents to be an active part of their student's education. The following are just a few ways you can be involved:

- **Review the AKS** for your student's grade.  
You also can access the AKS on the system's website—[www.gcpsk12.org](http://www.gcpsk12.org).
- **Ask to see your student's work.**
- **Ask your student to show his or her work** in assignments, making sure to answer the question asked, not just provide information that may or may not be relevant.
- **Support your student** and communicate that his or her academic success is important to you.
- **Read and write with your student often.** Remind students to edit the entire sentence and paragraph when they write and to use complete sentences with appropriate grammar and spelling.
- **Participate in parent-teacher conferences.**

## Share these Keys to School Success with Your Student

- ➡ **Be prepared each day.** Have the needed materials and assignments for each class.
- ➡ **Stay organized.** Keep your desk, notebooks, book bag, and home study area neatly arranged.
- ➡ **Use an agenda book or calendar** to keep track of assignments and due dates. Check it every day.
- ➡ **Give your best effort** to both homework and in-class assignments. Complete assignments and turn them in on time.
- ➡ **Review your work** from each class every evening, even if you don't have a homework assignment due the next day.
- ➡ **Study** for every test and quiz.
- ➡ **Ask your teacher questions** if you do not understand a lesson or an assignment.
- ➡ **Get involved** in at least one extracurricular activity.

## High School Language Arts

# Freshman Language Arts

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### A - Reading Literary Text

- analyze how an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise
- analyze a particular point of view or cultural experience reflected in a work of literature from outside the United States, drawing on a wide reading of world literature
- analyze the representation of a subject or a key scene in two different artistic mediums (e.g., Auden's poem "Musee des Beaux Arts" and Breughel's painting Landscape with the Fall of Icarus), including what is emphasized or absent in each treatment
- analyze how an author draws on and transforms source material in a specific work (e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare)
- cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text
- determine a theme or central idea of a text and closely analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text
- analyze how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of a text, interact with other characters, and advance the plot or develop the theme
- determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone)
- read and comprehend literature and literary nonfiction, including stories, dramas, and poems, at the high end of the grades 9-10 text complexity band independently and proficiently, with scaffolding as needed at the high end of the range, by the end of grade 9

### B - Reading Informational Text

- cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text
- determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text
- analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them

## High School Language Arts

### B - Reading Informational Text *(continued)*

- determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper)
- analyze in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter)
- determine an author's point of view or purpose in a text and analyze how an author uses rhetoric to advance that point of view or purpose
- analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account
- delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning
- analyze seminal U.S. documents of historical and literary significance (e.g., Washington's Farewell Address, the Gettysburg Address, Roosevelt's Four Freedoms speech, King's "Letter from Birmingham Jail," Nelson Mandela's Nobel Peace Prize Speech, The Universal Declaration of Human Rights), including how they address related themes and concepts
- read and comprehend informational texts in the grades 9-10 text complexity band proficiently by the end of grade 9

### C - Writing

- use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically
- conduct short, as well as more sustained, research projects to answer questions (including self-generated questions) or solve problems; narrow or broaden inquiries when appropriate; synthesize multiple sources on the subjects, demonstrating understanding of the subject under investigation
- write narratives to develop real or imagined experiences or events, using effective technique, well-chosen details, and well-structured event sequences
- write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content
- produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience
- develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience
- write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences

## High School Language Arts

### C - Writing *(continued)*

- write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence
- gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citations
- draw evidence from literary or informational texts to support analysis, reflection, and research

### D - Speaking and Listening

- integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, and orally), evaluating the credibility and accuracy of each source
- evaluate and/or reflect on a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence
- present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task
- make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest
- adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate
- initiate and participate effectively in a range of collaborative discussions (e.g., one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively

### E - Language

- acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression
- demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing
- demonstrate command of the conventions of standard English grammar and usage when writing or speaking
- determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 9-10 reading and content, choosing flexibly from a range of strategies
- demonstrate understanding of figurative language, word relationships, and nuances in word meanings
- apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, to comprehend more fully when reading or listening

## High School Language Arts

# Sophomore Language Arts

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### A - Reading Literary Text

- cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text
- determine a theme or central idea of text and closely analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text
- determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone)
- analyze how an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise
- analyze how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of a text, interact with other characters, and advance the plot or develop the theme
- analyze a particular point of view or cultural experience reflected in a work of literature from outside the United States, drawing on a wide reading of world literature
- analyze the representation of a subject or a key scene in two different artistic mediums (e.g., Auden's poem "Musee des Beaux Arts" and Breughel's painting Landscape with the Fall of Icarus), including what is emphasized or absent in each treatment
- analyze how an author draws on and transforms source material in a specific work (e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare)
- read and comprehend literature and literary nonfiction, including stories, dramas, and poems, at the high end of the grades 9-10 text complexity band independently and proficiently, with scaffolding as needed at the high end of the range, by the end of grade 10

### B - Reading Informational Text

- analyze seminal U.S. documents of historical and literary significance (e.g., Washington's Farewell Address, the Gettysburg Address, Roosevelt's Four Freedoms speech, King's "Letter from Birmingham Jail," Nelson Mandela's Nobel Peace Prize Speech, The Universal Declaration of Human Rights), including how they address related themes and concepts
- read and comprehend informational texts at the high end of the grades 9-10 text complexity band independently and proficiently, by the end of grade 10
- analyze in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter)

## High School Language Arts

### B - Reading Informational Text *(continued)*

- determine an author's point of view or purpose in a text and analyze how an author uses rhetoric to advance that point of view or purpose
- analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account
- delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning
- cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text
- determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text
- analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them
- determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper)

### C - Writing

- write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences
- write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence
- write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content
- write narratives to develop real or imagined experiences or events, using effective technique, well-chosen details, and well-structured event sequences
- produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience
- develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience
- use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically



## High School Language Arts

### C - Writing *(continued)*

- conduct short, as well as more sustained, research projects to answer questions (including self-generated questions) or solve problems; narrow or broaden the inquiries when appropriate; synthesize multiple sources on the subjects, demonstrating understanding of the subject under investigation
- gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citations
- draw evidence from literary or informational texts to support analysis, reflection, and research

### D - Speaking and Listening

- initiate and participate effectively in a range of collaborative discussions (e.g., one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively
- integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source
- evaluate and/or reflect on a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence
- make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest
- adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate
- present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task

### E - Language

- acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression
- apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening
- determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 9-10 reading and content, choosing flexibly from a range of strategies
- demonstrate command of the conventions of standard English grammar and usage when writing or speaking
- demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing

## High School Language Arts

### E - Language *(continued)*

- demonstrate understanding of figurative language, word relationships, and nuances in word meanings

## High School Language Arts

### Junior Language Arts

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#### A - Reading Literary Text

- cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain
- determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text
- analyze the impact of the author's choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed)
- determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful (include Shakespeare as well as other authors)
- analyze multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), evaluating how each version interprets the source text (Include at least one play by Shakespeare and one play by an American dramatist)
- demonstrate knowledge of 18th, 19th, and early 20th-century foundational works (of American literature, British literature, world literature, or multicultural literature), including how two or more texts from the same period treat similar themes or topics
- read and comprehend literature and literary nonfiction, including stories, dramas, and poems, in the grades 11-12 CCR text complexity band proficiently, with scaffolding as needed at the high end of the range, by the end of grade 11
- analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact
- analyze a case in which grasping point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement)

#### B - Reading Informational Text

- delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., The Federalist presidential addresses)
- analyze foundational U.S. documents (and comparable documents for British literature, American literature, and Multicultural literature) of historical and literary significance (including The Declaration of Independence, the Preamble to the Constitution, The Bill of Rights, and Lincoln's Second Inaugural Address) for their themes, purposes, and rhetorical features

## High School Language Arts

### B - Reading Informational Text *(continued)*

- read and comprehend informational texts in the grades 11-CCR text complexity band proficiently, with scaffolding as needed at the high end of the range, by the end of grade 11
- cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain
- determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text
- analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text
- determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines 'faction' in Federalist No. 10)
- analyze and evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging
- determine an author's point of view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the power, persuasiveness, or beauty of the text
- integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem

### C - Writing

- write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content
- write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence
- write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences
- write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences
- produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience
- develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience

## High School Language Arts

### C - Writing *(continued)*

- use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information
- conduct short, as well as more sustained, research projects to answer questions (including self-generated questions) or solve problems; narrow or broaden the inquiries when appropriate; synthesize multiple sources on the subjects, demonstrating understanding of the subjects under investigation
- gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citations
- draw evidence from literary or informational texts to support analysis, reflection, and research

### D - Speaking and Listening

- initiate and participate effectively in a range of collaborative discussions (e.g., one-on-one, in groups, and teacher-led) with diverse partners on grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively
- integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, and orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data
- evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used
- present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks
- make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest
- adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate

### E - Language

- demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing
- apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening
- determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 11-12 reading and content, choosing flexibly from a range of strategies

**High School Language Arts****E - Language** *(continued)*

- demonstrate understanding of figurative language, word relationships, and nuances in word meanings
- acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression
- demonstrate command of the conventions of standard English grammar and usage when writing or speaking

## High School Language Arts

# Senior Language Arts

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### A - Reading Literary Text

- determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text
- analyze the impact of the author's choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed)
- determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful (include Shakespeare as well as other authors)
- analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact
- analyze a case in which grasping point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement)
- cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain
- analyze multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), evaluating how each version interprets the source text (include at least one play by Shakespeare and one play by an American dramatist)
- demonstrate knowledge of 18th, 19th, and early 20th-century foundational works (of American literature, British literature, world literature, or multicultural literature), including how two or more texts from the same period treat similar themes or topics
- read and comprehend literature and literary nonfiction, including stories, dramas, and poems, at the high end of the grades 11-12 CCR text complexity band independently and proficiently, by the end of grade 12

### B - Reading Informational Text

- determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text
- analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text
- determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines faction in Federalist No. 10)

## High School Language Arts

### B - Reading Informational Text *(continued)*

- analyze and evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging
- determine an author's point of view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the power, persuasiveness, or beauty of the text
- integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem
- cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain
- read and comprehend informational texts at the high end of the grades 11-12 CCR text complexity band independently and proficiently, by the end of grade 12
- delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., *The Federalist*, presidential addresses)
- analyze foundational documents of historical and literary significance for their themes, purposes, and rhetorical features

### C - Writing

- use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information
- write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content
- write narratives to develop real or imagined experiences or events, using effective technique, well-chosen details, and well-structured event sequences
- produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience
- develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience
- conduct short, as well as more sustained, research projects to answer questions (including self-generated questions) or solve problems; narrow or broaden the inquiries when appropriate; synthesize multiple sources on the subjects, demonstrating understanding of the subjects under investigation



## High School Language Arts

### C - Writing *(continued)*

- gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation
- draw evidence from literary or informational texts to support analysis, reflection, and research
- write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence
- write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences

### D - Speaking and Listening

- present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks
- make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest
- adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate
- initiate and participate effectively in a range of collaborative discussions (e.g., one-on-one, in groups, and teacher-led) with diverse partners on grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively
- integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data
- evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used

### E - Language

- demonstrate understanding of figurative language, word relationships, and nuances in word meanings
- acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression
- demonstrate command of the conventions of standard English grammar and usage when writing or speaking

**High School Language Arts****E - Language** *(continued)*

- demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing
- apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening
- determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 11-12 reading and content, choosing flexibly from a range of strategies

## High School Language Arts

# Advanced Composition

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### A - Writing

- establish voice through tone, word choice, rhetorical devices, and literary devices
- use precise language, action verbs, sensory details, appropriate modifiers, and active rather than passive voice
- write, combine, and vary sentences to match purposes and audience
- use a variety of sentence types in writing (e.g., simple, compound, complex, and compound-complex sentences)
- integrate quotations and citations into a written text while maintaining the flow of ideas
- synthesize and summarize information to avoid plagiarism
- prepare bibliographies, tables of contents, title pages, and appendices
- prewrite to generate ideas for writing
- draft writing to capture ideas and develop fluency
- revise writing to match purposes with audience and to improve content, organization, and style
- revise writing to eliminate wordiness, excessive predictions, and roundabout expressions
- edit for spelling, fragments, and run-on sentences
- edit for misplaced and dangling modifiers, split infinitives, and non-parallel elements
- use writing handbooks, grammar checkers, and references to edit usage and mechanics
- write and support thesis statements
- develop a central idea with examples, illustrations, facts, and details
- write logical and effective transitions between ideas and paragraphs
- maintain unity and coherence
- write to report answers to research questions
- construct persuasive written arguments related to themes of literature
- write proposals and action plans
- write college-style essays

## High School Language Arts

# Competitive Speaking/Debate

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### A - Competitive Speaking

- define and differentiate among various debate propositions and among debate formats
- demonstrate understanding of competitive speaking vocabulary
- identify methods of reasoning and types of fallacies
- demonstrate respect for the integrity of evidence and accurate representation of the ideas of others
- identify and acceptably utilize parliamentary procedure rules
- demonstrate an understanding of forensic tournament procedures and conduct
- demonstrate research skills involving proposition of policy using appropriate techniques, resources, and documentation
- demonstrate critical thinking skills by developing an affirmative and negative case
- adjust reading rate to match purpose
- demonstrate an understanding of a national debate topic
- demonstrate appropriate speaking skills in a round of competitive speaking or dramatic interpretation
- demonstrate competence in the use of cross-examination techniques
- analyze and evaluate presentations of other students

### B - Extemporaneous (Impromptu) and Oratory

- demonstrate topic control and limitation
- identify and summarize the main and subordinate ideas in a written work
- recognize different purposes and methods of writing, identify a writer's point-of-view and tone, and comprehend a writer's meaning inferentially as well as literally
- distinguish own personal opinions and assumptions from those of other writers
- increase vocabulary using various strategies
- practice thesis support, appropriate documentation, and synthesis of information from various sources
- utilize persuasive and extemporaneous speaking skills
- utilize the school's media center, its resources, and the Internet to document current events

## High School Language Arts

### C - Dramatic Events

- apply techniques of emotional expression to portray human personalities in characterization
- use movement to discover and explore thought, feeling, sensory awareness, and emotional responses
- apply and synthesize vocal techniques to create characterization in scripted and improvised activities
- use improvisation as a tool for creating and developing characterization
- recognize and describe personal and universal meanings in interpretation
- recognize the importance of energy, build, and control for precise nonverbal communication
- apply skills for ensemble blend, group communication, focus, and balance in improvisation, rehearsal of scripted materials, and performance
- read and use scripted materials to determine the text and subtext of the script
- read, edit, and practice dramatic, humorous, and oral interpretation of various works
- read, discuss, and write to formulate reasoned judgments about written and oral communication in various media genres and literary forms

## High School Language Arts

# Critical Literacy

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### A - Reading Literary Text

- analyze the impact of the author's choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed)
- cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain
- analyze a case in which grasping point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement)
- determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful
- analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact
- analyze multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), evaluating how each version interprets the source text
- demonstrate knowledge of 18th, 19th, and early 20th-century works of multicultural literature, including how two or more texts from the same period treat similar themes or topics
- read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 11-CCR text complexity band independently and proficiently, by the end of grade 12
- determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text

### B - Reading Informational Text

- integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem
- delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning and the premises, purposes, and arguments in works of public advocacy
- analyze foundational documents of historical and literary significance for their themes, purposes, and rhetorical features
- analyze and evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging

## High School Language Arts

### B - Reading Informational Text *(continued)*

- analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text to create a distinct perspective
- determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text
- determine an author's point of view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the power, persuasiveness, or beauty of the text
- cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain
- determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text
- read and comprehend informational texts at the high end of the grades 11-CCR text complexity band independently and proficiently, by the end of grade 12

### C - Writing

- write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content
- write narratives to develop real or imagined experiences or events, using effective technique, well-chosen details, and well-structured event sequences
- write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence
- develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience
- use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information
- conduct short, as well as more sustained, research projects to answer questions (including self-generated questions) or solve problems; narrow or broaden the inquiries when appropriate; synthesize multiple sources on the subjects, demonstrating understanding of the subjects under investigation
- gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation
- draw evidence from literary or informational texts to support analysis, reflection, and research

## High School Language Arts

### C - Writing *(continued)*

- produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience
- write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences

### D - Speaking and Listening

- evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used
- integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data
- make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest
- present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks
- adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate
- initiate and participate effectively in a range of collaborative discussions (e.g., one-on-one, in groups, and teacher-led) with diverse partners on grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively

### E - Language

- demonstrate command of the conventions of standard English grammar and usage when writing or speaking
- demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing
- demonstrate understanding of figurative language, word relationships, and nuances in word meanings
- apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening
- determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 11-12 reading and content, choosing flexibly from a range of strategies
- acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression



## High School Language Arts

# Journalism I

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### A - Laws and Ethics

- explain the code of journalism ethics (e.g. seek the truth and report it, do no harm, act independently, be accountable and transparent)
- summarize the decisions of the Supreme Court cases pertaining to the First Amendment's freedoms of speech and the press (e.g., *Times v. Sullivan* (1964), *Tinker v. Des Moines* (1968), *Bethel v. Fraser* (1968), *Hazelwood School District v. Kuhlmeier* (1988), *Morse v. Frederick* (2007))
- recognize copyright laws of plagiarism and fair use

### B - Planning and Organization

- demonstrate awareness of the intended audience and provide appropriate coverage
- recognize the basic elements in the publication layout
- create and carry-out long-term and short-term plans and deadlines
- summarize rules for local digital storage
- define roles and responsibilities for each member of the publication process

### C - Design

- explain the publishing process
- create a product that adheres to the basic design elements (e.g., typography, graphics, color, and use of space)
- recognize current trends in production

### D - Interviewing and Writing

- produce content that meets professional and community standards as defined by *Hazelwood School District v. Kuhlmeier* 1988
- demonstrate effective interview skills

### E - Photography

- use appropriate photographic techniques
- demonstrate an understanding of the importance of variety in photo choice
- demonstrate ability to crop pictures and art, when applicable
- recognize the value of quality pictures and art, when applicable
- evaluate the quality of an image (e.g., conveying the message, technical quality, and composition)

## **High School Language Arts**

### **F - Marketing**

- identify and meet financial goals necessary to produce a publication
- identify the sources of income and expenses
- identify the most appropriate means of distribution for the publication
- develop strategies to increase publication awareness through promotions

## High School Language Arts

# Library Science I - IV

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### A - Classification and Location

- identify and locate various formats of media in the media center (e.g., eBooks, audio books)
- demonstrate an understanding of the Dewey Decimal classification system
- identify and locate genres within fiction and nonfiction, biography, reference, periodicals, and special collections in the media center

### B - Operational Procedures

- circulate media center resources and equipment
- demonstrate the use of selected media equipment (i.e., audio, cameras)
- define terminology pertaining to the media center
- identify policies and procedures of the media center

### C - Information Access and Use

- demonstrate a working knowledge of media center databases and digital tools
- demonstrate an understanding of basic research strategies
- assist students, staff, and teachers in locating information
- demonstrate a working knowledge of the credibility and relevance of information
- define terminology pertaining to digital citizenship
- demonstrate a working knowledge of best practices in good digital citizenship in the area of information access and use

### D - Application

- demonstrate the system for shelving media center materials
- demonstrate the system for processing new media center materials
- locate media materials using the online catalog
- support literacy promotions at the direction of the media specialist promotions

## High School Language Arts

# Literary Types and Composition

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### A - Literary Types and Composition

- write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content
- write proposals and reports that effectively organize and convey technical information through economical selection of details and language and purposeful attention to conventions as a part of the inquiry and problem-solving process
- listen critically and respond appropriately to written and oral communication in a variety of genres and media in order to increase precision as a reader and competence as a writer
- initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade-appropriate topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively
- demonstrate command of the conventions of standard English grammar and usage when writing or speaking
- demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing
- use the conventions of standard English grammar, usage, punctuation, and spelling through analysis and imitation of mentor texts
- demonstrate thorough knowledge of the elements of the major forms of fiction and nonfiction: short story, folktale, poetry, drama, essay, biography, autobiography, memoir, and editorial (e.g., plot, characterization, purpose, structure, evidence, etc.)
- determine an author's central purpose with a high level of precision, and analyze and evaluate the way(s) that purpose is developed through significant choices in the elements of composition (e.g., diction, syntax, imagery, figurative language, organization, tone, etc.)
- analyze how various texts of literary merit reflect the social and historical context of the culture in which they were written
- recognize significant incongruities (e.g., irony, ambiguity, omissions, etc.) in literary texts and analyze the purpose and impact of those incongruities
- analyze and evaluate the clarity and effectiveness of informational and transactional texts through consideration of factors
- determine the sincerity, credibility and authority of informational and transactional texts through careful consideration of the source of the text and the author's language, as well as possible instances of propaganda, disinformation, or bias
- write for a variety of purposes and audiences, effectively adapting the elements of writing (e.g., diction, syntax, tone, organization, selection of support, format, etc.) as needed
- edit and revise compositions multiple times in order to make them more correct, clear, economical, engaging, and compelling

**High School Language Arts****A - Literary Types and Composition** *(continued)*

- study a selection of mentor texts and adopt features of those texts, as appropriate, to revise and improve compositions; demonstrate conscious use of those features as well as an understanding of their impact on the clarity, effectiveness, or beauty of compositions
- write narratives to develop real or imagined experiences or events, using effective techniques, well-chosen details, and well-structured event sequences in support of a significant theme or purpose
- write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence; effectively anticipate and respond to likely concerns and objections of readers who would be opposed to the writer's position

## High School Language Arts

# Oral/Written Communication

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### A - Oral/Written Communication

- comprehend, develop, and use concepts and generalizations to affect an audience
- read, discuss, and analyze speeches and other types of literature that lend themselves to oral interpretation
- use voice effectively (e.g., volume, rate, clarity, and inflection)
- use nonverbal signs appropriately (e.g., gestures, eye contact, facial expression, and posture)
- perform social rituals (e.g., introductions, greetings, and conversations)
- evaluate the messages and effects of mass communication
- analyze an issue to determine the topic, subtopic, amount, and timeliness of information for a given speech
- demonstrate, through presentation skills, an understanding of the basic process for audience analysis, including demographics, cultural concerns, gender, and knowledge of the subject
- use, identify, and create speeches for different types of speaking purposes, including informing, persuading, entertaining, and motivating
- demonstrate effective preparation skills in the organization of speeches into appropriate sections and develop each section using the appropriate information and transitions between sections
- use and understand the patterns of organization to structure information for each specific type of speech
- demonstrate effective listening skills as they relate to critical understanding of speech topics
- demonstrate an understanding of ethical speaking and listening during presentations

## High School Language Arts

# Reading/Writing I

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### A - Literary Text

- analyze a particular point of view or cultural experience reflected in a work of literature from outside the United States, drawing on a wide reading of world literature
- read and comprehend literature, including stories, dramas, and poems, at the high end of the ninth through tenth grades text complexity band independently and proficiently, with scaffolding as needed at the high end of the range, by the end of ninth grade
- cite strong and thorough textual evidence to support analysis of what the literary text says explicitly as well as inferences drawn from the text
- determine a theme or central idea of a literary text and closely analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text
- analyze how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of a literary text, interact with other characters, and advance the plot or develop the theme
- determine the meaning of words and phrases as they are used in a literary text, including figurative and connotative meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone)
- analyze how an author's choices concerning how to structure a literary text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise

### B - Informational Text

- cite strong and thorough textual evidence to support analysis of what an informational text says explicitly as well as inferences drawn from the text
- determine a central idea of an informational text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text
- analyze how the author of an informational text unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them
- determine the meaning of words and phrases as they are used in an informational text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper)
- analyze in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter)

## High School Language Arts

### B - Informational Text *(continued)*

- analyze in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter)
- delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning
- analyze documents of historical and literary significance (e.g., Washington's Farewell Address, the Gettysburg Address, Roosevelt's Four Freedoms Speech, King's "Letter from Birmingham Jail," Nelson Mandela's Nobel Peace Prize Speech, The Universal Declaration of Human Rights), including how they address related themes and concepts
- read and comprehend informational texts in the grades ninth through tenth text complexity band proficiently, by the end of ninth grade

### C - Writing

- produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience
- develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience
- conduct short, as well as more sustained, research projects to answer questions (including self-generated questions) or solve problems; narrow or broaden inquiries when appropriate; synthesize subjects, demonstrating understanding of the subject under investigation
- gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citations
- draw evidence from literary or informational texts to support analysis, reflection, and research



## High School Language Arts

# Writer's Workshop

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### A - Writer's Workshop

- identify and analyze techniques specific to a variety of genres (e.g., poem and short story, creative nonfiction, drama) and effectively utilize the appropriate genre technique(s) in writing an original text
- read text as a writer analyzing the author's craft (e.g., structure, ideas, details, syntax, diction, tone) and use of language
- create and develop original writing by effectively using individual revision strategies and writing workshops to address weakness and gaps in the development of what is most significant in a text (e.g., response to the needs of the audience, effective use of the elements of language, purposeful and effective use of literary and poetic devices)
- analyze the function and effect of poetic and literary devices in mentor text in order to emulate in original poetry, or to use poetic language, voice, style, and purpose in a variety of texts
- evaluate and analyze a variety of genres representing multiple literary periods, cultures, and perspectives to emulate and inform the writing of original fiction
- develop advanced literary and poetic devices (e.g., motifs, symbols, archetypes, extended metaphors, conflicts) in the development of an original text
- use a variety of platforms (e.g., blog, performance, traditional publication, social media) to publish original writing for specific audiences and purposes using an appropriate genre for the platform
- create an original piece in multiple genres in response to a single stimuli (e.g., text, visual, prompt, situation) purposefully and effectively using poetic devices and techniques (e.g., form, meter, rhyme) and the elements of fiction (e.g., characters, plot, setting, mood)
- adapt writing style to various audiences
- develop imaginative expression in writing (i.e., fresh ideas, diction, and voice)
- use techniques appropriate to different stages of the writing process to achieve fluency, control, and proficiency
- choose appropriate diction, syntax, and conventions for the intended audience and purpose, and use language choices effectively and purposefully in a variety of genres
- establish and maintain effective techniques (e.g., well-chosen details, well-structured event sequence, poetic and literary devices, point-of-view, elements of fiction) to develop an original piece of fiction
- identify and analyze components (e.g., structure, fluency, style, voice, diction, mechanics, grammar, imaginative expressions, details, literary and poetic devices) in exemplar texts
- use a variety of techniques in writing to affect the reader
- analyze the development of theme in exemplar texts in order to create major and minor themes in original writing (e.g., fiction, poetry, drama, creative nonfiction)

**High School Language Arts****A - Writer's Workshop** *(continued)*

- create and develop an original text, based on self-selected topics, themes, ideas, research, or areas of interest, in a variety of genres using the elements of fiction and rhetorical techniques

## High School Mathematics

# Algebra I

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### A - Algebra

- interpret the meaning of given formulas or expressions in context of individual terms or factors when given in situations which utilize the formulas or expressions with multiple terms and/or factors
- create linear equations and inequalities in one variable and use them to solve problems
- solve linear equations and inequalities in one variable, including equations with coefficients represented by letters (i.e., solve multi-step linear equations with one solution, infinitely many solutions, or no solutions; extend this reasoning to solve compound linear inequalities and literal equations); express solution sets to inequalities using both interval notation (e.g.,  $(2, 10]$ ) and set notation (e.g.,  $\{x \mid 2 < x \leq 10\}$ )
- rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations (i.e., rearrange Ohm's law  $V=IR$  to highlight resistance  $R$ )
- justify the steps of a simple one-solution equation using algebraic properties and the properties of real numbers; justify each step, or if given two or more steps of an equation, explain the progression from one step to the next using properties
- demonstrate that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane
- graph the solutions to a linear inequality in two variables as a half plane, excluding the boundary in the case of a strict inequality
- graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes
- represent constraints by equations or inequalities, and interpret data points as possible (i.e., a solution) or not possible (i.e., a non-solution) under the established constraints
- represent constraints by systems of equations and/or inequalities, and interpret data points as possible (i.e., a solution) or not possible (i.e., a non-solution) under the established constraints
- add, subtract, and multiply polynomials
- interpret parts of an expression, such as terms, factors, and coefficients in context
- create linear equations in two variables to represent relationships between quantities expressed in a table of values or verbal representation, including writing equations when given a slope and a y-intercept or slope and a point; graph these linear equations on coordinate axes with appropriate labels and scales
- solve systems of linear equations exactly (i.e., algebraically) and approximately (i.e., with graphs), focusing on pairs of linear equations in two variables; solve simple cases by inspection (i.e.,  $3x + 2y = 5$  and  $3x + 2y = 6$  have no solution because  $3x + 2y$  cannot simultaneously be 5 and 6)
- show and explain why the elimination method works to solve a system of two-variable equations

## High School Mathematics

### A - Algebra *(continued)*

- use the structure of an expression to rewrite it in different equivalent forms [i.e., see  $x^4 - y^4$  as  $((x^2) - (y^2))^2$ , thus recognizing it as a difference of squares that can be factored as  $(x^2 - y^2)(x^2 + y^2)$ ]
- choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression (i.e., reveal the zeros, minimum, or maximum)
- factor any quadratic expression to reveal the zeros of the function it defines
- create exponential equations in one variable and use them to solve simple equations
- explain why the x-coordinates of the points where the graphs of the equations  $y=f(x)$  and  $y=g(x)$  intersect are the solutions of the equation  $f(x)=g(x)$ ; find the solutions approximately (i.e., using technology to graph the functions, make tables of values, or find successive approximations)
- complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines
- use the method of completing the square to transform any quadratic equation in  $x$  into an equation of the form  $(x - p)^2 = q$  that has the same solutions. Derive the quadratic formula from  $ax^2 + bx + c = 0$
- solve quadratic equations by inspection, taking square roots, factoring, completing the square, and the quadratic formula, as appropriate to the initial form of the equation (limit to real number solutions)
- create quadratic equations in one variable and use them to solve problems
- create quadratic equations in two variables to represent relationships between quantities expressed in a table of values or verbal representation; graph these quadratic equations on coordinate axes with appropriate labels and scales
- create exponential equations in two variables to represent relationships between quantities expressed in a table of values or verbal representation, graph these exponential equations on coordinate axes with appropriate labels and scales

### B - Statistics and Probability

- summarize categorical data for two categories in two-way frequency tables; interpret relative frequencies in the context of the data (i.e., including joint, marginal, and conditional relative frequencies); recognize possible associations and trends in the data
- represent data on two quantitative variables on a scatter plot and describe how the variables are related
- compute (using technology) and interpret the correlation coefficient of a linear fit (i.e., by looking at a scatter plot, students should be able to tell if the correlation coefficient is positive or negative and give a reasonable estimate of the “ $r$ ” value after calculating the line of best fit using technology, describe how strong the goodness of fit of the regression is using “ $r$ ”)
- explain the difference between correlation and causation
- represent data with plots on the real number line (i.e., dot plots, histograms, and box plots)

## High School Mathematics

### B - Statistics and Probability *(continued)*

- use statistics appropriate to the shape of the data distribution to compare center (i.e., median, mean) and spread (i.e., interquartile range, mean absolute deviation) of two or more different data sets
- interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (i.e., outliers)
- fit a function to bivariate data; use functions fitted to data to solve problems in the context of the data; use given functions or choose a function suggested by the context; emphasize linear, quadratic, and exponential models
- determine and interpret the slope (i.e., rate of change) and the intercept (i.e., constant term) of a linear model in the context of the data

### C - Functions

- graph quadratic functions expressed algebraically by hand and by using technology; show and interpret key features including intercepts, maxima, and minima (as determined by the function or by context)
- interpret key features of quadratic functions represented in graphs, tables, equations, and verbal descriptions (i.e., intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior); sketch graphs showing these key features when given a verbal description of the relationship
- calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval; estimate the rate of change from a graph
- understand that a function from one set (the input, called the domain) to another set (the output, called the range) assigns to each element of the domain exactly one element of the range [i.e., if  $f$  is a function,  $x$  is the input (an element of the domain), and  $f(x)$  is the corresponding output (an element of the range); the graph of the function is the set of ordered pairs consisting of an input and the corresponding output]
- write arithmetic sequences both recursively and with an explicit formula; use them to model situations, and translate between the two forms; connect arithmetic sequences to linear functions
- recognize that arithmetic sequences are functions, sometimes defined recursively, whose domain is a subset of the integers
- compare properties of two functions each represented algebraically, graphically, numerically in tables, and/or by a verbal description
- relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes [e.g., if the function  $h(n)$  gives the number of person-hours it takes to assemble  $n$  engines in a factory, then the positive integers would be an appropriate domain for the function]; represent the domain and range using both interval notation (e.g.,  $(2, 10]$ ) and set notation (e.g.,  $\{x \in \mathbb{N} \mid x \leq 10\}$ )
- write a function that describes a linear relationship between two quantities by determining an explicit expression, a recursive process, or steps for calculation from a context

## High School Mathematics

### C - Functions *(continued)*

- evaluate functions for inputs in their domains using function notation and interpret statements that use function notation in terms of a context
- graph linear functions expressed algebraically in slope-intercept and standard form by hand and by using technology; show and interpret key features including slope and intercepts (as determined by the function or by context)
- interpret key features of linear functions represented in graphs, tables, equations, and verbal descriptions (i.e., intercepts, positive, negative; intervals where the function is increasing, decreasing); sketch graphs showing these key features when given a verbal description of the relationship
- recognize that geometric sequences are functions, sometimes defined recursively, whose domain is a subset of the integers
- write a function that describes an exponential relationship between two quantities by determining an explicit expression, a recursive process, or steps for calculation from a context
- write geometric sequences both recursively and with an explicit formula; use them to model situations, and translate between the two forms; connect geometric sequences to exponential functions
- prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals; this can be shown by algebraic proof, with a table showing differences, or by calculating average rates of change over equal intervals
- recognize situations in which one quantity changes at a constant rate per unit interval relative to another (i.e., linear)
- recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another (i.e., exponential)
- identify the effect on the graph of replacing  $f(x)$  by  $f(x) + k$ ,  $k f(x)$ ,  $f(kx)$ , and  $f(x + k)$  for specific values of  $k$  (both positive and negative); find the value of  $k$  given the graphs; experiment with cases and illustrate an explanation of the effects on the graph using technology; include recognizing even and odd functions from their graphs and algebraic expressions
- use second differences to write a quadratic function that describes a relationship between two quantities
- use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context (i.e., compare and contrast quadratic functions in standard, vertex, and intercept forms)
- graph exponential functions expressed algebraically by hand and by using technology; show and interpret key features including intercepts and end behavior
- interpret key features of exponential functions represented in graphs, tables, equations, and verbal descriptions (i.e., intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; asymptote; and end behavior); sketch graphs showing these key features when given a verbal description of the relationship

## High School Mathematics

### C - Functions *(continued)*

- construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, table, a description of a relationship, or two input-output pairs
- interpret the parameters in a linear (i.e.,  $f(x) = mx + b$ ) or exponential function (i.e.,  $f(x) = a \cdot dx$ ) in terms of a context (i.e., in the provided functions, “m” and “b” are the parameters of the linear function, and “a” and “d” are the parameters of the exponential function); in context, students should describe what these parameters mean in terms of change and starting value
- graph linear, quadratic, and exponential functions algebraically and show key features of the graph by hand and by using technology
- interpret key features of linear, quadratic, and exponential functions represented in graphs, tables, equations, and verbal descriptions (i.e., intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; asymptotes; end behavior); sketch graphs showing these key features when given a verbal description of the relationship
- show using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or more generally as a polynomial function

### D - Number and Quantity

- explain why the sum or product of rational numbers is rational, why the sum of a rational number and an irrational number is irrational, and why the product of a nonzero rational number and an irrational number is irrational
- use units of measure (linear, area, capacity, rates, and time) as a way to understand problems; identify, use, and record appropriate units of measure within context, within data displays, and on graphs; convert units and rates using dimensional analysis (English to English and Metric to Metric without conversion factor provided and between English and Metric with conversion factor); use units within multi-step problems and formulas; interpret units of input and resulting units of output
- define appropriate quantities for the purpose of descriptive modeling; given a situation, context, or problem, students will determine, identify, and use appropriate quantities for representing the situation
- choose a level of accuracy appropriate to limitations on measurement when reporting quantities (e.g., money situations are generally reported to the nearest hundredth; also, an answers’ precision is limited to the precision of the data given)
- rewrite expressions involving radicals (i.e., simplify and/or use the operations of addition, subtraction, multiplication, and division with radicals within algebraic expressions limited to square roots)

## High School Mathematics

# Accelerated Algebra I

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### A - Algebra

- add, subtract, and multiply polynomials
- solve quadratic equations by inspection, taking square roots, factoring, completing the square, and the quadratic formula, as appropriate to the initial form of the equation (limit to real number solutions)
- create quadratic equations in one variable and use them to solve problems
- create quadratic equations in two variables to represent relationships between quantities expressed in a table of values or verbal representation; graph these quadratic equations on coordinate axes with appropriate labels and scales
- create exponential equations in two variables to represent relationships between quantities expressed in a table of values or verbal representation, graph these exponential equations on coordinate axes with appropriate labels and scales
- create exponential equations in one variable and use them to solve simple equations
- demonstrate that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane
- graph the solutions to a linear inequality in two variables as a half plane, excluding the boundary in the case of a strict inequality
- graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes
- represent constraints by equations or inequalities, and interpret data points as possible (i.e., a solution) or not possible (i.e., a non-solution) under the established constraints
- represent constraints by systems of equations and/or inequalities, and interpret data points as possible (i.e., a solution) or not possible (i.e., a non-solution) under the established constraints
- create linear equations in two variables to represent relationships between quantities expressed in a table of values or verbal representation, including writing equations when given a slope and a y-intercept or slope and a point; graph these linear equations on coordinate axes with appropriate labels and scales
- solve systems of linear equations exactly (i.e., algebraically) and approximately (i.e., with graphs), focusing on pairs of linear equations in two variables; solve simple cases by inspection (e.g.,  $3x + 2y = 5$  and  $3x + 2y = 6$  have no solution because  $3x + 2y$  cannot simultaneously be 5 and 6)
- justify the steps of a simple one-solution equation using algebraic properties and the properties of real numbers; justify each step, or if given two or more steps of an equation, explain the progression from one step to the next using properties
- show and explain why the elimination method works to solve a system of two-variable equations



## High School Mathematics

### A - Algebra *(continued)*

- explain why the x-coordinates of the points where the graphs of the equations  $y=f(x)$  and  $y=g(x)$  intersect are the solutions of the equation  $f(x)=g(x)$ ; find the solutions approximately (e.g., using technology to graph the functions, make tables of values, or find successive approximations)
- use the structure of an expression to rewrite it in different equivalent forms [i.e., see  $x^4 - y^4$  as  $((x^2) - (y^2))^2$ , thus recognizing it as a difference of squares that can be factored as  $(x^2 - y^2)(x^2 + y^2)$ ]
- choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression (e.g., reveal the zeros, minimum, or maximum)
- factor any quadratic expression to reveal the zeros of the function it defines
- complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines
- use the method of completing the square to transform any quadratic equation in  $x$  into an equation of the form  $(x - p)^2 = q$  that has the same solutions; derive the quadratic formula from  $ax^2 + bx + c = 0$
- interpret parts of an expression, such as terms, factors, and coefficients in context
- interpret the meaning of given formulas or expressions in context of individual terms or factors when given in situations which utilize the formulas or expressions with multiple terms and/or factors
- create linear equations and inequalities in one variable and use them to solve problems
- solve linear equations and inequalities in one variable, including equations with coefficients represented by letters (i.e., solve multi-step linear equations with one solution, infinitely many solutions, or no solutions; extend this reasoning to solve compound linear inequalities and literal equations); express solution sets to inequalities using both interval notation (e.g.,  $(2, 10]$ ) and set notation (e.g.,  $\{x \mid 2 < x \leq 10\}$ )
- rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations (e.g., rearrange Ohm's law  $V=IR$  to highlight resistance  $R$ )

### B - Statistics and Probability

- interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (i.e., outliers)
- summarize categorical data for two categories in two-way frequency tables; interpret relative frequencies in the context of the data (i.e., including joint, marginal, and conditional relative frequencies); recognize possible associations and trends in the data
- represent data on two quantitative variables on a scatter plot and describe how the variables are related
- represent data with plots on the real number line (e.g., dot plots, histograms, and box plots)
- use statistics appropriate to the shape of the data distribution to compare center (i.e., median, mean) and spread (i.e., interquartile range, mean absolute deviation) of two or more different data sets

## High School Mathematics

### B - Statistics and Probability *(continued)*

- fit a function to bivariate data; use functions fitted to data to solve problems in the context of the data; use given functions or choose a function suggested by the context; emphasize linear, quadratic, and exponential models
- determine and interpret the slope (i.e., rate of change) and the intercept (i.e., constant term) of a linear model in the context of the data
- compute (using technology) and interpret the correlation coefficient of a linear fit (e.g., by looking at a scatter plot, students should be able to tell if the correlation coefficient is positive or negative and give a reasonable estimate of the "r" value; after calculating the line of best fit using technology, describe how strong the goodness of fit of the regression is using "r")
- explain the difference between correlation and causation

### C - Geometry

- given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using graph paper, tracing paper, or geometry software; specify a sequence of transformations that will carry a given figure onto another
- use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent
- use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent
- know and apply the precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc
- prove theorems about lines and angles (i.e., vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints)
- prove theorems about triangles (i.e., measures of the interior angles of a triangle sum to 180 degrees; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point)
- prove theorems about parallelograms (i.e., opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals)
- explain how the criteria for triangle congruence (i.e., ASA, SAS, SSS, HL, AAS) follow from the definition of congruence in terms of rigid motions

## High School Mathematics

### C - Geometry *(continued)*

- make formal geometric constructions with a variety of tools and methods (e.g., compass and straightedge, string, reflective devices, paper folding, dynamic geometric software); copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line
- construct an equilateral triangle, a square, and a regular hexagon, each inscribed in a circle
- verify experimentally the properties of dilations given by a center and a scale factor (i.e., a dilation of a line not passing through the center of the dilation results in a parallel line and leaves a line passing through the center unchanged; the dilation of a line segment is longer or shorter according to the ratio given by the scale factor)
- given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides
- use the properties of similarity transformations to establish the AA criterion for two triangles to be similar
- describe transformations as function that take points in the plane as inputs and give other points as outputs; compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch)
- describe the rotations and reflections that carry a rectangle, parallelogram, trapezoid, or regular polygon onto itself
- develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments
- prove theorems about triangles (i.e., a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem using triangle similarity)
- use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures
- understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles
- explain and use the relationship between the sine and cosine of complementary angles
- use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems

### D - Functions

- recognize that geometric sequences are functions, sometimes defined recursively, whose domain is a subset of the integers
- write a function that describes an exponential relationship between two quantities by determining an explicit expression, a recursive process, or steps for calculation from a context

## High School Mathematics

### D - Functions *(continued)*

- write geometric sequences both recursively and with an explicit formula; use them to model situations, and translate between the two forms; connect geometric sequences to exponential functions
- prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals; this can be shown by algebraic proof, with a table showing differences, or by calculating average rates of change over equal intervals
- recognize situations in which one quantity changes at a constant rate per unit interval relative to another (i.e., linear)
- recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another (i.e., exponential)
- construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, table, a description of a relationship, or two input-output pairs
- interpret the parameters in a linear or exponential function in terms of a context; in context, students should describe what these parameters mean in terms of change and starting value
- interpret key features of linear, quadratic, and exponential functions represented in graphs, tables, equations, and verbal descriptions (i.e., intercepts, positive, negative; intervals where the function is increasing, decreasing; relative maximums and minimums; symmetries; asymptotes; end behavior); sketch graphs showing these key features when given a verbal description of the relationship
- show using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or more generally as a polynomial function
- graph linear, quadratic, and exponential functions algebraically and show key features of the graph by hand and by using technology
- understand that a function from one set (the input, called the domain) to another set (the output, called the range) assigns to each element of the domain exactly one element of the range [i.e., if  $f$  is a function,  $x$  is the input (an element of the domain), and  $f(x)$  is the corresponding output (an element of the range); the graph of the function is the set of ordered pairs consisting of an input and the corresponding output]
- evaluate functions for inputs in their domains using function notation and interpret statements that use function notation in terms of a context
- graph linear functions expressed algebraically in slope-intercept and standard form by hand and by using technology; show and interpret key features including slope and intercepts (as determined by the function or by context)
- identify the effect on the graph of replacing  $f(x)$  by  $f(x) + k$ ,  $k f(x)$ ,  $f(kx)$ , and  $f(x + k)$  for specific values of  $k$  (both positive and negative); find the value of  $k$  given the graphs; experiment with cases and illustrate an explanation of the effects on the graph using technology; include recognizing even and odd functions from their graphs and algebraic expressions
- use second differences to write a quadratic function that describes a relationship between two quantities

## High School Mathematics

### D - Functions *(continued)*

- graph quadratic functions expressed algebraically by hand and by using technology; show and interpret key features including intercepts, maxima, and minima (as determined by the function or by context)
- interpret key features of quadratic functions represented in graphs, tables, equations, and verbal descriptions (i.e., intercepts, positive, negative; intervals where the function is increasing, decreasing; relative maximums and minimums; symmetries; end behavior); sketch graphs showing these key features when given a verbal description of the relationship
- calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval; estimate the rate of change from a graph
- interpret key features of linear functions represented in graphs, tables, equations, and verbal descriptions (i.e., intercepts, positive, negative; intervals where the function is increasing, decreasing); sketch graphs showing these key features when given a verbal description of the relationship
- relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes [e.g., if the function  $h(n)$  gives the number of person-hours it takes to assemble  $n$  engines in a factory, then the positive integers would be an appropriate domain for the function]; represent the domain and range using both interval notation (e.g.,  $(2, 10]$ ) and set notation (e.g.,  $\{x \in \mathbb{Z} \text{ and } x = 10\}$ )
- write a function that describes a relationship between two quantities by determining an explicit expression, a recursive process, or steps for calculation from a context
- write a function that describes a linear relationship between two quantities by determining an explicit expression, a recursive process, or steps for calculation from a context
- compare properties of two functions each represented algebraically, graphically, numerically in tables, and/or by a verbal description
- use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context (e.g., compare and contrast quadratic functions in standard, vertex, and intercept forms)
- graph exponential functions expressed algebraically by hand and by using technology; show and interpret key features including intercepts and end behavior
- interpret key features of exponential functions represented in graphs, tables, equations, and verbal descriptions (i.e., intercepts, positive, negative; intervals where the function is increasing, decreasing; relative maximums and minimums; asymptotes; end behavior); sketch graphs showing these key features when given a verbal description of the relationship
- write arithmetic sequences both recursively and with an explicit formula; use them to model situations, and translate between the two forms; connect arithmetic sequences to linear functions
- recognize that arithmetic sequences are functions, sometimes defined recursively, whose domain is a subset of the integers

## High School Mathematics

### E - Numbers and Quantity

- rewrite expressions involving radicals (i.e., simplify and /or use the operations of addition, subtraction, multiplication, and division with radicals within algebraic expressions limited to square roots)
- explain why the sum or the product of rational numbers is rational, why the sum of a rational number and an irrational number is irrational, and why the product of a nonzero rational number and an irrational number is irrational
- use units of measure (linear, area, capacity, rates, and time) as a way to understand problems; identify, use, and record appropriate units of measure within context, within data displays, and on graphs; convert units and rates using dimensional analysis (English to English and Metric to Metric without conversion factor provided and between English and Metric with conversion factor); use units within multi-step problems and formulas; interpret units of input and resulting units of output
- define appropriate quantities for the purpose of descriptive modeling; given a situation, context, or problem, students will determine, identify, and use appropriate quantities for representing the situation
- choose a level of accuracy appropriate to limitations on measurement when reporting quantities (e.g., money situations are generally reported to the nearest hundredth; also, an answers' precision is limited to the precision of the data given)

## High School Mathematics

# Geometry

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### A - Geometry

- construct the inscribed and circumscribed circle of a triangle
- informally prove the Pythagorean Theorem and its converse geometrically (i.e., using area model)
- prove theorems about triangles (i.e., measures of interior angles of a triangle sum to 180 degrees; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point)
- prove theorems about parallelograms (i.e., opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals)
- use congruence criteria for triangles to solve problems and to prove relationships in geometric figures
- verify experimentally the properties of dilations given by a center and a scale factor (i.e., a dilation of a line not passing through the center of the dilation results in a parallel line and leaves a line passing through the center unchanged; the dilation of a line segment is longer or shorter according to the ratio given by the scale factor)
- develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments
- use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent
- use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent
- explain how the criteria for triangle congruence (i.e., ASA, SAS, SSS, HL, AAS) follow from the definition of congruence in terms of rigid motions
- use informal arguments to establish facts about the angle sum and exterior angles of triangles and about the angles created when parallel lines are cut by a transversal
- prove theorems about lines and angles (i.e., vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints)
- construct an equilateral triangle, a square, and a regular hexagon, each inscribed in a circle
- prove properties of angles for a quadrilateral inscribed in a circle
- construct a tangent line from a point outside a given circle to the circle

## High School Mathematics

### A - Geometry (*continued*)

- derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector
- derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation
- prove that all circles are similar (i.e., using transformations; ratio of circumference to the diameter is a constant)
- identify and describe relationships among inscribed angles, radii, chords, tangents, and secants (i.e., the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle)
- make formal geometric constructions with a variety of tools and methods (e.g., compass and straightedge, string, reflective devices, paper folding, dynamic geometric software); copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line
- know and apply the precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc
- describe the effects of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates
- describe transformations as functions that take points in the plane as inputs and give other points as outputs; compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch)
- given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using graph paper, tracing paper, or geometry software; specify a sequence of transformations that will carry a given figure onto another
- describe the rotations and reflections that carry a rectangle, parallelogram, trapezoid, or regular polygon onto itself
- given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides
- use the properties of similarity transformations to establish the AA criterion for two triangles to be similar
- give informal arguments for geometric formulas (i.e., informal arguments for the formulas of the circumference of a circle and area of a circle using dissection arguments and informal limit arguments; informal arguments for the formula of the volume of a cylinder, pyramid, and cone using Cavalieri's principle)



## High School Mathematics

### A - Geometry (*continued*)

- give an informal argument using Cavalieri's principle for the formulas of the volume of a sphere and other solid figures
- use volume formulas for cylinders, pyramids, cones, and spheres to solve problems
- explain and apply the distance formula as an application of the Pythagorean Theorem
- use coordinates to prove simple geometric theorems algebraically (i.e., prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that a point lies on a circle centered at the origin and containing a given point), including quadrilaterals, circles, right triangles, and parabolas
- prove theorems about triangles (i.e., a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem using triangle similarity)
- use similarity criteria for triangles to solve problems and to prove relationships in geometric figures
- understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles
- explain and use the relationship between the sine and cosine of complementary angles
- use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems
- prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point)
- find the point on a directed line segment between two given points that partitions the segment in a given ratio
- use coordinates to compute perimeters of polygons and areas of triangles and rectangles (e.g., using the distance formula)
- identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects
- apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in three dimensions
- use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder)
- apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot)
- apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios)

## High School Mathematics

### B - Statistics and Probability

- recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations (e.g., compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer)
- find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in context
- apply the Addition Rule,  $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ , and interpret the answer in context
- describe categories of events as subsets of a sample space using unions, intersections, or complements of other events (i.e., "or," "and," "not")
- understand the conditional probability of A given B as  $P(A \text{ and } B)/P(B)$ ; interpret independence of A and B in terms of conditional probability (i.e., the conditional probability of A given B is the same as the probability of A and the conditional probability of B given A is the same as the probability of B)
- construct and interpret two-way frequency tables of data when two categories are associated with each object being classified; use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities (e.g., collect data from a random sample of students in your school on their favorite subject among math, science, and English; estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade; do the same for other subjects and compare the results)
- understand that if two events A and B are independent, the probability of A and B occurring together is the product of their probabilities, and that if the probability of two events A and B occurring together is the product of their probabilities, the two events are independent

## High School Mathematics

# Accelerated Geometry

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### A - Algebra

- represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context (e.g., represent inequalities describing nutritional and cost constraints on combinations of different foods)
- rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations
- solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise
- solve quadratic equations in one variable
- solve quadratic equations by inspection (e.g.,  $x^2 = -49$ ), taking square roots, factoring, completing the square, and using the quadratic formula, as appropriate to the initial form of the equation; recognize when the quadratic formula gives complex solutions and write them as  $a \pm bi$  for real numbers  $a$  and  $b$
- understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions
- interpret expressions that represent a quantity in terms of its context
- interpret parts of an expression such as terms, factors, and coefficients, in context
- given situations which utilize formulas or expressions with multiple terms and/or factors, interpret the meaning (in context) of individual terms or factors
- use the structure of an expression to rewrite it in different equivalent forms (e.g., recognize  $x^4 - y^4$  as  $(x^2)^2 - (y^2)^2$ , thus recognizing it as a difference of squares that can be factored as  $(x^2 - y^2)(x^2 + y^2)$ )
- choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression
- use the properties of exponents to transform expressions for exponential functions
- derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems (e.g., calculate mortgage payments)
- understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials
- know and apply the Remainder Theorem: For a polynomial  $p(x)$  and a number  $a$ , the remainder on division by  $x - a$  is  $p(a)$ , so  $p(a) = 0$  if and only if  $(x - a)$  is a factor of  $p(x)$

## High School Mathematics

### A - Algebra *(continued)*

- identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial
- prove polynomial identities and use them to describe numerical relationships (e.g., the polynomial identity  $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$  can be used to generate Pythagorean triples)
- know and apply that the Binomial Theorem gives the expansion of  $(x + y)^n$  in powers of  $x$  and  $y$  for a positive integer  $n$ , where  $x$  and  $y$  are any numbers, with coefficients determined using Pascal's Triangle
- rewrite simple rational expressions in different forms; write  $a(x)/b(x)$  in the form  $q(x) + r(x)/b(x)$ , where  $a(x)$ ,  $b(x)$ ,  $q(x)$ , and  $r(x)$  are polynomials with the degree of  $r(x)$  less than the degree of  $b(x)$ , using inspection, long division, or, for the more complicated examples, a computer algebra system
- create equations and inequalities in one variable and use them to solve problems (i.e., create equations in one variable that describes simple rational functions, exponential functions, etc.)
- create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales (i.e., create and graph equations in two variables to describe radical functions, rational functions, etc.)
- explain why the  $x$ -coordinates of the points where the graphs of the equations  $y = f(x)$  and  $y = g(x)$  intersect are the solutions of the equation  $f(x) = g(x)$ ; find the solutions approximately (e.g., using a graph, find the solution to a system of equations where  $f(x)$  and/or  $g(x)$  are rational functions)

### B - Function

- express as a logarithm the solution to  $ab^{ct} = d$  where  $a$ ,  $c$ , and  $d$  are numbers and the base  $b$  is 2, 10, or  $e$ ; evaluate the logarithm using technology
- graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions
- graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior
- graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior
- graph exponential and logarithmic functions, showing intercepts and end behavior
- write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function
- use the properties of exponents to interpret expressions for exponential functions
- compare properties of two functions each represented algebraically, graphically, numerically in tables, and/or by a verbal description
- write a function that describes a relationship between two quantities (e.g., quadratic, polynomial, rational, radical, exponential, logarithmic)

## High School Mathematics

### B - Function *(continued)*

- find inverse functions
- solve an equation of the form  $f(x) = c$  for a simple function  $f$  that has an inverse and write an expression for the inverse (e.g.,  $f(x) = 2(x^3)$  or  $f(x) = (x+1)/(x-1)$  for  $x \neq 1$ )
- verify by composition that one function is the inverse of another
- read values of an inverse function from a graph or a table, given that the function has an inverse
- understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents
- combine standard function types using arithmetic operations
- compose functions
- identify the effect on the graph of replacing  $f(x)$  by  $f(x) + k$ ,  $kf(x)$ ,  $f(kx)$ , and  $f(x + k)$  for specific values of  $k$  (both positive and negative); find the value of  $k$  given the graphs; experiment with cases and illustrate an explanation of the effects on the graph using technology; include recognizing even and odd functions from their graphs and algebraic expressions for them
- using tables, graphs, equations, and verbal descriptions, interpret the key characteristics of a function which models the relationship between two quantities; sketch a graph showing key features, including intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior
- relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes (e.g., if the function  $h(n)$  gives the number of person-hours it takes to assemble  $n$  engines in a factory, then the positive integers would be an appropriate domain for the function)
- calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval; estimate the rate of change from a graph
- graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases

### C - Geometry

- derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation
- identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects
- give informal arguments for geometric formulas (i.e., informal arguments for the formulas of the circumference of a circle and area of a circle using dissection arguments and informal limit arguments; informal arguments for the formula of the volume of a cylinder, pyramid, and cone using Cavalieri's principle)
- use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder)

## High School Mathematics

### C - Geometry *(continued)*

- give an informal argument using Cavalieri's principle for the formulas of the volume of a sphere and other solid figures
- apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot)
- use volume formulas for cylinders, pyramids, cones, and spheres to solve problems
- apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios)
- use coordinates to prove simple geometric theorems algebraically (i.e., prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that a point lies on a circle centered at the origin and containing a given point), including quadrilaterals, circles, right triangles, and parabolas
- prove that all circles are similar (i.e., using transformations; ratio of circumference to the diameter is a constant)
- identify and describe relationships among inscribed angles, radii, chords, tangents, and secants (i.e., the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle)
- construct the inscribed and circumscribed circle of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle
- construct a tangent line from a point outside a given circle to the circle
- derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector
- prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point)
- find the point on a directed line segment between two given points that partitions the segment in a given ratio
- use coordinates to compute perimeters of polygons and areas of triangles and rectangles (e.g., using the distance formula)

### D - Numbers

- know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials
- know there is a complex number  $i$  such that  $i^2 = -1$ , and every complex number has the form  $a + bi$  with  $a$  and  $b$  real
- use the relation  $i^2 = -1$  and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers

## High School Mathematics

### D - Numbers *(continued)*

- find the conjugate of a complex number; use conjugates to find quotients of complex numbers
- solve quadratic equations with real coefficients that have complex solutions
- extend polynomial identities to the complex numbers (e.g., rewrite  $x^2 + 4$  as  $(x + 2i)(x - 2i)$ )
- explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents
- rewrite expressions involving radicals and rational exponents using the properties of exponents

### E - Statistics and Probability

- describe categories of events as subsets of a sample space using unions, intersections, or complements of other events (i.e., "or," "and," "not")
- understand that if two events A and B are independent, the probability of A and B occurring together is the product of their probabilities, and that if the probability of two events A and B occurring together is the product of their probabilities, the two events are independent
- understand the conditional probability of A given B as  $P(A \text{ and } B)/P(B)$ ; interpret independence of A and B in terms of conditional probability (i.e., the conditional probability of A given B is the same as the probability of A and the conditional probability of B given A is the same as the probability of B)
- construct and interpret two-way frequency tables of data when two categories are associated with each object being classified; use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities (e.g., collect data from a random sample of students in your school on their favorite subject among math, science, and English; estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade; do the same for other subjects and compare the results)
- recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations (e.g., compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer)
- find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in context
- apply the Addition Rule,  $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ , and interpret the answer in context

## High School Mathematics

# Algebra II

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### A - Algebra

- use the structure of an expression to rewrite it in different equivalent forms [e.g., see  $x^4 - y^4$  as  $((x^2) - (y^2))^2$ , thus recognizing it as a difference of squares that can be factored as  $(x^2 - y^2)(x^2 + y^2)$ ]
- choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression
- use the properties of exponents to transform expressions for exponential functions
- derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems (e.g., calculate mortgage payments)
- solve quadratic equations in one variable
- interpret expressions that represent a quantity in terms of its context
- interpret parts of an expression such as terms, factors, and coefficients
- interpret complicated expressions by viewing one or more of their parts as a single entity (e.g., interpret  $P(1+r)$  as the product of  $P$  and a factor not depending on  $P$ )
- rewrite simple rational expressions in different forms using inspection, long division, or a computer algebra system; write  $a(x)/b(x)$  in the form  $q(x) + r(x)/b(x)$ , where  $a(x)$ ,  $b(x)$ ,  $q(x)$ , and  $r(x)$  are polynomials with the degree of  $r(x)$  less than the degree of  $b(x)$
- understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions
- create equations and inequalities in one variable and use them to solve problems (i.e., create equations in one variable that describes simple rational functions, exponential functions, etc.)
- create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales (i.e., create and graph equations in two variables to describe radical functions, rational functions, etc.)
- prove polynomial identities and use them to describe numerical relationships (e.g., the polynomial identity  $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$  can be used to generate Pythagorean triples)
- know and apply that the Binomial Theorem gives the expansion of  $(x + y)^n$  in powers of  $x$  and  $y$  for a positive integer  $n$ , where  $x$  and  $y$  are any numbers, with coefficients determined using Pascal's Triangle
- represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context (e.g., represent inequalities describing nutritional and cost constraints on combinations of different foods)
- rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations



## High School Mathematics

### A - Algebra *(continued)*

- solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise
- explain why the x-coordinates of the points where the graphs of the equations  $y = f(x)$  and  $y = g(x)$  intersect are the solutions of the equation  $f(x) = g(x)$ ; find the solutions approximately (e.g., using a graph, find the solution to a system of equations where  $f(x)$  and/or  $g(x)$  are rational functions)
- solve quadratic equations by inspection (e.g.,  $x^2 = -49$ ), taking square roots, factoring, completing the square, and using the quadratic formula, as appropriate to the initial form of the equation; recognize when the quadratic formula gives complex solutions and write them as  $a \pm bi$  for real numbers  $a$  and  $b$
- understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials
- know and apply the Remainder Theorem: for a polynomial  $p(x)$  and a number  $a$ , the remainder on division by  $x - a$  is  $p(a)$ , so  $p(a) = 0$  if and only if  $(x - a)$  is a factor of  $p(x)$
- identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial

### B - Statistics and Probability

- use statistics appropriate to the shape of the data distribution to compare center (i.e., median, mean) and spread (i.e., interquartile, range, standard deviation) of two or more different data sets
- use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages; recognize that there are data sets for which such a procedure is not appropriate; use calculators, spreadsheets, and tables to estimate areas under the normal curve
- understand statistics as a process for making inferences about population parameters based on a random sample from that population
- decide if a specified model is consistent with results from a given data-generating process (e.g., a model says a spinning coin falls heads up with probability 0.5; would a result of 5 tails in a row cause you to question the model?)
- recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each
- use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling
- use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant
- evaluate reports based on data

## High School Mathematics

### C - Functions

- graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior
- graph exponential and logarithmic functions, showing intercepts and end behavior
- write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function
- use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context
- use the properties of exponents to interpret expressions for exponential functions
- compare properties of two functions each represented algebraically, graphically, numerically in tables, and/or by a verbal description
- write a function that describes a relationship between two quantities (e.g., quadratic, polynomial, rational, radical, exponential, logarithmic)
- combine standard function types using arithmetic operations (e.g., build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model)
- understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents
- express as a logarithm the solution to  $ab^{(ct)} = d$  where  $a$ ,  $c$ , and  $d$  are numbers and the base  $b$  is 2, 10, or  $e$ ; evaluate the logarithm using technology
- compose functions
- identify the effect on the graph of replacing  $f(x)$  by  $f(x) + k$ ,  $kf(x)$ ,  $f(kx)$ , and  $f(x + k)$  for specific values of  $k$  (both positive and negative); find the value of  $k$  given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them
- find inverse functions
- solve an equation of the form  $f(x) = c$  for a simple function  $f$  that has an inverse and write an expression for the inverse (e.g.,  $f(x) = 2(x^3)$  or  $f(x) = (x+1)/(x-1)$  for  $x \neq 1$ )
- verify by composition that one function is the inverse of another
- read values of an inverse function from a graph or a table, given that the function has an inverse
- graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions
- graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior

## High School Mathematics

### C - Functions *(continued)*

- using tables, graphs, equations, and verbal descriptions, interpret the key characteristics of a function which models the relationship between two quantities; sketch a graph showing key features, including intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior
- relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes (e.g., if the function  $h(n)$  gives the number of person-hours it takes to assemble  $n$  engines in a factory, then the positive integers would be an appropriate domain for the function)
- calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval; estimate the rate of change from a graph
- graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases

### D - Number and Quantity

- use the relation  $i^2 = -1$  and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers
- find the conjugate of a complex number; use conjugates to find quotients of complex numbers
- extend polynomial identities to the complex numbers (e.g., rewrite  $x^2 + 4$  as  $(x + 2i)(x - 2i)$ )
- know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials
- know there is a complex number  $i$  such that  $i^2 = -1$ , and every complex number has the form  $a + bi$  with  $a$  and  $b$  real
- solve quadratic equations with real coefficients that have complex solutions
- explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents
- rewrite expressions involving radicals and rational exponents using the properties of exponents

## High School Mathematics

# Pre-calculus

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### A - Algebra

- solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically
- represent a system of linear equations as a single matrix equation in a vector variable
- find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension  $3 \times 3$  or greater)

### B - Functions

- use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context
- prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems
- understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle
- produce an invertible function from a non-invertible function by restricting the domain
- use special triangles to determine geometrically the values of sine, cosine, tangent for  $\pi/3$ ,  $\pi/4$  and  $\pi/6$ , and use the unit circle to express the values of sine, cosine, and tangent for  $\pi - x$ ,  $\pi + x$ , and  $2\pi - x$  in terms of their values for  $x$ , where  $x$  is any real number
- use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions
- understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed
- using tables, graphs, and verbal descriptions, interpret the key characteristics of a function which models the relationship between two quantities; sketch a graph showing key features including: intercepts; interval where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity
- graph functions expressed algebraically and show key features of the graph both by hand and by using technology
- graph trigonometric functions, showing period, midline, and amplitude
- find inverse functions
- explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle
- choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline
- prove the Pythagorean identity  $(\sin A)^2 + (\cos A)^2 = 1$  and use it to find  $\sin A$ ,  $\cos A$ , or  $\tan A$ , given  $\sin A$ ,  $\cos A$ , or  $\tan A$ , and the quadrant of the angle

## High School Mathematics

### C - Geometry

- derive the equation of a parabola given a focus and directrix.
- derive the formula  $A = (1/2)ab \sin(C)$  for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side
- prove the Laws of Sines and Cosines and use them to solve problems
- understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces)
- derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant

### D - Number and Quantity

- multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector; work with matrices as transformations of vectors
- use matrices to represent and manipulate data, (e.g., to represent payoffs or incidence relationships in a network)
- multiply matrices by scalars to produce new matrices, (e.g., as when all of the payoffs in a game are doubled)
- add, subtract, and multiply matrices of appropriate dimensions
- understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties
- understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers; the determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse
- work with 2x2 matrices as transformations of the plane, and interpret the absolute value of the determinant in terms of area
- add and subtract vectors
- add vectors end-to-end, component-wise, and by the parallelogram rule; understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes
- given two vectors in magnitude and direction form, determine the magnitude and direction of their sum
- understand vector subtraction  $v - w$  as  $v + (-w)$ , where  $(-w)$  is the additive inverse of  $w$ , with the same magnitude as  $w$  and pointing in the opposite direction; represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise
- multiply a vector by a scalar
- represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, (e.g., as  $c(v_x, v_y) = (cv_x, cv_y)$ )

## High School Mathematics

### D - Number and Quantity *(continued)*

- compute the magnitude of a scalar multiple  $c\mathbf{v}$  using  $\|c\mathbf{v}\| = |c|\|\mathbf{v}\|$ ; compute the direction of  $c\mathbf{v}$  knowing that when  $\|\mathbf{v}\|$  not equal to 0, the direction of  $c\mathbf{v}$  is either along  $\mathbf{v}$  (for  $c \geq 0$ ) or against  $\mathbf{v}$  (for  $c < 0$ )
- find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers
- represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number
- represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation
- calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints
- recognize vector quantities as having both magnitude and direction; represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes
- find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point
- solve problems involving velocity and other quantities that can be represented by vectors

### E - Statistics and Probability

- develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value (e.g., find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household; how many TV sets would you expect to find in 100 randomly selected households?)
- weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values
- find the expected payoff for a game of chance (e.g., find the expected winnings from a state lottery ticket or a game at a fast-food restaurant)
- evaluate and compare strategies on the basis of expected values (e.g., compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident)
- use probabilities to make fair (equally likely) decisions (e.g., drawing by lots, using a random number generator)
- analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game)
- apply the general Multiplication Rule in a uniform probability model,  $P(A \text{ and } B) = P(A) \times P(B|A) = P(B) \times P(A|B)$ , and interpret the answer in terms of the model
- use permutations and combinations to compute probabilities of compound events and solve problems

**High School Mathematics****E - Statistics and Probability** *(continued)*

- define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions
- calculate the expected value of a random variable; interpret it as the mean of the probability distribution
- develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value (e.g., find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes)

## High School Mathematics

# Accelerated Pre-calculus

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### A - Algebra

- use mathematical induction to find and prove formulae for sums of finite series
- describe parametric representations of plane curves
- convert between Cartesian and parametric form
- graph equations in parametric form showing direction and endpoints where appropriate
- express coordinates of points in rectangular and polar form
- solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically
- graph and identify characteristics of simple polar equations including lines, circles, cardioids, limaçons and roses
- establish and utilize trigonometric identities to simplify expressions and verify equivalence statements (e.g., double angle, half angle, reciprocal, quotient, pythagorean, even, and odd)
- represent a system of linear equations as a single matrix equation in a vector variable
- find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension  $3 \times 3$  or greater)

### B - Functions

- understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed
- use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context
- find inverse functions
- produce an invertible function from a non-invertible function by restricting the domain
- use special triangles to determine geometrically the values of sine, cosine, tangent, cosecant, secant, cotangent for  $\pi/3$ ,  $\pi/4$  and  $\pi/6$ , and use the unit circle to express the values of sine, cosine, tangent, cosecant, secant, and cotangent for  $\pi - x$ ,  $\pi + x$ , and  $2\pi - x$  in terms of their values for  $x$ , where  $x$  is any real number
- use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions
- explore the continuity of functions of two independent variables in terms of the limits of such functions as  $(x,y)$  approaches a given point in the plane
- understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle



## High School Mathematics

### B - Functions *(continued)*

- explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle
- choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline
- prove the Pythagorean identity  $(\sin A)^2 + (\cos A)^2 = 1$  and use it to find  $\sin A$ ,  $\cos A$ , or  $\tan A$ , given  $\sin A$ ,  $\cos A$ , or  $\tan A$ , and the quadrant of the angle
- using tables, graphs, and verbal descriptions, interpret the key characteristics of a function which models the relationship between two quantities; sketch a graph showing key features including: intercepts; interval where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity
- graph functions expressed algebraically and show key features of the graph both by hand and by using technology
- graph trigonometric functions, showing period, midline, and amplitude
- prove the addition, subtraction, and double angle formulas for sine, cosine, and tangent and use them to solve problems

### C - Geometry

- derive the formula  $A = (1/2)ab \sin(C)$  for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side
- prove the Laws of Sines and Cosines and use them to solve problems
- understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces)
- derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant
- derive the equation of a parabola given a focus and directrix

### D - Number and Quantity

- add vectors end-to-end, component-wise, and by the parallelogram rule; understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes
- given two vectors in magnitude and direction form, determine the magnitude and direction of their sum
- understand vector subtraction  $v - w$  as  $v + (-w)$ , where  $(-w)$  is the additive inverse of  $w$ , with the same magnitude as  $w$  and pointing in the opposite direction; represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise
- multiply a vector by a scalar
- represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, (e.g., as  $c(v_x, v_y) = (cv_x, cv_y)$ )

## High School Mathematics

### D - Number and Quantity *(continued)*

- compute the magnitude of a scalar multiple  $c\mathbf{v}$  using  $\|c\mathbf{v}\| = |c|\mathbf{v}\|$ ; compute the direction of  $c\mathbf{v}$  knowing that when  $\mathbf{v}$  not equal to 0, the direction of  $c\mathbf{v}$  is either along  $\mathbf{v}$  (for  $c \geq 0$ ) or against  $\mathbf{v}$  (for  $c < 0$ )
- multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector; work with matrices as transformations of vectors
- add, subtract, and multiply matrices of appropriate dimensions
- understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties
- find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers
- understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse
- work with 2x2 matrices as transformations of the plane, and interpret the absolute value of the determinant in terms of area
- use matrices to represent and manipulate data, (e.g., to represent payoffs or incidence relationships in a network)
- multiply matrices by scalars to produce new matrices, (e.g., as when all of the payoffs in a game are doubled)
- represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number
- represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation
- calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints
- recognize vector quantities as having both magnitude and direction; represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g.,  $\mathbf{v}$ ,  $\|\mathbf{v}\|$ ,  $\|\mathbf{v}\|$ ,  $v$ )
- find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point
- solve problems involving velocity and other quantities that can be represented by vectors
- add and subtract vectors

## High School Mathematics

### E - Statistics and Probability

- develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value (e.g., find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes)
- apply the general Multiplication Rule in a uniform probability model,  $P(A \text{ and } B) = [P(A)] \times [P(B|A)] = [P(B)] \times [P(A|B)]$ , and interpret the answer in terms of the model
- use permutations and combinations to compute probabilities of compound events and solve problems
- define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions
- calculate the expected value of a random variable; interpret it as the mean of the probability distribution
- use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant
- evaluate reports based on data
- develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value (e.g., find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household; how many TV sets would you expect to find in 100 randomly selected households?)
- weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values
- find the expected payoff for a game of chance (e.g., find the expected winnings from a state lottery ticket or a game at a fast-food restaurant)
- evaluate and compare strategies on the basis of expected values (e.g., compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident)
- use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator)
- analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game)
- use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread(interquartile, range, standard deviation) of two or more different data sets
- use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages; recognize that there are data sets for which such a procedure is not appropriate; use calculators, spreadsheets, and tables to estimate areas under the normal curve

## High School Mathematics

### E - Statistics and Probability *(continued)*

- understand statistics as a process for making inferences about population parameters based on a random sample from that population
- decide if a specified model is consistent with results from a given data-generating process, (e.g., using simulation; for example, a model says a spinning coin falls heads up with probability 0.5; would a result of 5 tails in a row cause you to question the model?)
- recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each
- use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling

## High School Mathematics

# Calculus

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### A - Process Skills

- create and use pictures, manipulatives, models, and symbols to organize, record, and communicate mathematical ideas
- select, apply, and translate among mathematical representations to solve problems
- use representations to model and interpret physical, social, and mathematical phenomena
- analyze and evaluate the mathematical thinking and strategies of others
- use the terminology and language of mathematics to express mathematical ideas precisely
- recognize and use connections among mathematical ideas
- explain how mathematical ideas interconnect and build on one another to produce a coherent whole
- recognize and apply mathematics in contexts outside of mathematics
- use appropriate technology to solve mathematical problems
- build new mathematical knowledge through problem-solving
- solve problems that arise in mathematics and in other areas
- apply and adapt a variety of appropriate strategies to solve problems
- monitor and reflect on the process of mathematical problem-solving
- recognize reasoning and proof (evidence) as fundamental aspects of mathematics
- make and investigate mathematical conjectures
- investigate, develop, and evaluate mathematical arguments and proofs
- select and use various types of reasoning and methods of proof
- organize and consolidate mathematics thinking
- communicate mathematical thinking coherently to peers, teachers, and others

### B - Functions

- identify and apply properties of algebraic, trigonometric, piecewise, absolute value, exponential, and logarithmic functions
- apply concepts of functions including domain, range, intercepts, symmetry, asymptotes, zeros, odd, even, and inverse
- apply the algebra of functions by finding sum, product, quotient, composition, and inverse, where they exist

## High School Mathematics

### C - Limits and Continuity

- calculate limits using algebra
- evaluate limits of functions and apply properties of limits, including one-sided limits
- estimate limits from graphs or tables of data
- describe asymptotic behavior in terms of limits involving infinity
- indicate where a function is continuous and where it is discontinuous
- identify types of discontinuities graphically and analytically
- apply the definition of continuity to a function at a point

### D - Derivatives

- define the derivative of a function in various ways: the limit of the difference quotient, the slope of the tangent line at a point, instantaneous rate of change, and the limit of the average rate of change
- determine if a function is differentiable over an interval
- determine where a function fails to be differentiable
- apply the rules of differentiation, such as product and quotient rules, to algebraic functions, including successive derivatives
- interpret derivative as a rate of change in the context of speed, velocity, and acceleration
- apply the chain rule to composite functions, implicitly defined relations, and related rates of change
- apply the rules of differentiation to trigonometric functions, such as product, quotient, and chain rules, including successive derivatives

### E - Applications of Derivatives

- solve optimization problems
- apply the extreme value theorem to problem situations
- apply the derivative to determine: the slope of a curve at a point, the equation of the tangent line to a curve at a point, and the equation of the normal line to a curve at a point
- apply Rolle's Theorem and the Mean Value Theorem
- use the relationships between  $f(x)$ ,  $f'(x)$ , and  $f''(x)$  to determine the increasing/decreasing behavior of  $f(x)$ ; determine the critical point(s) of  $f(x)$ ; determine the concavity of  $f(x)$  over an interval; and determine the point(s) of inflection of  $f(x)$
- given various pieces of information, sketch of graph(s) of  $f(x)$ ,  $f'(x)$ , and  $f''(x)$
- find absolute (global) and relative (local) extrema

## High School Mathematics

### E - Applications of Derivatives *(continued)*

- model rates of change involved with related rates problems

### F - Integrals

- relate the definite integral to the concept of the area under a curve; define and apply the properties of the definite integral
- identify and use the Fundamental Theorem of Calculus in evaluation of definite integrals
- evaluate integrals following directly from derivatives of basic functions
- evaluate integrals by substitution of variables (including change of limits for definite integrals)
- define the antiderivative and apply its properties to problems such as distance and velocity from acceleration with initial condition, growth, and decay
- compute Riemann sums using left, right, and midpoint evaluations and trapezoids
- calculate area by a definite integral of Riemann sums over equal subdivisions
- calculate areas by evaluation sums using sigma notation

### G - Applications of the Integral

- apply the integral to the average or mean value of a function on an interval
- evaluate the area between curves using integration formulas
- evaluate the volume of a solid using known cross-sections
- evaluate the volume of a solid of revolutions using the disk or washer method

### H - Reading Across the Curriculum

- read and discuss mathematical material to establish context for subject matter, develop mathematical vocabulary, and develop an awareness of current research

## High School Mathematics

# Advanced Calculus II

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### A - Process Skills

- use appropriate technology to solve mathematical problems
- build new mathematical knowledge through problem-solving
- solve problems that arise in mathematics and in other areas
- apply and adapt a variety of appropriate strategies to solve problems
- monitor and reflect on the process of mathematical problem-solving
- recognize reasoning and proof (evidence) as fundamental aspects of mathematics
- make and investigate mathematical conjectures
- investigate, develop, and evaluate mathematical arguments and proofs
- select and use various types of reasoning and methods of proof
- use the terminology and language of mathematics to express mathematical ideas precisely
- recognize and use connections among mathematical ideas
- explain how mathematical ideas interconnect and build on one another to produce a coherent whole
- recognize and apply mathematics in context outside of mathematics
- create and use pictures, manipulatives, models, and symbols to organize, record, and communicate mathematical ideas
- select, apply, and translate among mathematical representations to solve problems
- use representations to model and interpret physical, social, and mathematical phenomena
- organize and consolidate mathematics thinking
- communicate mathematical thinking coherently to peers, teachers, and others
- analyze and evaluate the mathematical thinking and strategies of others

### B - Integrals

- evaluate integrals using integration by parts
- evaluate integrals of rational functions using partial fractions
- evaluate improper integrals



## High School Mathematics

### C - Functions

- apply concepts of functions including domain, range, intercepts, and symmetry

### D - Geometry

- define parabolas, ellipses, and hyperbolas geometrically
- explain the role of conic sections in the reflection of light and sound
- sketch curves in polar coordinates
- calculate the area of a region with boundary given in polar coordinates
- express curves in parametric form
- find equations of tangents to curves given parametrically
- calculate arc length using integrals
- calculate the area of a surface generated by revolution
- use Pappus's Theorem on Surface Area to find area of a surface

### E - Sequences

- find least upper bounds and greatest lower bounds
- determine the limit of a sequence
- state the convergence or divergence of a sequence
- calculate the limit of a sequence using L'Hospital's Rule
- calculate limits of sequences with indeterminate forms
- determine the convergence of improper integrals
- write a given sequence in sigma notation

### F - Series

- find the Lagrange form of the remainder of a series and use it to test for accuracy of the polynomial
- apply Taylor's Theorem to find the Taylor polynomial of a given function for a given value
- find the interval of convergence for a power series
- differentiate and integrate power series
- evaluate the sum of series
- determine if a series converges or diverges using the integral test, basic comparison test, limit comparison test, root test, and the ratio test
- test for absolute and conditional converges of alternating series

## High School Mathematics

### F - Series *(continued)*

- test for convergence of MacLaurin series
- find a Taylor polynomial for given functions and use them to estimate function values

### G - Vectors

- find projection vectors
- find direction angles of a vector
- calculate the angle between two vectors
- calculate cross products
- find the volume of parallelepipeds
- find vector parameterizations for lines
- find equations for a plane
- calculate distance from a point to a plane
- determine whether vectors are parallel, skew, or intersecting
- find points of intersections of intersecting vectors
- find the angle between two planes
- determine the co-planarity of vectors
- find unit normal vectors for a plane
- find a set of scalar parametric equations for lines formed by the intersection of planes
- calculate distance between points in 3-space
- write an equation for spheres with given conditions
- calculate the norm of a vector
- find a unit vector for a given vector
- calculate dot products

### H - Vector Calculus

- sketch curves defined by vectors
- calculate the arc length of a curve defined in vector form
- find the angular speed and the magnitude of the acceleration of a particle moving along a curve
- integrate vectors

**High School Mathematics****H - Vector Calculus** *(continued)*

- calculate acceleration vectors
- apply the rules of differentiation to find the derivative of vectors
- find the tangent vector at a given point

## High School Mathematics

# Advanced Mathematical Decision Making

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### A - Number and Operations

- extend the understanding of proportional reasoning, ratios, rates, and percents by applying them to various settings to include business, media, and consumerism; use proportional reasoning to solve problems involving ratios; analyze and use averages, weighted averages, and indices; solve problems involving large quantities that are not easily measured; explain how identification numbers, such as UPCs, are created and verified

### B - Algebra

- use a variety of network models to organize data in quantitative situations, make informed decisions, and solve problems; solve problems represented by a vertex-edge graph, and find critical paths, Euler paths, and minimal spanning trees; construct, analyze, and interpret flow charts to develop an algorithm to describe processes such as quality control procedures; investigate the scheduling of projects using PERT; consider problems that can be resolved by coloring graphs
- use vectors and matrices to organize and describe problem situations; represent situations and solve problems using vectors in areas such as transportation, computer graphics, and the physics of force and motion; represent geometric transformations and solve problems using matrices in fields such as computer animations
- create and analyze mathematical models to make decisions related to earning, investing, spending, and borrowing money; use exponential functions to model change in a variety of financial situations; determine, represent, and analyze mathematical models for income, expenditures, and various types of loans and investments
- analyze and evaluate the mathematics behind various methods of voting and selection; evaluate various voting and selection processes, which include polling biases voting to determine an appropriate method for a given situation; apply various ranking algorithms to determine an appropriate method for a given situation

### C - Geometry

- solve geometric problems involving inaccessible distances using basic trigonometric principles, including the Law of Sines and the Law of Cosines
- create and use two- and three-dimensional representations of authentic situations

### D - Data Analysis and Probability

- use functions to model problem situations in both discrete and continuous relationships; determine whether a problem situation involving two quantities is best modeled by a discrete relationship; use linear, exponential, logistic, piecewise and sine functions to construct a model
- determine probability and expected value to inform everyday decision making; determine conditional probabilities and probabilities of compound events to make decisions in problem situations; use probabilities to make and justify decisions about risks in everyday life; calculate expected value to analyze mathematical fairness, payoff, and risk

**High School Mathematics****D - Data Analysis and Probability** *(continued)*

- build the skills and vocabulary necessary to analyze and critique reported statistical information, summaries, and graphical displays
- apply statistical methods to design, conduct, and analyze statistical studies

## High School Mathematics

# Algebra I Strategies

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### A - Algebra

- create exponential equations in two variables to represent relationships between quantities expressed in a table of values or verbal representation, graph these exponential equations on coordinate axes with appropriate labels and scales
- complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines
- solve quadratic equations by inspection, taking square roots, factoring, completing the square, and the quadratic formula, as appropriate to the initial form of the equation (limit to real number solutions)
- represent constraints by equations or inequalities, and interpret data points as possible (i.e., a solution) or not possible (i.e., a non-solution) under the established constraints
- represent constraints by systems of equations and/or inequalities, and interpret data points as possible (i.e., a solution) or not possible (i.e., a non-solution) under the established constraints
- create quadratic equations in two variables to represent relationships between quantities expressed in a table of values or verbal representation; graph these quadratic equations on coordinate axes with appropriate labels and scales
- create linear equations in two variables to represent relationships between quantities expressed in a table of values or verbal representation, including writing equations when given a slope and a y-intercept or slope and a point; graph these linear equations on coordinate axes with appropriate labels and scales
- solve systems of linear equations exactly (i.e., algebraically) and approximately (i.e., with graphs), focusing on pairs of linear equations in two variables; solve simple cases by inspection (i.e.,  $3x + 2y = 5$  and  $3x + 2y = 6$  have no solution because  $3x + 2y$  cannot simultaneously be 5 and 6)
- show and explain why the elimination method works to solve a system of two-variable equations
- choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression (i.e., reveal the zeros, minimum, or maximum)
- factor any quadratic expression to reveal the zeros of the function it defines
- solve linear equations and inequalities in one variable, including equations with coefficients represented by letters (i.e., solve multi-step linear equations with one solution, infinitely many solutions, or no solution; extend this reasoning to solve compound linear inequalities and literal equations); express solution sets to inequalities using both interval notation (e.g.,  $(2, 10]$ ) and set notation (e.g.,  $\{x \mid 2 < x \leq 10\}$ )
- justify the steps of a simple one-solution equation using algebraic properties and the properties of real numbers; justify each step, or if given two or more steps of an equation, explain the progression from one step to the next using properties

## High School Mathematics

### A - Algebra *(continued)*

- graph the solutions to a linear inequality in two variables as a half plane, excluding the boundary in the case of a strict inequality
- graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes
- interpret the meaning of given formulas or expressions in context of individual terms or factors when given in situations which utilize the formulas or expressions with multiple terms and/or factors
- add, subtract, and multiply polynomials

### B - Statistics and Probability

- interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (i.e., outliers)
- summarize categorical data for two categories in two-way frequency tables; interpret relative frequencies in the context of the data (i.e., including joint, marginal, and conditional relative frequencies); recognize possible associations and trends in the data
- represent data on two quantitative variables on a scatter plot and describe how the variables are related
- fit a function to bivariate data; use functions fitted to data to solve problems in the context of the data; use given functions or choose a function suggested by the context; emphasize linear, quadratic, and exponential models

### C - Functions

- graph quadratic functions expressed algebraically by hand and by using technology; show and interpret key features including intercepts, maxima, and minima (as determined by the function or by context)
- interpret key features of quadratic functions represented in graphs, tables, equations, and verbal descriptions (i.e., intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior); sketch graphs showing these key features when given a verbal description of the relationship
- calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval; estimate the rate of change from a graph
- use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context (i.e., compare and contrast quadratic functions in standard, vertex, and intercept forms)
- relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes [e.g., if the function  $h(n)$  gives the number of person-hours it takes to assemble  $n$  engines in a factory, then the positive integers would be an appropriate domain for the function]; represent the domain and range using both interval notation (e.g.,  $(2, 10]$ ) and set notation (e.g.,  $\{x \in \mathbb{N} \text{ and } x \leq 10\}$ )

## High School Mathematics

### C - Functions *(continued)*

- write arithmetic sequences both recursively and with an explicit formula; use them to model situations, and translate between the two forms; connect arithmetic sequences to linear functions
- compare properties of two functions each represented algebraically, graphically, numerically in tables, and/or by a verbal description
- graph exponential functions expressed algebraically by hand and by using technology; show and interpret key features including intercepts and end behavior
- interpret key features of exponential functions represented in graphs, tables, equations, and verbal descriptions (i.e., intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; asymptote; and end behavior); sketch graphs showing these key features when given a verbal description of the relationship
- write geometric sequences both recursively and with an explicit formula; use them to model situations, and translate between the two forms; connect geometric sequences to exponential functions
- prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals; this can be shown by algebraic proof, with a table showing differences, or by calculating average rates of change over equal intervals
- recognize situations in which one quantity changes at a constant rate per unit interval relative to another
- recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another
- graph linear, quadratic, and exponential functions algebraically and show key features of the graph by hand and by using technology
- graph linear functions expressed algebraically in slope-intercept and standard form by hand and by using technology; show and interpret key features including slope and intercepts (as determined by the function or by context)
- interpret key features of linear functions represented in graphs, tables, equations, and verbal descriptions (i.e., intercepts, positive, negative; intervals where the function is increasing, decreasing); sketch graphs showing these key features when given a verbal description of the relationship
- interpret key features of linear, quadratic, and exponential functions represented in graphs, tables, equations, and verbal descriptions (i.e., intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; asymptotes; end behavior); sketch graphs showing these key features when given a verbal description of the relationship
- show using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or more generally as a polynomial function



**High School Mathematics****C - Functions** *(continued)*

- understand that a function from one set (the input, called the domain) to another set (the output, called the range) assigns to each element of the domain exactly one element of the range [i.e., if  $f$  is a function,  $x$  is the input (an element of the domain), and  $f(x)$  is the corresponding output (an element of the range); the graph of the function is the set of ordered pairs consisting of an input and the corresponding output]
- evaluate functions for inputs in their domains using function notation and interpret statements that use function notation in terms of a context

**D - Number and Quantity**

- rewrite expressions involving radicals (i.e., simplify and/or use the operations of addition, subtraction, multiplication, and division with radicals within algebraic expressions limited to square roots)

## High School Mathematics

# Algebra II Strategies

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### A - Algebra

- interpret complicated expressions by viewing one or more of their parts as a single entity
- identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial
- prove polynomial identities and use them to describe numerical relationships
- create equations and inequalities in one variable and use them to solve problems; include equations arising from linear and quadratic functions, and simple rational and exponential functions
- create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales
- solve quadratic equations in one variable
- use the properties of exponents to transform expressions for exponential functions
- solve quadratic equations by inspection, taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation; recognize when the quadratic formula gives complex solutions and write them as  $a \pm bi$  for real numbers  $a$  and  $b$ ; connect the solutions to the graph and real life application
- interpret expressions that represent a quantity in terms of its context
- represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context
- rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations
- derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems

### B - Statistics and Probability

- decide if a specified model is consistent with results from a given data-generating process
- use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling
- evaluate reports based on data

### C - Functions

- express as a logarithm for exponential models the solution to  $ab$  raised to the  $(ct)$  power equals  $d$  where  $a$ ,  $c$ , and  $d$  are numbers and the base  $b$  is 2, 10, or  $e$ ; evaluate the logarithm using technology

## High School Mathematics

### C - Functions *(continued)*

- calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval; estimate the rate of change from a graph; consider all types of functions
- compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions)
- identify the effect on the graph of replacing  $f(x)$  by  $f(x) + k$ ,  $k f(x)$ ,  $f(kx)$ , and  $f(x + k)$  for specific values of  $k$  (both positive and negative); find the value of  $k$  given the graphs; experiment with cases and illustrate an explanation of the effects on the graph using technology; include recognizing even and odd functions from their graphs and algebraic expressions for them
- combine standard function types using arithmetic operations
- compose polynomial functions
- interpret key features of graphs and tables in terms of the quantities for a function that models a relationship between two quantities, and sketch graphs showing key features given a verbal description of the relationship; key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity
- graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases
- use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context
- relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes
- use the properties of exponents to interpret expressions for exponential functions
- understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents

### D - Number and Quantity

- use the relation  $i^2 = -1$  and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers
- extend polynomial identities to the complex numbers
- rewrite expressions involving radicals and rational exponents using the properties of exponents
- solve quadratic equations with real coefficients that have complex solutions; connect complex solutions to the graphs and examples using the quadratic formula

## Applications of Linear Algebra in Computer Science

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### A - Functions and Linear Equations

- review function notation, domain/co-domain, identity/associativity, inverse/invertibility connecting to the computer science concept of perfect secrecy (i.e., encryption)
- review Python psuedo random number generation, calculating probability distribution and interpreting probability events through application of Caesar's Cypher and other examples of cryptosystems

### B - Python Programming

- understand how to program and utilize modules and control statements (e.g., loops, conditionals, grouping) in Python
- program input and output features to read from and write to files in Python
- utilize sets, lists, dictionaries, comprehensions, indexing, and tuples in Python

### C - The Complex Field

- perform operations of complex number numbers (e.g., absolute value, adding, multiplying) and understand how they produce different transformations
- understand how complex numbers connect to the unit circle and represent them in polar form; perform transformations in polar form and utilize Euler's formula/The First Law of Exponentiation to understand these transformations; connect to performing image transformation on a computer graphic program
- work with the Galois Field to understand further concepts in perfect secrecy and network coding (i.e., providing efficiency in streaming services)

### D - The Vector

- perform vector operations in  $\mathbb{R}(n)$  including addition, scalar multiplication, and dot product; review concepts of convex and affine combinations; represent and perform these operations using dictionaries and the Vec.py class in Python
- use the dot product to display the concept of simple authentication schemes and interacting with them, and performing a senator voting record analysis
- solve triangular systems of linear equations using upper-triangular systems, backward substitution, and other algorithms
- find the distance, its unit vector in the same or opposite direction, the projection of a vector onto a given vector or vector space, dot product, inner product, cross product, and angle between two vectors in Euclidean space
- connect use of vectors in Galois Field(2) by applying concepts of perfect secrecy, all-or-nothing secret sharing, and programming/solving lights out games

## High School Mathematics

### E - Vector Spaces

- determine if a linear combination is an affine combination and determine if an affine space exists by translating a vector space, represent an affine space as a solution set to a linear system
- define and discuss uses of linear combinations and understand how to solve for coefficients or linear combinations, connect to programmed/solved lights out game
- define span and what it means for linear combinations to be a span of vectors; connect span to simple authentication schemes; understand the geometric depiction of the span of vectors over  $\mathbb{R}$  and the geometry of solution sets of homogeneous linear equations and systems; understand the geometric interpretations of  $\mathbb{R}^2$  and  $\mathbb{R}^3$
- determine if a given set of vectors in a vector space is a spanning set for that vector space and if they are linearly independent
- determine whether a provided subset of a vector space is a subspace and find the dimension of a subspace
- find whether a vector is a linear combination of a given finite set of vectors in a vector space and provide this linear combination

### F - Matrices

- review the structure of a matrix and composition of the identity matrix, determine the size, transpose, inverse, rank, and LU-factorization of a matrix; interpret matrices as vectors
- generate an augmented coefficient matrix from a system of linear equations
- perform matrix operations including transpose, addition, scalar multiplication, dot product, and multiplication; compute the inner and outer product
- define and understand what the null space is by connecting to concepts of homogeneous linear systems/matrix equations, and error correcting codes such as linear codes and Hamming's code
- factor a given matrix into the product of two elementary matrices, find the adjoint of a matrix and use it to find the inverse of the matrix (understanding the conditions for invertibility) or solve a system of linear equations
- program error correcting code concepts such as Hamming's code using matrix operations
- program transformations in 2D geometry using Python and concepts of matrix operations

### G - The Basis and Dimension

- connect the Exchange Lemma to the concept of camera image perspective rendering in a Python lab
- define and determine the dimension and rank of a basis (and therefore vector space); use it to prove the Morphing Lemma and prove the Superset-Basis Lemma
- discuss rank theorem and demonstrate its use via the Simple Authentication Schema in computer science
- utilize direct sum to add vector spaces and find the basis for the direct sum and understand if two subspaces are complementary

## High School Mathematics

### G - The Basis and Dimension *(continued)*

- understand if a linear function is invertible utilizing the concept of dimension and determine if a function is onto or one-to-one; discuss in connection with Kernel-Image Theorem and Rank-Nullity Theorem, demonstrate using checksums
- define the coordinate representation of a basis and connect to lossy compression in computer science; find a basis for the column or row space of a matrix, and find a basis for and the dimension of the nullspace of a matrix
- review the minimum spanning forest problem in  $GF(2)$  in connection with the Grow and Shrink Algorithms and how to formulate the problem in linear algebra
- define what it means for vectors to be linearly dependent and linearly independent and define the Superfluous-Vector Lemma; perform tests of linear dependence
- demonstrate that every vector space has a basis and any finite set of vectors contains a basis for its span (e.g., Subset-Basis Lemma)
- determine whether a given set of vectors in a vector space forms a basis for that vector space and recognize standard bases in the vector spaces  $n$ th dimensional Euclidean space, the set of all polynomials of degree greater than or equal to  $n$
- find the transition matrix from one basis to another (i.e., change of basis)

### H - Gaussian Elimination

- use elementary row operations to create matrices in row-echelon and reduced row-echelon form
- solve systems of linear equations and finding the basis for a Null space by use of Gaussian Elimination, Gauss-Jordan Elimination, LU factorization, and Cramer's Rule; show how the simple authentication scheme can be attacked/improved over  $GF(2)$  using Gaussian Elimination
- understand how Threshold Secret Sharing works in conjunction with Gaussian Elimination through a programming lab in Python
- understand how factoring integers can be performed using Euclid's algorithm and utilizing prime set factors in Python

### I - Orthogonalization

- define and perform QR factorization of a matrix to compute solutions to the matrix equation  $Ax=b$ ; use to perform the application of least squares to find the line or curve of best fit (linear/quadratic) to approximate data in the industrial espionage problem/sensor node problem/machine learning problem
- determine if two given vectors/sets of vectors(complements)/subspaces are orthogonal, parallel, or neither; find the orthogonal component of a given subspace
- find an orthogonal basis for a given basis/subspace/inner product space by applying the Gram-Schmidt orthonormalization process
- given the solution space of a homogenous system of linear equations, find an orthonormal basis
- use orthogonalization to find the closest point in the span of many vectors, compute a basis/subset basis, direct sums of complements

## High School Mathematics

### J - Special Bases

- utilize compression by suppression to find the closest k-sparse vector coordinate representation in terms of an orthogonal basis
- understand how images and sounds can be represented as wavelets and the bases representation of wavelets as well as wavelet transformation, implementation, and decomposition, perform Python lab on using wavelets to perform file compression
- define and demonstrate the Fourier transform connecting how a sound is stored as a sequence of amplitude samples and how the Fast Fourier Transform Algorithm is utilized/derived/coded

### K - The Eigenvalue/Eigenvector

- determine an orthogonal matrix that diagonalizes a given matrix
- discuss how Markov chains work to model various concepts such as population movement, dance patterns, literary documents, and Google's search engine PageRank
- find the determinant, minors, and cofactors of a given matrix and use the determinant to find whether a given matrix is singular/non-singular; use determinant properties to characterize eigenvalues
- connect use of the determinant and eigenvectors to code functionality of Google's PageRank search engine in Python
- utilize eigenvalues/vectors and single value decomposition to program face recognition software (Eigenfaces)
- verify the eigenvalue/eigenvector of a given matrix while understanding the geometric interpretation and coordinate representation; connect to the Internet Worm case of 1988; perform eigen theorem proofs
- find the characteristic equation and eigenvalues/corresponding eigenvectors of a given matrix and determine if the matrix is diagonalizable/symmetric/orthogonal
- find a nonsingular matrix(D) for a given matrix (if one exists) such that  $D^{-1}AD$  is diagonal; find a basis for the domain of a linear transformation such that the matrix of the linear transformation relative to the basis is diagonal
- find the eigenvalues of a given symmetric matrix and find the dimension of the corresponding eigenspace

### L - Linear Programming

- perform a machine learning lab on a large set of health care data that incorporates concepts of linear programming
- explore samples of linear programming cases including the diet problem, the vertices of polyhedra (polyhedral combinatorics), the simplex algorithm, game theory, nonzero-sum games, and compressed sensing for MRI imaging
- perform a Python lab to explore concepts of linear programming

## High School Mathematics

# College Readiness Mathematics

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### A - Algebra

- use graphs, tables, or successive approximations and use technology to explain and show that the solution to the equation  $f(x) = g(x)$  is the  $x$ -value where the  $y$ -values of  $f(x)$  and  $g(x)$  are the same
- graph and analyze the solution set to a linear inequality in two variables in context
- use the method of completing the square to transform any quadratic equation in  $x$  into an equation of the form  $(x - p)^2 = q$  that has the same solutions; derive the quadratic formula from  $ax^2 + bx + c = 0$
- solve quadratic equations by inspection, taking square roots, factoring, completing the square, and the quadratic formula, as appropriate to the initial form of the equation limited to real number solutions
- show and explain why the elimination method works to solve a system of two-variable equations
- solve systems of linear equations exactly and approximately in context, focusing on pairs of linear equations in two variables
- solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically
- interpret expressions that represent a quantity in terms of its context
- use right triangles to explain why the slope  $m$  is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation  $y = mx + b$  for a line through the origin and the equation  $y = mx + b$  for a line intercepting the vertical axis at  $b$
- analyze and solve linear equations in one variable
- choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression
- factor any quadratic expression to reveal the zeros of the function defined by the expression
- convert a quadratic expression to vertex form to reveal the maximum or minimum value of the function defined by the expression; complete the square, use the axis of symmetry, or use the midpoint of the  $x$ -intercepts
- graph proportional relationships, interpreting the unit rate as the slope of the graph. compare two different proportional relationships represented in different ways
- interpret parts of an expression, such as, but not limited to, terms, factors and coefficients, in context
- given situations which utilize formulas or expressions with multiple terms and/or factors, interpret the meaning (in context) of individual terms or factors
- use the structure of an expression to rewrite it in different equivalent forms



## High School Mathematics

### A - Algebra *(continued)*

- solve and graph linear equations and inequalities in one variable, including equations with coefficients represented by letters
- solve quadratic equations in one variable
- solve simple rational and radical equations in one variable, demonstrate understanding, and give examples showing how extraneous solutions may arise
- create equations and inequalities in one variable and use them to solve problems in context; include equations arising from linear, quadratic simple rational, and exponential functions-integer inputs only; identify variables and describe their relationship in context
- create linear, quadratic, and exponential equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales
- represent constraints by equations or inequalities, and by systems of equations and/or inequalities; interpret data points as viable or non-viable under the established constraints
- rearrange formulas to highlight a quantity of interest using the same reasoning as in solving equations
- justify the steps of a simple, one-solution equation using algebraic properties and the properties of real numbers. Justify own steps, or, if given two or more steps of an equation, explain the progression from one step to the next using the properties

### B - Number and Quantity

- use units of measure (linear, area, capacity, rates, and time) as a way to understand problems
- identify , use, and record appropriate units of measure within context, within data displays, and on graphs
- convert units and rates, reasoning quantitatively and using dimensional analysis
- use units within multi-step problems and formulas; interpret units of input and resulting units of output in context
- define appropriate quantities for the purpose of descriptive modeling. given a situation, context, or problem, determine, identify, use, and justify appropriate quantities for representing the situation

### C - Functions

- understand that a function is a rule that assigns to each input exactly one output; the graph of a function is the set of ordered pairs consisting of an input and corresponding output; represent domain and range using interval and set notation
- compare properties of two functions each represented among verbal, tabular, graphic, and algebraic representations of functions
- interpret the equation  $y = mx + b$  as defining a linear function whose graph is a straight line; give examples of functions that are not linear

## High School Mathematics

### C - Functions *(continued)*

- construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship from two  $(x, y)$  values, including reading these from a table or from a graph; interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values; interpret functions that arise in application in terms of the context
- interpret the key characteristics of a function that models the relationship between two quantities, using tables, graphs, and verbal descriptions; sketch and analyze a graph showing key features, including intercepts; interval where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity
- determine an explicit expression and recursive process (steps for calculation) from context
- construct arithmetic and geometric sequences recursively and explicitly, use them to model situations, and translate between the two forms; connect arithmetic sequences to linear functions and geometric sequences to exponential functions
- identify and compare the effects on the graph of replacing  $f(x)$  by  $f(x) + k$ ,  $k f(x)$ ,  $f(kx)$ , and  $f(x + k)$  for specific values of  $k$  (both positive and negative); find the value of  $k$  given the graphs; experiment with cases and illustrate an explanation of the effects on the graph using technology; include recognizing even and odd functions from their graphs and algebraic expressions for them
- distinguish between situations that can be modeled with linear functions and with exponential functions
- explain that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals
- recognize situations in which one quantity changes at a constant rate per unit interval relative to another
- construct a function that models a relationship between two quantities or contexts
- graph functions expressed algebraically and show key features of the graph, both by hand and by using technology
- graph linear and quadratic functions and show intercepts, maxima, and minima as determined by the function or by context
- graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude
- write a function defined by an expression in different, but equivalent, forms to reveal and explain different properties of the function
- compare and contrast quadratic functions in standard, vertex, and intercept forms, using the process of factoring and completing the square in a quadratic function to show zeros, extreme values and symmetry of the graph, and interpret these in terms of a context
- use the properties of exponents to interpret expressions for exponential functions and classify them as representing exponential growth and decay

## High School Mathematics

### C - Functions (*continued*)

- recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another
- construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table)
- show and explain, using graphs and tables, that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function
- interpret the parameters in a linear function and an exponential function in terms of context; in context, describe what these parameters mean in terms of change and starting value
- compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions)

### D - Geometry

- interpret and use coordinates to prove simple geometric theorems algebraically
- interpret and use coordinates to compute perimeters of polygons and areas of triangles and rectangles
- give an informal argument for the formulas for the circumference of a circle, for the area of a circle, and for the volume of a cylinder, pyramid, and cone, using dissection arguments, Cavalieri's principle, and informal limit arguments
- use volume formulas for cylinders, pyramids, cones, and spheres to solve problems in context
- apply concepts of density based on area and volume in modeling situations
- apply geometric methods to solve design problems with multiple representations

### E - Statistics and Probability

- interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data
- compute (using technology) and interpret the correlation coefficient " $r$ " of a linear fit; after calculating the line of best fit using technology, students should be able to describe how strong the goodness of fit of the regression is, using " $r$ "
- recognize and explain the difference between correlation and causation
- understand statistics as a process for making inferences about population parameters in context, based on a random sample from that population
- recognize and analyze the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each
- represent data on two quantitative variables on a scatter plot, and describe how the variables are related in context

## High School Mathematics

### E - Statistics and Probability *(continued)*

- decide which type of function is most appropriate by observing graphed data or charted data, or by analysis of context; emphasize linear, quadratic and exponential models
- using a linear association model based on given or collected bivariate data, fit a linear function for a scatter plot that suggests a linear association
- represent and interpret data with plots on the real number line (i.e., dot plots, histograms, and box plots)
- use statistics appropriate to the shape of the data distribution to compare and describe center (i.e., median, mean) and spread (i.e., interquartile range, mean absolute deviation, standard deviation) in context of two or more different data sets
- interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers)
- summarize categorical data for two categories in two-way frequency tables; interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies); analyze possible associations and trends in the data

## High School Mathematics

# Differential Equations

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### A - First Order Differential Equations

- partially differentiate functions of multiple variables as it pertains to Exact Equations for first order differential equations
- solve first order Exact Equations
- classify differential equation by type (i.e. ordinary/partial), order, and linearity
- solve separable differential equations for general solutions and initial value problems
- solve first order differential equations and initial value problems using integrating factors
- use modeling software to solve more complex first order differential equations
- draw direction fields containing solution curves for first order differential equations by hand and using modeling software
- solve first order differential equations that apply to various real-world models including falling bodies, mixtures, population and the Logistic equation, continuously compounded interest, and other physics application
- draw and interpret real world solutions to first order differential equations using modeling software

### B - Second and Higher Order Differential Equations

- recognize the structure of solution sets to higher order linear differential equations, the basic Existence and Uniqueness Theorem, and the generalization of the Wronskian for higher order equations.
- solve higher order constant coefficient homogeneous equations
- solve special case non-homogeneous second order ODE's including Cauchy-Euler Equations
- when given a solution to a non-homogeneous second order equation, find a second linearly dependent solution using reduction of order
- recognize systems of differential equations and the basic existence and uniqueness results for the corresponding initial value problems
- determine whether a first or second order differential equation has a unique solution over a given interval by working with the Existence and Uniqueness Theorem
- solve second order linear homogeneous and non-homogeneous equations by finding characteristic equations, using the method of undetermined coefficients and variation of parameters
- solve second order differential equations that apply to various real-world models such as mass-spring systems, electric circuits, and economic growth
- use vector function notation when discussing the structure of solutions sets for homogeneous systems as it pertains to the Wronskian

## High School Mathematics

### B - Second and Higher Order Differential Equations *(continued)*

- recognize the existence and uniqueness of solutions for second order linear differential equations and a fundamental set of solutions; verify that two solutions form a fundamental set by taking the Wronskian

### C - Systems of Differential Equations

- draw Phase Portraits for solutions of homogeneous systems with constant coefficients by hand and using a modeling software
- solve constant coefficient homogeneous systems using eigenvalues and eigenvectors; solve systems with real, distinct eigenvalues, as well as those with repeated and imaginary eigenvalues
- solve non-homogeneous systems of ODE's using the method of undetermined coefficients and variation of parameters
- determine which non-linear systems are locally linear, and identify the systems' behavior about each critical point
- plot locally linear systems by hand and using modeling software
- apply various population models derived from locally linear systems including Lotka-Volterra, competition and cooperation models

### D - Laplace Transforms

- use the integral definition to perform Laplace transforms for functions, such as, but not limited to polynomials, exponentials, and trigonometric functions; use a Laplace table to accurately and efficiently identify Laplace transforms, such as, but not limited to, the transforms for polynomials, exponentials, and trigonometric functions, and the product of these functions
- perform inverse Laplace transforms using a variety of techniques, such as but not limited to, algebraic manipulation partial fraction decomposition
- discuss the main properties of the Laplace transform which make it useful for solving initial value problems
- solve first and second order differential equations using Laplace transforms that apply to real world fields such as Electrical and Mechanical Engineering
- write piecewise functions as compositions of Step (Heaviside) functions
- recognize the general uniqueness and existence of solutions for Step functions, and will use the Laplace transform to find solutions to Step functions.
- find the Laplace transform of, the Dirac Delta function
- solve linear systems of differential equations using Laplace transforms

### E - Series Solutions

- review Power Series as an introduction to series solutions of differential equations
- recognize ordinary points, recurrence relations, and changing indexes as it relates to series solutions to ODE's

**High School Mathematics****E - Series Solutions** *(continued)*

- find series solutions to first and second order non-linear initial value problems

**F - Mathematical Connections**

- identify and describe the contribution of several key mathematicians and scientists to the field of differential equations

## High School Mathematics

# Engineering Calculus

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### A - Multidimensional Engineering Analysis

- apply knowledge of mathematics, science, and engineering design to solve problems; determine the equations of lines and surfaces using vectors and 3D graphing; apply dot and cross products of vectors to express equations of planes, parallelism, perpendicularity, angles; describe the role of vectors in engineering applications, such as modeling the velocity of moving objects or static forces on structures and objects
- learn to evaluate matrices and apply their properties to solve engineering problems; calculate determinants of matrices; express systems of linear equations in matrix equation form; use Gaussian elimination to compute solution sets of linear systems
- use visual and written communication to express basic design elements in the appropriate mathematics notation; demonstrate fundamentals of technical sketching using computer-generated visuals by using the appropriate mathematics scale; present a technical design, using computer-generated model, for an assigned design project utilizing the appropriate scientific units (US standards and SI units)
- investigate functions of two and three independent variables to model engineering systems; compute limits of scalar and vector-valued functions; identify, interpret and graph level curves of multivariate functions; calculate regions of continuity of such functions

### B - Differentiation In Engineering

- evaluate and apply partial differentiation of multivariable functions with two or more independent variables; compute the first and second partial derivatives of a function; use the general chain rule to determine the partial derivatives of composite functions; compute and apply the gradient of multivariable functions; solve engineering optimization problems by applying partial differentiation or Lagrange multipliers; utilize partial derivatives in developing the appropriate system balances (e.g., mass balance) in engineering problems

### C - Multidimensional Integration in Engineering Systems

- apply the techniques of double and triple integration to multivariable scalar- and vector-valued functions; manipulate integrals by changing the order of integration, introducing variable substitutions, or changing to curvilinear coordinates; evaluate and apply line integrals that are independent of path; apply properties of integrals to calculate and represent area, volume, or mass; use integrals of vectors to define and apply the gradient, divergence, or the curl  $\mathbf{e}$ . Interpret the theorems of Green, Stokes, or Gauss and apply them to the study of real-world phenomena



## High School Mathematics

# Geometry Strategies

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### A - Geometry

- prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point)
- use coordinates to compute perimeters of polygons and areas of triangles and rectangles (e.g., using the distance formula)
- use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder)
- apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot)
- apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios)
- explain how the criteria for triangle congruence (i.e., ASA, SAS, SSS, HL, AAS) follow from the definition of congruence in terms of rigid motions
- use informal arguments to establish facts about the angle sum and exterior angles of triangles and about the angles created when parallel lines are cut by a transversal
- prove theorems about lines and angles (i.e., vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints)
- informally prove the Pythagorean Theorem and its converse geometrically (i.e., using area model)
- prove theorems about triangles (i.e., measures of interior angles of a triangle sum to 180 degrees; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point)
- prove theorems about parallelograms (i.e., opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals)
- know and apply the precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc
- describe the effects of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates

## High School Mathematics

### A - Geometry *(continued)*

- use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent
- use congruence criteria for triangles to solve problems and to prove relationships in geometric figures
- prove theorems about triangles (i.e., a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem using triangle similarity)
- use similarity criteria for triangles to solve problems and to prove relationships in geometric figures
- understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles
- explain and use the relationship between the sine and cosine of complementary angles
- use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems
- prove that all circles are similar (i.e., using transformations; ratio of circumference to the diameter is a constant)
- use volume formulas for cylinders, pyramids, cones, and spheres to solve problems

### B - Statistics and Probability

- find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in context
- apply the Addition Rule,  $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ , and interpret the answer in context
- construct and interpret two-way frequency tables of data when two categories are associated with each object being classified; use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities (e.g., collect data from a random sample of students in your school on their favorite subject among math, science, and English; estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade; do the same for other subjects and compare the results)

## High School Mathematics

# Mathematics of Finance

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### A - Process Skills

- use appropriate technology to solve mathematical problems
- select and use various types of reasoning and methods of proof
- organize and consolidate mathematics thinking
- communicate mathematical thinking coherently to peers, teachers, and others
- analyze and evaluate the mathematical thinking and strategies of others
- use the terminology and language of mathematics to express mathematical ideas precisely
- recognize and use connections among mathematical ideas
- explain how mathematical ideas interconnect and build on one another to produce a coherent whole
- recognize and apply mathematics in contexts outside of mathematics
- create and use pictures, manipulatives, models, and symbols to organize, record, and communicate mathematical ideas
- select, apply, and translate among mathematical representations to solve problems
- use representations to model and interpret physical, social, and mathematical phenomena
- build new mathematical knowledge through problem-solving
- solve problems that arise in mathematics and in other areas
- apply and adapt a variety of appropriate strategies to solve problems
- monitor and reflect on the process of mathematical problem-solving
- recognize reasoning and proof (evidence) as fundamental aspects of mathematics
- make and investigate mathematical conjectures
- investigate, develop, and evaluate mathematical arguments and proofs

### B - Numbers and Operations

- use fractions, percents, and ratios to solve problems related to stock transactions, credit cards, taxes, budgets, automobile purchases, fuel economy, Social Security, Medicare, retirement planning, checking and saving accounts, and other related finance applications
- apply percent increase and decrease, ratios, and proportions

## **High School Mathematics**

### **C - Geometry**

- apply the concepts of area, volume, scale factors, and scale drawings to planning for housing
- apply the distance formula to trip planning
- apply the properties of angles and segments in circles to accident investigation data

### **E - Algebra**

- apply rational and square root functions
- apply greatest integer and piecewise functions
- apply exponential and logarithmic functions
- use basic functions to solve and model problems related to stock transactions, banking and credit, employment and taxes, rent and mortgages, retirement planning, and other related finance applications
- apply linear, quadratic, and cubic functions
- understand domain and range when limited to a financial problem situation
- apply limits as end behavior of modeling functions
- evaluate investments in banking and retirement planning using simple and compound interest, and future and present value formulas
- represent data and solve banking and retirement planning problems using matrices

### **F - Data Analysis and Probability**

- investigate data found in the stock market, retirement planning, transportation, budgeting, and home rental or ownership using measures of central tendency
- recognize and interpret trends related to the stock market, retirement planning, insurance, car purchasing, and home rental or ownership using data displays including bar graphs, line graphs, stock bar charts, candlestick charts, box-and-whisker plots, stem and leaf plots, circle graphs, and scatter plots
- use probability, the Monte Carlo method, and expected value model and predict outcomes related to the stock market, retirement planning, insurance, and investing
- draw conclusions about applied problems using decision theory
- use linear, quadratic, and cubic regressions as well as the correlation coefficient to evaluate supply and demand, revenue, profit, and other financial problem situations

## High School Mathematics

# Mathematics of Industry and Government

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### A - Deterministic Decision Making

- use advanced linear programming to make decisions
- determine optimal locations and use them to make appropriate decisions
- determine optimal paths and use them to make appropriate decisions

### B - Probabilistic Decision Making

- reason and evaluate mathematical arguments
- communicate mathematically
- use properties of normal distributions to make decisions about optimization and efficiency
- use computer simulations to make decisions
- solve problems (using appropriate technology)
- use properties of other distributions (e.g., binomial, geometric, Poisson) to make decisions about optimization and efficiency
- will use other probabilistic models to make decisions
- represent mathematics in multiple ways
- make connections among mathematical ideas and to other disciplines

## High School Mathematics

# Multivariable Calculus

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### A - Algebra

- investigate the relationship between points, lines, and planes in three-dimensions; represent equations of lines in space using vectors; express analytic geometry of three dimensions (equations of planes, parallelism, perpendicularity, angles) in terms of the dot product and cross product of vectors; . recognize conic sections and identify quadric surfaces
- explore functions of two independent variables of the form  $z = f(x, y)$  and implicit functions of the form  $f(x, y, z) = 0$ ; evaluate such functions at a point in the plane; graph the level curves of such functions.; determine points or regions of discontinuity of such functions
- recognize and apply properties of matrices; find the determinants of 2-by-2 and 3-by-3 matrices; represent a 3-by-3 system of linear equations as a matrix and solve the system in multiple ways the inverse matrix, row operations, and Cramer's Rule; apply properties of similar and orthogonal matrices to prove statements about matrices; find and apply the eigenvectors and eigenvalues of a 3-by-3 matrix; determine if a given set is a vector space; determine whether a vector  $v$  is a linear combination of the vectors in  $S$ ; express a vector in a linearly independent set as a linear combination of the vectors in the set; determine whether a given set of vectors span; determine whether a set of vectors is linearly independent or linearly dependent; show that a set of vectors is a basis for a vector space; find a basis for the null space, row space, and column space of a matrix; find the rank and nullity of a matrix

### B - Derivatives

- explore the continuity of functions of two independent variables in terms of the limits of such functions as  $(x, y)$  approaches a given point in the plane
- explore, find, use, and apply partial differentiation of functions of two independent variables of the form  $z = f(x, y)$  and implicit functions of the form  $f(x, y, z) = 0$ ; approximate the partial derivatives at a point of a function defined by a table of data; find expressions for the first and second partial derivatives of a function; define and apply the total differential to approximate real-world phenomena; represent the partial derivatives of a system of two functions in two variables using the Jacobian; find the partial derivatives of the composition of functions using the general chain rule; apply partial differentiation to problems of optimization, including problems requiring the use of the Lagrange multiplier; investigate the differential, tangent plane, and normal lines
- define and apply the gradient, the divergence, and curl in terms of differential vector operations

### C - Integration

- integrate functions of the form  $z = f(x, y)$  or  $w = f(x, y, z)$ ; define, use, and interpret double and triple integrals in terms of volume and mass; represent integrals of vectors as double and triple integrals; integrate functions through various techniques such as changing the order of integration, substituting variables, or changing to polar coordinates

**High School Mathematics****C - Integration** *(continued)*

- apply and interpret the theorems of Green, Stokes, and Gauss. a. Apply line and surface integrals to functions representing real-world phenomena. b. Recognize, understand, and use line integrals that are independence of path. c. Define and apply the gradient, the divergence, and the curl in terms of integrals of vectors

**D - Differential Equations**

- use, apply, and solve linear first-order differential equations; solve linear first-order differential equations of the form  $y' + p(x)y = q(x)$  with an integrating factor; solve homogeneous linear first-order differential equations using a variable substitution; solve Clairaut equations; explore the concepts of families of solutions and envelopes; write linear first-order differential equations that represent real-world phenomena and solve them, such as those arising from Kirchhoff's Law and mixing problems; students will solve linear second-order differential equations of the form  $y'' + p(x)y' + q(x)y = c$  using the characteristic equation where the characteristic equation has two real roots, one real root, or no real roots

## High School Mathematics

# Number Theory

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### A - Discrete Mathematics

- solve problems using concepts in graph theory including directed and undirected graphs, the Handshaking Theorem, isomorphisms, paths and path-connectedness, as well as Euler and Hamilton Paths
- apply counting principles, such as recurrence relations, Polya's Enumeration Theorem, inclusion-exclusion, and the Pigeonhole principle
- apply game theory including Nash Equilibrium and two player zero sum games

### B - Logic

- determine truth tables for sentences and use Venn diagrams to illustrate the relationships represented by these truth tables
- represent logical operators such as AND, OR, NOT, NOR, and XOR in symbolic notation and use truth tables and in assessing logical equivalence
- apply quantifiers, conditionals, negations, contrapositives, converses, and inverses to determine the truth value of logical propositions, including, but not limited to, whether a proposition is a tautology, contradiction, or neither.
- apply quantifiers, conditionals, negations, contrapositives, converses, and inverses to determine the validity of logic statements
- apply modus ponens and modus tollens to determine the validity of logical arguments involving conditionals

### C - Set Theory

- describe sets using set builder notation; define, use notation of, and pictorially represent set theory components, including union, intersection, difference, element of, cardinality, complement, subset, and proper subset; define and determine the power set of a given set
- calculate the union, intersection, difference, and Cartesian product and Power of sets
- prove set relations, including DeMorgan's Laws, proving a set is a subset of another set, and proving set equivalence
- recognize that a partition of a set is a collection of pairwise disjoint subsets
- determine if a relation is an equivalence relation on two sets by showing that the relation satisfies reflexive, symmetric, and transitive properties
- understand that equivalence classes form a partition on a set
- recognize that a function is a bijective (injective and surjective) relation on two sets, be able to prove or disprove that a relation is a function, and be able to determine the inverse of a function if it exists



## High School Mathematics

### D - Proof Methods

- recognize and utilize appropriate methods of proof: direct proof, proof by mathematical induction (including the Principle of Mathematical Induction and the Second Principle of Mathematical Induction), proof by contradiction, proof by contraposition, proofs involving conditional and biconditional statements, proofs involving universal and existential quantifiers, and proof by counterexample
- differentiate between mathematical axioms, postulates, and theorems
- write theorems containing a hypothesis and conclusion; prove previously recognized mathematical theorems from various Set Theory and Number Theory concepts
- prove previously recognized mathematical theorems, such as but not limited to the Pythagorean Theorem, the Minimax Theorem, the Binomial Theorem, and Cantor's Theorem

### E - Number Theory

- execute various primality tests to determine if large integers are prime; recognize certain prime numbers as Fermat Numbers or Mersenne Primes
- explore various Prime conjectures, such as but not limited to Bertrand's Conjecture, the Twin Prime Conjecture, the Legendre Conjecture, and the  $n^2+1$  Conjecture
- define and explore concepts involving pseudoprimes
- analyze basic cryptology including Character ciphers, Block ciphers, Hill ciphers, Stream ciphers, Exponentiation ciphers, and Knapsack ciphers
- explore Public Key Cryptography including the RSA cryptosystem
- define and utilize the greatest integer function to write rules to represent sequences
- derive formulas for sums and products of series; derive definitions for various mathematical sequences, such as but not limited to triangular numbers and the Fibonacci numbers
- prove statements involving properties of numbers; prove that the square of any odd integer can be expressed as  $8k+1$  for some integer  $k$ ; prove there are infinitely many primes; prove that the square root of 2 is irrational
- apply the Euclidean algorithm to determine the GCD of two integers
- use Fermat Factorization, Pollard Rho Factorization, and Pollard  $(p-1)$  Factorization to determine the GCD of two integers
- prove results involving divisibility and the greatest common divisor
- convert integers between a variety of number systems with different bases, including decimal, octal, binary, and hexadecimal
- apply Divisibility rules to base  $b$  number systems
- find solutions to linear, polynomial, simultaneous, and systems of congruences, and prove results involving congruences and modular arithmetic
- apply the Chinese Remainder Theorem

## High School Mathematics

### E - Number Theory (*continued*)

- apply congruences to several real world situations, including but not limited to creating a perpetual calendar, error detection in bit strings, and various types of hashing functions
- use congruences to prove Fermat's Little Theorem and Wilson's Theorem
- use mathematical induction to prove results about the natural numbers
- apply modular arithmetic concepts; apply the "divides" ( $a \mid b$ ) relation to the natural numbers and " $a \pmod m$ " for integers  $a$  and  $m$
- determine the modular inverse of a given integer for any positive integer modulus, if it exists
- determine integral solutions to linear Diophantine equations

**High School Mathematics****Statistical Reasoning**

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**A - Statistics**

- describe and interpret any outliers or gaps in the distribution
- describe and interpret the modal category for the distribution
- describe and interpret patterns that exist for the distribution
- use distributions to compare two or more groups
- recognize that random selection from a population plays a different role than random assignment in an experiment
- recognize that sample size impacts the precision with which estimates of the population parameters can be made (i.e., larger the sample size the more precision)
- use distributions to identify the key features of the data collected
- describe the distribution for quantitative and categorical data
- describe and interpret the shape of the distribution
- describe and interpret the measures of center for the distribution
- describe and interpret the patterns in variability for the distribution
- construct appropriate graphical displays of distributions
- use graphical and numerical attributes of distributions to make comparisons between distributions
- determine if an association exists between two variables (e.g., pattern or trend in bivariate data) and use values of one variable to predict values of another variable
- analyze associations between variables and make predictions from one variable to another
- analyze associations between two variables
- create scatter plots for two-variable numerical data
- create two-way tables for two-variable categorical data
- analyze patterns and trends in data displays
- make predictions and draw conclusions from two-variable data based on data displays
- distinguish between association and causation
- apply the statistical method to real-world situations
- formulate questions to clarify the problem at hand and formulate one (or more) questions that can be answered with data

## High School Mathematics

### A - Statistics *(continued)*

- compare two or more groups by analyzing distributions
- using simulation, determine the appropriate model to decide if there is a significant difference between two populations
- using simulation, determine the appropriate model to decide if there is a significant difference between two treatment effects
- understand that when randomness is incorporated into a sampling or experimental procedure, probability provides a way to describe the "long-run" behavior of a statistic as described by its sampling distribution
- create simulated sampling distributions and understand how to use the sampling distribution to make predictions about a population parameter(s) or the difference in treatment effects
- create an appropriate simulated sampling distribution (using technology) and develop a margin of error
- create an appropriate simulated sampling distribution (using technology) and develop a  $\alpha$ -value
- identify the three types of distributions
- recognize a population distribution has fixed values of its parameters that are usually unknown
- recognize a sample data distribution is taken from a population distribution and the data distribution is what is seen in practice hoping it approximates the population distribution
- recognize a sampling distribution is the distribution of a sample statistic (such as a sample mean or a sample proportion) obtained from repeated samples; the sampling distribution provides the key for determining how close to expect a sample statistic approximates the population parameter
- create sample data distributions and a sampling distribution
- create a sample data distribution by taking a sample from a defined population and summarizing the data in a distribution
- create a sampling distribution of a statistic by taking repeated samples from a population (either hands-on or by simulation with technology)
- understand that randomness should be incorporated into a sampling or experimental procedure
- implement a reasonable random method for selecting a sample or for assigning treatments in an experiment
- implement a simple random sample
- randomly assign treatments to experimental subjects or objects
- distinguish between the three types of study designs for collecting data (i.e., sample survey, experiment, and observational study) and will know the scope of the interpretation for each design type

## High School Mathematics

### A - Statistics *(continued)*

- determine the type of study design appropriate for answering a statistical question
- determine the appropriate scope of inference for the study design used
- distinguish between the role of randomness and the role of sample size with respect to using a statistic from a sample to estimate a population parameter
- distinguish the roles of randomization and sample size with designing studies
- recognize that randomization reduces bias where bias occurs when certain outcomes are systematically more likely to appear
- collect data by designing a plan to collect appropriate data and employ the plan to collect the data
- analyze data by selecting appropriate graphical and numerical methods and using these methods to analyze the data
- interpret results by interpreting the analysis and relating the interpretation to the original question
- identify whether the data are categorical or quantitative (numerical)
- identify the difference between categorical and quantitative (numerical) data
- determine the appropriate graphical display for each type of data
- determine the type of data used to produce a given graphical display
- distinguish between a population distribution, a sample data distribution, and a sampling distribution
- ask if the difference between two population parameters (or two treatment effects) is due to random variation or if the difference is statistically significant
- determine if there are significant differences between two population parameters or treatment effects

## High School Science

# Biology

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### A - Content

- obtain, evaluate, and communicate information to analyze the nature of the relationships between structures and functions in living cells
- obtain, evaluate, and communicate information to analyze the role of cellular transport in maintaining homeostasis
- obtain, evaluate, and communicate information to analyze the role of the cell cycle in maintaining genetic continuity
- obtain, evaluate, and communicate information to assess the interdependence of all organisms on one another and their environment
- obtain, evaluate, and communicate information to illustrate the organization of interacting systems within single celled and multi-celled organisms
- obtain, evaluate, and communicate information about how genetic engineering techniques can manipulate DNA and lead to advancements in society
- obtain, evaluate, and communicate information on how changes in the environment have contributed to speciation and biodiversity
- obtain, evaluate, and communicate information regarding processes that result in heritable genetic variation
- obtain, evaluate, and communicate information to analyze how biological traits are passed on to successive generations
- obtain, evaluate, and communicate information to explore the theory of evolution
- obtain, evaluate, and communicate information regarding the mechanisms through which populations evolve
- ask questions to investigate and provide explanations on the role of photosynthesis and cellular respiration in the energy exchange of organisms, examining their function in the cycling of matter and the flow of energy in ecosystems
- obtain, evaluate, and communicate information to analyze how genetic information is expressed in cells

## High School Science

# Chemistry

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### A - Content

- obtain, evaluate, and communicate information about the Kinetic Molecular Theory to model atomic and molecular motion in chemical and physical processes
- obtain, evaluate, and communicate information about the chemical and physical properties of matter resulting from the ability of atoms to form bonds
- obtain, evaluate, and communicate information about how to refine the design of a chemical system by applying engineering principles to manipulate the factors that affect a chemical reaction
- obtain, evaluate, and communicate information about the properties that describe solutions and the nature of acids and bases
- obtain, evaluate, and communicate information about how the Law of Conservation of Matter is used to determine chemical composition in compounds and chemical reactions
- obtain, evaluate, and communicate information about the use of the modern atomic theory and periodic law to explain the characteristics of atoms and elements
- plan and carry out appropriate safety practices for equipment used for all classroom laboratory and field experiences

## High School Science

# Physics

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### A - Content

- obtain, evaluate, and communicate information about electrical and magnetic force interactions
- obtain, evaluate, and communicate information about the properties and applications of electromagnetic waves
- obtain, evaluate, and communicate information about the importance of Law of Conservation of Linear Momentum in predicting the behavior of physical systems
- obtain, evaluate, and communicate information about electrical force interactions
- obtain, evaluate, and communicate information about electrical circuits
- obtain, evaluate, and communicate information about the importance of law of conservation of energy in predicting the behavior of physical systems
- obtain, evaluate, and communicate information about how forces affect the motion of objects
- obtain, evaluate, and communicate information to identify the force or force component responsible for causing an object to move along a circular path
- plan and carry out investigations, using lenses and mirrors, to identify the behavior of light
- obtain, evaluate, and communicate information about nuclear changes of matter and related technological applications
- obtain, evaluate, and communicate information about the relationship between distance, displacement, speed, velocity and acceleration as functions of time for two-dimensional motion
- obtain, evaluate, and communicate information about the relationship between distance, displacement, speed, velocity and acceleration as functions of time for one-dimensional motion
- obtain, evaluate, and communicate information about the properties and applications of mechanical waves and sound



## High School Science

# Physical Science

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### A - Content

- obtain, evaluate, and communicate information to support the Law of Conservation of Mass/Law of Conservation of Matter
- obtain, evaluate, and communicate information from the Periodic Table to explain the relative properties of elements based on patterns of atomic structure
- obtain, evaluate, and communicate information to explain how atoms bond to form stable compounds
- obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion
- obtain, evaluate, and communicate information to explain the properties of waves
- obtain, evaluate, and communicate information to explain the changes in nuclear structure as a result of fission, fusion, and radioactive decay
- obtain, evaluate, and communicate information to explain transformations and flow of energy within a system
- obtain, evaluate, and communicate information to compare and contrast the phases of matter as they relate to atomic and molecular motion
- obtain, evaluate, and communicate information to explain the properties of solutions
- obtain, evaluate, and communicate information to explain the properties of and relationships between electricity and magnetism

## High School Science

# Advanced Genetics

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### A - Characteristics of Science

- design and conduct scientific investigations
- apply standard safety practices for all classroom laboratory and field investigations
- read scientific materials to establish context for subject matter, to develop vocabulary, and to be aware of current research
- use technology to collect, observe, measure, and analyze data and report findings
- communicate scientific information, ideas, and arguments clearly
- apply computation and estimation skills necessary for analyzing data and developing conclusions
- use valid critical assumptions to draw conclusions
- discuss the importance of curiosity, honesty, openness, and skepticism in science and exhibit these traits in efforts to understand how the world works

### B - Academic Knowledge

- explain gene expression
- explain recombinant DNA technology
- explain Mendelian genetics
- examine the ethical and legal issues arising from the application of bioengineering
- understand genes and their functions
- explain the regulation of gene expression in bacteria, bacteriophages, and eukaryotes
- identify genetic changes, including DNA mutation and repair, human genetic diseases, and the detection of mutations
- explain the genetics of populations, including genotypic frequencies and allelic frequencies, Hardy-Weinberg, variation in natural populations, and forces that change gene frequencies

## High School Science

# Advanced Physics and Robotics

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### A - Characteristics of Science

- identify, develop and investigate questions/problems that can be answered through scientific inquiry
- read grade-level appropriate text (both informational and fictional) from a variety of genres and modes of discourse (GPS)
- write clear, coherent laboratory reports related to scientific investigations (GPS)
- develop and use systematic procedures for recording and organizing information (GPS)
- develop reasonable conclusions based on data collected (GPS)
- determine the source of large disparities between estimated and calculated results (GPS)
- follow correct procedures for use of scientific apparatus (GPS)

### B - Mathematical Skills

- apply mathematical skills and processes to analyze and solve scientific problems

### C - Content Knowledge

- investigate fluid power systems (pneumatic and hydraulic) and apply the scientific laws that govern each
- explore the relationships between work, power, torque, and kinetic energy (using narrative and mathematical descriptions) and be able to apply these relationships to realistic situations
- build electric circuits and will use Ohm's Law and Kirchhoff's Laws to explore the relationships between concepts such as current, voltage, resistance, capacitance and electrical power
- explain the history of robotics along with the significant technology that has resulted over the last 2,000 years
- collaborate as a team to optimize a design solution that involves the engineering design process in which solutions are systematically tested and refined
- use a text-based programming language such as RobotC required to control robotic systems

## High School Science

# Anatomy and Physiology

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### A - Content

- obtain, evaluate, and communicate information regarding the function of cardiovascular and respiratory system in the transport and exchange of materials throughout the body
- obtain, evaluate, and communicate information regarding the structure and function of the reproductive system
- obtain, evaluate, and communicate the interdependence of the systems of the body
- obtain, evaluate, and communicate information regarding the structure and function of the digestive system and the excretory system
- obtain, evaluate, and communicate information regarding the structure and function of the endocrine system
- obtain, evaluate, and communicate information regarding the structure and function of the skeletal system
- obtain, evaluate, and communicate information regarding the structure and function of the muscular system
- obtain, evaluate, and communicate information regarding the function of integumentary system
- obtain, evaluate, and communicate information regarding the structure and function of the nervous system
- obtain, evaluate, and communicate the relationship between anatomical structure and physiological processes

## High School Science

# Astronomy

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### A - Content

- obtain, evaluate, and communicate information about cosmology and our place in the universe
- obtain, evaluate, and communicate information about non-planetary solar system objects
- obtain, evaluate, and communicate information about physical characteristics of stars
- obtain, evaluate, and communicate information about stellar evolution
- obtain, evaluate, and communicate information about the Milky Way and other galaxies
- obtain, evaluate, and communicate information about the methods of observing the universe
- obtain, evaluate, and communicate information about Earth and the moon system
- obtain, evaluate, and communicate information about physical characteristics of the sun
- obtain, evaluate, and communicate information about the terrestrial planets
- obtain, evaluate, and communicate information about the gas giants

## High School Science

# Bioengineering/Scientific Research III

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### A - Content

- obtain, evaluate, and communicate information regarding the bioengineering field and its application in society
- obtain, evaluate, and communicate information about the development and delivery of biotechnology and bioengineering to the marketplace
- obtain, evaluate, and communicate information on employing the use of Standard Laboratory Operating Procedures (SLOP) throughout the course
- obtain, evaluate, and communicate information on applying technologies used in the life science industry
- obtain, evaluate, and communicate information focused on the ethical and legal issues arising from the application of bioengineering
- obtain, evaluate, and communicate information about career opportunities in the field of bioscience
- obtain, evaluate, and communicate information about how basic chemistry concepts affect living organisms

**High School Science****Chemistry II**

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**A - Content**

- obtain, evaluate, and communicate information about the properties of biochemical molecules
- plan and carry out appropriate safety practices for equipment used for all classroom laboratory and field experiences
- obtain, evaluate, and communicate information about the use of the modern atomic theory to explain the characteristics of atoms and molecules
- obtain, evaluate, and communicate information about the properties that describe solutions and the nature of acids and bases
- obtain, evaluate, and communicate information about the chemical and physical properties of matter resulting from the ability of atoms to form bonds
- obtain, evaluate, and communicate information about the Kinetic Molecular Theory to model atomic and molecular motion in chemical and physical processes
- obtain, evaluate, and communicate information about how thermodynamically favored reactions are more likely to take place

## High School Science

# Earth Systems

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### A - Content

- obtain, evaluate, and communicate information to explore the actions of water, wind, ice, and gravity as they relate to landscape change
- obtain, evaluate, and communicate information to understand how rock relationships and fossils are used to reconstruct Earth's past
- obtain, evaluate, and communicate information to investigate the interaction of solar energy and Earth's systems to produce weather and climate
- obtain, evaluate, and communicate information to investigate the composition and formation of Earth systems, including Earth's place in the solar system
- obtain, evaluate, and communicate information to understand how plate tectonics create certain geologic features, landforms, Earth materials, and geologic hazards
- obtain, evaluate, and communicate information about how life on Earth responds to and shapes Earth's systems



## High School Science

# Ecology

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### A - Content

- obtain, evaluate, and communicate information for how biotic and abiotic factors interact to affect the distribution of species and the diversity of life on Earth
- obtain, evaluate, and communicate information on how succession occurs following a disturbance to an ecosystem
- obtain, evaluate, and communicate information to identify and describe Earth's major aquatic and terrestrial biomes
- obtain, evaluate, and communicate information to investigate the impact of continued human population growth on the demand for Earth's resources
- obtain, evaluate, and communicate information to investigate how organisms interact as individuals and as populations
- obtain, evaluate, and communicate information to explore how populations grow in predictable patterns
- obtain, evaluate, and communicate information regarding threats to biodiversity worldwide
- obtain, evaluate, and communicate information to investigate the impact of humans to global ecosystems
- obtain, evaluate, and communicate information about how air and water quality affect ecosystems on a global level
- obtain, evaluate, and communicate information to investigate how matter cycles in and out of an ecosystem
- obtain, evaluate, and communicate information to investigate how the stability of an ecosystem depends on energy flow

## High School Science

# Environmental Science

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### A - Content

- obtain, evaluate and communicate information about the effects of human population growth, activities, and technology on global ecosystems
- obtain, evaluate, and communicate information to analyze how humans impact land resources and construct explanations of the potential effects of habitat destruction, erosion, pollution and depletion of soil fertility as a result of human activities
- obtain, evaluate, and communicate information regarding the use and conservation of the various forms of energy resources
- obtain, evaluate, and communicate information to analyze human impact on the conservation of biodiversity
- obtain, evaluate, and communicate information to investigate the flow of energy and cycling of matter within an ecosystem
- obtain, evaluate, and communicate information to construct explanations of stability and change in Earth's ecosystems
- obtain, evaluate, and communicate information to analyze human impact on water
- obtain, evaluate, and communicate information to analyze human impact on the atmosphere

## High School Science

# Forensic Science

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### A - Content

- obtain, evaluate, and communicate information regarding how the body is used as evidence, including the use of models to determine time of death
- obtain, evaluate, and communicate information about how forensic science is the application of science to the law
- obtain, evaluate, and communicate information regarding the role of ballistics, fingerprints and other impressions evidence in forensic investigations
- obtain, evaluate, and communicate information about the proper techniques to search, isolate, collect, and record physical and trace evidence at a crime scene
- obtain, evaluate, and communicate information regarding physical evidence used in forensic investigations
- obtain, evaluate, and communicate information regarding trace evidence
- obtain, evaluate, and communicate information identifying and analyzing the use of DNA in forensic investigations
- obtain, evaluate, and communicate information used to investigate evidence involving arson and explosives
- obtain, evaluate, and communicate information as it pertains to cybercrimes in forensic investigations
- obtain, evaluate, and communicate information used to investigate how document examiners analyze questioned documents involved in forensic investigation
- obtain, evaluate, and communicate information identifying and analyzing the use of toxins and drugs in forensic investigations
- obtain, evaluate, and communicate information identifying and analyzing the use of serology in forensic investigations

## High School Science

# Microbiology

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### A - Content

- obtain, evaluate, and communicate information showing the impact of the invention of the microscope on the field of microbiology
- obtain, evaluate, and communicate information to discriminate between abiogenesis and biogenesis
- obtain, evaluate, and communicate information about common microbial diseases
- obtain, evaluate, and communicate information about cellular differences that are used in the classification of microbes
- obtain, evaluate, and communicate information about how to identify and control variables in order to maintain pure bacterial cultures
- obtain, evaluate, and communicate information about the effectiveness of physical and chemical agents on controlling bacterial growth
- obtain, evaluate, and communicate information about different aseptic techniques
- obtain, evaluate, and communicate proper microscopic techniques when preparing microscope slides
- obtain, evaluate, and communicate the role of microorganisms play to water quality and waste-water treatment
- obtain, evaluate, and communicate the role of microorganisms in agriculture
- obtain, evaluate, and communicate information in order to investigate the germ theory
- obtain, evaluate, and communicate information regarding the different methods of food-processing and storage and how these processes might relate to microbial growth
- obtain, evaluate, and communicate disease terminology
- obtain, evaluate, and communicate information regarding major industrial processes involving foods
- obtain, evaluate, and communicate information about the characteristics of viruses
- obtain, evaluate, and communicate information about the societal and economic impact of viruses
- obtain, evaluate, and communicate information about the molecular mechanisms involved in gene expression in microbes

## High School Science

# Oceanography

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### A - Content

- obtain, evaluate, and communicate information regarding the cycling of matter and the flow of energy among organisms in marine ecosystems
- obtain, evaluate, and communication information regarding the properties of water
- obtain, evaluate, and communicate information regarding the chemical characteristics of seawater (pH, density, and dissolved oxygen)
- obtain, evaluate, and communicate information regarding light and sound movement through water
- obtain, evaluate, and communicate information regarding the interaction of the atmosphere and seawater
- obtain, evaluate, and communicate data on atmosphere's greenhouse effect and implications of this effect for the future
- obtain, evaluate, communicate information regarding the characteristics of a wave and relate those characteristics to ocean phenomena
- obtain, evaluate, and communicate information regarding models that explain the origin of Earth and oceans
- obtain, evaluate, and communicate information regarding the theory of global plate tectonics
- obtain, evaluate, and communicate information regarding different types of marine sediments
- obtain, evaluate, and communicate information about how nonliving components of marine habitats determine the biological diversity of coastal water, estuaries, lagoons and marginal seas
- obtain, evaluate, and communicate information regarding the identification and characteristics of marine organisms found in the pelagic and benthic ocean

## High School Science

# Science Research I

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### A - Content

- construct explanations regarding how various organisms grow, develop, and differentiate during their lifetimes based on an interplay between genetics and their environment
- engage in scientific inquiry in biology topics by asking or responding to scientifically oriented questions, collecting and analyzing data, giving priority to evidence, formulating explanations based on evidence, connecting explanations to scientific knowledge, and communicating and justifying explanations
- engage in inquiry by asking or responding to biological oriented challenges and problems, collecting and analyzing data, giving priority to evidence, developing solutions based on evidence, connecting solutions to scientific knowledge, and communicating solutions
- analyze and interpret data to demonstrate if a hypothesis is supported by the data, or if a proposed engineering solution is viable
- plan and carry out investigations to test a biological hypothesis or evaluate a solution to a biological problem
- construct explanations regarding the relationship between structure and function in living systems at a variety of organizational levels, and recognize living systems' dependence on natural selection
- develop and use models to explain and illustrate with examples how living systems interact with the biotic and abiotic environment

## High School Science

# Science Research II

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### A - Content

- plan and carry out an investigation to explore acid-base neutralization
- plan and carry out an investigation to calculate the amount of heat absorbed or released by chemical or physical processes
- engage in scientific inquiry in chemistry topics by asking or responding to scientifically oriented questions, collecting and analyzing data, giving priority to evidence, formulating explanations based on evidence, connecting explanations to scientific knowledge, and communicating and justifying explanations
- engage in inquiry by asking or responding to chemistry oriented challenges and problems, collecting and analyzing data, giving priority to evidence, developing solutions based on evidence, connecting solutions to scientific knowledge, and communicating solutions
- analyze and interpret data to demonstrate if a hypothesis is supported by the data, or if a proposed engineering solution is viable
- plan and carry out investigations to test a chemistry-based hypothesis or evaluate a solution to a chemistry problem
- construct explanations to demonstrate an understanding of atomic and molecular structure to explain the properties of matter, and predict outcomes of chemical and nuclear reactions
- plan and carry out an investigation to evaluate the factors that affect the rate at which a solute (i.e., solid or gas) dissolves in a specific solvent
- plan and carry out an investigation to determine and use data to justify that a new chemical has formed by identifying indicators of a chemical reaction (i.e., precipitate formation, gas evolution, color change, water production, and changes in energy to system)
- plan and carry out an investigation to gather evidence to compare the physical and chemical properties at the macroscopic scale to infer the strength of intermolecular and intramolecular forces; the investigation may include melting point, state of matter, solubility, viscosity, and conductivity
- plan and carry out an investigation to demonstrate the conceptual principle of limiting reactants

## High School Science

# Scientific Research IV

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### A - Characteristics of Science

- communicate scientific information, ideas, and arguments clearly
- use valid critical assumptions to draw conclusions
- apply standard safety practices for all classroom laboratory and field investigations
- use technology to collect, observe, measure, and analyze data and report findings
- read scientific materials to establish context for subject matter, to develop vocabulary, and to be aware of current research
- apply computation and estimation skills necessary for analyzing data and developing conclusions
- design and conduct scientific investigations

### B - Academic Knowledge

- explore the scope of funding, professional development, and collaboration within the scientific research community
- read credible, peer-reviewed scientific literature to recognize and understand the elements of ethical scientific research; develop vocabulary and subject-related content knowledge; and become familiar with current research in the field, as well as the implications of the research
- conduct a complete, research-based scientific investigation including obtaining and documenting accurate data, performing data analysis, critiquing and modifying experimental protocols, and report findings
- clearly communicate the results and conclusions of a research-based scientific investigation
- using knowledge obtained from scientific literature, design an ethical research-based experimental project that investigates questions or problems that can be answered through scientific inquiry
- use collaborative skills to inquire and explore research and career opportunities in science



## High School Social Studies

# World Geography

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### A - Map and Globe Skills

- use cardinal directions
- use intermediate directions
- use a letter/number grid system to determine location
- compare maps with data sets (e.g., charts, tables, graphs) and/or readings to draw conclusions and make generalizations
- compare and contrast the categories of natural, cultural, and political features found on maps
- use customary and metric map scales to determine distance on a map
- use map key/legend to acquire information from historical, physical, political, resource, product, and economic maps
- use a map to explain the impact of geography on historical and current events
- draw conclusions and make generalizations based on information from maps
- use latitude and longitude to determine location
- use graphic scales to determine distances on a map
- compare maps of the same place at different points in time and from different perspectives to determine changes, identify trends, and generalize about human activities

### B - Information Processing Skills

- identify main idea, detail, sequence of events, and cause and effect in a social studies context
- identify and use primary and secondary sources
- interpret political cartoons
- identify social studies reference resources to use for a specific purpose
- organize items chronologically
- identify and write about issues and/or problems and alternative solutions
- distinguish between fact and opinion as used in informational/explanatory text
- check for consistency of information
- compare similarities and differences
- write arguments, informative text, and explanatory text that determine adequacy and/or relevancy of information

## High School Social Studies

### **B - Information Processing Skills** *(continued)*

- interpret timelines
- construct charts and tables
- analyze artifacts
- write arguments, informative text, and explanatory text that draw conclusions and make generalizations
- analyze graphs and diagrams
- translate dates into centuries, eras, or ages
- formulate appropriate research questions

### **C - Geographic Concepts**

- explain why physical characteristics of place, such as landforms, bodies of water, climate, and natural resources, act as contributing factors to world settlement patterns
- evaluate how the physical and human characteristics of places and regions are connected to human identities and cultures

### **D - Political Geography**

- examine the spatial distribution of major economic systems and analyze the role that geography plays in economic development
- evaluate how cooperation and conflict among people influence the division and control of Earth's surface
- analyze human interactions with the world's environments
- assess the characteristics, spatial distribution, and migration of human populations on the Earth's surface

## High School Social Studies

# World History

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### A - Map and Globe Skills

- use cardinal directions
- use intermediate directions
- use a letter/number grid system to determine location
- compare and contrast the categories of natural, cultural, and political features found on maps
- use customary and metric map scales to determine distance on a map
- use map key/legend to acquire information from historical, physical, political, resource, product, and economic maps
- use a map to explain the impact of geography on historical and current events
- draw conclusions and make generalizations based on information from maps
- use latitude and longitude to determine location
- use graphic scales to determine distances on a map
- compare maps of the same place at different points in time and from different perspectives to determine changes, identify trends, and generalize about human activities
- compare maps with data sets (e.g., charts, tables, graphs) and/or readings to draw conclusions and make generalizations

### B - Information Processing Skills

- organize items chronologically
- analyze artifacts
- write arguments, informative text, and explanatory text that draw conclusions and make generalizations
- compare similarities and differences
- analyze graphs and diagrams
- identify main idea, detail, sequence of events, and cause and effect in a social studies context
- translate dates into centuries, eras, or ages
- formulate appropriate research questions
- identify and write about issues and/or problems and alternative solutions
- distinguish between fact and opinion as used in informational/explanatory text

## High School Social Studies

### **B - Information Processing Skills** *(continued)*

- identify and use primary and secondary sources
- write arguments, informative text, and explanatory text that determine adequacy and/or relevancy of information
- interpret timelines
- identify social studies reference resources to use for a specific purpose
- check for consistency of information
- construct charts and tables
- interpret political cartoons

### **C - Ancient Civilizations through the Classical Era**

- examine the political, philosophical, and cultural interaction among classical Mediterranean societies from 700 BCE/BC to 400 CE/AD
- identify the major achievements of Chinese and Indian societies from 1100 BCE to 500 CE
- analyze the origins, structures, and interactions among societies in the ancient world from 3500 BCE/BC to 500 BCE/BC

### **D - Post-Classical Era**

- analyze impact of the Byzantine and Mongol empires between 450 CE/AD and 1500 CE/AD
- describe the diverse characteristics of societies in Central and South America
- examine the political, economic, and cultural interactions within the medieval Mediterranean world between 600 CE/AD and 1300 CE/AD
- describe the diverse characteristics of early African societies before 1500 CE/AD

### **E - Middle Ages through the Renaissance and Reformation**

- analyze change and continuity in the Renaissance and Reformation
- analyze European medieval society with regard to culture, politics, society, and economics

### **F - Discovery and Expansion**

- examine political and social changes in Japan and in China from the 14th century CE/AD to mid-19th century CE/AD
- describe the development and contributions of the Ottoman, Safavid, and Mughal empires
- analyze the causes and effects of exploration and expansion into the Americas, Africa, and Asia

### **G - Age of Transitions and Revolutions**

- examine the intellectual, political, social, and economic factors that changed the world view of Europeans from the 16th century CE/AD to the late 18th century CE/AD

**High School Social Studies****G - Age of Transitions and Revolutions** *(continued)*

- analyze the Age of Revolutions

**H - Industrialization and Imperialism**

- describe the impact of industrialization and urbanization
- analyze the rise of nationalism and worldwide imperialism

**I - Global Conflict**

- examine the major political and economic factors that shaped world societies between World War I and World War II
- demonstrate an understanding of long-term causes of World War I and its global impact
- demonstrate an understanding of the global political, economic, and social impact of World War II

**J - The Modern Era**

- demonstrate an understanding of the global, political, economic, and social impact of the Cold War and decolonization from 1945 to 1989
- examine change and continuity in the world since the 1960s
- analyze globalization in the contemporary world

## High School Social Studies

# U.S. History

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### A - Map and Globe Skills

- use cardinal directions
- use intermediate directions
- use a letter/number grid system to determine location
- compare and contrast the categories of natural, cultural, and political features found on maps
- use customary and metric map scales to determine distance on a map
- use map key/legend to acquire information from historical, physical, political, resource, product, and economic maps
- use a map to explain the impact of geography on historical and current events
- draw conclusions and make generalizations based on information from maps
- use latitude and longitude to determine location
- use graphic scales to determine distances on a map
- compare maps of the same place at different points in time and from different perspectives to determine changes, identify trends, and generalize about human activities
- compare maps with data sets (e.g., charts, tables, graphs) and/or readings to draw conclusions and make generalizations

### B - Information Processing Skills

- compare similarities and differences
- identify and write about issues and/or problems and alternative solutions
- construct charts and tables
- distinguish between fact and opinion as used in informational/explanatory text
- check for consistency of information
- analyze artifacts
- write arguments, informative text, and explanatory text that draw conclusions and make generalizations
- write arguments, informative text, and explanatory text that determine adequacy and/or relevancy of information
- interpret political cartoons
- identify main idea, detail, sequence of events, and cause and effect in a social studies context

## High School Social Studies

### **B - Information Processing Skills** *(continued)*

- identify and use primary and secondary sources
- interpret timelines
- identify social studies reference resources to use for a specific purpose
- analyze graphs and diagrams
- translate dates into centuries, eras, or ages
- formulate appropriate research questions
- organize items chronologically

### **C - Colonial Era**

- compare and contrast the development of the three regions of English settlement and colonization during the 17th century in America
- describe the early English colonial society in America and investigate the development of its governance

### **D - Revolution to Constitution**

- analyze the ideological, military, social, and diplomatic aspects of the American Revolution
- analyze the causes of the American Revolution

### **E - Creating a Nation**

- investigate specific events and key ideas that brought about the adoption and implementation of the U.S. Constitution
- investigate political, economic, and social developments during the Age of Jackson
- analyze the challenges faced by the first five presidents and how they responded

### **F - A Divided Nation**

- evaluate key events, issues, and individuals relating to the Civil War
- identify legal, political, and social dimensions of Reconstruction
- explore the relationship between slavery, growing North-South divisions, and westward expansion that led to the outbreak of the Civil War

### **G - Industrialization and Urbanization**

- evaluate the impact of westward expansion on the Plains Indians and fulfilled Manifest Destiny
- examine connections between the rise of big business, the growth of labor unions, and technological innovations

### **H - Progressivism and Imperialism**

- evaluate efforts to reform American society and politics in the Progressive Era

**High School Social Studies****H - Progressivism and Imperialism** *(continued)*

- explain America's evolving relationship with the world at the turn of the 20th century

**I - World War I, 1920s, and 1930s**

- analyze the causes and consequences of the Great Depression
- evaluate Franklin D. Roosevelt's New Deal as a response to the Great Depression and compare how governmental programs aided those in need
- analyze the origins and impact of U.S. involvement in World War I
- investigate how political, economic, and cultural developments after WW I led to a shared national identity

**J - World War II**

- examine the origins, major developments, and domestic impact of World War II, including the growth of the federal government

**K - Truman and Eisenhower**

- analyze the U.S. international and domestic policies, including their influences on technological advancements and social changes, during the Truman and Eisenhower administrations

**L - Kennedy and Johnson**

- analyze U.S. international and domestic policies, including their influences on technological advancements and social changes, during the Kennedy and Johnson administrations

**M - Nixon, Ford, and Carter**

- analyze U.S. international and domestic policies, including their influences on technological advancements and social changes, during the Nixon, Ford, and Carter administrations

**N - Reagan, Bush (41), Clinton, Bush (43), and Obama**

- assess the political, economic, and technological changes during the Reagan; Bush (41); Clinton; Bush (43) ; and Obama administrations



## High School Social Studies

# Economics

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### A - Map and Globe Skills

- compare and contrast the categories of natural, cultural, and political features found on maps as it relates to trade
- use map key/legend to acquire information from physical, political, resource, product, and economic maps
- draw conclusions and make generalizations based on information from maps
- compare maps with data sets (e.g., charts, tables, graphs) and/or readings to draw conclusions and make generalizations

### B - Information Processing Skills

- identify social studies reference resources to use for a specific purpose
- distinguish between fact and opinion as used in informational/explanatory text
- check for consistency of information
- write arguments, informative text, and explanatory text that determine adequacy and/or relevancy of information
- analyze graphs and diagrams
- formulate appropriate research questions
- construct charts and tables
- write arguments, informative text, and explanatory text that draw conclusions and make generalizations
- compare similarities and differences
- identify and use primary and secondary sources
- identify and write about issues and/or problems and alternative solutions
- interpret political cartoons

### C - Fundamental Concepts

- explain how productivity, economic growth, and future standards of living are influenced by investment in the four factors of production, including factories, machinery, new technology, and the health, education, and training of people
- explain why limited productive resources and unlimited wants result in scarcity, opportunity costs, and tradeoffs for individuals, businesses, and governments
- describe the roles of government in the United States economy (e.g., mixed or modified private/free enterprise economy)

## High School Social Studies

### C - Fundamental Concepts *(continued)*

- explain how specialization and voluntary exchange positively influence buyers and sellers
- compare and contrast different economic systems and explain how they answer the three basic economic questions: what to produce, how to produce, and for whom to produce
- give examples of how rational decision-making entails comparing the marginal benefits and the marginal costs of an action

### D - Microeconomics

- explain the organization and role of business and analyze the four types of market structures in the U.S. economy
- describe how households and businesses are interdependent and interact through the flow of goods, services, resources, and money
- explain how the Law of Demand, the Law of Supply, and prices work to determine production and distribution in a market economy

### E - Macroeconomics

- illustrate the means by which economic activity is measured
- explain the role and functions of the Federal Reserve System
- explain how the U.S. government uses fiscal policy to promote price stability, full employment, and economic growth

### F - International Economics

- explain why countries sometimes erect trade barriers and sometimes advocate free trade
- explain how changes in exchange rates can have an impact on the purchasing power of groups in the United States and in other countries
- explain why individuals, businesses, and governments trade goods and services

### G - Personal Finance

- explain how changes in taxation can have an impact on an individual's spending and saving choices
- describe how insurance and other risk-management strategies protect against financial loss
- apply rational decision-making to personal spending and saving choices
- explain that banks and other financial institutions are businesses that channel funds from savers to investors
- evaluate the costs and benefits of using credit
- describe how the earnings of workers are determined in the marketplace

## High School Social Studies

# American Government and Civics

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### A - Map and Globe Skills

- compare and contrast the categories of natural, cultural, and political features found on maps
- use map key/legend to acquire information from historical, physical, political, resource, product, and economic maps
- draw conclusions and make generalizations based on information from maps
- compare maps of the same place at different points in time and from different perspectives to determine changes, identify trends, and generalize about human activities
- compare maps with data sets (e.g., charts, tables, graphs) and/or readings to draw conclusions and make generalizations

### B - Information Processing Skills

- organize items chronologically
- compare similarities and differences
- interpret timelines
- identify social studies reference resources to use for a specific purpose
- translate dates into centuries, eras, or ages
- formulate appropriate research questions
- write arguments, informative text, and explanatory text that determine adequacy and/or relevancy of information
- check for consistency of information
- interpret political cartoons
- analyze graphs and diagrams
- write arguments, informative text, and explanatory text that draw conclusions and make generalizations
- identify main idea, detail, sequence of events, and cause and effect in a social studies context
- construct charts and tables
- identify and write about issues and/or problems and alternative solutions
- identify and use primary and secondary sources
- analyze artifacts
- distinguish between fact and opinion as used in informational/explanatory text

## **High School Social Studies**

### **C - Foundations and Principles of American Government**

- analyze the meaning and importance of each of the rights guaranteed under the Bill of Rights and how each is secured
- compare and contrast various systems of government
- demonstrate knowledge of the organization and powers of the national government
- demonstrate knowledge of the framing and structure of the United States Constitution
- demonstrate knowledge of the federal system of government described in the United States Constitution
- demonstrate knowledge of the political philosophies that shaped the development of United States constitutional government

### **D - Political Participation**

- demonstrate knowledge of local, state, and national elections
- analyze the difference between involuntary and voluntary participation in civic life

### **E - Three Branches of Government**

- demonstrate knowledge of the organization and powers of state and local government described in the Georgia Constitution
- explain the functions of the departments and agencies of the federal bureaucracy
- explain the process for impeachment and removal from office and its use for federal officials as defined in the U.S. Constitution
- demonstrate knowledge of the executive branch of government
- demonstrate knowledge of the criminal justice process
- describe the tools used to carry out United States foreign policy, including diplomacy and treaties; economic, military, and humanitarian aid; and sanctions and military intervention
- demonstrate knowledge of the operation of the judicial branch of government
- demonstrate knowledge of civil liberties and civil rights
- demonstrate knowledge of the legislative branch of government

## High School Social Studies

# Civic Engagement

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### A - Map and Globe Skills

- compare and contrast the categories of natural, cultural, and political features found on maps as it relates to global civic engagement
- use map key/legend to acquire information from physical, political, resource, product, and economic maps
- draw conclusions and make generalizations based on information from maps
- compare maps with data sets (e.g., charts, tables, graphs) and/or readings to draw conclusions and make generalizations

### B - Information Processing Skills

- check for consistency of information
- interpret political cartoons
- write arguments, informative text, and explanatory text that draw conclusions and make generalizations
- analyze graphs and diagrams
- formulate appropriate research questions
- write arguments, informative text, and explanatory text that determine the adequacy and/or relevancy of information
- compare similarities and differences
- identify and write about issues and/or problems and alternative solutions
- distinguish between fact and opinion as used in information/explanatory text
- identify and use primary or secondary sources
- identify social studies reference resources to use for a specific purpose
- construct charts and tables

### C - Civil Dialogue

- explain and apply the principles of civil dialogue

### D - Origins and Purposes of Government

- analyze the origins and purposes of law, government, and the political system in America
- analyze the importance of the Constitution in granting rights and powers individually and collectively in America

## **High School Social Studies**

### **E - Principles, Functions, and Organization of Government**

- demonstrate an understanding of the function and organization of the federal government of the United States of America
- identify the relationship and division of powers between the federal government and state governments

### **F - Foundations of Citizen Participation in America**

- analyze historical documents as they pertain to the rights of citizens to participate in American government
- evaluate the roles, rights, and responsibilities of U.S. citizens, and determine methods of active participation in society, government and the political system

### **G - 1st Amendment Protections for Civic Engagement**

- examine the impact of rights guaranteed in the 1st Amendment on Civic Engagement

### **H - Citizen Participation in America**

- apply civic virtues and democratic principles in school and community settings
- evaluate the role of political parties and candidates in being the voice of the American people in government
- analyze the role of various forces on the American Political System

### **I - Religion and Civic Engagement**

- analyze the relationship between religion and civic engagement

### **J - Civics in Action (Simulation I)**

- explain the importance of being an active problem-solving citizen utilizing the appropriate pathways to solve local and state problems
- develop a plan to resolve a state or local problem by researching public policy alternatives, identifying appropriate government agencies to address the issue, and determining a course of action.

### **K - Contemporary and Global Citizenship**

- analyze and explain global citizen issues
- demonstrate an understanding of contemporary issues in world affairs, and evaluate the role and impact of U.S. foreign policy as it pertains to civic engagement

### **L - Civics in Action (Simulation II)**

- develop a plan to resolve a global problem by researching public policy alternatives, identifying appropriate government agencies to address the issue, and determining a course of action.

## High School Social Studies

# Comparative Politics

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### A - Map and Globe Skills

- compare and contrast the categories of natural, cultural, and political features found on maps as it relates to comparative government and politics
- use map key/legend to acquire information from physical, political, resource, product, and economic maps
- draw conclusions and make generalizations based on information from maps
- compare maps with data sets (e.g., charts, tables, graphs) and/or readings to draw conclusions and make generalizations

### B - Information Processing Skills

- construct charts and tables
- write arguments, informative text, and explanatory text that draw conclusions and make generalizations
- analyze graphs and diagrams
- formulate appropriate research questions
- write arguments, informative text, and explanatory text that determine the adequacy and/or relevancy of information
- check for consistency of information
- interpret political cartoons
- identify and use primary or secondary sources
- identify social studies reference resources to use for a specific purpose
- compare similarities and differences
- identify and write about issues and/or problems and alternative solutions
- distinguish between fact and opinion as used in information/explanatory text

### C - Introduction to Comparative Politics

- explain the processes used within the study of comparative politics

### D - Political Systems, Regimes and Governments

- explain the differences between a democratic and authoritarian regime/government, including the factors that indicate the degree to which a country falls into either category
- explain the process and goals of democratization
- explain sources of power, legitimacy and authority in different types of political systems

## High School Social Studies

### **D - Political Systems, Regimes and Governments** *(continued)*

- describe the sources of political legitimacy for the different types of regimes

### **E - Political Institutions**

- describe parliamentary, presidential and semi-presidential systems
- explain the structure, function, and change of executive leadership, legislatures, and judiciaries in countries with different types of political systems

### **F - Political Culture and Participation**

- explain the extent to which civil rights and civil liberties are protected or restricted in different regimes
- explain the nature and role of political participation as related to a regime's use of authority and power
- explain how political values and beliefs frame policy choices to address particular political problems
- describe civil society and political culture and how they influence the operation of countries

### **G - Party and Electoral Systems and Citizen Organizations**

- describe electoral systems and election rules among countries with different types of political systems or regimes
- describe characteristics of political party systems and party membership

### **H - Political and Economic Changes and Development**

- compare and contrast political responses to global market forces
- explain how global economic and technological forces influence political policies, behaviors, and culture



## High School Social Studies

# Contemporary Issues

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### A - Map and Globe Skills

- compare and contrast the categories of natural, cultural, and political features found on maps as it relates to trade
- use map key/legend to acquire information from physical, political, resource, product, and economic maps
- draw conclusions and make generalizations based on information from maps
- compare maps with data sets (e.g., charts, tables, graphs) and/or readings to draw conclusions and make generalizations

### B - Information Processing Skills

- identify and write about issues and/or problems and alternative solutions
- write arguments, informative text, and explanatory text that draw conclusions and make generalizations
- write arguments, informative text, and explanatory text that determine adequacy and/or relevancy of information
- identify social studies reference resources to use for a specific purpose
- construct charts and tables
- compare similarities and differences
- distinguish between fact and opinion as used in informational/explanatory text
- analyze graphs and diagrams
- formulate appropriate research questions
- interpret political cartoons
- check for consistency of information
- identify and use primary and secondary sources

### C - Economic Trends

- analyze current trends leading to international economic cooperation

### D - Environmental Progress

- analyze the struggle between environmental protection and economic progress

### E - Family and Urbanization

- describe the challenges relating to urbanization and changes in family and household structure

**High School Social Studies****F - Human Rights and Societal Issues**

- analyze the major issues regarding international human rights
- analyze the causes for the growth of radical groups throughout the world and the effects of such growth
- recognize the growing diversity of American society

**G - 21st Century Issues**

- analyze the costs, benefits, and opportunities presented by technology as a means to address political, social, and economic problems

## High School Social Studies

# Controversial Issues

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### A - Map and Globe Skills

- compare maps of the same place at different points in time and from different perspectives to determine changes, identify trends, and generalize about human activities
- compare maps with data sets (e.g., charts, tables, graphs) and/or readings to draw conclusions and make generalizations
- compare and contrast the categories of natural, cultural, and political features found on maps
- use map key/legend to acquire information from historical, physical, political, resource, product, and economic maps
- draw conclusions and make generalizations based on information from maps

### B - Information Processing Skills

- compare similarities and differences
- identify and write about issues and/or problems and alternative solutions
- distinguish between fact and opinion as used in informational/explanatory text
- analyze artifacts
- write arguments, informative text, and explanatory text that draw conclusions and make generalizations
- analyze graphs and diagrams
- translate dates into centuries, eras, or ages
- formulate appropriate research questions
- identify main idea, detail, sequence of events, and cause and effect in a social studies context
- write arguments, informative text, and explanatory text that determine adequacy and/or relevancy of information
- interpret timelines
- interpret political cartoons
- identify social studies reference resources to use for a specific purpose
- organize items chronologically
- identify and use primary and secondary sources
- check for consistency of information
- construct charts and tables

## High School Social Studies

### C - World Views, Logical Fallacies, and Constructive Discourse

- examine the basic principles of constructive discourse in order to engage in rational, thoughtful discussions on public policy issues
- analyze the most common fallacies of ordinary reasoning in order to evaluate the validity, clarity, and precision of types of arguments, such as Ad Populum, Ad Hominem, and Slippery Slope

### D - Life and Health Issues

- analyze and evaluate major life and health issues facing today's society
- evaluate the increasing economic demand on community agencies and resources relating to federal programs such as Medicare, Medicaid, and the Affordable Care Act
- formulate possible solutions based on an informed perspective rather than an emotional reaction to the issues
- identify Life and Health issues currently facing today's society such as obesity, use of GMOs, and Roe v. Wade

### E - Discrimination Issues

- analyze current discrimination issues in the United States
- examine and evaluate the government's attempts to deal with invidious discrimination, including policies related to Title IX and affirmative action
- evaluate whether unjust discrimination harms all Americans or just those who are its target

### F - Constitutional Issues

- examine arguments for and against several volatile constitutional issues in the United States, including Second Amendment rights and limits on First Amendment rights
- explain why rights guaranteed in the Constitution are relative and are not absolute
- identify current issues relevant to Constitutional rights and their interpretation

### G - Global Issues

- examine and evaluate several significant global issues confronting the modern world, such as the War on Terror, radical terrorism, wealth disparity, and human rights violations
- analyze policy options proposed for each global issue
- identify which option would appear to be an optimally effective choice in each case

## High School Social Studies

# Current Issues in Health Science

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### A - Map and Globe Skills

- compare and contrast the categories of natural, cultural, and political features found on maps as it relates to trade
- use map key/legend to acquire information from physical, political, resource, product, and economic maps
- draw conclusions and make generalizations based on information from maps
- compare maps with data sets (e.g., charts, tables, graphs) and/or readings to draw conclusions and make generalizations

### B - Information Processing Skills

- write arguments, informative text, and explanatory text that determine the adequacy and/or relevancy of information
- formulate appropriate research questions
- check for consistency of information
- construct charts and tables
- interpret political cartoons
- analyze graphs and diagrams
- compare similarities and differences
- identify social studies reference resources to use for a specific purpose
- distinguish between fact and opinion as used in information/explanatory text
- identify and write about issues and/or problems and alternative solutions
- identify and use primary or secondary sources
- write arguments, informative text, and explanatory text that draw conclusions and make generalizations

### C - Economics of Healthcare

- analyze how economic conditions impact access to medicine in various areas of the world

### D - The Government and Healthcare

- explain how governments have responded to healthcare issues in a historical context

### E - Environment and Health

- describe how environmental factors contribute to specific individual and community health outcomes

**High School Social Studies****E - Environment and Health** *(continued)*

- discuss the environmental concerns that are created through research and development in the medical industry

**F - Families and Healthcare**

- describe the challenges relating to urbanization and changes in family and household structure and its impact on public health

**G - Societal Issues and Healthcare**

- analyze the issues related to access to medical care around the world and the impact on society
- analyze the impact of diversity on the health services industry

**H - Technology and Society**

- analyze the impact of technology on the medical field and on human health

**I - 21st Century Issues**

- analyze future trends and concerns in health sciences

## High School Social Studies

# Ethnic Studies

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### A - Map and Globe Skills

- use a map to explain the impact of geography on historical and current events
- draw conclusions and make generalizations based on information from maps
- compare maps of the same place at different points in time and from different perspectives to determine changes, identify trends, and generalize about human activities
- compare maps with data sets (e.g., charts, tables, graphs) and/or readings to draw conclusions and make generalizations

### B - Information Processing Skills

- write arguments, informative text, and explanatory text that draw conclusions and make generalizations
- analyze graphs and diagrams
- formulate appropriate research questions
- write arguments, informative text, and explanatory text that determine the adequacy and/or relevancy of information
- check for consistency of information
- identify and write about issues and/or problems and alternative solutions
- identify main idea, detail, sequence of events, and cause and effect in a social studies context
- identify and use primary and secondary sources

### C - Understanding Racial and Ethnic Identity

- analyze the dynamics of how race and ethnicity play a role in the construction of personal identity
- examine and apply methods to discuss and study race, racism, and ethnicity

### D - History and Ethnicity

- compare and contrast the impact of the factors influencing the arrival, relocation and/or coexistence of ethnic groups from one region within the United States to another
- analyze the factors that influenced each ethnic group's origins historically in different regions globally over time

### E - Historical and Contemporary Contributions

- analyze the major environmental, historical and political developments that have influenced and affected specific ethnic communities
- evaluate the various social and political movements led by ethnic groups to effect change

**High School Social Studies****E - Historical and Contemporary Contributions** *(continued)*

- analyze the role of government, law, the media, and public policy and their impact on various ethnic communities
- analyze the 21st century challenges occurring globally and within the U.S. for various ethnic groups through a social justice lens

**F - Cultural Influence and Contemporary Culture**

- analyze the intellectual, economic, and political contributions to history and society of individuals and organizations within different ethnic groups
- analyze the cultural contributions of various ethnic groups including, but not limited to, literature, music, art, fashion, and cuisine



## High School Social Studies

# Foundations of Leadership

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### A - Map and Globe Skills

- compare and contrast the categories of natural, cultural, and political features found on maps as it relates to the needs of leaders
- use map key/legend to acquire information from physical, political, resource, product, and economic maps
- draw conclusions and make generalizations based on information from maps
- compare maps with data sets (e.g., charts, tables, graphs) and/or readings to draw conclusions and make generalizations

### B - Information Processing Skills

- formulate appropriate research questions
- write arguments, informative text, and explanatory text that determine the adequacy and/or relevancy of information
- check for consistency of information
- interpret political cartoons
- compare similarities and differences
- identify and write about issues and/or problems and alternative solutions
- distinguish between fact and opinion as used in information/explanatory text
- identify and use primary or secondary sources
- identify social studies reference resources to use for a specific purpose
- construct charts and tables
- write arguments, informative text, and explanatory text that draw conclusions and make generalizations
- analyze graphs and diagrams

### C - Goal Setting

- analyze the core four basic skills for setting and meeting goals
- identify and demonstrate processes for making short and long term goals

### D - Civil Dialogue

- identify and exercise the principles of civil dialogue (with a focus on how they are used in positions of leadership)

## **High School Social Studies**

### **E - Fundamentals of Leading a Team**

- analyze skills and needs required when working in a group setting

### **F - History of Leadership**

- identify and discuss the historical importance of leaders and how they lead

### **G - Leadership Framework and Theory**

- demonstrate understanding of historical and contemporary leadership theories by comparing and contrasting the different leadership frameworks/theories OR explaining the evolution of leadership theories/frameworks

### **H - Styles of Leadership**

- analyze the styles of leadership, including your own

### **I - Ethics of Leadership**

- demonstrate an understanding of key ethical frameworks
- analyze the role of decision making within the ethics of leadership

### **J - Communication in Leadership**

- analyze the different communication styles and structures

### **K - Leadership and Followers**

- explore the dynamic of leading and following
- examine the roles of a group leader in managing and supporting the functions and members of the group

### **L - Civic-Minded Leadership**

- evaluate the relationship between leadership and civics

### **M - Etiquette in Leadership**

- demonstrate understanding the nuances of etiquette necessary in leadership

### **N - Application of Leadership Skills**

- analyze effectiveness of different leaders and/or organizations
- use research methods to identify and address a problem within the local community
- analyze and refine personal leadership mission statement

## High School Social Studies

# International Relations and Diplomacy

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### A - Map and Globe Skills

- draw conclusions and make generalizations based on information from maps
- compare maps with data sets (e.g., charts, tables, graphs) and/or readings to draw conclusions and make generalizations
- compare and contrast the categories of natural, cultural, and political features found on maps as it relates to international relations
- use map key/legend to acquire information from physical, political, resource, product, and economic maps

### B - Information Processing Skills

- compare similarities and differences
- identify and write about issues and/or problems and alternative solutions
- distinguish between fact and opinion as used in information/explanatory text
- identify and use primary or secondary sources
- identify social studies reference resources to use for a specific purpose
- construct charts and tables
- write arguments, informative text, and explanatory text that draw conclusions and make generalizations
- analyze graphs and diagrams
- formulate appropriate research questions
- write arguments, informative text, and explanatory text that determine the adequacy and/or relevancy of information
- check for consistency of information
- interpret political cartoons

### C - Foundations of International Relations and Diplomacy

- explain how governments interact with each other through international relations and diplomacy
- analyze the framework theories of diplomacy
- examine bias in international relations and diplomacy
- analyze the modern framework theories of diplomacy

**High School Social Studies****D - History of International Relations and Diplomacy**

- interpret the significance of various foundational documents and individuals in developing international relations
- describe the importance of the Vienna Conventions
- discuss the history of international relations and diplomacy

**E - Diplomatic Foundations**

- evaluate the different methods and practices of diplomacy
- compare and contrast the different spheres of diplomacy

**F - Contemporary Diplomatic Environment**

- explain the organization of Diplomatic Infrastructure
- analyze the organizations and actors in the diplomatic environment
- describe the legal underpinnings of international relations and diplomacy

**G - Negotiating in International Relations and Diplomacy**

- identify and analyze the principles and complexities of negotiating
- analyze the culture and behavior of negotiating

**H - The Future of Diplomacy**

- discuss potential strategies used in diplomacy in the future
- discuss the potential role of diplomacy in the future

**I - The Art of Negotiation**

- research and present in a simulation of international diplomacy

## High School Social Studies

# Law

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### A - Information Processing Skills

- write arguments, informative text, and explanatory text that determine adequacy and/or relevancy of information
- check for consistency of information
- identify social studies reference resources to use for a specific purpose
- write arguments, informative text, and explanatory text that draw conclusions and make generalizations
- interpret political cartoons
- analyze artifacts
- organize items chronologically
- identify and write about issues and/or problems and alternative solutions
- identify main idea, detail, sequence of events and cause and effect in a social studies context
- distinguish between fact and opinion as used in informational/explanatory text
- construct charts and tables
- compare similarities and differences
- interpret timelines
- analyze graphs and diagrams
- translate dates into centuries, eras, or ages
- formulate appropriate research questions
- identify and use primary and secondary sources

### B - Judicial System

- explain court systems in the United States

### C - Civil Law

- explain civil laws and processes

### D - Criminal Law

- describe criminal laws and processes

## High School Social Studies

# Medical Ethics and the Law

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### A - Information Processing Skills

- construct charts and tables
- organize items chronologically
- identify and write about issues and/or problems and alternative solutions
- compare similarities and differences
- write arguments, informative text, and explanatory text that determine the adequacy and/or relevancy of information
- identify main idea, detail, sequence of events and cause and effect in a social studies context
- formulate appropriate research questions
- analyze graphs and diagrams
- identify and use primary or secondary sources
- interpret timelines
- identify social studies reference resources to use for a specific purpose
- read and write arguments, informative text, and explanatory text that draw conclusions and make generalizations
- interpret political cartoons
- distinguish between fact and opinion as used in information/explanatory text
- check for consistency of information

### B - Legal Principles of Medical Care

- discuss the legal principles governing healthcare administration

### C - Ethics in Healthcare

- describe the ethical principles impacting healthcare administration

### D - Medical Leadership and the Law

- analyze the responsibilities of leaders on healthcare law and regulations

### E - The Role of Government in Medical Law

- recognize and interpret the governing laws, policies, and ethical considerations in which health care administrators work

**High School Social Studies****F - Implications of Modifying Healthcare**

- analyze health reform issues and articulate their implications

**G - Liability of Healthcare Organizations**

- evaluate the implications of liability issues in the healthcare field

## High School Social Studies

# Personal Financial Literacy

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### A - Information Processing Skills

- compare similarities and differences
- formulate appropriate research questions
- identify and use primary and secondary sources
- distinguish between fact and opinion as used in informational/explanatory text
- construct charts and tables
- write arguments, informative text, and explanatory text that draw conclusions and make generalizations
- analyze graphs and diagrams
- write arguments, informative text, and explanatory text that determine adequacy and/or relevancy of information
- check for consistency of information
- identify and write about issues and/or problems and alternative solutions
- interpret political cartoons
- identify social studies reference resources to use for a specific purpose

### B - Budget and Income

- describe how budgeting and actively reviewing finances can be used to allocate scarce income
- evaluate different methods for paying for goods and services
- evaluate various sources of income and analyze variables that affect a person's income

### C - Credit and Financial Institutions

- analyze the purpose and functions of various financial institutions
- describe the importance of credit and having a favorable credit score
- evaluate alternatives for life after high school including college, technical school, internships, working, military, doing nothing, taking a "gap year", traveling, or other options

### D - Consumers and Investments

- explain and evaluate various forms of consumer protection
- explain sources of and protection against identity theft
- explain how interest rates affect various consumer decisions



**High School Social Studies****D - Consumers and Investments** *(continued)*

- evaluate reasons for and various methods of investment
- describe how government taxing and spending decisions affect consumers
- describe how insurance and other risk-management strategies protect against financial loss

## High School Social Studies

# Philosophy

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### A - Information Processing Skills

- identify and write about issues and/or problems and alternative solutions
- write arguments, informative text, and explanatory text that determine adequacy and/or relevancy of information
- analyze graphs and diagrams
- translate dates into centuries, eras, or ages
- formulate appropriate research questions
- identify and use primary and secondary sources
- interpret political cartoons
- identify social studies reference resources to use for a specific purpose
- analyze artifacts
- organize items chronologically
- interpret timelines
- compare similarities and differences
- identify main idea, detail, sequence of events and cause and effect in a social studies context
- construct charts and tables
- distinguish between fact and opinion as used in informational/explanatory text
- write arguments, informative text, and explanatory text that draw conclusions and make generalizations
- check for consistency of information

### B - Historical Background

- differentiate mythological explanations versus teachings of the Pre-Socratic "Natural Philosopher"
- analyze philosophical advancements during the Golden Age of Athens: Discourse in the Agora
- describe a basic framework for the study of philosophical thought

### C - Cultural Relationships

- analyze major aspects of Eastern philosophy originating in China, India, and the Middle East
- discuss early Christianity's relation to Semitic culture and its influence on Indo-European thought

## **High School Social Studies**

### **D - Western Thought**

- compare and contrast the schools of modern thought and philosophy
- differentiate the opposing views of modern empiricists and modern rationalist thinkers
- analyze the philosophical contributions of important German thinkers
- analyze differing strands of Western Medieval philosophical thought
- profile the Renaissance Era philosopher-scientists

### **E - Modern Era**

- analyze the beliefs and contributions of leading post-modern and feminist philosophers

## High School Social Studies

# Psychology

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### A - Map and Globe Skills

- compare maps with data sets (e.g., charts, tables, graphs) and/or readings to draw conclusions and make generalizations
- compare maps of the same place at different points in time and from different perspectives to determine changes, identify trends, and generalize about human activities

### B - Information Processing Skills

- translate dates into centuries, eras, or ages
- formulate appropriate research questions
- analyze graphs and diagrams
- interpret timelines
- check for consistency of information
- compare similarities and differences
- identify and use primary and secondary sources
- organize items chronologically
- identify and write about issues and/or problems and alternative solutions
- interpret political cartoons
- identify main idea, detail, sequence of events, and cause and effect in a social studies context
- write arguments, informative text, and explanatory text that determine adequacy and/or relevancy of information
- identify social studies reference resources to use for a specific purpose
- write arguments, informative text, and explanatory text that draw conclusions and make generalizations
- construct charts and tables
- analyze artifacts
- distinguish between fact and opinion as used in informational/explanatory text

### C - Psychology as a Science

- explain the research methods and the types of statistics used in the field of psychology
- explain selected historical and contemporary perspectives and practices of psychologists

## **High School Social Studies**

### **D - Biological Basis of Behavior**

- compare different states of consciousness
- explain the development, structure, and function of biological systems and their role in behavior, cognition, and emotion

### **E - Sensation and Perception**

- explain the sensory processes and how people perceive their environment

### **F - Learning**

- identify the characteristics of and major approaches to learning

### **G - Motivation and Emotion**

- identify major theories and concepts related to motivation and emotion

### **H - Cognitive Processes**

- analyze key concepts associated with information processing and memory
- analyze concepts related to the measurement, and nature of intelligence
- discuss the components of stress

### **I - Lifespan and Development**

- describe behavioral, social, and cognitive changes, starting in the prenatal period and throughout the lifespan
- evaluate theories of personality and assessment tools

### **J - Abnormal Behavior**

- identify psychological disorders and treatment

### **K - Social Psychology**

- analyze the impact of the social environment on behaviors and attitudes

## High School Social Studies

# Sociology

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### A - Map and Globe Skills

- compare and contrast the categories of natural, cultural, and political features found on maps
- use map key/legend to acquire information from historical, physical, political, resource, product, and economic maps
- draw conclusions and make generalizations based on information from maps
- compare maps of the same place at different points in time and from different perspectives to determine changes, identify trends, and generalize about human activities
- compare maps with data sets (e.g., charts, tables, graphs) and/or readings to draw conclusions and make generalizations

### B - Information Processing Skills

- compare similarities and differences
- distinguish between fact and opinion as used in informational/explanatory text
- interpret political cartoons
- interpret timelines
- analyze graphs and diagrams
- translate dates into centuries, eras, or ages
- formulate appropriate research questions
- write arguments, informative text, and explanatory text that draw conclusions and make generalizations
- identify and write about issues and/or problems and alternative solutions
- check for consistency of information
- identify main idea, detail, sequence of events and cause and effect in a social studies context
- write arguments, informative text, and explanatory text that determine adequacy and/or relevancy of information
- identify social studies reference resources to use for a specific purpose
- construct charts and tables
- analyze artifacts
- organize items chronologically
- identify and use primary and secondary sources

**High School Social Studies****C - Sociology as a Science**

- explain the origins of sociology, the sociological perspective, and how sociology relates to the other social sciences
- explain the research methodologies used in sociology
- explain the major theoretical perspectives in sociology

**D - Culture and Socialization**

- explain the development and importance of culture
- explain the process of socialization
- evaluate how cultures evolve over time

**E - Social Issues**

- analyze social structure and interaction within society
- analyze forms of social inequality
- analyze the impact of social control on deviance in society

**F - Social Institutions**

- analyze the function of social institutions as agents of social control across differing societies and times

**G - Trends**

- analyze social change processes in a society

## High School Gifted

### Gifted Directed Study

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#### A - Independent Directed Study

- select and narrow topic and research questions
- use a variety of sources to gather information
- formulate appropriate research questions
- determine the adequacy and/or relevancy of information
- identify issues and/or problems
- draw conclusions and make generalizations
- apply critical-thinking skills
- document sources
- establish time management skills and effectively put them to use (e.g., schedules, organization, record keeping)
- present information through reports, demonstrations, and projects



## High School Gifted

# Gifted Internship

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### A - Preparation for Work

- prepare appropriate cover letter and résumé
- participate in mock interview practice
- identify interests, aptitudes, and abilities that will contribute to a career choice
- complete interview process, including completion of procedural requirements, preparation for interview, and appropriate follow up
- evaluate appropriateness of proposed internship experience

### B - Exploration of the Career Field

- verify hours earned on consistent basis
- describe work experience on consistent basis
- identify time management issues related to the career field
- develop personal list of learning goals for internship experience
- identify and use professional journals in the career field for career exploration

### C - Demonstration of Acceptable Work Habits

- display businesslike demeanor on the job
- dress appropriately to work situation
- exhibit skills and growth in initiative, human relations, and job knowledge
- communicate effectively
- accept and respond appropriately to criticism
- exhibit traits of honesty and truthfulness
- demonstrate characteristics of a team player
- adapt to the work environment
- cooperate with mentors, peers, clients, and/or customers
- demonstrate the ability to maintain confidentiality
- show positive attitude, enthusiasm, and energy
- attend and participate in required seminars

**High School Gifted****D - Response to Evaluation**

- appraise evaluations by supervisors
- use supporting evidence to respond appropriately to evaluations

## High School ESOL

# Academic Language of Mathematics

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### A - Number System

- use the academic language of mathematics to describe how to find common factors and multiples; compute fluently with multi-digit numbers and find common factors and multiples in real world scenarios, with scaffolding appropriate to the proficiency level

### B - Expressions

- use the academic language of mathematics in applying and extending previous understandings of arithmetic to algebraic expressions in real world scenarios with scaffolding appropriate to the proficiency level

### C - Exponents, Expressions, and Equations

- use the academic language of mathematics in evaluating and solving expressions and equations using integer exponents in real world scenarios with scaffolding appropriate to the proficiency level

### D - Equations

- use the academic language of mathematics in analyzing and solving linear equations and inequalities in real world scenarios with scaffolding appropriate to the proficiency level

### E - Introduction to Functions

- use the academic language of mathematics to describe, define, evaluate, and compare functions in real world scenarios with scaffolding appropriate to the proficiency level

### F - Linear Functions

- use the academic language of mathematics to describe the connections between proportional relationships, lines, and linear equations in real world scenarios with scaffolding appropriate to the proficiency level
- use the academic language of mathematics to describe, define, evaluate, and compare functions with scaffolding appropriate to the proficiency level

### G - Linear Models and Tables

- use the academic language of mathematics when investigating and describing patterns of association in bivariate data in real world scenarios with scaffolding appropriate to the proficiency level

### H - Quadratic Functions

- use the academic language of mathematics in graphing, interpreting, and factoring quadratic and exponential functions with scaffolding appropriate to the proficiency level

### I - Exponential Functions

- use the academic language of mathematics to interpret exponential functions with scaffolding appropriate to the proficiency level

## High School ESOL

# Academic Language of Science

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### A - Cells

- use the academic language of science to recognize, identify, understand, and communicate information about the structure and function of cells needed to support living organisms orally and in writing with visual support, modeling, and scaffolding appropriate to the proficiency level

### B - Photosynthesis and Cellular Respiration

- use the academic language of science to recognize, identify, understand, and ask questions to investigate the role of photosynthesis and cellular respiration in the energy exchange of organisms with visual support, modeling, and scaffolding appropriate to the proficiency level

### C - Biology

- use the academic language of science to recognize, identify, understand, and compare and contrast mitosis and meiosis (number of divisions, number of daughter cells produced, genetically different or identical, sexual or asexual, etc.) orally and in writing with visual support, modeling, and scaffolding appropriate to the proficiency level

### D - Central Dogma of Biology

- use the academic language of science to recognize, identify, understand, and communicate information about the Central Dogma of Biology orally and in writing with visual support, modeling, and scaffolding appropriate to the proficiency level

### E - Inheritance

- use the academic language of science to recognize, identify, understand, and communicate information orally and in writing to explain the probabilities of inheritance with visual support, modeling, and scaffolding appropriate to the proficiency level

## High School ESOL

# Academic Language of Social Studies

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### A - Geography and Map Skills

- comprehend and use the academic language of Social Studies to explore physical features on the earth, natural resources, migration of people, climate, and natural disasters with visual support, modeling, sentence frames, and other scaffolding appropriate to the proficiency level
- use the academic language of Social Studies to recognize, identify, describe, and explain how geography has influenced historical or current events using simple and some compound sentences with visual support, modeling, sentence frames, and other scaffolding appropriate to the proficiency level

### B - Government, Graphs, Charts, and Diagrams

- determine the meaning of words and phrases as they are used in a text, including vocabulary specific to types of governments, different levels of government, basic government concepts, types of economic systems, and basic economic concepts with visual support, modeling, sentence frames, and other scaffolding appropriate to the proficiency level

### C - History and Timelines

- comprehend and use the academic language of Social Studies, including world and U.S. history vocabulary specific to trade, political ideologies, culture, and religious beliefs with visual support, modeling, sentence frames, and other scaffolding appropriate to the proficiency level

### D - Political Symbols and Cartoons

- comprehend and use the academic language of Social Studies to interpret political cartoons (e.g. caricature, symbol, caption) with increasing accuracy and precision with visual support, modeling, and scaffolding appropriate to the proficiency level

### E - Reading in Social Studies

- recognize, identify, and describe the main idea, key details, sequence of events, and/or cause and effect with visual support, modeling, and scaffolding appropriate to the proficiency level

### F - Note-Taking

- use the academic language of Social Studies to take, organize, and maintain notes on topics studied with visual support, modeling, and scaffolding appropriate to the proficiency level

## High School ESOL

# ESOL I Language

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### A - Social and Instructional Language

- listen to, exchange, and understand simple spoken and written information in English on a variety of social and instructional topics and some academic topics that are culturally responsive to the backgrounds and contributions of students
- listen to, read, understand, and respond to a variety of written texts

### B - Reading Foundations

- understand phonics and use word-analysis skills in decoding words
- recognize letters and use the alphabet
- read with increasing accuracy and fluency to support comprehension

### C - Grammar and Conventions

- read, recognize, categorize, and use various parts of speech
- read, understand, and use English syntax properly to create simple sentences, and some compound/complex sentences

### D - Vocabulary

- understand and use vocabulary related to numbers, colors, shapes, size, weather, calendar, and time
- recognize, understand, and use vocabulary related to eating and drinking
- understand and use vocabulary related to self, family, home, rooms in the home, interests, pets, hobbies, and talents in spoken interaction and written texts
- understand and use vocabulary related to school, various school environments (e.g., library, lunchroom, bathroom), school schedule, daily routine, and school subjects in spoken interaction and written texts
- understand and use vocabulary related to places and buildings in the community (e.g., park, library, church, supermarket, shopping mall, police station, fire station) and important community members (e.g., crossing guard, firefighter, cashier, salesperson) in spoken interaction and written texts
- understand and use vocabulary related to directions (i.e., north, south, east, west), the seven continents, and animals native to each continent

### E - Writing

- write short literary and informational texts with support

### F - United States Culture and Values

- recognize key documents related to the history of the United States and begin to understand and use vocabulary related to the foundational principles of the United States of America

## High School ESOL

# ESOL I Literature

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### A - Reading Literary Text

- identify main ideas and some details when reading and listening to literary text
- ask and answer questions - such as who, what, where, when, why, and how - to demonstrate understanding of key details in a literary text
- identify and describe the overall structure of a story, including describing how the beginning introduces the story, the middle provides major events and challenges, and the ending concludes the action
- identify first- and third-person point of view
- use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, and/or plot
- recount literary text by completing cloze activities, via dictation or literary summaries, or by means of story charts
- recount and retell literary text with appropriate scaffolding
- identify key elements of poetry, specifically rhyme and stanzas
- compare and contrast texts in different forms or genres

### B - Reading Informational Text

- identify main ideas and some details when reading and listening to informational text
- ask and answer questions - such as who, what, where, when, why, and how - to demonstrate understanding of key details in an informational text
- identify and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text
- identify the main purpose of a text, including what the author wants to answer, explain, or describe
- compare and contrast the most important points presented by two texts on the same topic

### C - Writing

- use a variety of tools to produce and publish writing, including digital tools and collaboration with peers, with guidance and support from adults
- write persuasive phrases or sentences based on a familiar topic
- write simple sentences on familiar topics
- write a simple paragraph on a single topic
- use basic punctuation

## High School ESOL

### C - Writing *(continued)*

- compare and contrast two views on a single topic, using graphic organizers and other supports as needed
- complete simple forms pertaining to basic personal information (e.g., name, address, date of birth)

### D - Speaking and Listening

- engage in collaborative conversations with peers and adults on a given topic with appropriate scaffolding
- listen for and respond to simple questions such as who, what, where, when, why and how pertaining to a given topic
- listen for and recognize key vocabulary terms pertaining to given topic
- plan and deliver a variety of simple oral presentations
- consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the meaning or pronunciation of a word or determine its part of speech

### E - Reading Foundations

- understand phonics and word analysis skills in decoding words
- read with increasing accuracy and fluency to support comprehension



## High School ESOL

# ESOL II

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### A - Reading Literary Text

- cite textual evidence to support analysis of what the text says explicitly as well as work toward making inferences drawn from the text
- determine a theme and/or central idea of a text and how it is conveyed; provide a summary of the text
- describe how a particular story's or drama's plot unfolds in a series of episodes as well as how the characters respond or change as the plot moves toward a resolution
- identify first- and third-person point of view and provide details to support
- analyze how a particular sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the theme, setting, or plot
- determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings
- read and comprehend literature, including stories, dramas, and poems at the appropriate proficiency level, with teacher or peer guidance, collaboration, and/or scaffolding as needed
- compare and contrast elements of poetry from cultural, linguistic, and historical perspectives
- compare and contrast texts in different forms or genres (e.g., stories and poems, historical novels, fantasy stories, and traditional literature from different cultures) in terms of their approaches to similar themes and topics
- compare and contrast the experience of reading a story, drama, or poem to listening to or viewing an audio, video, or live version of the text

### B - Reading Informational Text

- determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments
- cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text
- analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas
- determine an author's point of view or purpose in a text
- integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue
- trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not
- read and comprehend literary nonfiction at the appropriate proficiency level

## High School ESOL

### C - Writing

- use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills
- write arguments to support claims with logical reasons and evidence
- write an informative/explanatory paragraph on a topic and convey ideas and information by selecting, analyzing, and organizing relevant content
- write narratives to develop real or imagined experiences or events, relevant descriptive details, and well-structured event sequences
- produce paragraphs with varying sentence types (e.g., simple, compound) with increasing cohesion in which the development, organization, and style are appropriate to task, purpose, and audience
- conduct short research projects to answer questions, drawing on several sources and refocusing the inquiries when appropriate
- develop and strengthen writing through collaboration, guidance, and support from peers and adults, by planning, revising, editing, rewriting, or trying a new approach
- gather relevant information from a limited number of print and digital sources appropriate to the students' proficiency level; assess the credibility of each source; quote and cite the data and conclusions of others appropriately
- draw evidence from literary or informational texts to support analysis, reflection, and research
- produce expository, persuasive, and/or narrative writing of varying lengths (sentences and paragraphs) for appropriate discipline-specific tasks, purposes, and audiences

### D - Speaking and Listening

- engage in a range of collaborative discussions (e.g., one-on-one, in groups, and teacher-led) with diverse partners on topics, texts, and issues, building on others' ideas and expressing their own
- plan and deliver oral presentations and reports on a variety of appropriate topics
- interpret information presented in diverse media and formats
- examine texts to determine the difference between fact and opinion
- present claims and findings, sequencing ideas logically, and using descriptions, facts, and details; use appropriate eye contact, adequate volume, and clear and correct pronunciation
- utilize formal and informal language as appropriate for audience and context
- include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to convey information

### E - Grammar and Conventions

- demonstrate command of the conventions of standard English grammar and usage when writing or speaking

**High School ESOL****E - Grammar and Conventions** *(continued)*

- demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing
- use knowledge of language and its conventions when writing, speaking, reading, or listening

**F - Vocabulary**

- determine or clarify the meaning of unknown and multiple-meaning words and phrases, reading and content, as appropriate to the students' proficiency level
- demonstrate understanding of figurative language
- acquire and use general academic and domain-specific words and phrases appropriate for proficiency level with increasing precision

## High School ESOL

### ESOL III

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#### A - Reading Literary Text

- cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text
- determine a theme and/or central idea of a text and analyze its development over the course of the text
- provide an objective summary of a variety of literary texts
- analyze how particular elements of a story or drama interact (e.g., how setting shapes the characters or plot)
- determine the meaning of words and phrases as they are used in a text
- read and comprehend literature, including stories, dramas, and poems at the appropriate proficiency level with teacher or peer guidance, collaboration, and/or scaffolding as needed
- analyze the elements of poetry (including tone, metaphor, simile, form, alliteration, rhyme, imagery, symbolism, and theme) from a variety of cultures, languages, and historic periods
- analyze texts in different forms or genres (e.g., stories and poems, historical novels, fantasy stories, and traditional literature from different cultures), comparing and contrasting themes and topics
- compare and contrast the experience of reading a story, drama, or poem to listening to or viewing an audio, video, or live version of the text

#### B - Reading Informational Text

- determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text
- cite several pieces of textual evidence to support the thesis and main ideas
- analyze how an author organizes a text, including how the major sections contribute to the whole and to the development of the ideas
- determine an author's point of view or purpose in a text and analyze how the author acknowledges and responds to conflicting evidence or viewpoints
- compare and contrast a text to an audio, video, or multimedia version of the text, analyzing how and why each medium's portrayal of the subject differs (e.g., how the delivery of a speech affects the impact of the words)
- trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims and recognize when irrelevant evidence is introduced
- read and comprehend nonfiction texts at the appropriate proficiency level, with scaffolding as needed

## High School ESOL

### **B - Reading Informational Text** *(continued)*

- demonstrate comprehension of current and historical events gained from a variety of written sources
- analyze how a text connects with other subject areas
- identify any inferences that can be drawn from the text to support thesis and main idea
- determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone

### **C - Writing**

- apply analysis of the organizational structure of different text types (e.g., how arguments are organized by establishing clear relationships among claims, counterclaims, reasons, and evidence)
- write arguments to support claims with clear reasons and relevant evidence
- produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience
- summarize opposing positions with evidence and evaluate and challenge evidence presented; summarize content-related material
- conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation
- collaborate with peers to engage in increasingly complex, grade-appropriate written exchanges and writing projects, using technology as appropriate
- utilize informal language from academic conversations to draft formal written texts
- develop and strengthen writing as needed by participating in the writing process of planning, revising, editing, rewriting, or trying a new approach, with input from peers and adults
- write routinely over extended time frames (e.g., time for research, reflection, and revision) and shorter time frames (e.g., a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences

### **D - Speaking and Listening**

- engage regularly, effectively, and extensively in a range of collaborative discussions (e.g., one-on-one, in groups, and teacher-led) with diverse partners on topics, texts, and issues, building on others' ideas and expressing their own clearly
- contribute to class, group, and partner discussions, sustaining conversations on a variety of age- and grade-appropriate, academic topics by following turn-taking rules, asking and answering relevant, on-topic questions, affirming others, providing additional, relevant information, and paraphrasing key ideas
- exchange oral and written information and ideas on topics related to contemporary events, history, and literature; demonstrate comprehension of these topics when presented through a variety of media

## High School ESOL

### D - Speaking and Listening *(continued)*

- delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and the relevance and sufficiency of the evidence
- present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation
- adjust language choices according to the context (e.g., classroom, community), purpose (e.g., to persuade, to provide arguments or counterarguments), task, and audience (e.g., peers, teachers, guest lecturer)
- plan and deliver a variety of oral presentations and reports on grade-appropriate topics that present evidence and facts to support ideas by using growing understanding of formal versus informal register
- include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points
- evaluate the advantages and disadvantages of using different media (e.g., print or digital text, video, multimedia) to present a particular topic or idea

### E - Grammar and Conventions

- demonstrate command of the conventions of standard English grammar and usage when writing or speaking
- consult reference materials, both print and digital, to clarify the meaning or pronunciation of a word or determine the part of speech
- choose words and phrases to provide precise details, descriptions, comparisons, and ordered procedures
- demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing

### F - Vocabulary

- use knowledge of morphology (e.g., affixes, Greek and Latin roots), context, reference materials to determine and learn the meaning of new words
- acquire and accurately use general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression
- determine or clarify the meaning of unknown and multiple-meaning words and phrases based on reading and context clues
- demonstrate understanding of subtleties of meaning in a variety of level appropriate works, including idiomatic expressions and figurative language

## High School ESOL

# Language Development in the Content Areas 1

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### A - Reading Foundations

- understand phonics and word analysis skills in decoding words
- read with increasing accuracy and fluency to support comprehension

### B - Reading Across the Content Areas

- develop and strengthen basic reading skills, reading a variety of text types, fiction and non-fiction, on culturally responsive themes related to social, instructional language and the language of the content areas, with appropriate scaffolding
- compare and contrast content area texts that address related topics or themes

### C - Writing

- develop and strengthen foundational writing skills, progressing from words and phrases to sentences and simple paragraphs, on culturally responsive topics, with scaffolding appropriate for the proficiency level, with increasing fluency and accuracy

### D - Grammar and Conventions

- develop and strengthen use of standard English grammar and usage when writing and speaking, with scaffolding appropriate for the proficiency level
- revise draft texts by adding adjectives to nouns to create more detailed phrases and sentences on a variety of topics
- develop and strengthen use of conventions of standard English capitalization, punctuation, and spelling

### E - Vocabulary

- acquire and use general social, instructional, and academic words and phrases on culturally responsive topics and themes such as self, hobbies, school, home, family, school, free time activities, and neighborhood and community, in speaking and writing

### F - Speaking and Listening

- engage in collaborative conversations with peers and adults on relevant, culturally responsive topics, with scaffolding appropriate for the proficiency level

## High School ESOL

# Language Development in the Content Areas 2

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### A - Reading Across the Content Areas

- read and comprehend a variety of content area texts on relevant, culturally responsive topics or themes, including fiction and nonfiction, at the appropriate level of proficiency or with scaffolding appropriate to the proficiency level
- cite textual evidence to support analysis of what the text says as well as work toward making inferences drawn from the text, with scaffolding appropriate to the proficiency level
- determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings, with scaffolding appropriate to the proficiency level
- compare and contrast the experience of reading a variety of content area texts on relevant topics and themes to listening to or viewing an audio, video, or live version of the text, with scaffolding appropriate to the proficiency level
- compare and contrast texts on relevant topics and themes in different forms or genres, with scaffolding appropriate to the proficiency level
- determine the meaning of words and phrases as they are used in a text at the appropriate level of proficiency or with scaffolding appropriate to the proficiency level
- explain and evaluate the argument and specific claims in a text, and begin to recognize when irrelevant evidence is introduced, with scaffolding appropriate to the proficiency level

### B - Writing

- produce writing on relevant, culturally responsive topics and themes, in which the development, organization, and style are appropriate to task, purpose, and audience, with increasing clarity and coherence, with appropriate scaffolding
- collaborate with peers to engage in increasingly complex, grade-appropriate written exchanges, with scaffolding appropriate to the proficiency level, using technology as appropriate
- conduct short research projects on culturally responsive topics to answer a question, drawing on sources and generating additional related, focused questions for further research and investigation, with scaffolding appropriate to the proficiency level
- write summaries of texts and experiences by using complete sentences and keywords (e.g., from notes or graphic organizers), with scaffolding appropriate to the proficiency level
- synthesize vocabulary, phrases, and patterns in extended written discourse, with scaffolding appropriate to the proficiency level
- leverage oral language from academic conversations to draft formal written texts on academic topics, with scaffolding appropriate to the proficiency level
- develop and strengthen writing as needed by participating in the writing process of planning, revising, editing, rewriting, with input from peers and adults, with scaffolding appropriate to the proficiency level



## High School ESOL

### **B - Writing** *(continued)*

- write routinely over extended time frames (i.e., time for research, reflection, revision) and shorter time frames (i.e., a single sitting, a day or two) for a range of tasks, purposes, and audiences, with scaffolding appropriate to the proficiency level

### **C - Grammar and Conventions**

- demonstrate command of the conventions of standard English grammar and usage when writing or speaking, with scaffolding appropriate to the proficiency level

### **D - Vocabulary**

- use knowledge of morphology (e.g., affixes, Greek and Latin roots), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar and new topics
- determine or clarify the meaning of unknown and multiple-meaning words and phrases based on reading and context clues, with scaffolding appropriate to the proficiency level
- use dictionaries and other reference resources, print and digital, to determine the meaning and pronunciation and part of speech of unfamiliar words
- acquire and begin to accurately use general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression

### **E - Speaking and Listening**

- engage regularly in collaborative discussions (e.g., one-on-one, in groups, and teacher-led) with diverse partners on culturally relevant topics, building on others' ideas and expressing their own clearly, with scaffolding appropriate to the proficiency level
- justify opinions and positions or persuade others by making connections between ideas, with scaffolding appropriate to the proficiency level
- exchange oral and written information and ideas on a variety of topics, such as contemporary events, history, and literature; demonstrate comprehension when presented through a variety of media, with scaffolding appropriate to the proficiency level
- present claims and findings, descriptions, facts, details, and examples; beginning to use appropriate eye contact, adequate volume, and clear pronunciation, with scaffolding appropriate to the proficiency level

## High School ESOL

# Language Development in the Content Areas 3

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### A - Reading Across the Content Areas

- read and comprehend a variety of content area texts on relevant, culturally responsive topics and themes at the appropriate level of proficiency or with scaffolding appropriate to the level of proficiency
- cite textual evidence to support analysis of what the text says explicitly as well as work toward making inferences drawn from the text, with scaffolding appropriate to the level of proficiency
- determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings, with scaffolding appropriate to the level of proficiency
- compare and contrast the experience of reading a variety of content area texts on relevant themes to listening to or viewing an audio, video, or live version of the text, with scaffolding appropriate to the level of proficiency
- compare and contrast texts on related topics or themes, including fiction and nonfiction, in different forms or genres
- determine the meaning of words and phrases as they are used in a text, with scaffolding appropriate to the level of proficiency
- explain and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and recognizing when irrelevant evidence is introduced, with scaffolding appropriate to the level of proficiency

### B - Writing

- produce clear and coherent writing on relevant, culturally responsive topics and themes, in which the development, organization, and style are appropriate to task, purpose, and audience, with scaffolding appropriate to the level of proficiency
- collaborate with peers to engage in increasingly complex, grade-appropriate written exchanges, with scaffolding appropriate to the level of proficiency, using technology as appropriate
- conduct research projects of increasing length to answer a question, drawing on sources and generating additional related, focused questions for further research and investigation, with scaffolding appropriate to the level of proficiency
- write summaries of texts and experiences by using complete sentences and keywords (e.g., from notes or graphic organizers), with scaffolding appropriate to the level of proficiency
- synthesize vocabulary, phrases, and patterns in extended written discourse, with scaffolding appropriate to the level of proficiency
- utilize oral language from academic conversations to draft formal written texts on academic topics and themes, with scaffolding appropriate to the level of proficiency
- develop and strengthen writing as needed by participating in the writing process of planning, revising, editing, rewriting, with input from peers and adults, with scaffolding appropriate to the level of proficiency

## High School ESOL

### **B - Writing** *(continued)*

- write routinely over extended time frames (i.e., time for research, reflection, and revision) and shorter time frames (i.e., a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences, with appropriate scaffolding

### **C - Grammar and Conventions**

- demonstrate command of the conventions of standard English grammar and usage when writing or speaking, with scaffolding appropriate to the level of proficiency

### **D - Vocabulary**

- use knowledge of morphology (e.g., affixes, Greek and Latin roots), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar and new topics
- determine or clarify the meaning of unknown and multiple-meaning words and phrases based on reading and context clues
- use dictionaries and other reference resources, print and digital, to determine the meaning and pronunciation and part of speech of unfamiliar words
- acquire and accurately use general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression

### **E - Speaking and Listening**

- engage effectively in a range of collaborative discussions (e.g., one-on-one, in groups, and teacher-led) with diverse partners on culturally responsive topics, building on others' ideas and expressing their own clearly, with appropriate scaffolding
- justify opinions and positions or persuade others by making connections between ideas and articulating relevant textual evidence or background knowledge, with scaffolding appropriate to the level of proficiency
- exchange oral and written information and ideas on topics related to contemporary events, history, and literature; demonstrate comprehension when presented through a variety of media, with scaffolding appropriate to the level of proficiency
- present claims and findings, descriptions, facts, details, and examples; beginning to use appropriate eye contact, adequate volume, and clear pronunciation, with scaffolding appropriate to the level of proficiency

## High School ESOL

# Language Development in the Content Areas 4

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### A - Reading Across the Content Area

- read and comprehend a variety of content area texts on relevant, culturally responsive topics or themes, including fiction and non-fiction, at the appropriate level of proficiency
- cite textual evidence to support analysis of the text; make inferences from the text, with scaffolding appropriate to the proficiency level
- determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings with scaffolding appropriate to the proficiency level
- compare and contrast the experience of reading a variety of content area texts to listening or to viewing the text with scaffolding appropriate to the proficiency level
- compare and contrast texts on relevant topics and themes in different forms or genres with scaffolding appropriate to the proficiency level
- determine the meaning of words and phrases as they are used in a text at the appropriate level of proficiency or with scaffolding appropriate to the proficiency level
- explain and evaluate the argument and the specific claims in a text, and begin to recognize when irrelevant evidence is introduced, with scaffolding appropriate to the proficiency level

### B - Writing

- write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content with scaffolding appropriate to the proficiency level
- collaborate with peers to engage in increasingly complex, grade-appropriate written exchanges, appropriate to the level of proficiency, using technology as appropriate
- conduct short, as well as more sustained, research projects to answer questions (including self-generated questions) or solve problems; narrow or broaden inquiries when appropriate; synthesize multiple sources on the subjects, demonstrating understanding of the subject under investigation with scaffolding appropriate to the proficiency level
- gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citations with scaffolding appropriate to the proficiency level
- write summaries of texts and experiences by using complete sentences and keywords (e.g., from notes or graphic organizers), appropriate to the level of proficiency
- synthesize vocabulary, phrases, and patterns in extended written discourse, appropriate to the level of proficiency
- utilize oral language from academic conversations to draft formal written texts on academic topics and themes, appropriate to the level of proficiency

## High School ESOL

### B - Writing *(continued)*

- develop and strengthen writing as needed, with some guidance and support from peers and adults, by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed
- write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences

### C - Grammar and Conventions

- demonstrate command of the conventions of standard English grammar and usage when writing or speaking, with scaffolding appropriate to the proficiency level

### D - Vocabulary

- use knowledge of morphology (e.g., affixes, Greek and Latin roots), context, and visual cues to determine the meaning of unknown and multiple-meaning words
- use dictionaries and other reference resources, print and digital, to determine the meaning, pronunciation, and part of speech of unfamiliar words
- acquire and accurately use general and domain specific words and phrase, apply vocabulary knowledge when considering a word or phrase important to comprehension or expression

### E - Speaking and Listening

- initiate and participate effectively in a range of collaborative discussions (e.g., one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively with scaffolding appropriate to the proficiency level
- evaluate and/or reflect on a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence with scaffolding appropriate to the proficiency level
- delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and the relevance and sufficiency of the evidence
- present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation with scaffolding appropriate to the proficiency level
- exchange oral and written information and ideas on topics related to contemporary events, science, history, and literature; demonstrate comprehension when presented through a variety of media, appropriate to the level of proficiency
- make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest

## High School Career and Technical Education

### 3-D Modeling

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#### **A - Employability**

- demonstrate employability skills required by business and industry

#### **B - Disciplines of Engineering Graphics Professions**

- identify the disciplines related to engineering graphics and engineering professions

#### **C - Math for Business and Industry**

- analyze applied math required by business and industry for engineering graphics

#### **D - Fasteners**

- demonstrate an understanding for fasteners and the correct application in engineering graphics and product design

#### **E - Artifact Drawing**

- produce a working drawing artifact that conveys all of the information needed to manufacture and assemble a design

#### **F - Assembly Drawings**

- evaluate and develop assembly drawings

#### **G - Model Construction**

- construct a 3-D assembly model showing criteria, constraints, design, and quality of a final product by creating a presentation or capstone final project

#### **H - Career Relationships**

- students explore how related career and technology student organizations are integral parts of career and technology education courses students will develop leadership, interpersonal, and problem-solving skills through participation in co-curricular activities associated with the technology student association

## High School Career and Technical Education

# AC Theory, Electric Motors, and Hydraulic Systems

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### **A - Employability Skills**

- demonstrate employability skills required by business and industry

### **B - Implementing Industrial Safety Procedures**

- implement industrial, and laboratory safety, procedures and practices

### **C - Understanding AC Wave Generation**

- demonstrate an understanding of AC Wave Generation

### **D - Basic operation of AC Test Equipment**

- explain and demonstrate the basic operation of AC Test equipment

### **E - Applications of Inductance and Capacitance**

- understand the applications of inductance and capacitance

### **F - Basic Transformer Application**

- explain and understand the Basic Transformer Application

### **G - Operating Principles of Motors**

- examine motor theory and operating principles of motors

### **H - Principles of Motor Controls**

- investigate the principles of motor controls

### **I - Control Devices Used in Automation**

- explain how control devices are used in automation

### **J - Symbols of Schematic Diagrams**

- use symbols appropriately when working with schematic diagrams

### **K - Wiring Magnetic Starters and Braking**

- show proper wiring for magnetic starters and braking

### **L - Preventative Maintenance**

- demonstrate preventative maintenance and troubleshooting for motors

### **M - Hydraulic System Principles**

- explain hydraulic system principles

### **N - Operation of Hydraulic System**

- demonstrate proper operation of hydraulic system components

## High School Career and Technical Education

### Advanced AC and DC Circuits

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#### **A - Employability Skills**

- demonstrate employability skills required by business and industry

#### **B - Engineering Fields**

- analyze fields of engineering and electronic specializations (e.g., aeronautical, automotive, chemical, civil, industrial, and mechanical, computer software, electrical, and biomedical) and identify associated career tracks

#### **C - Safety in STEM**

- describe and follow safety, health, and environmental standards related to Science, Technology, Engineering, and Mathematics (STEM) workplaces

#### **D - History of Circuits**

- investigate the history and development of analog circuits

#### **E - Amplifiers**

- research and present operational characteristics and applications of amplifiers

#### **F - Oscillator Characteristics**

- research and define oscillator characteristics and applications

#### **G - Communication Circuits Characteristics**

- research and define operating characteristics and applications of communication circuits

#### **H - Integrated Circuits Characteristics**

- research and present characteristics and construction of integrated circuits

#### **I - Electronic Operational Characteristics**

- research and present operational characteristics of electronic control devices and circuits

#### **J - Culminating Digital Project**

- create a digital project that displays mastery of the standards involved with electronics



## High School Career and Technical Education

### Advanced Animation Game and APP Design

---

#### A - Employability Skills

- demonstrate employability skills required by business and industry

#### B - Safety

- demonstrate following safety procedures when working with computer and television equipment

#### C - History

- demonstrate an understanding of the history of animation and the evolution of 2-D to 3-D animation

#### D - Terminology

- demonstrate applying trade terminology in an appropriate manner

#### E - Communication

- demonstrate the use of effective professional communication skills (e.g., oral, written, and digital) and practices that enable positive customer relationships

#### F - Design

- demonstrate using formal qualities of art (elements and principles) to create unified composition and communicate meaning

#### G - Computations

- demonstrate using computational thinking procedures to analyze and solve problems

#### H - Production

- demonstrate construction of 2-D modeling
- demonstrate applying media, techniques, and processes in color painting
- demonstrate the ability to specify color materials properly
- demonstrate applying media, techniques, and processes in three-dimensional art
- develop an independent production setting the direction of specialization for news, film, and graphics by effectively using tools for media production, development, and project management

#### I - Software

- distinguish the basic functions of media design software, such as key frame animation, two-dimensional design, and three-dimensional design

#### J - Composition

- demonstrate applying the principles of Character Rigging, Cut-Out Animation, Inverse Kinematics, and Paths and Motion

## **High School Career and Technical Education**

### **K - Animation**

- create a basic character head and lip syncing animation that focuses on two dimensional sketches, preparation, and design of a digitally-created project and includes a short clip with audio

### **L - Imaging**

- create a video to illustrate finding, recording, editing, and producing a portion of an animatic/animation into a digital production and demonstrate rendering/exporting media into a standalone file format (.mov/.m4v/.wmv/.avi) position
- create mechanical, optical and computer generated illusions for movies, television shows and computer games using software graphics programs that apply concepts in Digital Media

### **M - Portfolio Development**

- create a portfolio or e-portfolio, using a website that demonstrate skills, experience, and showcases work that would help obtain a job

### **N - Collaboration**

- apply concepts of collaborating effectively in group media production

### **O - Legal Issues**

- identify logistical, ethical, and legal issues related to digital media and apply concepts to use of text, graphics, animation, sound, video, and digital images in digital products

### **P - Student Organizations**

- examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Advanced Cybersecurity

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Legal Issues

- explore concepts of cybersecurity related to legal and ethical decisions

### C - Malware

- investigate concepts of malware threats

### D - Threats and Attacks

- demonstrate how to analyze and react to various threats and vulnerabilities

### E - Cryptology

- apply advanced principles of cryptology

### F - Wireless

- apply advanced communications and wireless security techniques

### G - Security

- implement organizational security techniques

### H - Response and Recovery

- implement contingency planning (incident response and disaster recovery) techniques

### I - Testing

- perform security analysis, as well as testing and evaluation

### J - Risk Management

- implement risk management techniques for personal computer and network systems
- demonstrate how to work with advanced methods of cybersecurity

### K - Student Organizations

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# Advanced Fashion, Merchandising, and Retailing

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Evolution of Fashion

- review the evolution and movement of fashion

### C - Marketing Centers

- differentiate various market centers and relate their importance to merchandising decisions

### D - Impact of Laws on Marketing

- identify major laws that regulate and/or impact the fashion/retail industry

### E - Fashion industry Economics

- analyze economics in the fashion industry

### F - Merchandising Plans

- determine factors to consider when developing a merchandise plan and budget for a business

### G - Business Decision Making

- understand the concepts, systems, and tools needed to gather, access, synthesize, evaluate, and disseminate information for use in making business decisions

### H - Inventory Management

- implement an inventory management plan and compute product pricing utilizing cost control methods

### I - Product Selection

- describe the product selection process for fashion/retailing buying

### J - Business Communication

- understand the concepts and actions needed to determine client needs and wants and respond through planned, personalized communication that influences purchase decisions and enhances future business opportunities

### K - Effects of Promotion

- evaluate and explain the effects of promotion in the fashion/retail industry by developing visual merchandising presentations and promotional plans

### L - Distribution Systems

- analyze the importance of utilizing an efficient distribution system

### M - Careers in the Fashion Industry

- explore career interest within the fashion industry

## High School Career and Technical Education

# Advanced Graphic Design

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Proper Use of Equipment

- demonstrate proper equipment operation and following procedures in a safe manner, and achieve 100% on a written or demonstration safety test

### C - Portfolio

- demonstrate the development of a professional portfolio and self-branding

### D - Business Ethics and Guidelines

- research professional business ethics guidelines and copyright laws utilized throughout the graphic design industry

### E - Careers in Graphic Design

- determine requirements for selected career(s)

### F - Project Development

- explore the process of print and electronic projects

### G - Project Production

- explore the process of project production

### H - Vector Illustrations

- explore vector illustration techniques per assignments

### I - Digital Imaging

- explore raster digital imaging and multimedia

### J - SkillsUSA

- examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Advanced Graphic Output Processes

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Proper Equipment Procedures

- demonstrate proper equipment operation and follow procedures in a safe manner, and achieve 100 % on a written or demonstration safety test

### C - Entrepreneurship

- investigate entrepreneurship as it relates to economic development

### D - Portfolio

- develop a portfolio for a graphics-related career plan

### E - Job Production Processes

- implement optimal job production processes

### F - Project Cost Analysis

- accurately analyze project costs

### G - Customer Service

- practice customer service skills, as well as, follow ethical guidelines and copyright laws

### H - File Preparation

- plan, create, and prepare files for print and electronic production

### I - Output Device Control

- identify and describe the major components and operating controls of output devices

### J - Ink Types

- identify the various types of inks and/or toners used in the graphics and printing industry

### K - Paper Substrate Applications

- explain the various applications and characteristics of paper substrates

### L - Knowledge of Ink Toners

- demonstrate knowledge of inks, toners, and substrates for commercial output

### M - Output Processes

- demonstrate the ability to use an output process to create a quality product

## **High School Career and Technical Education**

### **N - Safe and Proper Cutting Techniques**

- identify, demonstrate, and practice safe and proper paper cutting techniques on various class projects

### **O - Multi-page Publications**

- plan and impose the binding and finishing workflow of a multiple-page publication

### **P - Binding and Finishing Processes**

- identify and describe binding and finishing processes

### **Q - Multi-page Publication Workflow**

- plan and impose the finishing and binding workflow of a multiple-page publication

### **R - Binding Processes**

- identify and describe binding processes as well as demonstrate the ability to bind a printed product

### **S - Finishing Processes**

- identify and describe finishing processes as well as demonstrate the ability to add finishes to a printed product

### **T - Effective Project Preparation**

- exercise effective project preparation following proper customer service and quality control principles

### **U - SkillsUSA**

- examine how related student organizations are integral parts of career and technology education courses, through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Advanced Recording and Post-Production Techniques

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### A - Advanced Recording Techniques

- demonstrate and explain various microphone pre-amps to illustrate different sonic characteristics to capture while recording
- utilize recording techniques including musical equalization, compression, and limiting during the recording session
- demonstrate effective usage of various special effects processors in the mixing process
- demonstrate various microphone types and setups for different musical styles

### B - Digital Audio Workstation

- briefly explain the history of digital audio workstations
- describe different forms of digital audio workstations
- define relevant digital audio workstation terms
- apply basic operation inputting and outputting audio with a digital audio workstation
- apply basic editing features such as cut, copy, and paste
- apply advanced editing features such as phase reversal, time and pitch shifting, looping, cross-fading, digital delay, normalization, and waveform drawing
- apply various mixing tools such as aux sends/returns, reverberation, limiting, equalization, and fading within the digital audio workstation
- create a music recording utilizing a digital audio workstation

### C - Synchronization for Post Production

- explain time code and its various types (e.g., 25fps, 29fps, 30fps, non-drop frame, drop frame, and MIDI)
- apply SMPTE Time code to an audio track
- apply synchronization for an audio track to a video track
- synchronize midi tracks and multi-channel digital audio to a video via TC
- embed mixed audio into a video track
- apply remote control via RS422, RS232
- use time sync in the post production process

### D - Core Skills

- identify problems, analyze alternative solutions, and develop a plan of action



## High School Career and Technical Education

### D - Core Skills *(continued)*

- use effective learning techniques to acquire and apply new knowledge and skills
- set goals and monitor progress toward meeting goals
- participate and interact as a team member and leader
- work to satisfy customer/client expectations
- acquire, store, allocate, and use materials and space efficiently
- apply mathematical concepts and calculations and solve problems using appropriate mathematical techniques
- use and create text and multimedia documents in a variety of formats and be able to troubleshoot problems with technical or electronic equipment
- identify the scope of a business, its organization, and activities, and the interrelationship of its parts
- discuss factors that impact career decisions and formulate appropriate plans to reach career goals
- maintain safety, health, and environmental standards, and address ergonomic concerns
- communicate in a clear, concise, and courteous manner

### E - Literacy Standards

- cite specific textual evidence to support analysis of technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account
- determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms
- follow precisely a complex multistep procedure when performing technical tasks; analyze the specific results based on explanations in the text
- determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific technical context relevant to grade level texts and topics
- analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas
- analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved
- integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem
- evaluate the hypotheses, data, analysis, and conclusions in technical texts, verifying the data when possible and corroborating or challenging conclusions with other sources of information
- synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible

## High School Career and Technical Education

### E - Literacy Standards *(continued)*

- read and comprehend technical texts in the text complexity band independently and proficiently
- write arguments focused on discipline-specific content
- write informative/explanatory texts, including the narration of historical events or technical processes
- produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience
- develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience
- use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information
- conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation
- gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation
- draw evidence from informational texts to support analysis, reflection, and research
- write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences

## High School Career and Technical Education

# Advanced Sports and Entertainment Marketing

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Significance of Marketing

- evaluate the significance and components of sports and entertainment marketing as a viable industry service

### C - Importance of Planning

- analyze the importance of planning, organizing, implementing, and controlling sports and entertainment events

### D - Strategic Management Plans

- construct a strategic management plan

### E - Operations Management

- examine operations management and control as they apply to sports and entertainment marketing

### F - Staffing and Organizational Plans

- describe the importance of organizing and staffing for sports and entertainment events

### G - Decision Making Process

- dissect the decision making process and analyze several forms of decision making

### H - Legal and Ethical Behaviors

- interpret legal and ethical behaviors as they relate to the sports and entertainment marketing field

### I - Management Functions

- evaluate the management functions necessary for college, amateur, and professional sports

### J - Sales Promotion

- examine the role of sales promotion and advertising as promotional tools in sports and entertainment marketing

### K - Public Relations

- examine the role of public relations and publicity as a promotional tool in sports and entertainment marketing

### L - Collection of Data

- implement strategies needed to collect, organize process, transmit and communicate research information

**High School Career and Technical Education****M - Elements of Risk in Marketing**

- examine the elements of risk associated with the industry of sports and entertainment marketing

## High School Career and Technical Education

# Allied Health and Medicine

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Respiratory Care

- research advanced technical skills in respiratory care Respiratory Services (500 minutes)

### C - Imaging Services

- analyze advanced technical skills within the imaging services field Imaging Services (450 minutes)

### D - Surgical Services

- research advanced technical skills in the surgical services field to include nutrition and fluid intake, elimination, and ostomy and wound care Surgical services (1,350 minutes)

### E - Rehabilitation Services

- perform advanced technical skills within rehabilitation services Rehabilitation Services (900 minutes)

### F - Pharmacy Services

- perform advanced technical skills within pharmaceuticals Pharmacy Services (500 minutes)

### G - Dietary Services

- perform advanced technical skills within dietary services Dietary Services (450 minutes)

### H - Alternative Medicine

- research the field of Complementary and Alternative Medicine (CAM) to include, but not limited to, such practices as chiropractic care, acupuncture, reflexology, massage therapy, homeopathic medicine, aromatherapy, and stress reduction techniques Complementary and Alternative Medicine (450 minutes)

### I - Mental Health Services

- perform advanced technical skills within mental health services Mental Health Services (450 minutes)

### J - Epidemiology

- research public health services and epidemiology, utilizing [www.cdc.gov](http://www.cdc.gov) as the primary source Public Health and Epidemiology

### K - Medical Office Services

- perform advanced technical skills within medical office services Medical Office Assistant (2,250 minutes)

### L - Advanced Medical Services

- perform advanced technical skills within medical laboratory services using simulated equipment based on school, county, and facility protocol Medical Laboratory Services (900 minutes)

**High School Career and Technical Education****M - Cardiology Services**

- perform advanced technical skills within cardiology services Cardiology Services (450 minutes)

**N - Emergency Services**

- perform advanced technical skills within emergency services Emergency Services (2,250 minutes)

**O - Dentistry Services**

- perform advanced technical skills within dentistry services Dentistry (900 minutes)

## High School Career and Technical Education

# Animal Science Technology and Biotechnology

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Agriculture Lab Work

- demonstrate safety practices through participation in FFA and in the classroom

### C - Agricultural Animal Research and Production

- apply scientific methods in agricultural research and production

### D - Economics of Large Animal Industry

- describe the various phases, segments, trends, consumption, and economic scope of the large animal industry

### E - Economics of the Poultry Industry

- describe the various phases, segments, trends, consumption, and economic scope of the poultry industry

### F - Economics of the Dairy Industry

- describe the various phases, segments, trends, consumption and economic scope of the dairy industry

### G - Aquaculture Industry and Scientific Principles

- evaluate trends in the aquaculture industry and the scientific principles involved in the production of aquatic animals

### H - Economics of Alternative and Laboratory Animals

- describe the various phases, segments, trends, demand, consumption and economic scope of the alternative and laboratory animals

### I - Classification of Agriculture Animals

- classify animals using scientific binomial nomenclature as well as classify agriculture animals by breed and use

### J - Food Safety and Environmental Concerns

- explain and addresses the general public's food safety and environmental concerns

### K - Animal Welfare

- compare and contrast crucial animal welfare issues and explain the benefits of treating animals in a humane manner and providing for the needs of animals

### L - Natural Behavior of Animals

- observe and interpret the natural behavior of agricultural animals and relate these behaviors to production practices yielding more content, healthier, and productive animals

## **High School Career and Technical Education**

### **M - Genetic Principles**

- research genetic principles to animal selection, breeding and production

### **N - Scientific Methods of Animal Selection**

- research scientific methods of animal selection

### **O - Reproduction of Agricultural Animals**

- discuss the reproductive anatomy and biological processes involved in the reproduction of agricultural animals

### **P - Prenatal and Postnatal Growth of Animals**

- describe the physiological processes involved in prenatal and postnatal growth and development of agricultural animals

### **Q - Nutrient Sources and Functions**

- explain nutrient sources and functions as they relate to monogastric and ruminant agricultural animals

### **R - Physiological and Chemical Properties of Meat Products and Preservation**

- investigate the physiological and chemical properties of meat products and preservation

### **S - Effects, Development, and Control of Parasites in Agricultural Animals**

- describe the effects, development, and control of parasites in agricultural animals

### **T - Animal Disease, Immune Systems, and Disease Prevention and Control**

- describe animal diseases, animal immune systems, and disease prevention and control programs



## High School Career and Technical Education

### Applications of Biotechnology

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#### **A - Employability Skills**

- demonstrate employability skills required by business and industry

#### **B - Characteristics of Living Organisms**

- describe how characteristics of living organisms are integrated with advanced biotechnology techniques to lead to discovery or production

#### **C - Advanced Techniques**

- demonstrate how advanced techniques in biotechnology contribute to our quality of life

#### **D - Statistical Analysis**

- utilize statistical analyses to evaluate molecular separations and manipulations

#### **E - Safety**

- incorporate required safety practices and procedures in performing tasks encountered in the laboratory setting

#### **F - Current Trends, Ethical, and Regulatory Issues**

- assess current trends, ethical, legal, and regulatory issues related to the development of biotechnology products

## High School Career and Technical Education

# Applications of Firefighting

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Organizational Structure

- evaluate the organizational structure and principles, purpose, and general operational procedures of the fire service

### C - Safety Guidelines

- follow and apply safety guidelines specific to firefighter safety and health issues

### D - Fire Chemistry

- analyze fire chemistry including physical and chemical changes and reactions that occur with fire and the factors involved in fire development

### E - Building Construction

- research the various components of basic building construction, understand the effects of fire on common building materials, and identify the indications of imminent building collapse and construction hazards

### F - Protective Clothing

- utilize and maintain various articles of protective clothing and self-contained breathing apparatus (SCBA)

### G - Portable Fire Extinguishers

- operate portable fire extinguishers effectively and safely

### H - Care for Ropes and Knots

- utilize and care for the appropriate and most common types of ropes and knots used in the fire service

### I - Team Safety Guidelines

- operate as a member of a team following safety guidelines to enter a burning building for search and rescue operations while being prepared to perform basic victim removal

### J - Forcible Entry

- utilize forcible entry techniques through various types of doors, windows, padlocks, and walls to accomplish quick access to a structure in a safe manner

### K - Fire Service Ladders

- utilize various fire service ladders and perform ladder inspections, and maintenance

### L - Types of Ventilation

- utilize types of ventilation within a structure considering various situations

## **High School Career and Technical Education**

### **M - Types of Fire Hydrants**

- identify different types of fire hydrants, make fire hydrant connections, and set up a static water source

### **N - Fire Hose Maintenance**

- utilize, care for, and perform maintenance on fire hose, couplings, hose appliances, and tools and perform various hose loads and finishes following the policies and procedures set forth by the authority having jurisdiction (AHJ)

### **O - Fire Streams**

- demonstrate operating fire streams to reduce the heat from a fire and providing protection to firefighters and exposures using a solid, fog, and broken stream nozzle

### **P - Attack Methods**

- attack various types of fires, using effective attack tactics, and proper hose line selection that will lead to successful fire control while keeping property damage to a minimum (This procedure should be simulated students must be 18 to participate in live fire activities)

### **Q - Fire Detection Systems**

- operate various fire detection, alarm, and suppression systems and function at fires in protected properties

### **R - Loss Control Operations**

- perform loss control operations, in a manner that will minimize damage to property using basic principles of salvage cover deployment and safe overhaul operations

### **S - Indicators of Incendiary Fire**

- identify indicators of an incendiary fire and protect and preserve evidence after a fire of suspicious nature

### **T - Communication**

- perform communication responsibilities

### **U - Medical Care**

- provide basic pre-hospital emergency medical care when necessary

## High School Career and Technical Education

# Applications of Health Information Technology

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Mobile Application and Utilization in a Medical Setting

- design a mobile application and demonstrate utilization in a medical setting

### C - IT Services in Hospitals

- examine the information technology services in hospitals and the major functional categories

### D - HIT Applications in Hospitals

- demonstrate the three main groups of HIT applications in hospitals including the clinical functions of HIT in a simulated format

### E - Functionality and Role of Electronic Health Records

- research the functionality and role of the Electronic Health Record system.

### F - Health Information Flow in Varying Systems

- evaluate health information flow and differentiate open systems interoperability and closed isolated systems

### G - Patient Privacy, Security and Confidentiality

- adhere to patient privacy, security, and confidentiality regulations

### H - Implementation of Health Information Exchange, CCDs, and CCRs

- evaluate the challenges associated with implementation of the Health Information Exchange, CCDs, Continuity of Care Documents, and CCRs, Continuity of Care Record

### I - HIT Project Life Cycle and Project Management

- assess the HIT project life cycle and the role of HIT project management

### J - Telemedicine Program

- evaluate the effectiveness and success of a successful telemedicine program

### K - Technical Skills for Electronic Health Records

- demonstrate technical skills necessary for working with electronic health records

### L - Health Analytics

- evaluate the value of health analytics

## High School Career and Technical Education

# Applications of Public Health

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Quality of Life

- describe the context and scope of public health on improving health and quality of life in personal, community (including local, state, and federal health department), and the global population based on the ten essentials of public health

### C - Epidemiology

- explain how epidemiology is the basic science of public health and describe how it is used to study, prevent, and control disease

### D - Infectious Disease

- differentiate the means of transmission as they relate to the biomedical basis of disease for infectious, chronic, and genetic diseases

### E - Psychosocial Factors

- identify how psychosocial factors affect health behavior

### F - Health Disorders

- discuss the significance that obesity, substance abuse (including tobacco usage), and mental health disorders have with relation to the development of illness

### G - Maternal Health

- investigate the reasons child and maternal health is a high priority in public health

### H - Injury Assessment

- assess that injuries are not accidents, are a major public health issue, and dependent on people's behavior and environment

### I - Environmental Impact

- summarize the relationship between role of environmental and occupational health with the prevention of injury and illnesses

### J - Medical Care

- investigate the relationship between medical care and public health

### K - Health Service Research

- describe the fundamental concepts and applications of health services research as they intersect public health practice with medical care, institutions of higher learning, and governmental agencies at the local, state, and federal level

**High School Career and Technical Education****L - Elderly Population Trends**

- research the health needs of the elderly population and how changing trends, medical costs, and existing programs can result in a positive health outcome

**M - Emergency Preparedness**

- describe the role that public health has with emergency preparedness planning

## High School Career and Technical Education

### Applications of the Law

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#### **A - Employability Skills**

- demonstrate employability skills required by business and industry

#### **B - Criminal Law Application**

- apply criminal laws used frequently in the criminal justice system

#### **C - Law of Torts**

- apply the law of torts

#### **D - Contractual Relationships**

- recognize contractual relationships and the application of contract law

#### **E - The Law of Real Property**

- apply the law of real property

#### **F - Family Law**

- apply family law

#### **G - Citizenship and Immigration Law**

- apply the law of citizenship and immigration

#### **H - Legal Research Skills**

- demonstrate legal research, critical thinking and decision-making skills

#### **I - Diverse Cultures and Law**

- analyze how the influence of diverse cultures, customs and economic status impact applications of law

#### **J - CTSO Organizations**

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# Appropriate and Alternative Energy

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Analyze Current and Potential Careers in Energy

- analyze current and potential careers in engineering

### C - Nonrenewable and Renewable Energy Sources

- understand the differences between renewable and nonrenewable types of energy sources and how each affects their world

### D - Alternative Energy

- define alternative energy and list several alternative resources and discuss the regional implications of each, including, but not limited to economic, environmental, and sustainability issues

### E - Nuclear Power

- define nuclear power and discuss it in terms of its positive and negative impacts and explain its relevancy to various situations in today's society

### F - Future Trends of Energy and Power

- discuss and provide research support for the future trends of energy and power and their impact on modes of transportation in developed and underdeveloped economies

### G - Energy Generation

- create a culminating project that demonstrates an understanding of alternative energy systems by incorporating a unique, as well as appropriate, approach to energy generation



## High School Career and Technical Education

# Architectural Drawing and Design I

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### A - Employability

- demonstrate employability skills required by business and industry

### B - Design Process

- identify components related to the architectural design process

### C - Drafting Skills

- demonstrate architectural drafting skills

### D - Floor Plans

- prepare residential floor plans

### E - Roof Systems

- research roof systems, styles and terminology

### F - Elevations

- prepare elevations for residential drawings

### G - Schedules

- demonstrate preparing schedules

### H - Foundation Plans

- demonstrate preparing foundation plans

### I - Portfolio

- maintain a course portfolio

### J - TSA

- students explore how related career and technology student organizations are integral parts of career and technology education courses Students will develop leadership, interpersonal, and problem-solving skills through participation in co-curricular activities associated with the Technology Student Association

## High School Career and Technical Education

# Architectural Drawing and Design II

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Site Plans

- demonstrate and explain the preparation of site plans

### C - Electrical Plans

- demonstrate and describe the preparation of electrical plans

### D - Plumbing Plans

- read and interpret plumbing plans

### E - Section and Detail Drawings

- demonstrate preparing sections and details

### F - Project Presentations

- create a project presentation for a building

### G - Portfolios

- maintain a course portfolio

### H - SkillsUSA

- examine how SkillsUSA is a co-curricular part of career and technical education through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Audio Video Technology and Film I

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Safety

- identify and follow safety procedures when working with production and computer equipment

### C - Industry Terminology

- utilize trade terminology related to audio, video, technology and film

### D - Production Equipment

- demonstrate proper set-up and use of basic production equipment

### E - Script

- identify and create various types of scripts

### F - Studio Broadcasting

- demonstrate proper use and operation of studio equipment and production techniques while working as part of a production team during a studio broadcast

### G - Live Production

- demonstrate teamwork and proper use of equipment while participating in a live field production which may include electronic news gathering, film work and/or streaming live events

### H - Recording and Post-Production Applications

- demonstrate the use of technology in recording and post-production applications

### I - Careers in Audio and Video, Technology and Film

- describe the principle fields of specializations and identify associated career opportunities
- analyze the relationship between leadership development, school and community service projects with a career in the audio, video, and film industry

### J - Literacy

- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

# Audio Video Technology and Film II

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### A - Employability

- demonstrate employability skills required by business and industry

### B - Program Formats

- demonstrate use of multiple types and formats of programs and productions

### C - Operational/Maintenance Procedures

- identify and demonstrate specified set up, operations and maintenance procedures

### D - Editing Operations

- perform advanced editing operations

### E - Studio Productions

- demonstrate organization, teamwork and proper use of equipment

### F - Lighting

- demonstrate correct operations for studio and field lighting

### G - Graphics

- create production graphics

### H - Careers

- identify an research related career opportunities

### I - SkillsUSA

- examine how SkillsUSA is a co-curricular part of career and technical education through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

### Audio Video Technology and Film III

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#### **A - Employability**

- demonstrate employability skills required by business and industry

#### **B - Independent Production**

- select and develop the direction of specialization for news, film, and graphics in an independent production setting

#### **C - Portfolios**

- create portfolios to include résumé, letter of recommendations, references, list of skill sets, and demo reel highlighting of the student's skill sets

#### **D - Collaboration**

- demonstrate collaborating effectively in group media production

#### **E - Media Law**

- describe and apply the principles of media law

#### **I - SkillsUSA**

- examine how SkillsUSA is a co-curricular part of career and technical education through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Automobile Service Technology Eight

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Safety

- identify and utilize safety procedures and proper tools

### C - Tools and Equipment

- identify and utilize proper tools and equipment

### D - Service

- identify and utilize vehicle service information

### E - Skills

- demonstrate general engine service techniques

### F - Transmission

- perform general automatic transmission and manual transaxle and different service

### G - Suspension and Steering

- prepare vehicle for general suspension and steering systems service

### H - Brakes

- perform hydraulic brake system service and repairs

### I - Electrical Systems

- perform general electrical systems service

### J - Air Conditioning

- demonstrate knowledge of A/C systems

### K - Engine Performance

- analyze engine performance

## High School Career and Technical Education

### Automobile Service Technology Seven

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#### **A - Employability Skills**

- demonstrate employability skills required by business and industry

#### **B - Safety**

- identify and utilize proper tools and equipment
- identify and utilize safety procedures and proper tools

#### **C - Service**

- identify and utilize vehicle service information
- demonstrate general engine service techniques

#### **D - Brakes**

- perform hydraulic brake system service and repairs

#### **E - Electrical**

- perform general electrical systems service

## High School Career and Technical Education

# Automotive Service Technology Internship I

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Integrate Work-based and School-based Learning

- demonstrate relevancy of academic and technical skills needed on the job, integrating work-based and school-based learning

### C - Student Organizations

- examine how SkillsUSA is a co-curricular part of career and technical education through leadership development, school and community service projects, and competitive events

### D - Technical Standard One - General Service

- demonstrate and explain general engine service techniques relating to general engine diagnosis

### E - Technical Standard Two - Automatic Transmission

- perform general automatic transmission and differential service

### F - Technical Standard Three - Manual Transmission

- perform general manual transaxle service

### G - Technical Standard Four - Suspension and Steering

- prepare vehicle for general suspension and steering systems service, including wheel alignment

### H - Technical Standard Five - Brakes

- perform hydraulic brake system service and repairs

### I - Technical Standard Six - Electrical

- perform general electrical systems service and diagnose and repair the charging system, horn and wiper/washer, and automobile accessories

### J - Technical Standard Seven - Heating and Air

- apply concepts related to general service, diagnosis, and repair of the heating and air conditioning

### K - Technical Standard Eight - Engine

- analyze engine performance to diagnose and repair issues related to the engine, ignition system, and fuel, air induction, and exhaust systems



## High School Career and Technical Education

# Automotive Service Technology Internship II

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Integrate Work-based and School-based Learning

- demonstrate relevancy of academic and technical skills needed on the job, integrating work-based, and school-based learning

### C - Student Organizations

- examine how SkillsUSA is a co-curricular part of career and technical education through leadership development, school and community service projects, and competitive events

### D - Technical Standard One - General Service

- assess and formulate general engine service techniques and procedures relating to general engine

### E - Technical Standard Two - Automatic Transmission

- compare general automatic transmission/transaxle and differential operations

### F - Technical Standard Three - Manual Transmission

- compare general manual transmission/transaxle and differential operations

### G - Technical Standard Four - Suspension and Steering

- apply concepts of vehicle general suspension and steering systems service, including wheel alignment diagnosis, adjustment and repair

### H - Technical Standard Five - Brakes

- analyze hydraulic brake system procedures and repairs

### I - Technical Standard Six - Electrical

- analyze general electrical systems, diagnose and repair the charging system, horn and wiper/washer, and automobile accessories

### J - Technical Standard Seven - Heating and Air

- compare procedures related to general service, diagnosis, and repair of the heating and air

### K - Technical Standard Eight - Engine

- assess engine performance to identify and repair issues related to the engine, ignition system, and fuel, air induction, and exhaust systems

## High School Career and Technical Education

# Automotive Service Technology Internship III

---

### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Integrate Work-based and School-based Learning

- demonstrate relevancy of academic and technical skills needed on the job, integrating work-based and school-based learning

### C - Student Organizations

- examine how SkillsUSA is a co-curricular part of career and technical education through leadership development, school and community service projects, and competitive events

### D - Technical Standard One - General Service

- analyze general engine service techniques and procedures relating to general engine service

### E - Technical Standard Two - Automatic Transmission

- apply concepts of general automatic transmission/transaxle and differential service

### F - Technical Standard Three - Manual Transmission

- apply concepts of general manual transmission/transaxle and differential service

### G - Technical Standard Four - Suspension and Steering

- analyze vehicle general suspension and steering systems, including wheel alignment diagnosis

### H - Technical Standard Five - Brakes

- apply concepts of hydraulic brake system service procedures and repairs

### I - Technical Standard Six - Electrical

- create test equipment for general electrical diagnosis

### J - Technical Standard Seven - Heating and Air

- analyze procedures related to general service, diagnosis, and repair of the heating and air

### K - Technical Standard Eight - Engine

- apply concepts of diagnosis to identify and repair issues related to the engine, ignition system, and fuel, air induction, and exhaust systems

## High School Career and Technical Education

# Automotive Technologies 1

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Safety Procedures

- identify and use safety procedures and proper tools

### C - Tools and Equipment

- demonstrate and utilize proper tools and equipment

### D - Vehicle Service Information

- identify and utilize vehicle service information

### E - Careers

- develop an understanding of automotive careers, describing the principal fields of specializations and identifying associated career opportunities

### F - Student Organizations

- examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, and competitive events

### G - Technical Standard One - Engine Repair

- general engine repair
- lubrication and cooling systems

### H - Technical Standard Two - Automatic Transmission/Transaxle

- automatic transmission and transaxle
- off vehicle transmission and transaxle

### I - Technical Standard Three - Manual Drive Train & Axles

- manual drivetrain and axles
- differential case assembly
- clutch

### J - Technical Standard Four - Suspension & Steering

- suspension and steering
- related suspension and steering service
- wheels and tires

## **High School Career and Technical Education**

### **J - Technical Standard Four - Suspension & Steering**

- wheel alignment, diagnosis, adjustment, and repair

### **K - Technical Standard Five - Brakes**

- general brakes
- hydraulic system
- drum brakes
- disc brakes
- power-assist units
- related systems (i.e., wheel bearings, parking brakes, electrical)

### **L - Technical Standard Six - Electrical/Electronic Systems**

- electrical/electronic systems
- battery service
- charging system

### **M - Technical Standard Seven - Heating & Air Conditioning**

- heating, ventilation, and air conditioning (HVAC)

### **N - Technical Standard Eight - Engine Performance**

- engine performance
- fuel, air induction, and exhaust systems

## High School Career and Technical Education

# Automotive Technologies 2

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Safety Procedures

- identify and utilize safety procedures and proper tools

### C - Tools and Equipment

- research and utilize proper tools and equipment

### D - Vehicle Service Information

- research and utilize vehicle service information

### E - Careers

- understand automotive careers, principal fields, and areas of specialization

### F - Student Organizations

- examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, and competitive events

### G - Technical Standard One - Engine Repair

- diagnose and adjust cylinder heads and valves
- lubrication and cooling systems
- general engine repair

### H - Technical Standard Two - Automatic Transmission/Transaxle

- general transmission and transaxle maintenance
- inspect, adjust or repair in-vehicle transmission or transaxle
- inspect, adjust or repair off-vehicle transmission or transaxle

### I - Technical Standard Three - Manual Drive Train & Axles

- service and maintain drivetrain and axles
- service and maintain clutch
- maintain drive assemblies
- maintain drive shaft, half shaft, and associated joints
- inspect and maintain differential case

## **High School Career and Technical Education**

### **J - Technical Standard Four - Suspension & Steering**

- maintain suspension and steering systems
- maintain systems related to suspension and steering
- suspension systems diagnosis and repair
- maintain wheels and tires
- wheel alignment, diagnosis, adjustment, and repair

### **K - Technical Standard Five - Brakes**

- maintain hydraulic systems
- assess and maintain drum brakes
- inspect, maintain, and repair disc brakes
- assess and maintain power assist units
- maintain systems related to brakes such as: wheel bearings, parking brakes, and electrical
- assess, maintain, and repair brake systems

### **L - Technical Standard Six - Electrical/Electronic Systems**

- assess and repair electrical systems
- maintain batteries and related systems
- assess and maintain charging systems
- diagnose and maintain lighting, instrument cluster, and body electrical systems
- body electrical systems diagnosis and repair

### **M - Technical Standard Seven - Heating & Air Conditioning**

- perform general service on heating, ventilation, and air conditioning
- inspect engine cooling and heater systems hoses and pipes; determine necessary action
- maintain air system operating controls

### **N - Technical Standard Eight - Engine Performance**

- perform general engine diagnosis
- computerized controls
- maintain fuel, air induction, and exhaust systems

## High School Career and Technical Education

# Automotive Technologies 3

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Safety Procedures

- identify and utilize safety procedures and proper tools

### C - Tools and Equipment

- research and utilize proper tools and equipment

### D - Vehicle Service Information

- research and utilize vehicle service information

### E - Careers

- develop an understanding of automotive careers, describing the principal fields of specializations and identifying associated career opportunities

### F - Student Organizations

- examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, and competitive events

### G - Technical Standard One- Engine Repair

- general engine repair
- cylinder head and valve train
- inspect and service lubricant and cooling systems

### H - Technical Standard Two- Automatic Transmission/Transaxle

- inspect and service transmission and transaxle
- inspect, adjust, or repair in-vehicle transmission
- inspect, adjust, or repair off-vehicle transmission

### I - Technical Standard Three - Manual Drive Train & Axles

- transmission and transaxle diagnosis and repair
- inspect and repair manual drivetrain and axles
- check and adjust clutch master cylinder fluid level, use proper fluid type per manufacturer specification
- inspect and repair drive shaft, half shaft, and universal joints

## **High School Career and Technical Education**

### **I - Technical Standard Three - Manual Drive Train & Axles** *(continued)*

- inspect and repair vehicle differential and drive axle
- inspect, adjust, and repair manual drive train and axle

### **J - Technical Standard Four - Suspension & Steering**

- suspension and steering systems
- suspension and steering service
- diagnose and repair suspension
- inspect, diagnose, and repair wheels and tires
- diagnose, adjust, and repair wheel alignment

### **K - Technical Standard Five - Brakes**

- diagnose and repair power assist units
- diagnose and repair brake related systems including wheel bearings, parking brake, and electrical
- diagnose and repair electronic brake control systems
- diagnose and repair disc brakes
- diagnose braking systems and problems
- diagnose and repair hydraulic systems
- diagnose and repair drum brakes

### **L - Technical Standard Six - Electrical/Electronic Systems**

- inspect, diagnose, and repair electrical and electronic systems
- assess, test, and maintain battery
- diagnose, test, and repair starting system
- diagnose and repair body electrical systems
- inspect, diagnose, and repair charging system
- inspect and verify operation of lighting and other electrical systems

### **M - Technical Standard Seven - Heating & Air Conditioning**

- diagnose and repair air conditioning
- inspect, diagnose and repair heat and ventilation



## **High School Career and Technical Education**

### **N - Technical Standard Eight - Engine Performance**

- perform engine diagnosis
- access and test computerized controls
- inspect and service fuel, air induction, and exhaust systems

## High School Career and Technical Education

# Automotive Technologies 4

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Safety Procedures

- identify and utilize safety procedures and proper tools

### C - Tools and Equipment

- research and utilize proper tools and equipment

### D - Vehicle Service Information

- research and utilize vehicle service information

### E - Careers

- develop an understanding of automotive careers, describing the principal fields of specializations and identifying associated career opportunities

### F - Student Organizations

- examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, and competitive events

### G - Technical Standard One - Engine Repair

- lubrication and cooling systems diagnosis and repair
- engine diagnosis, removal and reinstallation

### H - Technical Standard Two - Automatic Transmission/Transaxle

- automatic transmission and transaxle
- in-vehicle transmission/transaxle maintenance and repair

### I - Technical Standard Three - Manual Drive Train & Axles

- clutch diagnosis and repair
- transmission/transaxle diagnosis and repair
- drive axle diagnosis and repair
- limited slip differential

### J - Technical Standard Four - Suspension & Steering

- steering systems diagnosis and repair
- suspension systems diagnosis and repair

## **High School Career and Technical Education**

### **K - Technical Standard Five - Brakes**

- brakes

### **L - Technical Standard Six - Electrical/ Electronic Systems**

- body electrical systems diagnosis and repair

### **M - Technical Standard Seven - Heating & Air Conditioning**

- A/C system diagnosis and repair
- refrigeration system component diagnosis and repair
- heating, ventilation, and engine cooling systems diagnosis and repair
- operating systems and related controls diagnosis and repair
- refrigerant recovery, recycling, and handling

### **N - Technical Standard Eight - Engine Performance**

- engine diagnostics

## High School Career and Technical Education

# Automotive Technologies 5

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Safety Procedures

- identify and utilize safety procedures and proper tools

### C - Tools and Equipment

- research and utilize proper tools and equipment

### D - Vehicle Service Information

- research and utilize vehicle service information

### E - Careers

- develop an understanding of automotive careers, describing the principal fields of specializations and identifying associated career opportunities

### F - Student Organizations

- examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, and competitive events

### G - Technical Standard One -Engine Repair

- engine diagnosis, removal and reinstallation
- engine block assembly diagnosis and repair
- cylinder head and valve train diagnosis and repair

### H - Technical Standard Five - Brakes

- brakes

### I - Technical Standard Six - Electrical

- electrical and electronic systems

### J - Technical standard Seven - Engine Performance

- fuel, air induction, and exhaust systems diagnosis and repair

## High School Career and Technical Education

# Automotive Technologies 6

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Safety Procedures

- identify and utilize safety procedures and proper tools

### C - Tools and Equipment

- research and utilize proper tools and equipment

### D - Vehicle Service Information

- research and utilize vehicle service information

### E - Careers

- develop an understanding of automotive careers, describing the principal fields of specializations and identifying associated career opportunities

### F - Student Organizations

- examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, and competitive events

### G - Technical Standard One - Engine Repair

- general: engine diagnosis; removal and reinstallation

### H - Technical Standard Two - Automatic Transmission/Transaxle

- automatic transmission and transaxle

### I - Technical Standard Three - Manual Drive Train & Axles

- transmission, transaxle diagnosis and repair

### J - Technical Standard Four - Electrical/Electronic Systems

- body electrical systems diagnosis and repair

### K - Technical Standard Five - Engine Performance

- diagnose oil leaks, emissions, and driveability concerns caused by the positive crankcase ventilation (PCV) system; determine needed action

## High School Career and Technical Education

# Banking, Investing and Insurance

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Banking Concepts

- demonstrate an understanding of basic banking concepts, terminology and operating procedures

### C - Negotiable Instruments

- compare and contrast various types of negotiable instruments and describe the effects of e-commerce on banking

### D - Interpret Financial Performance

- interpret and measure financial performance of banking institutions

### E - Investment Principles

- demonstrate an understanding of basic investment principles, including the importance of investment planning and establishing financial goals

### F - Investment Instruments

- investment Instruments

### G - International Finance

- predict future investment trends and explain the role of international finance in the investing process

### H - Risk Management

- demonstrate an understanding of risk management basics and personal insurance coverage

### I - Insurance

- identify risks present in business and the insurance needed to protect a business

### J - Ethics and Fraud

- evaluate the ethical needs of the financial services industry and examine the effects of fraud upon the industry

### K - Careers

- identify and evaluate careers in the financial services industry

### L - Professional Organizations

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# Broadcast Video Production Applications

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Production

- produce samples to enhance or replace existing portfolio artifacts
- produce a variety of programming that emulates professional productions
- demonstrate a mastery proficiency level of production equipment used in broadcasting and video production in various workplace setting

## High School Career and Technical Education

# Business and Technology

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### **A - Demonstrate Employability Skills**

- demonstrate employability skills required by business and industry

### **B - Create, Edit, and Publish Industry Appropriate Documents**

- create, edit, and publish industry appropriate documents using technology as a tool to increase productivity

### **C - Develop Organizational Communication Skills**

- develop organizational communication skills through professional leadership, personal ethics, and customer/business relationships

### **D - Manage Data in Spreadsheet Software**

- manage data in spreadsheet software for effective use in a business environment

### **E - Organize and Share Data from a Spreadsheet**

- master use of spreadsheet software to analyze, organize and share data from a spreadsheet while presenting the data visually in a business environment

### **F - Develop Creditable Research Skills**

- develop creditable research skills to use information from a variety of sources

### **G - Acquire Database Skills**

- acquire database skills to manage data in a business environment

### **H - Develop Personal Leadership Skills**

- develop personal leadership skills to work on teams, teach others, serve customers, lead, negotiate, and work effectively and efficiently in a business environment

### **I - FBLA**

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events



## High School Career and Technical Education

# Business Communication

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Grammatically Correct and Professional Business Correspondence

- examine and practice grammar, mechanics, and process of composing professionally written business communications

### C - Verbal and Nonverbal Communication

- apply effective oral communication in various situations by communicating in a clear, courteous, concise, and professional manner

### D - Listening Skills

- listen discriminately and respond appropriately to oral communication

### E - Word Processing

- master word processing software at an expert level to create, edit, and publish professional-appearing business documents

### F - Integration of Communication in the Workplace

- integrate multiple forms of communication in the successful pursuit of a career/employment

### G - Skills and Strategies for Effective Presentations

- apply skills and strategies for the delivery of effective oral communication and presentations

### H - Digital Technology, Networking Tools and Social Networking

- use digital technologies (e.g., computers, PDAs, media players, GPS, etc.), communication/networking tools, and social networks appropriately to access, manage, integrate, evaluate, and create information to successfully function in professional settings

### I - Presentation Software

- master presentation software to create, edit, publish, and deliver professional-appearing business presentations

### J - Student Organizations

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# Carpentry I

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Architectural and Construction Estimation

- read, interpret, apply information, and estimate costs from a variety of architectural and construction working drawings

### C - Concrete Materials, Processes, and Safety

- demonstrate an understanding of the materials, processes, and safety related to all cement and concrete products

### D - Materials and Practice of Basic Site Layout and Footings

- demonstrate an understanding of the concepts, materials, and practices of basic site layout and footings

### E - Floor and Wall Systems Construction

- demonstrate knowledge of proper and necessary carpentry tasks and materials that enable a team to construct floor and wall systems

### F - Ceiling and Roof Systems Construction

- demonstrate an understanding of proper and necessary carpentry tasks that enable a team to construct ceiling and roof systems

### G - Installation of Doors, Windows, and Stairs

- demonstrate an understanding of the proper and necessary carpentry tasks that enable a team to install doors, windows, and stairs

### H - Installation and Application Procedures for Exterior Finishes

- demonstrate an understanding of installation and application procedures for exterior finishes

### I - SkillsUSA

- examine how SkillsUSA is a co-curricular part of career and technical education through leadership development, school, and community service projects, and competitive events

## High School Career and Technical Education

# Clinical Lab I

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Careers

- explore options in the clinical lab industry including medical lab assistant and the organizational structure

### C - Safety

- abide by regulations governing workplace safety, infection control, operational standards, patient confidentiality, and facility protocol

### D - Quality Control

- maintain quality control measures within the medical/lab facility to prevent medical errors and provide appropriate patient care

### E - Clinical Laboratory

- discuss and evaluate clinical techniques in the identifications of microbes in a simulated classroom setting
- utilize appropriate laboratory and medical terminology, medical lab equipment and apply the use of the metric system

### F - Clinical Techniques

- discuss and evaluate basic clinical chemistry techniques in a simulated classroom lab setting

### G - Logistics

- ensure proper specimen collection and test management

### H - Health Informatics

- maintain appropriate reports and patient data inventory and supplies and billing procedures for laboratory tests

### I - Communication

- discuss proper communication techniques with medical personnel, patients, and families regarding laboratory testing and special requirements for lab tests

## High School Career and Technical Education

### Clinical Lab II

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#### A - Employability Skills

- demonstrate employability skills required by business and industry

#### B - Hematology

- discuss and evaluate hematology procedures to understand normal results and disease processes in a simulated classroom lab setting

#### C - Lab Processes

- obtain label preserve and process urine specimens for lab analysis in a simulated classroom lab setting

#### D - Chemistry

- research antigen/antibody response and determine steps performed in serology and immunology testing in the lab

#### E - Specimen Practices

- demonstrate the process of obtaining blood specimens through venipuncture and capillary puncture

#### F - Health Informatics

- maintain appropriate reports and patient data inventory and supplies and billing procedures for hematology, urinalysis, blood bank, and immunology testing

#### G - Communication

- observe medical personnel communication with other medical personnel, patients, and families regarding laboratory testing and special requirements for hematology, urinalysis, blood bank and immunology testing

#### H - Forensics

- analyze the use of forensic medicine in criminal science

## High School Career and Technical Education

# Computer Science Principles

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Digital Artifacts

- create digital artifacts that foster creative expression including programs, digital music, videos, images, documents, and combinations of these such as infographics, presentations, and web pages

### C - Abstraction

- apply abstraction in digital data to explain how bits are grouped to represent higher-level abstractions, such as numbers and characters

### D - Design Computer Programs

- design and create computer programs to process and extract information to gain insight and knowledge

### E - Algorithms

- develop, express, implement, and analyze algorithms analytically and empirically

### F - Create Programs

- create programs that translate human intention into computational artifacts including music, images, visualizations, and more while exploring the concepts, techniques and development used in writing programs

### G - Internet

- gain insight into the operation of the Internet, study characteristics of the Internet and systems built upon it, and analyze important concerns, such as cybersecurity

### H - Innovation

- develop a logical argument from the many ways in which computing enables innovation and our methods for communicating, collaborating, problem solving, and doing business, and analyze the potential benefits and harmful effects of computing in the way people think, work, live, and play and testing

### I - Student Organizations

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# Contemporary Issues in Education

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Career Paths

- analyze career paths in the area of education

### C - Humanities and Social Sciences

- apply disciplinary knowledge from the humanities and social sciences to interpret the meanings of education and schooling in diverse and contemporary contexts

### D - Cultural Influences

- analyze the inevitable presence of societal and cultural influences in contemporary educational thought and practice

### E - Educational Perspectives

- apply critical perspectives on education and schooling

### F - Moral Principles

- differentiate how moral principles related to democratic institution can inform and direct schooling practice, leadership, and governance

### G - Significance of Diversity

- draw conclusions on the full significance of diversity in a democratic society and how that society influences instruction, school leadership, and governance

### H - Ethics in Education

- critique how ethical, philosophical and moral commitments affect the process of evaluation at all levels of schooling practice, leadership, and governance

### I - School System Enhancement

- synthesize individual and organizational efforts that maintain and enhance United States schools as institutions in a democratic society

### J - Issues Affecting Education

- evaluate how issues such as justice, social inequality, concentrations of power, class difference, race and ethnic relation, disabilities, and family and community organization affect teaching and schooling

### K - Philosophical Assumptions

- research and discuss moral and philosophical assumptions underlying an assessment and evaluation process

## High School Career and Technical Education

# Cosmetology Services II

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Hair and Scalp Analysis and Application of Treatment

- investigate basic histology of the hair and skin, related diseases and disorders, corrective treatments and provided services based on hair and scalp analysis and applying safety precautions for scalp and hair treatments

### C - Shampoo and Condition Application and Chemistry

- differentiate chemistry of shampoos and conditioners for a variety of hair types and perform shampoo and conditioning applications

### D - Hair Design Principles Related to Elements, Facial Shapes, and Types

- create hairstyles to demonstrate the proper use of design principles, design elements, facials shapes, and hair types, as needed, for hair design

### E - Fundamental Theory and Skills for Hairstyling Techniques

- examine the fundamental theory and skills needed for wet hairstyling allowing students to perform various hairstyling techniques, including wet hairstyling, comb-outs, braiding and blow-dry styling

### F - Thermal Hairstyling Services

- demonstrate thermal hairstyling services, including the use of curling irons, hair pressing comb, hot rollers, etc., applying safety precautions for thermal tools

### G - Wave Sectioning, Blocking, and Wrapping

- explain the purpose of a scalp and hair analysis in relation to the permanent wave service and demonstrate (on a mannequin) sectioning, blocking, and wrapping a permanent wave

### H - Skills in the Cosmetology Industry

- explore and demonstrate skills used in the cosmetology industry

### I - Safety and Accident Prevention

- maintain a safe work environment and accident prevention by using safety precautions and/or practices including adherence to hazardous labeling requirements and compliance with safety signs, symbols, and labels

### J - Integration of Student Organizations

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# Cosmetology Services III

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Safety In Haircutting Services

- demonstrate proper methods of infection control, storage of products, draping clients, stylist protection, proper use of haircutting implements and safety used during haircutting services

### C - Reference Points, Design Elements, and Facial Shape Analysis

- explain the importance of reference points on the head, design elements, and principle needed for haircutting services, including analysis of client's facial shape, features, and profile

### D - Fundamentals of Haircutting

- demonstrate the fundamentals of haircutting including, angles, elevations, guidelines, face shapes, hair analysis, implements used, proper body position, and safety used in haircutting services

### E - Client Consultations

- introduce proper client consultations for haircutting services, including greeting techniques, client needs and desires, proper maintenance needed for client, reflective listening and recommendations perform various haircutting techniques and ability to check a completed haircut

### F - Hair Color Services

- demonstrate the ability to perform different hair color services, using in-depth hair analysis, consultations, release forms and record cards, identifying natural hair levels, color theory, types of hair color, developers, understanding the law of color, types of hair color, color formulations, patch test, hair color applications, preliminary strand test, and gray coverage

### G - Chemistry of Relaxing Hair

- analyze and explain how the chemistry of relaxing hair is achieved for various hair types compare and contrast the different type of relaxers and the application procedures follow all safety guidelines when performing all chemical relaxing services

### H - Advanced Skills, Trends, Equipment, Technology, Standards, and Practices in Industry

- explore and demonstrate various advanced skills, industry trends, equipment, technology, standards, practices, and career options in the cosmetology industry

### I - Integration of Student Organizations

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events



## High School Career and Technical Education

# Criminal Investigations

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Roles and Responsibilities of Criminal Investigators

- explore the roles and responsibilities of criminal investigators

### C - Elements of Preliminary Investigation

- recognize the fundamental elements of a preliminary investigation and the role it plays in the criminal trial

### D - Legal Complexities in Criminal Investigation

- analyze the legal complexities related to a criminal investigation and search of a crime scene

### E - Methods of Fingerprint Development

- demonstrate methods of fingerprint development

### F - Impressions and Tool Mark Evidence

- distinguish how impressions and tool mark evidence are used in a criminal investigation

### G - Trace Evidence

- analyze the significance of trace evidence in a criminal investigation

### H - Investigative Reports

- document concise investigative reports

### I - Crime Lab in Criminal Investigation

- summarize the role of the crime lab in a criminal investigation and subsequent trial

### J - Homicide Investigation

- analyze the complex nature of a homicide investigation

### K - Investigation Techniques in Major Crime Scenes

- compare the varied investigative techniques utilized when investigating major crime scenes

### L - Investigations in Criminal Trials

- critique various issues concerning the investigation that arise during the criminal trial

## High School Career and Technical Education

# Criminal Justice Essentials

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Design a Career Plan

- design a personal education and career plan

### C - Origins of U.S. Criminal Justice System

- synthesize the various origins and historical influences that created the current structure of the United States Criminal Justice System

### D - Court System and Process of Criminal Trial

- describe the court system and process of a criminal trial

### E - Law Enforcement Scenarios

- analyze scenarios related to law enforcement and apply relevant federal, state and local law

### F - Constitutional Standards and Proper Criminal Procedure

- cite constitutional standards as applied to the proper criminal procedure of criminal cases from initial response through trial

### G - Application of Law Enforcement Skills

- demonstrate proper and ethical application of law enforcement skills

### H - Patrol Operations Techniques

- demonstrate techniques used in patrol operations

### I - Police Interaction Techniques with Community

- formulate ways police can interact with the community to reduce crime and improve the community

### J - Criminal Trial Processes

- explore the steps of the criminal trial process

### K - Establish Purposes and Types of Sentences

- explain the various purposes and different types of sentences

### L - Researching American Corrections Systems

- research the American corrections systems

## High School Career and Technical Education

# Culinary Arts I

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### **A - Employability Skills**

- demonstrate employability skills required by business and industry

### **B - Food Sanitation and Safety**

- examine and apply the principles of food sanitation and safety in foodservice operations and kitchen environments to achieve a nationally recognized food safety certificate

### **C - Using and Maintaining Professional Equipment**

- acquire and apply basic knowledge of using and maintaining professional kitchen equipment

### **D - Business and Culinary Math**

- demonstrate basic knowledge in business and culinary math skills

### **E - Cooking**

- identify and demonstrate the principles and processes of cooking in a professional kitchen

### **F - Cooking Methods and Techniques**

- perform various cooking methods, techniques and preparations in a commercial kitchen

### **G - Fundamentals of Baking**

- identify and apply fundamentals of baking

### **H - Nutritional Concepts**

- examine the nutritional concepts that affect the food service industry today with emphasis on a healthy diets, allergies, and obesity issues

### **I - Fundamentals of Human Relations**

- apply fundamentals of human relations and management skills

### **J - Menu Planning Fundamentals**

- identify and apply menu planning fundamentals

### **K - Commercial Purchasing Procedures**

- analyze purchasing procedures in a commercial kitchen

## High School Career and Technical Education

### Culinary Arts II

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#### **A - Employability Skills**

- demonstrate employability skills required by business and industry

#### **B - Careers in Food Service**

- identify skills, certifications, and experience required for careers in the hospitality, tourism and food service industries

#### **C - Commercial Food Preparation**

- demonstrate competency in the commercial food preparation of all menu categories to produce a variety of food products

#### **D - Garde Manger**

- discuss and practice Garde Manger

#### **E - Commercial Baking**

- demonstrate and master the commercial preparation of all fundamental bakery categories to produce a variety of products

#### **F - Dining Room Operations**

- identify and apply dining room operations

#### **G - Food Service Operations**

- create a conceptual food-service operation and identify the requirements needed for successful operation's management

#### **H - Student Organizations**

- examine how related student organizations are integral parts of career and technology education courses through leadership development, school, and community service projects and competitive events

## High School Career and Technical Education

### Dental Science II

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#### A - Employability Skills

- demonstrate employability skills required by business and industry

#### B - Anatomy and Physiology

- identify and explain the human body including planes, regions, and organs

#### C - Anatomy and Physiology

- explain head and neck anatomy, physiology, and pathophysiology

#### D - Oral and Facial Anatomy

- investigate oral embryology and tooth morphology

#### E - Dental Charting

- perform appropriate dental charting including symbols and abbreviations

#### F - Office Management

- utilize office management skills necessary to maintain a dental office

#### G - Chair Side Assistance

- perform chairside assisting skills

#### H - Student Organizations

- demonstrate leadership and knowledge within a student organization

## High School Career and Technical Education

### Diagnostics Phlebotomy

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#### A - Employability Skills

- demonstrate employability skills required by business and industry

#### B - Careers

- explore options in the clinical lab industry including phlebotomy and the organizational structure

#### C - Terminology

- utilize appropriate laboratory/medical terminology and venipuncture equipment

#### D - Regulations

- abide by regulations governing workplace safety, infection control, operational standards, patient confidentiality, and facility protocol

#### E - Quality Control

- maintain quality control measures within the medical facility to prevent medical errors and provide appropriate patient care

#### F - Skills

- identify site specific anatomy related to venipuncture
- follow steps and guidelines necessary to prepare patients for blood collection procedures
- perform venipuncture and capillary blood collection utilizing appropriate equipment and techniques
- observe specialized laboratory tests that may involve specific techniques for patient preparation, timing of sample collection, other blood collection techniques, and sample handling

#### G - Specimen practices

- comply with facility procedures and protocol when documenting and reporting and when handling and transporting specimens

## High School Career and Technical Education

# Digital Design

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### A - Employability

- demonstrate employability skills required by business and industry

### B - Web Functions and Emerging Trends

- research, explain, and summarize current state of the web, functions of the web, and future trends emerging of the web

### C - Legal Issues Associated with Media

- identify logistical, ethical, and legal Issues related to digital media and apply concepts to use of text graphics, animation, sound, video, and digital images in digital products

### D - Web Development

- develop a plan to create, design, and market a web site with digital content to a specific target market

### E - Writing for Digital Media

- explore and write using the various writing styles used on web sites and in digital content to get the intended message across

### F - Design Principles for Digital Media

- identify and develop model digital products that reveal a professional layout and look by applying design principles to produce professional quality digital products

### G - Create and Edit Images

- create and edit images and graphics

### H - Digital Audio

- plan, produce, edit, and publish digital audio

### I - Multimedia-rich Video

- plan, edit, produce, and post a multimedia-rich video project

### J - Animations

- plan, produce, edit, and publish animations

### K - FBLA

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development and competitive events

## High School Career and Technical Education

# Digital Electronics

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Engineering Fields

- analyze fields of engineering and electronic specializations (e.g., aeronautical, automotive, chemical, civil, industrial, and mechanical, computer software, electrical, and biomedical) and identify associated career tracks

### C - Safety

- describe and follow safety, health and environmental standards related to Science, Technology, Engineering and Math (STEM) workplaces

### D - Digital and Analog Systems

- analyze characteristics of digital and analog systems

### E - Logic Gates

- demonstrate knowledge of logic gates (e.g., IF, Then, Else)

### F - Digital Coding Conversion

- compare and contrast the use of several commonly used digital codes, including the differences between conversion of decimal numbers and letters to code

### G - Operation and Outputs

- use truth tables and interpret waveforms to determine flip-flop modes of operation and outputs

### H - Analyzing Outputs

- analyze the output for a variety of counters based on a series of inputs

### I - Block-Style Logic Diagrams

- analyze block-style logic diagrams

### J - Memory and Storage

- investigate common memory and storage devices used in a microcomputer system

### K - Digital Projects

- create a digital project that displays mastery of the standards involved with electronics



## High School Career and Technical Education

# Early Childhood Education I

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### A - Employability Skills

- demonstrate employability skills required by business and industry
- analyze the relationship between leadership development, school and community service projects with a career in the early childhood education industry

### B - Career Opportunities

- analyze career paths within early childhood education and care

### C - Professionalism

- identify the role of professionalism in early childhood care and guidance

### D - Theories of Human Development

- examine the theories of human development

### E - Growth and Development

- explore prenatal development and the growth, development, and care of the infant
- explore the growth, development, and care of the toddler
- explore the growth, development, and care of the preschool child
- survey the growth and development of the school age child, 6-12 years of age

### F - Positive Relationships

- identify techniques for positive collaborative relationships with children

### G - Learning Environments

- determine components of a well-organized, developmentally appropriate learning environment
- examine program management and curriculum in early childhood education and care

### H - Diversity

- connect the importance of diversity within early childhood education

### I - Literacy Skills

- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

# Early Childhood Education II

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Evolution of Early Childcare

- describe the evolution of the roles and expectations of American early childhood educators and the children they teach

### C - Techniques for Observing

- analyze techniques for observing intellectual, physical, and behavioral development of children

### D - Accommodations for Exceptional Needs

- recognize, identify, and explore accommodations for children with exceptional needs

### E - Nutrition and Food Safety

- identify nutrition and food-safety principles for optimal child wellness

### F - Safety

- demonstrate a safe environment for children

### G - Healthy Environments

- demonstrate a healthy environment for children

### H - Communicable Illnesses

- identify the component elements of the communicable illness process

### I - Child Abuse

- identify types and characteristics of child abuse and neglect

### J - Safety Certifications

- research and obtain industry required safety certifications

### K - Licensing and Accreditation

- analyze licensing and accreditation standards in Georgia and the United States

## High School Career and Technical Education

### Early Childhood Education III

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#### **A - Employability Skills**

- demonstrate employability skills required by business and industry

#### **B - Child-Directed Play**

- explore the benefits of child-directed play

#### **C - Early Childhood Communication**

- determine activities necessary to support early childhood communication and language development

#### **D - Guidance Methods**

- research and apply appropriate guidance methods to promote positive behavior

#### **E - Current Trends**

- examine current trends affecting children and caregivers

#### **F - Family Dynamics**

- explore the changing dynamics in family culture and diversity

#### **G - Stress on Children**

- examine the causes and effects of stress on young children

#### **H - Appropriate Technology**

- explore appropriate technology integration for the young child

#### **I - Better Brains for Babies**

- formulate concepts using Georgia's Better Brains for Babies training materials as background information to study the importance of early brain development

#### **J - Nutritional Needs for Infants**

- discover and analyze an infant's nutritional needs

## High School Career and Technical Education

# Early Childhood Education Practicum

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### A - Employability

- demonstrate employability skills required by business and industry

### B - Confidentiality

- demonstrate and practice confidentiality in upholding the privacy of teachers, children, and their families in all matters

### C - Professional Organizations

- research the professional organizations related to teaching at all age levels for liability insurance provided at the different levels of supervision: student intern, paraprofessional, teacher and administrator and document findings

### D - Resume

- create a resume detailing all work experience in a pre-K setting

### E - Personal Philosophy

- write a personal philosophy of education including beliefs about education, teaching, schools, students and other educational aspects

### F - Safety

- demonstrate knowledge of basic safety procedures required at the candidate's internship work site

### G - Management

- research and evaluate various management techniques utilized with children

### H - Child Behavior Plan

- design a child guidance and behavior plan that includes consequences and rewards

### I - Assessment Methods

- investigate a variety of assessment methods to observe and interpret a child's growth and development

### J - Exceptionalities

- identify the types of exceptionalities that are served in the candidate's work site and give a brief description of each exceptionality

### K - Teacher Work Sample

- develop a Teacher Work Sample using Georgia Early Learning and Development Standards (GELDS) to include learning goals, assessment plans, instruction to meet learning goals, and a reflection of the lesson

### L - Personal Performance

- analyze personal performance in the internship and write a reflective summary

## High School Career and Technical Education

# Electrical I

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Proper Tool Usage

- use tools, instruments, and equipment in a professional and safe manner

### C - Material Handling and Storage

- demonstrate an understanding of the selection, handling, storage, and proper use of electrical materials

### D - Circuits and Conduits

- demonstrate an understanding of electrical circuitry including raceways, boxes, and conduits

### E - Electric Codes

- demonstrate knowledge of the current National Electrical Code (NEC), National Electrical Manufacturers Association Code (NEMA), National Fire Protection Association Code (NFPA), and Underwriters Laboratories (UL) Standards

### F - Conductors

- demonstrate an understanding of the identification and installation of conductors according to National Electrical Code (NEC)

### G - Fixtures

- demonstrate an understanding of installing a variety of fixtures

### H - Voltage, Resistance, and Current

- demonstrate an understanding of voltage, resistance, and current and how they relate

### I - Student Organizations

- examine how SkillsUSA is a co-curricular part of career and technical education through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# E-Marketing

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - E-Marketing

- analyze how the Internet has influenced modern day business and industry
- students will explore the nature of e-marketing
- evaluate e-marketing websites for user

### C - Legal and Ethical Concepts

- evaluate the legal and ethical issues affecting e-marketing

### D - Marketing Mix

- analyze the role of e-marketing in the marketing mix

### E - Research

- explore how market research is conducted in e-marketing

### F - Web Site Development

- create an online ad campaign for a website launch

### G - Distribution

- analyze distribution methods for e-marketing

### H - Design

- explore professional design and website development from a marketing perspective

### I - Revenue Generation

- analyze revenue generation in e-marketing

### J - Globalization

- evaluate the impact globalization has on e-marketing

### K - Careers

- explore e-marketing careers

## High School Career and Technical Education

# Embedded Computing

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Terminology

- explain Embedded Computing (EC) and the Internet of Things (IoT)

### C - Protocols

- demonstrate a working knowledge of basic networking protocols for industry, homes, and the internet including speed, power requirements, and popularity in industry and personal devices

### D - Circuits

- develop and investigate interfacing circuits

### E - Sensors

- classify and categorize multiple kinds of sensors

### F - Motors

- manipulate, connect, and examine performance aspects of motors

### G - Programming

- investigate and draw connections within the context of programming as it relates to Embedded Computing/Internet of Things

### H - Debugging

- interpret debugging techniques in hardware and software

### I - Cloud Computing

- compare, contrast, and utilize Cloud Service features

### J - Application Design

- design an embedded computing application that solves a current problem (e.g., robotics, artbotics, visual and kinetic art)

### K - Student Organizations

- examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Emergency Medical Responder

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### AA - Patient Safety

- analyze techniques used by appropriate personnel to ensure EMS personnel and patient safety during extrication operations

### B - Emergency Medical Services

- examine the Emergency Medical Services (EMS) system and the role of Emergency Medical Responders within the system

### BB - Clinical Management

- evaluate clinical management of the patient exposed to hazardous materials

### C - Scene Safety

- evaluate the necessity of scene safety, emotional and physical well-being, and stress management of the Emergency Medical Services provider

### CC - Evaluate Clinical Management

- evaluate and observe clinical management of the patients exposed to a terrorist event or involved in a disaster

### D - Appropriate Protocol

- follow appropriate protocol and regulations to document findings and data regarding patients

### DD - EMR Evaluations

- prepare for the NREMT EMR Evaluation

### E - Legal and Ethical Issues

- analyze the legal and ethical issues of Emergency Medical Services providers including Emergency Medical Responders and all levels of Emergency Medical Technicians, and the medical and legal issues at the scene of an emergency, while awaiting a higher level of care

### F - Body Systems

- demonstrate the anatomy and function of the upper airway, heart, vessels, blood, lungs, skin, muscles, and bones as the foundation of emergency care. Illustrate the different systems of the body and how they relate to patient care

### G - Medical Terminology

- utilize appropriate medical and anatomical terminology

### H - Respiratory Life Threats

- respond to life threats using knowledge of shock and respiratory compromise



## **High School Career and Technical Education**

### **I - Local Public Health Resources**

- recognize local public health resources and the role EMS personnel play in public health emergencies

### **J - Emergency Medications**

- demonstrate the medications that EMS may self-administer or administer to a peer in an emergency

### **K - Emergency Preparedness**

- demonstrate fundamental depth and foundational breadth of anatomy and physiology to assure a patent airway, adequate mechanical ventilation, and respiration while awaiting EMS response for patients of all ages

### **L - Managing Immediate Life Threats**

- identify and manage immediate life threats and injuries using scene information and simple patient assessment findings, within the scope of practice of the EMS

### **M - Primary Assessment of Patients**

- describe the primary assessment for all patient situations including the following: general impression, level of consciousness, ABCs, identifying life threats, and assessing vital functions

### **N - Subjective and Objective Observations**

- demonstrate utilizing subjective and objective observations and age-appropriate interview techniques to identify and manage immediate life threats and injuries within the scope of practice of the EMS

### **O - Various Assessment Techniques**

- demonstrate performing various assessment techniques to identify and manage immediate life threats and injuries within the scope of practice of the EMS

### **P - Manage Life Threats**

- recognize and manage life threats based on assessment findings of a patient with a medical emergency while awaiting additional emergency response

### **Q - Recognizing Shock**

- use assessment information to recognize shock, respiratory failure or arrest, and cardiac arrest based on assessment findings and manage the emergency while awaiting additional emergency response

### **R - Acute Injuries**

- recognize and manage life threats based on assessment findings for an acutely injured patient while awaiting additional emergency medical response

### **S - Pregnancy Emergency**

- recognize and manage life threats based on assessment findings for a pregnant patient while awaiting additional emergency response

## **High School Career and Technical Education**

### **T - Neonatal Life Threats**

- recognize and manage life threats based on simple assessment findings for a neonatal patient while awaiting additional emergency response

### **U - Infant Emergencies**

- identify, assess, and treat infants and children with medical, traumatic, and environmental emergencies and recognize and manage life threats based on assessment findings for a pediatric patient while awaiting additional emergency response

### **V - Geriatric Emergencies**

- recognize and manage life threats based on assessment findings for a geriatric patient while awaiting additional emergency response

### **W - EMS Responsibilities**

- identify and describe the operational roles and responsibilities of the EMS to ensure patient, public, and EMS personnel safety

### **X - Incident Management System**

- establish and work within the Incident Management System

### **Y - Multiple Casualty Incident Plan**

- perform necessary procedures during a multiple-casualty incident when a multiple-casualty incident plan is activated within EMR scope of practice

### **Z - EMS Techniques**

- perform duties of EMR within scope of practice safely in and around a landing zone during air medical operations and transport

## High School Career and Technical Education

# Emergency Medical Technician

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### AA - Skin and Soft Tissue Injuries

- understand the types of open and closed soft-tissue injuries, how to care for soft-tissue injuries, including the use of dressings and bandages; assessment and care of different types of burns, including thermal, chemical, and electrical burns

### B - Role of the Emergency Medical Technician

- examine EMS and EMT roles; apply fundamental knowledge of the EMS system including ethical issues

### BB - Head and Spine Trauma

- understand how to manage trauma related issues with the head, face, and neck

### C - Safety, Stress Management, and Wellness

- evaluate incident scene and responder safety, recognize hazards, address physical and emotional care issues for responders and patients

### CC - Traumatic Brain Injuries

- learn how to recognize life threats associated with traumatic brain injuries (TBI) as well as the need for immediate spinal stabilization and, potentially, airway and breathing support

### D - Legal and Ethical Implications

- describe elements of patient care and consent, confidentiality, refusal of care, organ donation, and end of life issues

### DD - Chest Trauma

- understand how to manage a patient with chest trauma; discuss age related issues in regards to pediatric and geriatric chest trauma

### E - Effective Communication

- describe unique communication challenges for pediatric and geriatric patients; identify specific reporting requirements for special emergency situations

### EE - Abdominal and Genitourinary Injuries

- understand detailed anatomy and physiology of the abdominal and genitourinary systems as well as the pathophysiology, complications, assessment, and management of abdominal and genitourinary injuries

### F - Medical Terminology

- identify and apply specific medical terminology including acronyms; list and define common patient movement and positional terms

## High School Career and Technical Education

### FF - Musculoskeletal Injuries

- know general and specific types of musculoskeletal injuries including fractures, sprains, and dislocations, with associated signs, symptoms, and emergency treatment including the use of splints, PASG, and traction splints

### G - Anatomy and Pathophysiology

- identify and describe patient assessment and management including body planes, anatomy, and functions of each body system

### GG - Environmental Injuries

- learn the proper assessment and management of general and specific types of environmental emergencies including hypothermia, local cold injuries such as frostbite, and heat exposure illnesses such as heat stroke; learn the associated signs and symptoms and emergency treatment of drowning emergencies, diving emergencies, high-altitude sickness, lightning strikes, and bites and envenomations from spiders, hymenoptera (e.g., bees, yellow jackets, wasps, and ants), snakes, scorpions, ticks, and marine life

### H - Stages of Human Development

- identify and describe phases of human development and their impact on the provision of care

### HH - Pregnancy and Neonatal Care

- understand the anatomy and physiology of the female reproductive system as it relates to pregnancy; learn the assessment and emergency treatment for childbirth including stages of labor, normal delivery, complications of pregnancy, and neonatal evaluations and resuscitation

### I - Patient Transport

- identify and demonstrate aspects of safe patient movement/transfer; demonstrate team transfer techniques and describe transfer equipment

### II - Pediatric Emergency Care

- describe the appropriate assessment and care for the types of illness and injury affecting children of all ages, injury patterns based on size, and special body system injuries; identify and describe the indicators of abuse and neglect, and the medical and legal responsibilities of an EMT

### J - Patient Assessment

- apply scene information and scope and sequence of patient assessment, including scene size-up, primary assessment, history taking, secondary assessment, and reassessment

### JJ - Geriatric Care

- identify the physiologic and psychological changes that occur with the aging process; learn and understand the types of illness and injuries common to the geriatric population

### K - Airway Management

- assess patient airway, apply principles of airway management including usage of specialized medical equipment

## High School Career and Technical Education

### **KK - Caring for the Impaired Patient**

- identify and describe the special needs of patients with developmental, sensory, and physical disabilities

### **L - Pharmacology**

- understand the significance and characteristics of general pharmacology and be able to identify, describe, and demonstrate the steps for assisting/administering medications carried by the EMT

### **LL - Emergency Transport**

- describe and apply effective preparation for transport, safe emergency vehicle operations, appropriate transport decisions, safe patient transfer techniques, and a responsible approach to patient care during transport

### **M - Management of Shock, Respiratory Failure, and Cardiac Failure**

- apply knowledge of the causes, pathophysiology, and management of shock, respiratory failure or arrest, cardiac failure or arrest, and post-resuscitation management

### **MM - EMS Rescue Operations**

- identify operational roles and responsibilities to ensure patient, public, and personnel safety during various EMS rescue operations to include vehicle extrication, trench rescue, and high-angle rescue

### **N - BLS Review**

- review the basic life support (BLS) procedures for adults, infants, and children

### **NN - Incident Command**

- describe and apply, in context, the National Incident Management System (NIMS) to include describing command and general staff roles

### **O - Assessment Techniques**

- describe the need for proper assessment techniques when called for a complaint of a medical nature

### **OO - Disaster Management**

- identify and explain operational roles and responsibilities to ensure patient, public, and personnel safety during various disaster management situations

### **P - Respiratory Emergencies**

- demonstrate comprehension of respiratory anatomy and physiology including various respiratory etiologies

### **PP - Health Care: A Team Approach**

- explain the significance and characteristics of a team approach to health care and the impact of this approach on positive patient outcomes

### **Q - Pathophysiology of Respiration and Perfusion**

- apply fundamental knowledge of the pathophysiology of respiration and perfusion to patient assessment and management

## **High School Career and Technical Education**

### **QQ - NREMT Preparation**

- prepare for the NREMT Evaluation

### **R - Neurological Emergencies**

- apply fundamental knowledge to provide basic emergency care and transportation based on assessment findings for a neurological emergency

### **RR - Student Organizations**

- explore the benefits of CTSO's, such as leadership development, school and community service projects, entrepreneurship development, and competitive events

### **S - Gastrointestinal/Genitourinary Emergencies**

- apply fundamental knowledge to provide basic emergency care and transportation based on assessment findings in a gastrointestinal or genitourinary emergency

### **T - Diabetic and Hematologic Emergencies**

- understand the significance and characteristics of type one and type two diabetes, including diabetic emergencies; identify and describe blood related ailments including sickle cell disease and clotting disorders, as well as the management of hematologic emergencies

### **U - Hypersensitivity Disorders and Anaphylactic Reactions**

- acquire the knowledge and skills to recognize and manage hypersensitivity disorders and anaphylactic reactions

### **V - Toxicological Emergencies**

- identify the classes of compounds involved in substance abuse and poisonings, the routes by which poisons enter the body, and the signs, symptoms, assessment, and treatment for various poisoning emergencies

### **W - Psychiatric Emergencies**

- recognize behaviors that pose a risk to the EMT, patient, or others and the basic principles of the mental health system; assess and manage patients suffering from a psychiatric emergency within the legal parameters of their scope of practice

### **X - Women's Health**

- understand the anatomy and physiology, including the developmental changes during puberty and menopause, of the female reproductive system and identify and describe assessment and treatment for gynecologic emergencies

### **Y - Trauma Patients**

- understand the general injury patterns associated with different types of impacts, falls, and penetrating trauma, and the basic application of laws of physics on the assessment of trauma patients; understand common injury patterns to major body systems

## **High School Career and Technical Education**

### **Z - Internal and External Bleeding**

- understand the structure and function of the circulatory system, the significance and characteristics of bleeding, the importance of personal protective equipment when treating a bleeding patient, the characteristics of external and internal bleeding, how to conduct a patient assessment, and methodologies for controlling bleeding

## High School Career and Technical Education

# Energy and Power Technology

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### A - Employability

- demonstrate employability skills required by business and industry

### B - Energy, Work, Power, and Force

- investigate energy, work, power, and force and analyze the relations of each

### C - Simple Machines

- identify the six simple machines and explain how each is able to change the value for force and distance in the work relation

### D - Power Systems

- differentiate between electrical and mechanical power systems and apply the various scientific laws that govern each

### E - Circuits

- differentiate between AC and DC circuits and apply Ohm's Law to series, parallel, and series/parallel circuits as well as state Kirchhoff's Laws

### F - Engines

- describe the basic components of a small engine and explain the difference between a 4-cycle and 2-cycle engine

### G - Safety Practices

- demonstrate the importance of following safety practices for energy and power



## High School Career and Technical Education

# Energy and Power: Generation, Transmission, and Distribution

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### A - Electric Power Generation Equipment

- identify electric power generation equipment and systems

### B - Electric Power Generation

- explain the conventional electric power generation systems and process (coal, gas, hydroelectric, and nuclear)

### C - Nuclear Power

- define nuclear power and discuss in terms of positive and negative impacts, as well as relevance to various situations in today's society

### D - Generation of Nuclear Power

- explain how nuclear power is generated

### E - Alternative Energy

- identify alternative sources for generation of electric power (e.g., solar, wind, geothermal, biomass, and ocean/tidal motion) and describe the advantages and disadvantages of their use for the consumer, industry, and the environment

### F - Electric Power Distribution

- explain the conditions necessary to build a functional electric power distribution and transmission grid

### G - Natural Gas

- explain the transmission and distribution of natural gas

### H - Energy Conservation

- explain the different processes used to conserve energy resources and increase efficient distribution and use

### I - Transmission and Distribution

- explain the ownership of the transmission and distribution systems

### J - Safety Practices

- understand and be able to implement safety practices, and procedures within the energy industry

### K - Safety Practices for Utility Workers

- demonstrate the importance of following safety practices for utility workers

## High School Career and Technical Education

# Energy Systems Applications

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### A - Energy Relationships

- determine and analyze the relationships between energy, work, power, and force

### B - Simple Machines

- identify the six simple machines and explain how each machine changes the value for force and distance during work

### C - Fluid Power Systems

- differentiate between fluid power systems and apply the laws that govern

### D - AC and DC Circuits

- differentiate between AC and DC circuits and apply Ohm's Law to Series, Parallel, and Series/Parallel circuits as well as discuss Kirchhoff's Laws

### E - Small Engines

- describe and demonstrate the basic components of a small engine and explain the difference between a four-stroke and two-stroke engine

## High School Career and Technical Education

# Engineering Applications

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### A - Employability

- demonstrate employability skills required by business and industry

### B - Safety

- demonstrate and follow safety, health, and environmental standards related to the STEM workplace and apply specific engineering tools, machines, materials and processes in a safe and orderly manner to formulate, analyze, and verify engineering practices and solutions

### C - Engineering Careers

- identify and explore career opportunities in one or more engineering career pathways to build an understanding of the opportunities available in the STEM workplace

### D - Engineering Design

- apply knowledge of the engineering design process to solve engineering/ technological problems in the STEM workplace

### E - Time Management

- employ planning and time management skills and tools to enhance results and complete work tasks

### F - Communication

- apply oral, written, and visual communication skills to obtain, interpret, and present information to and from intended audiences

### G - Develop Detailed Solutions

- develop and apply detailed plans to solutions for design problems using mathematical and scientific concepts

### H - Develop Appropriate Models

- develop appropriate models

### I - Construct Prototype

- design and construct a testable prototype

### J - Engineering Impact

- understand engineering impacts of social, economic, design and environmental issues

### K - Engineering Business and Marketing

- explain the impact of business and marketing on engineering design

## **High School Career and Technical Education**

### **L - Technology Student Association**

- explore how related career and technology student organizations are integral parts of career and technology education courses Students will develop leadership, interpersonal, and problem-solving skills through participation in co-curricular activities associated with the Technology Student Association (TSA)

## High School Career and Technical Education

# Engineering Concepts

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Safety

- demonstrate and follow safety, health, and environmental standards related to the Science, Technology, Engineering, and Math (STEM) workplaces

### C - Characteristics of Engineering Disciplines

- describe the characteristics of engineering disciplines and engineered products

### D - Post-Secondary Career Opportunities

- demonstrate the knowledge and skills required to pursue the full range of engineering post-secondary education and career opportunities

### E - Design Process

- explain a whole systems approach to the engineering design process to solve a technical problem

### F - Critical Thinking

- employ critical thinking skills and teamwork skills when working in groups to solve problems, to make decisions, achieve group goals and use team members' talents effectively

### G - Engineering Solutions

- summarize and apply engineering solutions through the audience appropriate application of engineering graphics and technical writing

### H - Data Collection

- apply basic engineering tools and resources to aid in data collection and problem solution sets

### I - Troubleshooting

- cite evidence for the role of troubleshooting, research and development, inventions, and innovations in problem solving

### J - 21st Technologies

- explore the use of social media and other 21st century technologies and their impact(s) on the fields of engineering and technology

### K - Critique and Synthesize

- critique and synthesize how related career and technology student organizations are integral parts of career and technology education courses Students will develop leadership, interpersonal, and problem-solving skills through participation in co-curricular activities associated with the Technology Student Association (TSA)

## High School Career and Technical Education

# Entrepreneurship

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Entrepreneurial Success

- understand and relate concepts and processes associated with entrepreneurial success and the personal traits and behaviors associated with successful entrepreneurial performance

### C - Concepts, Strategies, and Systems

- use and model concepts, strategies, systems , and techniques needed to interact and present effectively to others

### D - Business Concepts

- apply fundamental business concepts that affect business decision-making

### E - Impact of Government

- explain and detail legal form of business ownership and the impact of government's role on business

### F - Economic Principles Fundamental to Entrepreneurship

- understand and apply the basic economic principles and concepts fundamental to entrepreneurship

### G - Marketing Plan

- develop a marketing plan to identify, reach, and retain customers in a specific target market using all forms of media

### H - Financial Issues

- analyze financial issues relating to successful business ownership

### I - Manage and Operate a Business

- manage and operate a business, or simulate the management and operation, through daily tasks and activities of a small business

### J - Business Plan

- research, develop, and present a business plan

### K - Human Resources

- understand the concepts, systems, and strategies needed to acquire, motivate, develop, and terminate employees

### L - Student Organizations

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# Essentials of Biotechnology

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### **A - Employability Skills**

- demonstrate employability skills required by business and industry

### **B - Laboratory and Classroom Safety Practice and Procedures**

- research required safety practices and procedures in the classroom and laboratory environment

### **C - Biotechnology Products and Their Affects**

- identify the basis for biotechnology products and how such products affect the quality of life

### **D - Careers in Biotechnology**

- analyze careers in research and development, human health and diagnostics, bio manufacturing, environmental applications, and agriculture that utilize biotechnology

### **E - Physical Science in Biochemical Applications and Techniques**

- demonstrate how concepts of physical science connect to biochemical applications and techniques

### **F - Organisms in Product and Procedure Development**

- compare and contrast common organisms used in biotechnology and relate the manipulation of living organisms to product and procedure development

### **G - Economic, Social, Ethical, and Legal Issues in Biotechnology**

- analyze economic, social, ethical, and legal issues related to the use of biotechnology

## High School Career and Technical Education

# Essentials of Dental Science

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Dental Careers

- research careers and opportunities in the dental field and how dentistry has evolved over the years

### C - Regulations and Ethics

- investigate the laws, regulations, and ethical considerations in the dental fields

### D - Pathogens and Microorganisms

- classify pathogenic and non-pathogenic microorganisms, the various modes of transmission, and procedures to prevent transmission in the dental setting

### E - Infection Control Measures

- adhere to appropriate infection control guidelines and regulations and demonstrate infection control procedures including the use of Personal Protective Equipment (PPE)

### F - First Aid

- respond to life threatening and non-life threatening medical and dental emergencies and perform appropriate first aid according to level of training

### G - Vital Sign Procedures

- demonstrate appropriate procedures for taking vital signs, recording vital signs, and recognizing abnormalities in findings

### H - Equipment Maintenance

- maintain equipment and instruments used in dental procedures

### I - Terminology

- utilize medical terminology as it relates to the oral cavity and dental procedures

### J - Student Organizations

- research the qualities of a leader and the skills needed to function as a team member and team leader



## High School Career and Technical Education

# Essentials of Fire and Emergency Services

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Distinguish Fire and Emergency Agencies Roles and Functions

- distinguish between the various fire and emergency agencies and the functions, roles and responsibilities of those agencies within the federal, state and local public safety systems

### C - History

- create a timeline of the history of fire and emergency services and identify the events that have had an impact on current codes, rules, and laws

### D - Utilize Equipment and Applications to Facilitate Management Situations

- utilize up-to-date technology equipment and applications, as well as other appropriate equipment necessary to facilitate the management of fire and emergency management situations

### E - Execute Safety Procedures and Protocols

- execute safety procedures and protocols associated with local, state, and federal regulations

### F - Evaluate and Compare Different Career Fields

- compare and contrast the different career fields, the organizational structure, and the rules and regulations in fire and emergency services

### G - Demonstrate Professional Communication

- demonstrate professional communication skills utilized in fire and emergency scenarios

### H - Implement an Appropriate Incident Command System

- implement an appropriate Incident command system to effectively manage an incident scene

### I - Community and School Prevention/Preparedness Plans

- recommend improvements to community and school prevention and preparedness plans

### J - Analyze Chemistry of Fire

- analyze the chemistry of fire

### K - Access Rescue Operations

- access rescue operations in fire and emergency situations

### L - Evaluate Use of Fire Equipment

- evaluate the use of fire hoses, nozzles, portable lighting, appliances, and ladders

## High School Career and Technical Education

# Essentials of Health Information Technology

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Information Technology in the U.S.

- evaluate the overall state of healthcare in the United States and the role technology and information technology plays

### C - Health IT Opportunities

- evaluate career opportunities in Health IT, and the education and training required

### D - ARRA

- research the ARRA (American Recovery and Reinvestment Act), the HITECH Act (Health Information Technology Act), and other current legislation and the impact on healthcare

### E - Electronic Health Records

- assess the benefits and challenges of Electronic Health Records (EHR) implementation and the interoperability and coordination of care

### F - Evolution of Health IT

- discuss key factors, developments, and influences on the evolution of Health IT beginning with the 1950s

### G - Implementation of Electronic Health Records

- examine the guidelines and rules that govern the implementation and usage of Electronic Health Records

### H - Organizational Structure of Healthcare

- evaluate the organizational structure of healthcare and the continuum of care relating to medical records and pay structure for services

### I - Healthcare Terminology

- demonstrate the usage of terminologies and classification in healthcare

### J - IT Services in Hospitals

- examine and explain IT services in hospitals and the major functional categories

### K - Mobile Technology in Healthcare

- research the use of mobile technology and other medical devices in healthcare (mhealth) and the benefits to patients and healthcare providers

### L - Benefits of Telemedicine

- explore the benefits and applications of telemedicine and telehealth

## High School Career and Technical Education

# Essentials of Healthcare

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Structure and Functional Organization of the Body

- classify the basic structural and functional organization of the human body and identify body planes, cavities, regions, directional terms, tissues, organs and parts of the cell

### C - Integumentary System

- analyze the anatomy, physiology and basic pathophysiology of the integumentary system, and evaluate and monitor body temperature

### D - Cardiovascular System

- investigate the anatomy, physiology, and basic pathophysiology of the cardiovascular system, and evaluate and monitor blood pressure and pulse

### E - Respiratory System

- examine the anatomy, physiology and basic pathophysiology of the respiratory system, and evaluate and monitor respirations

### F - Muscular and Skeletal Systems

- evaluate the anatomy, physiology, and basic pathophysiology of the muscular and skeletal systems, and perform technical skills related to the systems

### G - Urinary System

- analyze the anatomy, physiology, and basic pathophysiology of the urinary system, and apply knowledge in performance of technical skills related to the system

### H - Reproductive System

- analyze the anatomy, physiology, and basic pathophysiology of the reproductive system, and perform technical skills related to the system

### I - Nervous System

- examine the anatomy, physiology, and basic pathophysiology of the nervous system and special senses, and perform technical skills related to these systems

### J - Endocrine System

- evaluate the anatomy, physiology, and basic pathophysiology of the endocrine system, and perform technical skills related to the system

### K - Digestive System

- investigate the anatomy, physiology, and basic pathophysiology of the digestive system, and perform technical skills related to the system

**High School Career and Technical Education****L - Lymphatic System**

- analyze the anatomy, physiology, and pathophysiology of the lymphatic system, and perform technical skills related to the system

## High School Career and Technical Education

# Essentials of Legal Services

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Explore Different Career Fields

- explore the different careers available in legal services

### C - Explore History of the American Court System

- explain the history and characteristics of the structure of the American court system

### D - Identify Various Roles in the Courtroom

- identify and explain the various roles of courtroom participants, including ethical and legal duties

### E - Demonstrate Knowledge of Constitutional Protections

- demonstrate knowledge of the basic protections guaranteed by the United States Constitution

### F - Explore Roles of Pretrial Criminal Process

- explore the roles of each participant in the pretrial criminal process

### G - Demonstrate Knowledge of Criminal Trial Process

- explain and demonstrate the criminal trial process

### H - Examine the Post-Trial Process

- examine the post-trial process

### I - Describe Civil Law

- describe civil law and cite examples of the primary areas of civil law

### J - Roles of Pretrial Civil Process

- explore the roles of each participant in the pretrial civil process

### K - Civil Trial Process

- explain the civil trial process including all parties involved

### L - Analyze Different cultures and the Effect on Legal Services

- analyze how the influence of diverse cultures, customs and economic status impact the field of legal services

### M - CTSO Organizations

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# Examining the Teaching Profession

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### A - Employability Skills

- analyze the relationship between leadership development, school and community service projects with a career in the teaching profession
- demonstrate employability skills required by business and industry

### B - Careers in Education

- analyze career paths in the field of education

### C - Introduction to Public Education

- evaluate the historical perspective and purpose of U.S. public education

### D - Professional Standards

- summarize the professional practices and standards related to working in the field of education

### E - Effective Use of Technology

- examine and apply technologies that are integrated in effective teaching methods

### F - Learning Environments

- construct and evaluate effective learning environments

### G - Instruction and Planning

- create instructional opportunities adapted to language and multicultural diverse learners
- analyze procedures and strategies to provide differentiated learning opportunities for all students
- explain the rationale and process for instructional planning

### H - Assessment

- analyze the role of assessment as part of the learning process and the teaching process

### I - Parent and Community Involvement

- identify practices to promote active parental / community involvement in the school setting

### J - Literacy Skills

- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

# Fashion, Merchandising, and Retailing Essentials

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Fashion Industry

- explore the fashion industry, including types of businesses, history, current trends, and the creation of fashion, utilizing the elements and principles of design

### C - Marketing Concepts

- understand the marketing concepts used in fashion merchandising

### D - Impacts of Technology

- explore the impact of technology on the fashion industry and merchandising

### E - Economic Principles

- understand the economic principles and concepts fundamental to business operations and global trade's impact on business decision making

### F - Marketing Information Management

- analyze the impact of marketing information management as it relates to the fashion industry

### G - Pricing Strategies with Merchandising

- utilize pricing strategies to maximize return on merchandising efforts and meet customers' perception of value

### H - Product Mix and Market Opportunities

- understand the concepts and processes needed to obtain, develop, maintain, and improve a product mix in response to market opportunities

### I - Promotion Utilizing Promotional Mix

- develop a fashion promotion utilizing the promotional mix

### J - Logistics in Fashion

- understand the concepts and processes needed to move, store, locate, and/or transfer ownership of goods in the fashion industry

### K - Fashion Career Opportunities

- identify career opportunities in the fashion industry and appropriate career path credentials

## High School Career and Technical Education

# Financial Literacy

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Forms of Income

- identify various forms of income, and analyze and evaluate factors that affect income as a part of the career decision-making process

### C - Taxes in the United States

- analyze taxes in the United States and evaluate the effect on personal income

### D - Savings Plans

- develop and evaluate a spending and savings plan while applying rational decision making to personal spending and saving choices

### E - Checking Accounts and Banking Services

- analyze checking accounts and other banking services and explain how financial institutions channel funds from savers to investors

### F - Credit Systems

- analyze factors that affect the choice of credit, the cost of credit, and the legal aspects of using credit

### G - Savings and Investments

- evaluate savings and investment options to meet short- and long-term goals

### H - Consumer Protection

- analyze laws and options available to consumers for protection from deceptive or unfair business practices

### I - Identity Theft

- evaluate how to help deter, detect, and defend against identity theft

### J - Consumer Loan Options

- evaluate various consumer loan options and analyze factors that affect lending decisions

### K - Risk Management and Insurance

- explain the principles of risk management and insurance as a strategy to protect against financial loss

### L - CTSO

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events



## High School Career and Technical Education

# Flight Operations I

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Meteorology

- identify and explain climate and seasonal changes of earth's atmosphere
- demonstrate an understanding of the relationship between air pressure, temperature, and density

### C - Aircraft

- demonstrate knowledge of the airplane systems and components

### D - Weather

- operate and employ weather technology and terminology
- demonstrate an understanding of mid latitude weather patterns and systems
- identify and describe aviation weather hazards

### E - Airspace

- demonstrate an understanding of the structure of the national airspace system

### F - Air Traffic Control

- demonstrate an understanding of the various roles of air traffic control in the airspace system

### G - Communication

- demonstrate an understanding of basic aeronautical charts and their application to flight planning
- demonstrate usage of standard aviation vocabulary, phraseology, and acronyms for communications

### H - Airports

- demonstrate and describe knowledge of airports

### I - Systems

- identify instruments and develop an understanding of their functions
- explain the operation of aircraft power plant and related systems and flight instruments and identify the components of the aircraft system

### J - Career and Technical Student Organizations

- explain how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Flight Operations II

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Flight Information and Planning

- apply sources of weather information to flight planning
- demonstrate and apply knowledge of sources of flight information

### C - Aircraft Performance

- demonstrate an understanding of aircraft performance and design

### D - Communication

- demonstrate competency in communication and flight information

### E - Weather

- demonstrate an understanding of aviation weather codes and terminology

### F - Navigation

- identify tools of basic, radio, and advanced navigation

### G - Calculations

- demonstrate an understanding of appropriate aviation measurements and calculations

### H - Flight Planning

- incorporate current weather information when creating a flight plan
- apply techniques to analyze and forecast weather data
- apply atmospheric dynamics to aeronautical components
- incorporate navigation and communication tools to create a flight plan

### I - Career and Technical Student Organizations

- examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Food for Life

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Function of the Digestive System

- outline the function of the digestive system and absorption process during the lifespan

### C - Nutrition

- design a nutritious diet plan

### D - Maternal and Fetal Nutrition

- identify and discuss the requirements of maternal and fetal nutrition during pregnancy

### E - Newborn Nutrition

- investigate the proper feeding of newborns

### F - Infant Nutrition

- develop a nutritionally balanced diet for infants

### G - Early Stages of Childhood Nutrition

- develop a nutritionally balanced diet for children in the different stages of childhood

### H - Adolescent Nutrition

- develop a nutritionally balanced diet for an adolescent

### I - Middle Adult Nutrition

- develop a nutritionally balanced diet for the middle adult years

### J - Elderly Nutrition

- develop a nutritionally balanced diet for the elderly

### K - Careers in Food and Nutrition

- research careers in foods and nutrition

## High School Career and Technical Education

# Food Science

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Food Science and Careers

- define food science and explore careers in food science

### C - Scientific Evaluation of Food

- investigate how and why scientific evaluation of foods is conducted

### D - Chemistry Concepts of Food

- explore the basic chemistry concepts of food science

### E - Energy in Food Preparation and Preservation

- observe and explain how energy works in food preparation and preservation

### F - Water and Acidity in Food Preparation and Preservation

- examine why water and acidity are important factors in food preparation and preservation

### G - Importance of Carbohydrates

- summarize why carbohydrates are important in food preparation, preservation, and the nutritional impact on diets

### H - Importance of Lipids

- summarize why lipids are important in food preparation and preservation and the nutritional impact they have on diet

### I - Importance of Proteins

- summarize why proteins are important in food preparation and preservation and the nutritional impact they have on diet

### J - Food Formulation, Preparation, and Preservation

- investigate the sources, and impact of food formulations, preparation and preservation on food constituents important to health

### K - Food Additives and Analogs

- investigate the reasons for the use of food additives and food analogs in food preparation and in processed products

### L - Principles of Fermentation

- analyze the principles of fermentation

### M - Sanitary Food Production

- investigate measures used to produce safe and wholesome food under sanitary conditions

**High School Career and Technical Education****N - Food Preservation Methods**

- compare and contrast different food preservation methods and the resultant quality of preserved food

## High School Career and Technical Education

# Food, Nutrition and Wellness

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### A - Employability Skills

- demonstrate employability skills required by business and industry
- analyze the relationship between leadership development, school and community service projects with a career in the food, nutrition, and wellness industry

### B - Food Influences

- analyze factors that influence food choices and quality of diet

### C - Nutrition for Individuals and Families

- evaluate nutritional information in relation to wellness for individuals and families

### D - Food Behaviors

- analyze the effects of food eating behaviors on wellness

### E - Special Dietary Considerations

- investigate the health and nutrition requirements of individuals and families with special needs

### F - Food Safety and Sanitation

- analyze food safety and sanitation practices from production to consumption

### G - Foodborne Illness

- compare the causes and foods at risk for illnesses

### H - Food Science

- evaluate scientific and technical advances in food processing, storage, product development and distribution for nutrition and wellness

### I - Food Preparation

- design and demonstrate ability to select, store, prepare and serve nutritious, safe and appealing foods

### J - Careers in the Food, Nutrition, and Wellness Industries

- research careers related to food, nutrition and wellness

### K - Literacy Skills

- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

# Forensic Science and Criminal Investigations

---

### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Methodologies of the Characteristics of Science

- utilize the methodologies of the "characteristics of science"

### C - Concepts of Forensic Science

- research and explain basic concepts of forensic science

### D - Medico-Legal Investigations of Death

- differentiate the methods of medico-legal investigations of death

### E - Concepts of Physics in Criminal Investigation

- apply the concepts of physics to a criminal investigation

### F - Principles of Chemistry in Criminal Investigation

- connect principles of chemistry to criminal investigations

### G - Investigating with Microscopes

- compare the various types of evidence investigated using a microscope

### H - Biological Science Applications

- assess applications from biological science to criminal investigations

### I - Forensic Science in the Courtroom

- explain how forensic science is used in the courtroom

### J - Crime Scene Investigation Skills

- demonstrate the skills needed to investigate a crime scene including preventing contamination when evidence is gathered

## High School Career and Technical Education

# Foundations of Electronics

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Careers

- develop an understanding of engineering and electronics and describe the principle fields of engineering and electronic specializations (ex. aeronautical, automotive, chemical, civil, industrial, and mechanical, computer software, electrical, and biomedical) and identify associated career tracks

### C - Safety

- describe and follow safety, health and environmental standards related to Science, Technology, Engineering, and Math (STEM) workplaces

### D - Tools and Machines

- identify criteria of usage, care, and maintenance for tools and machines
- demonstrate techniques, skills, tools, and understanding related to energy and power, bio-related, communication, transportation, manufacturing, and construction technologies

### E - Electron Theory

- introduce the history and development of electron theory
- identify electronic theories applicable to electronic processes

### F - Electrical Systems and Components

- introduce electronic components that comprise an electronic system
- introduce the techniques and processes in electronics systems
- understand the various measuring apparatuses appropriate to electronics systems

### G - Data

- use appropriate technology to collect, record, manipulate, analyze, and report data

### H - Math and Science in Engineering

- design a solution to an engineering and electronics problem applying math and science principles

### I - Electronic Devices

- construct an electronic device as a culminating experience

### J - Technological Systems

- recognize the systems, components, and processes of a technological system



## **High School Career and Technical Education**

### **K - Impacts of Engineering**

- identify the impact of engineering and technology within global, economic, environmental, and societal contexts
- design technological problem solutions using scientific investigation, analysis and interpretation of data, innovation, invention, and fabrication while considering economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability constraints.
- apply principles of science, technology, engineering, mathematics, interpersonal communication, and teamwork to the solution of technological problems

### **L - Leadership Development**

- analyze the relationship between leadership development, school and community service projects with a career in the electronics industry

### **M - Literacy**

- enhance reading by developing vocabulary and comprehension skills associated with text materials, problem descriptions, and laboratory activities associated with engineering and technology education
- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

# Foundations of Energy and Power Technologies

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### A - History of the Energy Industry

- describe the history of the energy industry

### B - Energy Generation and Distribution

- analyze the differing processes of generation and distribution of power and energy

### C - Types of Energy

- explain the differences between nonrenewable, renewable, and inexhaustible types of energy sources and their impact regionally and globally

### D - Alternative Energy

- research an alternative energy system that demonstrates understanding of a unique, as well as an appropriate, approach to energy and power generation
- define alternative power and energy and list several alternative sources as well as discuss the regional implications of each, including, but not limited to, economic, environmental, and sustainability issues

### E - Trends in Energy

- discuss the future trends of power and energy

### F - Technological Systems

- design technological problem solutions using scientific investigation, analysis and interpretation of data, innovation, invention, and fabrication while considering economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability constraints.
- recognize the systems, components, and processes of a technological system

### G - Impacts of Engineering

- identify the impact of engineering and technology within global, economic, environmental, and societal contexts

### H - Applications of Engineering

- apply principles of science, technology, engineering, mathematics, interpersonal communication, and teamwork to the solution of technological problems

### I - Tools and Machines

- demonstrate techniques, skills, tools, and understanding related to energy and power, bio-related, communication, transportation, manufacturing, and construction technologies

### J - Leadership Development

- analyze the relationship between leadership development, school and community service projects with a career in the energy technology professions

**High School Career and Technical Education****K - Employability Skills**

- demonstrate employability skills required by business and industry

**L - Literacy**

- enhance reading by developing vocabulary and comprehension skills associated with text materials, problem descriptions, and laboratory activities associated with engineering and technology education
- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

# Foundations of Engineering and Technology

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Engineering Careers

- students explore how related career and technology student organizations are integral parts of career and technology education courses; students will develop leadership, interpersonal, and problem-solving skills through participation in co-curricular activities associated with the Technology Student Association
- describe the principle fields of engineering specialization and identify associated career tracks

### C - Impact of Engineering

- identify the impact of engineering and technology within global, economic, environmental, and societal contexts
- identify the history of technology and engineering and describe the impact on society in the past, present, and future

### D - Safety

- demonstrate and follow safety, health, and environmental standards related to the Science, Technology, Engineering, and Math (STEM) workplaces

### E - Using Tools and Machines

- describe and apply appropriate use and care for equipment and supplies
- demonstrate techniques, skills, tools, and understanding related to energy and power, bio-related, communication, transportation, manufacturing, and construction technologies

### F - Engineering Design Process

- apply fundamental principles of the engineering design process
- use appropriate technology to collect, record, manipulate, analyze, and report data
- students design a solution to an engineering problem applying math and science principles

### G - Engineering Applications

- demonstrate the application of STEM in the real world
- apply principles of science, technology, engineering, mathematics, interpersonal communication, and teamwork to the solution of technological problems

### H - Technological Systems

- recognize the systems, components, and processes of a technological system

## **High School Career and Technical Education**

### **H - Technological Systems** *(continued)*

- design technological problem solutions using scientific investigation, analysis and interpretation of data, innovation, invention, and fabrication while considering economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability constraints

### **I - Leadership Development**

- analyze the relationship between leadership development, school and community service projects with a career in the energy technology industry

### **J - Computer Aided Drafting (CAD)**

- demonstrate the application of Engineering Design Graphic Techniques and Computer Aided Drafting and Design to communicate design specifications and annotations according to industry standards

### **K - Literacy**

- enhance reading by developing vocabulary and comprehension skills associated with text materials, problem descriptions, and laboratory activities associated with engineering and technology education
- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

# Foundations of Interior Design

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Careers

- explore and identify career options at various levels/types within the field of interior design

### C - Professional Practice

- examine the designer-client relationship
- describe issues of professional practice

### D - Design

- explore floor plans and importance in interior design
- discuss space planning and traffic patterns
- synthesize programming concepts that pertain to residential design
- synthesize programming concepts that pertain to commercial design
- explain the principles and elements of design
- evaluate the relationship of human factors in interior design projects

### E - Technology

- apply the current use of technology as related to the study of Interior Design
- examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Foundations of Manufacturing and Materials Science

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Impact of Manufacturing

- students will explain the societal impact of manufacturing

### C - History

- students will describe the history of manufacturing and discuss the preparation for the future of manufacturing

### D - Universal Systems

- students will explain the universal systems model (such as ISO, LEAN, etc.) as it relates to manufacturing

### E - Safety

- students will explain and apply safe work practices while performing tasks

### F - Materials and Resources

- students will identify materials and resources used in manufacturing

### G - Systems and Processes

- students will describe the essential systems and processes involved in manufacturing

### H - Skills

- demonstrate knowledge of correct safety procedures, appropriate use of materials, and processing operations by completing a project

### I - Communication

- students will use visual and verbal communication to present employment and career opportunities in manufacturing

### J - Technology

- students will recognize the systems, components, and processes of a technological system

### K - Impact of Engineering

- identify the impact of engineering and technology within global, economic, environmental, and societal contexts

### L - Design

- design technological problem solutions using scientific investigation, analysis and interpretation of data, innovation, invention, and fabrication while considering economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability constraints

## High School Career and Technical Education

### **L - Design** *(continued)*

- design technological problem solutions using scientific investigation, analysis and interpretation of data, innovation, invention, and fabrication while considering economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability constraints
- design technological problem solutions using scientific investigation, analysis and interpretation of data, innovation, invention, and fabrication while considering economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability constraints
- design technological problem solutions using scientific investigation, analysis and interpretation of data, innovation, invention, and fabrication while considering economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability constraints

### **M - Student Organizations**

- develop leadership and interpersonal problem-solving skills through participation in co-curricular activities associated with a Career and Technical Student Organization (CTSO)



## High School Career and Technical Education

# Foundations of Marine Engine Technology

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Professionalism

- demonstrate professionalism and work ethics as required by business and industry

### C - Marine Shop Operation

- apply basic concepts and practices necessary for effective marine shop operation

### D - Applications of Fasteners

- demonstrate knowledge of various fasteners and their applications

### E - Shop Management

- describe shop management systems and procedures

### F - Technical Documents

- apply information from literature sources to concepts from the marine engine technology industry

### G - Leadership Development

- analyze the relationship between leadership development, school and community service projects with a career in the marine engine technologies industry

### H - Literacy

- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

# Foundations of Sound and Recording

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### A - The Physics of Sound

- define amplitude, frequency and time in reference to sound waves and waveforms
- define different types of sound waves and waveforms
- demonstrate relationship between sound waves and waveforms by plotting a waveform on a graph
- demonstrate waveforms with an oscillator and an oscilloscope
- define the sound range of human hearing
- measure sound levels and frequency content with a sound pressure meter, white noise, pink noise, and a Real Time Analyzer (RTA)
- illustrate several items/musical instruments within the range of human hearing (voice, piano, cymbals)

### B - Acoustics

- define acoustics, space, delay, and reverb
- define absorption, reflection, and diffusion
- explain how absorption, reflection, and diffusion affect sound waves
- demonstrate how various objects/materials and their properties affect sound waves in different rooms and space
- explain and demonstrate the basic operation of microphone placement and how acoustic space plays an important role in recording

### C - Recording Systems

- summarize the history of recording
- explain different types of analog and digital recording mediums and media
- describe the differences of modern day direct to two-track, direct to disk, and multi-track recording processes
- explain the process of tracking, overdubbing, and mixing in multi-track recording
- illustrate the process of mastering recordings
- explain the process of CD/DVD/tape replication

### D - The Components of Recording Sound

- explain the function of microphone preamps
- describe the importance of gain staging (levels)

## High School Career and Technical Education

### D - The Components of Recording Sound *(continued)*

- explain routing and switching of audio
- discuss the function of compressors/limiters
- describe the function(s) of various effects processors
- discuss the functions of and operate a mixing console
- describe the function and use of playback/monitoring systems
- summarize the assembly of all components into a mixing console
- demonstrate the basic operation of a mixing console
- create a simple recording by utilizing the recording components
- identify the signal path (flowchart) of recording sound from initial source-microphone-mixing console components-recording device-playback/monitoring system
- explain the various connectivity types and wiring (patch bays, cables (1/48/phono. RCA/cinch, TT/TinyTelephone, XLR, DSUB, ELCO, balanced, unbalanced, +4, -10, AES/EBU, SPDIF, optical, TOSLINK, TDIF, fire wire, and USB)
- categorize the different types of microphones and their uses (dynamic, condenser, ribbon, and pressure zone)

### E - Recording Session

- establish the roles and responsibilities of the engineer, assistant engineer, and producer
- illustrate how and why music stands, lighting, line of sight, and chart notation are important
- set up a recording session using microphones, direct boxes, direct lines, microphone stands, cables, music stands, and cues system
- create a recording utilizing appropriate devices and equipment
- demonstrate the overdubbing process
- create a final mix for production
- create a CD Master

### F - Core Skills

- communicate in a clear, concise, and courteous manner
- identify problems, analyze alternative solutions, and develop a plan of action
- use effective learning techniques to acquire and apply new knowledge and skills
- set goals and monitor progress toward meeting goals
- participate and interact as a team member and leader

## High School Career and Technical Education

### F - Core Skills *(continued)*

- work to satisfy customer/client expectations
- acquire, store, allocate, and use materials and space efficiently
- apply mathematical concepts and calculations and solve problems using appropriate mathematical techniques
- use and create text and multimedia documents in a variety of formats and be able to troubleshoot problems with technical or electronic equipment
- identify the scope of a business, its organization, and activities, and the interrelationship of its parts
- discuss factors that impact career decisions and formulate appropriate plans to reach career goals
- maintain safety, health, and environmental standards, and address ergonomic concerns

### G - Literacy Standards

- follow precisely a complex multistep procedure when performing technical tasks; analyze the specific results based on explanations in the text
- determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific technical context relevant to grade level texts and topics
- analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas
- analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved
- integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem
- evaluate the hypotheses, data, analysis, and conclusions in technical texts, verifying the data when possible and corroborating or challenging conclusions with other sources of information
- synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible
- cite specific textual evidence to support analysis of technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account
- determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms
- read and comprehend technical texts in the text complexity band independently and proficiently
- write arguments focused on discipline-specific content
- write informative/explanatory texts, including the narration of historical events or technical processes

## High School Career and Technical Education

### G - Literacy Standards *(continued)*

- produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience
- develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience
- use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information
- conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation
- gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation
- draw evidence from informational texts to support analysis, reflection, and research
- write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences

## High School Career and Technical Education

# Fundamentals of Aerospace

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Aviation History and Regulations

- explain aspects of aviation history and interpret aviation regulations

### C - Aerospace Flight Principles

- examine the aerospace principles regarding flight

### D - Careers in Aerospace

- explore careers in the aerospace industry

### E - Human Impacts in Aerospace

- analyze the human factors that affect the aerospace industry and work environments

### F - Aerospace Technology

- explore the major aerospace technology areas

### G - Aviation Meteorology

- describe basic aviation meteorology concepts

### H - Career and Technical Student Organizations

- examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Fundamentals of Exercise Physiology

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Fundamentals of Human Movement Science

- identify and compare the structures and functions of the major anatomical systems of the human body

### C - Exercise Physiology

- identify the functions of exercise physiology within the systems of the body

### D - Human Kinesiology

- explain and compare the principles of human kinesiology

### E - Assessments Associated with Personal Fitness Training

- explain and perform the assessments associated with personal fitness training

### F - Exercise Technique and Training Instruction

- explain the concepts associated with exercise techniques and training instruction

### G - Program Design

- apply the following principles of program design

### H - Considerations in Nutrition

- research the concepts related to nutrition and wellness

### I - Client Relations and Behavioral Coaching

- research the concepts related to client relations and behavioral coaching

### J - Professional Development, Practice, and Responsibility

- research the concepts and requirements associated with professional development practice and responsibility

## High School Career and Technical Education

# Fundamentals of Fashion

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - History of Fashion and Fashion Industry

- analyze the history of fashion and the fashion industry

### C - Basic Fashion Terminology

- define basic fashion terminology

### D - Fashion Cycle

- summarize the basics of the Fashion Cycle

### E - Clothing Styles and Parts

- differentiate basic clothing styles and parts

### F - Principles of Design

- investigate the elements and principles of design relating to clothing

### G - Design and Production Process

- explore the basics of the design and production process

### H - Business Ownership and Economic Concepts

- distinguish the types of business ownership and connect basic economic concepts

### I - Consumer Skills and Fashion Purchases

- investigate beneficial consumer skills necessary to make informed fashion purchases

### J - Marketing and Merchandising

- summarize the concepts of marketing and merchandising

### L - Careers

- research career pathways within the fashion industry



## High School Career and Technical Education

# Game Design: Animation and Simulation

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Game Design

- demonstrate conceptual understanding of the game design process

### C - Programming

- apply complex and abstract thinking to programming and scripting

### D - Mathematics

- analyze and synthesize the relationship of mathematics to game design

### E - Physics

- construct two-dimensional models using concepts of physics

### F - Modeling

- develop three-dimensional models, backgrounds, and scenes

### G - Characters

- analyze 2-D/3-D character animation and character controls

### H - Augmented Reality

- explain how to create an Augmented Reality experience
- design an augmented reality experience into a location-based game

### I - Game Development

- design and develop a game in teams
- deploy a student-team created game for beta testing

### J - Student Organizations

- examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Global Awareness and Cultural Competency

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Career Opportunities

- classify and describe career opportunities in international business and connect results to personality traits

### C - International Market Entry

- research and model the process for businesses to determine international market entry

### D - International Marketing Strategies

- utilize knowledge of basic marketing principles and cultural diversity in order to analyze international marketing strategies

### E - Financial Investments

- cite evidence to evaluate the strategies businesses employ to use venture capital to finance investment in international markets

### F - Culture and Customer Service

- evaluate and draw conclusions about the relationship between culture and customer service in international business settings

### G - Risk Management

- analyze sources of business risk when operating internationally, and explain the effects of risk management

### H - Communication Strategies

- connect the influences of cultural and historical differences on effective communication strategies in international business settings

### I - Ethical and Social Responsibility

- evaluate ethical and socially responsible business behavior in a global business environment

### J - Student Organizations

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# Government and Public Administration: Local and State Issues

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Strategic Planning and Budgeting

- research and analyze agency needs to develop long-range strategic planning and budgeting to establish benchmark 5, 10, and 20 years out using demographic analysis and indicators to plan for population segment growth and needs to maximize the potential of a department or agency to meet its policy analysis, vision, mission and goals

### C - Fiscal Management and Allocation

- analyze and utilize fiscal management skills to manage budget and allocation processes to ensure that resources are applied across a government or public administration department or agency

### D - Facilitation of Communication

- facilitate the flow of ideas and information to keep a local or state government department or agency and its constituency informed of policies and operations

### E - Ethical Procurement Procedures

- describe ethical and fiscally responsible procurement systems and procedures used to meet local, state, or federal government department or agency needs

### F - Labor Relations and the Effect on Government

- differentiate labor relations and effect on a local or state government and public administration department or agency

### G - Evaluation of Government

- evaluate the basic tenets of education, healthcare, criminal justice, environmental and tax policy debates

### H - Budgeting and Accounting in Government Agencies

- differentiate and comprehend the basic budget cycle and accounting principles for a government agency or department

## High School Career and Technical Education

# Government and Public Administration: State and Federal Issues

---

### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Sectors of Government and Public Administration

- apply and extend previous understandings of the various sectors of government/public administration (e.g. federal, state, regional, county and municipal)

### C - Funding and Budgetary Expectations

- analyze and summarize the systemic relationships of government and public administration funding, and budgetary expectations

### D - Personal Safety and Security

- analyze the cause and effect between personal safety and health as related to public health threats, computer safety, and personal safety and security

### E - Release of Information

- analyze and synthesize agency communication policies relating to the release of information to government and non-government agencies

### F - Appropriate Research Skills

- develop appropriate research skills to identify, evaluate, and analyze data for government and public administration agencies for specified purposes

### G - Employee Job Levels

- identify and evaluate the services and job levels of employees found in firefighting, public safety, public health, and criminal justice system

### H - Professional Employee Job Levels

- identify and evaluate the services and job levels of employees found in civil engineering, transportation services, and land, air quality, and water technology

### I - Educational Employee Job Levels

- identify and evaluate the services and job levels of employees found in educational services, social services, and regulatory and records services

### J - Employee Loyalty

- demonstrate behaviors extending employee loyalty toward employers

### K - Safe and Healthful Working Conditions

- maintain safe and healthful working conditions and environment in order to promote well-being in governmental and public administrative workplaces

### L - Workplace Ethics

- understand the impact and priority for maintaining appropriate ethics when analyzing data and its sources

## High School Career and Technical Education

# Graphic Design and Production

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Proper Equipment Operations

- build upon previous knowledge and demonstrate proper equipment operation and follow procedures in a safe manner, and achieve 100% on a written or demonstration safety test

### C - Career Opportunities

- examine and prepare for career opportunities in the design profession

### D - Design Elements

- understand and demonstrate the fundamental basic elements and principles of design for both print and interactive design

### E - Creative Briefs

- demonstrate an understanding of the fundamental basics of a creative brief and demonstrate the proper usage

### F - Color Exploration

- explore color and the variety of methods in which it can be applied; interpret and apply color models through graphic manipulations; and identify the output issues involving color and demonstrate the proper usage

### G - Typography

- explore different outlets for text composition (e.g., paragraphs, columns, pages, gutters, etc.) for typography and define their role in design

### H - Communication Skills

- develop professional written, verbal and non-verbal communication skills, and follow ethical guidelines and copyright laws

### I - Illustrations

- identify and demonstrate a working knowledge of illustration as it pertains to the design field

### J - File Management

- demonstrate knowledge of file management and file formats and digital file preparation for print and interactive projects

### K - Measurement

- demonstrate proper usage of measuring units and devices

## **High School Career and Technical Education**

### **L - SkillsUSA**

- examine how related student organizations are integral parts of career and technology education courses, through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Health Information Management Medical Office

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Healthcare Delivery

- evaluate the organization of healthcare delivery in the United States

### C - Health Information Management

- investigate the role of the health information management (HIM) in healthcare facilities

### D - Medical Terminology

- utilize appropriate medical terminology necessary for working in a medical office or other healthcare facilities

### E - Technology in HIM

- perform advanced technical skills within medical office services and HIM utilizing appropriate technology

### F - Healthcare Data Management

- analyze the components of Healthcare Data Management

### G - Health Data Structure, Content and Standards

- evaluate health data structure, content and standards

### H - Data Storage and Retrieval

- investigate the usage and monitoring of data storage and retrieval

### I - Principles of Liability

- evaluate the principles of liability as it relates to the management of care

### J - Patient Health Information

- identify patient record requirements and access to health information

### K - Consent and Confidentiality Laws

- adhere to laws governing confidentiality and informed consent

### L - Risk Management and Quality Assurance

- evaluate risk management and quality assurance

### M - Electronic Health Records

- assess the implementation of electronic health records and the need for security and risk prevention

**High School Career and Technical Education****N - Clinical Classification Systems**

- apply, evaluate and validate clinical classification systems

**O - Reimbursement Methodologies**

- analyze various reimbursement methodologies

**P - Procedure Codes**

- apply principles of procedure codes utilizing current regulations and guidelines



## High School Career and Technical Education

# Healthcare Support Services

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Safety

- apply the safety concepts needed to maintain a secure work environment and to prevent accidents by using safety precautions and/or practices

### C - Healthcare Roles

- analyze the roles/services performed in healthcare delivery systems to ensure the delivery of quality health care

### D - Communication

- apply the concepts of communication and appropriate customer service skills

### E - Legal and Ethical Issues

- apply legal and ethical responsibilities of the healthcare profession develop a personal code of ethics and adhere to professional standards/code of conduct

### F - Skills

- research and perform the guidelines required for proficiency as a dietary aide
- review and perform the guidelines required for proficiency as an environmental service worker
- review and perform the guidelines required for proficiency as a central supply/materials manager
- research and perform the guidelines required for proficiency as a patient transporter per facility protocols (facilities may only allow the patient transporter to transport via wheelchair or stretcher not transferring into these devices)

## High School Career and Technical Education

# Heating, Ventilation, Air-Conditioning, and Refrigeration

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Mathematical Concepts

- apply mathematical concepts related to HVACR

### C - Power Tool Usage

- demonstrate using hand and power tools associated with the HVACR trade in a professional and safe manner

### D - HVACR Pipe and Tubing Knowledge

- demonstrate the proper selection, handling, and methods of joining, installing and supporting of HVACR pipe and tubing

### E - Understanding HVACR Cooling system conditions

- describe how an HVACR system conditions and cools the air within a specified space

### F - Understanding HVACR Heating system conditions

- describe how an HVACR system conditions and heats the air within a specified space

### G - Compressor Operation

- describe how compressors operate

### H - Equipment Operation

- demonstrate how to operate the equipment used in the HVAC field

### I - Ductwork Assembly

- demonstrate proper assembly of ductwork

### J - SkillsUSA

- examine how SkillsUSA is a co-curricular part of career and technical education through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Hospitality, Recreation, and Tourism Essentials

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### A - Employability

- demonstrate employability skills required by business and industry

### B - History of Tourism

- analyze the hospitality, recreation, and tourism industry in relationship to historical developments/changes, broad segments of the markets and various motivations for travel

### C - Varied Aspects of Tourism

- assess the varied aspects of tourism by determining the impact on the local, state, national, and international economies, the importance of successful positioning in the target consumers' minds and the competitive nature of the industry

### D - World Geography

- develop a basic knowledge of world geography and be able to discuss the relationship of geography to climates, major destinations, travel issues and concerns, and upcoming trends in destination hotspots

### E - Marketing for Tourism

- explore the application of marketing and business fundamentals as they apply to the hospitality, recreation, and tourism industry

### F - Lodging Industry

- examine the lodging industry and determine how companies use marketing to achieve the goals and objectives of the facility

### G - Food and Beverage

- examine food and beverage operations in the hospitality, recreation, and tourism industry

### H - Worldwide Transportation

- analyze the transportation options (i.e., cruise and ferry, air, rail and ground transportation) available to various destinations in the U.S. and abroad

### I - Human Relations

- assess the importance of human relations, communications, and ethical conduct in relation to the hospitality, recreation and tourism industry

### J - Meeting Plans

- determine the importance of group, convention and meeting planning as a vital segment of the HRT industry

### K - Recreation Industry

- explore the recreation industry segment and the role played in the overall HRT market

**High School Career and Technical Education****L - HRT Initiatives**

- analyze HRT initiatives related to conducting business in global and sustainable environment

## High School Career and Technical Education

# Hospitality, Recreation, and Tourism Management

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### **A - Employability**

- demonstrate employability skills required by business and industry

### **B - Social, Environmental, Economic and Consumer Factors**

- draw conclusions about the social, environmental, economic, and consumer factors that impact the hospitality, recreation, and tourism industry and its development

### **C - Leadership and Management Skills**

- develop the leadership and management skills needed by upwardly mobile employees in successful hospitality, recreation, and tourism facilities

### **D - Food and Beverage Operations and Control Systems**

- analyze the operations and control systems used in the food and beverage division of the hospitality, recreation, and tourism industry

### **E - Human Resources in Hospitality**

- explore the essential functions of human resources in the hospitality industry

### **F - Management Structure in the Service Industry**

- analyze hospitality, recreation, and tourism services in relation to management structures, service levels, and current issues

### **G - Management and Sales Operations**

- interpret the overall importance of sales, operations, and management of sales activities in the hospitality, recreation, and tourism industry

### **H - Legal and Liability Issues**

- demonstrate knowledge of legal and liability issues in the hospitality, recreation, and tourism industry and determine appropriate responses

### **I - Trends in the Hospitality Industry**

- determine current and emerging trends in the hospitality, recreation, and tourism industry

### **J - Guest Services**

- develop customer service skills and an overall understanding of the importance of guest services in the hospitality, recreation, and tourism industry

### **K - Cost Effective Operations**

- determine the importance of cost effective operations in the hospitality, recreation, and tourism industry

### **L - Technology in Hospitality, Recreation and Tourism**

- examine the elements of technology used in the hospitality, recreation, and tourism industry

## High School Career and Technical Education

# Human Resources Principles

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Basic Human Resources Principles

- apply the basic human resources principles as they relate to managing an effective and efficient organization

### C - Employment Laws and Ethics

- examine employment law and ethics as they refer to contemporary issues in Human Resources Management

### D - Selection of Employees

- apply and model the concepts of recruitment, interview, and selection of employees in the current labor market

### E - Training Plan

- develop a training plan for employees after investigating methods of employee training and development

### F - Job Description Analysis

- analyze the data and respond to results of job description analysis, development, and design

### G - Performance Evaluation Process

- assess the performance evaluation process and its relationship to promotions and demotions

### H - Employee Benefits

- review, develop, and compare employee compensation and company-sponsored benefits

### I - Employee Disciplinary Action and Rights

- investigate causes for and consequences of employee disciplinary action and relative employee rights

### J - CTSO Integration

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# Industry Fundamentals and Occupational Safety

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Construction Safety

- apply appropriate construction safety practices

### C - Math in Construction

- apply mathematical concepts as related to the field of construction

### D - Tool Usage and Safety

- utilize basic hand and power tools in a professional and safe manner

### E - Construction Drawings, Terms, Components and Symbols

- demonstrate knowledge of construction drawings terms, components, and symbols

### F - Rigging

- explain and implement safe rigging procedures

### G - Materials and Handling

- explain hazards associated with materials handling

### H - Communication

- demonstrate knowledge of the different forms of communication used in the construction industry

### I - Careers and Constructions

- describe the principle fields of specializations related to the construction industry and identify associated career opportunities

### J - Leadership Development

- analyze the relationship between leadership development, school and community service projects with a career in the construction industry

### K - Literacy

- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

# Information Technology Essentials

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Operate an Effective Workplace

- work safely with a variety of workplace technologies to solve problems and operate an efficient workplace

### C - Fundamental Principles of PCs

- identify the fundamental principles of personal computers by examining the hardware components and the interactions with component

### D - Upgrade PC Components

- install, configure, optimize, and upgrade personal computer components

### E - Troubleshooting Techniques PC Components

- use tools, diagnostic procedures and troubleshooting techniques for personal computer components

### F - Preventive Maintenance PC Components

- perform preventive maintenance on personal computer components

### G - Upgrade Laptops and Portable Devices

- install, configure, optimize, and upgrade laptops and portable devices

### H - Troubleshoot Laptops and Portable Devices

- using tools and basic diagnostic procedures troubleshoot laptops and portable devices

### I - Upgrade Operating Systems

- install, configure, optimize, and upgrade operating systems

### J - Troubleshooting Techniques Operating System

- identify tools, diagnostic procedures, and troubleshooting techniques for operating systems

### K - Troubleshooting Printers and Scanners

- identify the fundamental principles of using, operating, and troubleshooting printers and scanners

### L - CTSO Integration

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events



## High School Career and Technical Education

# Information Technology Support

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Printers and Scanners

- apply knowledge and skills to install, configure, optimize, and upgrade printers and scanners

### C - Networks

- apply knowledge and skills of networks to install, configure, optimize, and upgrade networks

### D - Fundamentals of Security

- identify the fundamentals and principles of security

### E - Security

- apply knowledge and skills to install, configure, upgrade, and optimize security

### F - Safety and Environmental Issues

- describe the aspects and importance of safety and environmental issues with computer support and services

### G - Laptops and Portable Devices Maintenance

- perform maintenance procedures on laptops and portable devices

### H - Professional Behavior

- use job-related professional behavior in language, interaction and communication including notation of privacy, confidentiality, and respect for the customer property

### I - CTSO Integration

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# International Business Concepts

---

### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Building Effective Teams

- research and evaluate the characteristics involved in building an effective team and explain how businesses utilize teams

### C - Targeted Global Centers

- research and critique the decisions companies make in order to enter a targeted global center

### D - Risk Analysis

- perform a risk analysis for a business operating in a targeted global center

### E - Start-Up Business Plan

- develop a team with the purpose to effectively research, develop, and present a startup business plan

### F - Marketing Plan and Branding

- develop a marketing plan including specific business branding to identify, reach, and retain customers in the targeted global center

### G - Student Organizations

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# Introduction to Business and Technology

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Applications of Productivity Tools

- apply technology as a tool to increase productivity to create, edit, and publish industry-appropriate documents

### C - Word Processing

- demonstrate proficiency in word processing through creating, editing, and publishing professional-appearing business documents

### D - Business Leadership

- analyze and integrate leadership skills and management functions within the business environment

### E - Marketing

- demonstrate understanding of the concept of marketing and its importance to business ownership

### F - Communication Skills

- use professional oral, written, and digital communication skills to create, express, and interpret information and ideas

### G - Entrepreneurship

- demonstrate an understanding of entrepreneurship through recognizing a business opportunity, how to start a business based on the recognized opportunity, and basics of how to operate and maintain that business

### H - Accounting

- understand, interpret, and use accounting principles to make financial decisions

### I - Financial Literacy

- develop effective money management strategies and understand the role and functions of financial institutions

### J - Business Risk

- research and interpret the various risks involved in operating a business while determining the role of insurance for a business

### K - Human Resources

- examine basic human resources and the legal aspects of a business while incorporating the methods into business practices

**High School Career and Technical Education****L - Leadership Development**

- analyze the relationship between leadership development, school and community service projects with a career in the business and technology industry

**M - Literacy**

- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

# Introduction to Collision Repair

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Safety

- comply with personal and environmental safety practices associated with collision repair

### C - Industry Standards and Practices

- explore different aspects of the collision repair industry and apply best practices and industry standards

### D - Tools and Machines

- identify and utilize power tools and hand tools used in collision repair

### E - Metals and Repair

- distinguish between different basic metal repair techniques

### F - Plastics and Repairs

- identify the most common types of plastic used in automotive construction and perform simple repairs using these materials

### G - Vehicle Construction

- differentiate between types of vehicle construction

### H - Automotive Refinishing

- identify and explain the differences in the types of material used in the automotive refinish industry, as well as demonstrate basic spray techniques

### I - Repair Estimates

- interpret different forms of repair estimates

### J - Leadership Development

- analyze the relationship between leadership development, school and community service projects with a career in the collision repair industry

### K - Literacy

- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

### Introduction to Construction

---

#### **A - Employability Skills**

- demonstrate employability skills required by business and industry

#### **B - History and Tradition of Building Trades**

- demonstrate and explain knowledge of the history and traditions of the building trades

#### **C - General Construction and OSHA and EPA Safety**

- demonstrate knowledge and application of general construction and specific OSHA and EPA safety concepts and practices

#### **D - Professional and Safe Use of Basic Tools**

- demonstrate the professional and safe use of basic tools used in the building trades

#### **E - Building Trades' Plans and Specifications**

- differentiate between the different building trades' plans and specifications

#### **F - SkillsUSA**

- examine how SkillsUSA is a co-curricular part of career and technical education through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Introduction to Consumer Relations

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Leadership Development

- analyze the relationship between leadership development, school and community service projects with a career in the consumer relations industry

### C - Consumer Relations Philosophy

- analyze components of a quality consumer relations philosophy

### D - Consumers and Their Needs

- describe consumers and identify their varying needs

### E - Consumer Satisfaction and Service

- identify concepts of quality service to assure consumer satisfaction

### F - Professionalism

- explain the effects of professionalism and a positive image

### G - Communication Skills and Customer Relations

- demonstrate the importance of communication skills in consumer relations

### H - Conflict Prevention and Management

- evaluate effective conflict prevention and management techniques

### I - Customer Support

- evaluate effective strategies for ongoing consumer support

### J - Careers in Consumer Relations

- research careers in the consumer relations industry

### K - Literacy

- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

# Introduction to Culinary Arts

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### A - Employability Skills

- examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, and competitive events
- demonstrate employability skills required by business and industry

### B - History of the Food Service Industry

- summarize the history and philosophy of the food service industry

### C - Sanitation in Food Service

- demonstrate and practice correct sanitation as it relates to healthy living and the modern commercial kitchen and bake shop

### D - Kitchen Equipment and Small Wares

- identify and describes fixed equipment and small wares associated with the commercial kitchen and bake shop

### E - Safety Skills in the Commercial Kitchen

- analyze and examine fundamental safety skills and practices related to the commercial kitchen

### F - Standardized Recipes

- examine and identify standardized recipes and their role in a commercial kitchen while practicing culinary math skills through recipe conversion and measurements

### G - Knife Skills

- examine and perform all aspects of kitchen knife use and classic knife skills

### H - Nutrition

- describe and apply the principles of nutrition

### I - Safe Food Handling Procedures

- identify various food products used in a commercial foodservice operation and list the proper handling and storage procedures for each

### J - Professionalism

- discuss and practice sound human relations and professionalism concepts for a career pathway in Culinary Arts employment

### K - Front of the House

- identify and apply front of the house techniques and methods of operation used in restaurants and catering services



## **High School Career and Technical Education**

### **L - Sustainability**

- identify and practice skills related to sustainability of resources

### **M - Cooking Methods and Techniques**

- examine and practice cooking methods, techniques, and preparations such as dry heat and moist heat methods

### **N - Careers in Culinary Arts**

- analyze the relationship between leadership development, school and community service projects with a career in the culinary arts industry

### **O - Literacy Skills**

- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

# Introduction to Cybersecurity

---

### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Basic Concepts

- demonstrate an understanding of cybersecurity concepts and research

### C - Fundamental Principles

- identify the fundamental principles of the Open Systems Interconnection Model, Internet Protocol IPv4 and IPv6, and common networking services to include Name Resolution Techniques
- identify the fundamental principles of networking (wired and wireless), local area networks (elements, perimeter networks, IP addressing, access methods and topologies), client-server and peer-to-peer networking models, and wide area networks

### D - Commands

- demonstrate how to work with the basic and advanced command prompts

### E - Infrastructures

- explore and research network infrastructures and network security

### F - Basic Skills

- demonstrate how to work with fundamental components of cybersecurity

### G - Security

- demonstrate how to employ host system and application security
- demonstrate how to implement proper security administration

### H - Controls

- demonstrate how to implement proper access controls and identity management

### I - Cryptology

- research and explore basic principles of cryptology

### J - Student Organizations

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# Introduction to Digital Media

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Safety

- understand and follow safety procedures when working with computers and audio-video equipment

### C - History

- develop an understanding of the history of animation and the evolution of 2-D to 3-D animation

### D - Terminology

- understand and utilize trade terminology in an appropriate manner

### E - Communication

- demonstrate effective professional communication skills

### F - Critical Thinking

- find and solve problems of the production process through open-ended inquiry, the consideration of multiple options, weighing consequences, and assessing results

### G - Drawing

- understand and apply media, techniques, and processes in drawing

### H - Painting

- understand and apply media, techniques, and processes in color painting

### I - Color

- demonstrate the ability to specify color materials properly

### J - Texture

- demonstrate the ability to create various surface materials

### K - Writing

- identify and create various types of scripts

### L - Focus Development

- demonstrate design skills needed to formally document project goals in order to focus development efforts
- analyze the origins of one's own ideas in relation to community, culture, and world that inform art

## **High School Career and Technical Education**

### **M - Framing**

- demonstrate knowledge of manipulating stop motion frames and direction

### **N - Software**

- demonstrate knowledge of animation software user-interface and general features

### **O - File Management**

- acquire knowledge of file management and apply accordingly

### **P - Ethical and Legal Issues**

- describe, analyze, develop, and follow policies for managing ethical and legal issues in the business world and in a technology based society

### **Q - Portfolio Development**

- create and organize portfolios through the use of a variety of web design tools

### **R - Student Organizations**

- examine how related student organizations are integral parts of career and technology education courses through leadership development school and community service projects and competitive events

## High School Career and Technical Education

# Introduction to Digital Technology

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Careers in Information Technology

- explore, research, and present findings on positions and career paths in technology and the impact of technology on chosen career area

### C - Communication Skills

- demonstrate effective professional communication skills (oral, written, and digital) and practices that enable positive customer relationships

### D - Types of Technology

- identify, describe, evaluate, select and use appropriate technology

### E - Introduction to the Digital World

- apply concepts needed to understand, communicate, and adapt to a digital world

### F - Computer Networks

- explore and explain the basic components of computer networks

### G - Problem Solving

- use computational thinking procedures to analyze and solve problems

### H - Web Design

- create and organize webpages through the use of a variety of web programming design tools

### I - Programming

- design, develop, test and implement programs using visual programming

### J - Ethical and Legal Issues

- describe, analyze, develop and follow policies for managing ethical and legal issues in the business world and in a technology-based society

### K - Professional Growth and Development

- analyze the relationship between leadership development, school and community service projects with a career in the digital technology industry

### L - Literacy Skills

- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

# Introduction to Drafting and Design

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Careers in Architecture and Engineering

- identify the disciplines related to architectural and engineering professions

### C - Lab Usage and Safety

- demonstrate the knowledge and skills to properly use the tools and equipment safely in the drafting lab

### D - Tool Usage and Safety

- demonstrate the correct use and management of all drafting tools and supplies

### E - Technical Freehand Sketching

- create technical freehand sketches

### F - Lettering Techniques

- demonstrate proper lettering techniques

### G - Line Types

- demonstrate the use of proper line types

### H - Scales

- demonstrate the ability to read and draw using the proper scale

### I - Computer Operations

- demonstrate the knowledge and skills of computer operations

### J - Single View Drawings

- create and add dimension to single view drawings while applying geometric construction

### K - Multi-View Drawings

- utilize orthographic projection to create and add dimension to multi-view drawings manually and using CADD

### L - Leadership Development

- analyze the relationship between leadership development, school and community service projects with a career in drafting and design industry

### M - Literacy

- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

# Introduction to Government and Public Administration

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Communication

- select appropriate communication formats to facilitate the flow of ideas and information among government, public administration, the business community, and the general public

### C - Government and Public Administration

- analyze and summarize the systemic relationships of government and public administration agencies
- execute work-related tasks and processes using emerging and specialized technologies to achieve common objectives specific to government and public administration

### D - Goals of Government

- utilize negotiation skills to achieve the goals of government

### E - Technology and Communication

- identify, evaluate, select, and use appropriate technology for specific tasks found in government and public administration agencies

### F - Policymaking

- apply democratic principles in the process of government and administrative policymaking to achieve the public will

### G - Health and Safety in the Workplace

- maintain safe and healthful working conditions and environment in order to promote wellbeing in governmental and public administrative workplaces

### H - Vision and Strategic Plan

- develop an organizational vision and strategic plan to inform stakeholders of the goals of a government or public administration agency

### I - Legal and Ethical Requirements

- adopt and apply a standard of practices sufficient to meet legal and ethical requirements and meet the public's expectations for government and public administration

### J - Careers in Government and Public Administration

- analyze the relationship between leadership development, school and community service projects with a career in the government and public administration

### K - Literacy Skills

- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

# Introduction to Graphics and Design

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### **A - Employability Skills**

- demonstrate employability skills required by business and industry

### **B - Careers in Graphic Communications and Design**

- explore careers available in the field of graphic communications and the design industry

### **C - History of Graphics and Design Industry**

- discuss developments and individuals relating to the history of the graphics and design industry and explore emerging trends and technologies

### **D - Professional and Ethical Issues**

- examine the professional and ethical issues involved in the visual communications and design industries

### **E - Business Cycle**

- examine and describe the business cycle elements

### **F - Equipment Operation and Safety**

- explain and demonstrate how to operate equipment in a safe manner

### **G - Lab Safety and Procedures**

- identify safety and health procedures utilized in the classroom/lab environment

### **H - Measurement**

- demonstrate proper usage of measuring units and devices

### **I - Paper Types and Outputs**

- recognize and utilize basic paper types and sizes for output

### **J - Graphic Imaging**

- generate and manipulate various graphic imaging processes

### **K - Output Operations**

- analyze pre-press, pre-flight, and output operations

### **L - Design Layout**

- understand and demonstrate how to design a page layout

### **M - Elements of Design**

- identify and define the five elements incorporated in basic graphic designs and understand the application of effective color usage



## **High School Career and Technical Education**

### **N - File Formats**

- identify and produce files utilizing different digital formats

### **O - Page Layout**

- identify and demonstrate page layout terminology and tools
- distinguish and demonstrate the difference between page layout, raster-based photo manipulation, and vector-based graphic software applications

### **P - Letterforms**

- discuss the origins of type by examining the evolution of letterforms

### **Q - Typeface**

- evaluate the function of typeface design in supporting legibility in a variety of media applications

### **R - Printing**

- distinguish between the different print/output processes

### **S - Electronic Imaging**

- explore the different electronic imaging processes

### **T - Leadership Development**

- analyze the relationship between leadership development, school and community service projects with a career in the graphics and design industry

### **U - Literacy**

- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

# Introduction to Healthcare Science

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Health and Safety Policy and Procedure

- demonstrate standard safety practices for all classroom, laboratory and field experience; understand the existing and potential hazards to clients, co-workers, and self, and prevent injury or illness through safe work practices by following current health and safety policies and procedures

### C - Healthcare Systems and Performance

- describe how various healthcare roles fit into the office/department, the organization and the overall healthcare environment and identify how key systems affect services performed and quality of care

### D - Develop a Career Plan

- develop a Career Plan

### E - Diversity and Ethics in Healthcare Delivery

- evaluate the impact of diversity and ethics on healthcare delivery

### F - Regulation, Policy, and Law

- demonstrate an understanding of the legal responsibilities, limitations, and implications of their actions within the healthcare delivery setting; evaluate the importance of their duties according to regulations, policies, laws and legislated rights of clients

### G - Providing and Obtaining Information

- identify and demonstrate the various methods of providing and obtaining information from patients, family members, other agencies, and other members of the healthcare team

### H - Preventive Health

- practice preventive health behaviors personally and professionally

### I - Microorganisms and Infection

- analyze different types of microorganisms and their defining characteristics to reduce the risk of infection or illness. Demonstrate physicochemical methods and the use of PPE in preventing and controlling the spread of microbial growth

### J - Demonstrating CPR, First Aid and AED

- demonstrate CPR, First Aid, and the AED utilizing current standards

### K - Stages of Human Development

- describe the stages of development from birth to adulthood (e.g., neonatal period, infancy, childhood, adolescence and puberty, adulthood, and geriatrics)

**High School Career and Technical Education****L - Information Technology Applications**

- utilize information technology applications required within all career specialties and demonstrate use as appropriate to healthcare applications

**M - Applying Mathematical Computation**

- apply mathematical computations related to healthcare procedures

## High School Career and Technical Education

# Introduction to HVACR Systems

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Electrical Concepts and Laws

- demonstrate a thorough understanding of electrical concepts, theories, laws, and simple circuits

### C - HVACR Electrical Circuitry

- identify and describe electrical circuitry associated with the HVACR trade

### D - Schematic Symbols

- compare components to schematic symbols

### E - Alternating Current

- describe and illustrate alternating current

### F - Electrical Component Testing

- demonstrate the ability to test various electrical components in a HVAC system

### G - Thermostat Testing

- demonstrate installing and troubleshooting thermostats

### H - SkillsUSA

- examine how SkillsUSA is a co-curricular part of career and technical education through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Introduction to International Business

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Personal Trait Assessments

- summarize personal strengths, weaknesses, and personality traits through the completion of different types of assessments

### C - International Business Concepts

- collect and compare fundamental business concepts that affect business and international business decision making

### D - Management Styles

- summarize from multiple sources the essential management styles, outcomes, vision statements, and needed personality traits used in international business settings

### E - Diversity

- make observations about the interrelatedness and diversity of geographic, social, cultural, political, and legal factors and how those factors shape the international business environment

### F - Communication Strategies

- apply communication strategies necessary and appropriate for effective and profitable international business relations

### G - Ethical Business Behavior

- recognize the need for ethical business behavior in a global business environment

### H - Economic Concepts

- compare and contrast economic concepts as they relate to international business

### I - Student Organizations

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# Introduction to Law, Public Safety, Corrections and Security

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### **A - Employability Skills**

- demonstrate employability skills required by business and industry

### **B - Careers in Law, Public Safety, Corrections and Security**

- explore and evaluate careers in Law, Public Safety, Corrections and Security

### **C - Cultural Impacts and Conflict Resolution**

- analyze how cultural differences impact the fields of Law, Public Safety, Corrections, and Security
- apply conflict resolution to effectively resolve issues in Law, Public Safety, Corrections, and Security

### **D - Structures of the Legal System**

- describe the structure and interaction between law and public safety agencies at a local, state, and federal level

### **E - Policy and Management in the Legal System**

- demonstrate understanding of the missions, strategies, policies and management styles utilized by Law, Public Safety, Corrections, and Security agencies

### **F - Constitutional Law**

- evaluate constitutional law as it affects Law, Public Safety, Corrections, and Security personnel and issues and incidents they face in their careers

### **G - Reports and Documents**

- demonstrate the ability to accurately complete various Law, Public Safety, Corrections, and Security reports and documents

### **H - Ethical and Legal Responsibilities**

- investigate ethical and legal responsibilities associated with Law, Public Safety, Corrections, and Security professions

### **I - Disaster Preparedness and Emergency Management**

- discuss disaster preparedness/emergency management agencies, including but not limited to: Department of Homeland Security, Federal Emergency Management Agency, Citizens Corps, and Georgia Emergency Management Agency

### **J - Life Support and First Aid**

- demonstrate the steps of Basic Life Support (BLS) and First Aid

### **K - Hazards**

- identify the types of hazards likely to affect homes and communities and describe steps to prepare for emergencies

**High School Career and Technical Education****L - Fire**

- describe the various origins of fires, classes of fires, and the correct means to extinguish each type of fire

**M - Search and Rescue**

- analyze the components of search and rescue operations

**N - Intrapersonal Crisis Management**

- evaluate techniques for managing intrapersonal reactions to crisis situations

**O - Terrorism**

- examine common targets of terroristic attacks and the appropriate action following an attack

**P - Leadership Development**

- analyze the relationship between leadership development, school and community service projects with a career in the law, public safety, and corrections industry

**Q - Literacy**

- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

# Introduction to Mechatronics

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Safety

- define safe laboratory procedures and OSHA Regulations for the manufacturing lab

### C - Electrical Laws and Principles

- demonstrate and understanding of electrical laws and principles

### D - Magnetism

- demonstrate an understanding of magnetism and applications in manufacturing

### E - Batteries

- demonstrate an understanding of batteries and uses in manufacturing

### F - Circuits

- explain and demonstrate the basic operation of DC test equipment
- compute and apply series, parallel, and simple combination circuits

### G - Pneumatic Systems

- explain pneumatic system principles
- demonstrate proper operation of pneumatic system components

### H - Programmable Logic Controller

- demonstrate an understanding of Programmable Logic Controller (PLC) safety procedures
- demonstrate the uses of Programmable Logic Controller (PLC) hardware and software
- demonstrate correct Programmable Logic Controller (PLC) installation, configuration, and setup
- understand the terms, operations, and values for Programmable Logic Controller (PLC) Programming Basics

### I - Relay Logic

- understand Relay Logic instructions and uses in automation and controls

### J - Timers and Counters

- demonstrate the proper uses of timers and counters

### K - Careers in Mechatronics

- analyze the relationship between leadership development, school and community service projects with a career in the mechatronics industry



**High School Career and Technical Education****L - Literacy Skills**

- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

### Introduction to Metals

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#### **A - Employability Skills**

- demonstrate employability skills required by business and industry

#### **B - History of Machining, Welding and Sheet-Metal Trade**

- explore the history of the machining, welding, and sheet-metal trade

#### **C - Metals Safety**

- demonstrate knowledge and practice of metals safety

#### **D - Using Tools**

- demonstrate proficiency in the use of hand and power tools specific to the trade

#### **E - Measurement and Tools**

- demonstrate the ability to use measuring instruments specific to the metals trade

#### **F - Welding**

- demonstrate and explain the ability to safely set up and operate basic equipment for welding and cutting specific to the metal trade

#### **G - Parallel Line Development**

- demonstrate the ability to perform basic layout for parallel line development

#### **H - Machined Projects**

- demonstrate and explain the ability to perform basic layout for machined projects

#### **I - SkillsUSA**

- examine how SkillsUSA is a co-curricular part of career and technical education through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Introduction to Personal Care Services

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Careers and Trends

- explore career opportunities and economic trends in the personal care industry

### C - Laws, Rules, and Regulations

- identify and evaluate state laws, rules and regulations

### D - Professionalism

- display a professional appearance and role play appropriate interaction with clients in the personal care services

### E - Safety and Sanitation

- evaluate and apply the regulations of infection control: principles, prevention, procedures and precautions to reduce the risk of the spread of infection to clients and personal care services personnel
- demonstrate proper safety procedures and accident prevention in personal care services

### F - Basic Chemistry

- understand basic chemistry fundamentals and applications to the personal care services industry

### G - Body Systems

- demonstrate a working knowledge of anatomy as it relates to skills in cosmetology, barbering, esthetics and nail

### H - Technical Skills

- explore and demonstrate basic technical skills and the use of technology in cosmetology, barbering, esthetics and nails

### I - Careers in Personal Care Services

- analyze the relationship between leadership development, school and community service projects with a career in the personal care services industry

### J - Literacy Skills

- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

# Introduction to Sports and Entertainment Marketing

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Marketing Concepts

- interpret marketing concepts as they apply to sports and entertainment marketing

### C - Marketing Information Management

- apply concepts of marketing-information management to sports and entertainment marketing

### D - Elements of Promotion

- differentiate between the elements of promotion: sales promotion, advertising, personal selling, public relations, and publicity

### E - Branding Concepts

- interpret branding concepts as they apply to sports and entertainment marketing

### F - Financial Planning

- apply concepts of processes associated with successful financial planning in sports and entertainment marketing

### G - Product Marketing

- analyze product/service marketing as it relates to sports and entertainment marketing

### H - Components of Sports Marketing

- differentiate between the components of the sports marketing industry

### I - Entertainment Industry

- analyze the field of marketing as it relates to the elements of the entertainment industry: television, radio, music, movie, theater, and fine arts

### J - Selling Processes

- interpret the elements of the selling process as they relate to sports and entertainment marketing

### K - Legal and Ethical Behaviors

- interpret legal and ethical behaviors as they relate to the sports and entertainment marketing field

### L - Communication Skills

- incorporate communication and presentation skills into sports and entertainment activities

### M - Distribution Channels

- arrange appropriate and efficient channels of distribution for sports and entertainment events

**High School Career and Technical Education****N - Career Choices**

- investigate career choices in sports and entertainment marketing

**O - Marketing Plans**

- compose and create a sports and entertainment marketing plan

## High School Career and Technical Education

### Legal Administrative Services

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#### **A - Employability Skills**

- demonstrate employability skills required by business and industry

#### **B - Legal Administrative Careers**

- explore and evaluate careers in legal administrative services (LaS)

#### **C - General Legal Knowledge**

- demonstrate general legal knowledge

#### **D - Proper Legal Correspondence**

- create proper legal correspondence

#### **E - Format Legal Documents**

- create and format court and legal documents

#### **F - Appropriate Mail Handling Procedures**

- demonstrate appropriate mail-handling procedures

#### **G - Appropriate Filing Procedures**

- demonstrate appropriate filing procedures

#### **H - Basic Accounting**

- review basic accounting terms and procedures

#### **I - Computer Information Systems**

- demonstrate familiarity with computer information systems

#### **J - Career Opportunities**

- explore career opportunities for certified court reporters

#### **K - Student Organizations**

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# Legal Environment of Business

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Ethics

- compare and contrast the relationship between ethics and law for a business

### C - Legal Dispute Resolution

- explain and illustrate through simulation the process by which a legal dispute is resolved for a business and personal issue

### D - Major Crimes Impact

- investigate major crimes affecting business and the impact on a business

### E - Tort Law

- evaluate the use of tort law in a business setting

### F - Contractual Relationships

- demonstrate an understanding of contractual relationships

### G - Statutory/Regulatory Schemes

- categorize, evaluate, and assess specific statutory/regulatory schemes impact on a business

### H - e-commerce and the Law

- illustrate and defend the challenges of applying existing law to e-commerce

### I - Diversity

- research and summarize the influence of diverse cultures and customs on business practices while detailing awareness in business operations

### J - Co-Curricular Organizations

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# Logistics Fundamentals

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Safety and Health Procedures

- identify safety and health procedures utilized in the classroom/lab environment

### C - Economics

- explain the role economics plays in logistics and supply chain management

### D - Logistics and Supply Chains

- acquire an understanding of logistics and supply chain management

### E - Motor Carrier Industry

- describe the motor carrier industry's relation to logistics and supply chain management

### F - Railroad Industry

- investigate the railroad industry relating to logistics and supply chain management

### G - Airline Industry

- investigate the airline industry relating to logistics and supply chain management

### H - Ocean Carrier Industry

- research and describe the ocean carrier industry relating to logistics and supply chain management

### I - Deep Water Ports

- describe of the importance of deep water ports to logistics and supply chain management

### J - Warehousing Equipment

- identify and describe types of equipment used in warehousing to move, store, and control and protect products

### K - Warehousing and Material Handling Logistics

- describe the concepts of warehousing and material handling logistics

### L - Student Organizations

- explain how related student organizations are integral parts of career and technology education courses through leadership development, school, and community service projects, and competitive events



## High School Career and Technical Education

# Logistics Operations

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Global Supply Chain Logistics

- distinguish the essential components of global supply chain logistics and assess how these components affect company viability, profitability, and effectiveness

### C - Global Logistics and the Environment

- investigate the global logistics environment and interpret its impact on the environment

### D - Material Handling Equipment

- identify and describe equipment utilized in the material handling environment and apply concepts to select the correct equipment for specific jobs

### E - Safety

- identify and explain principles and procedures used to maintain a safe logistics work environment

### F - Quality Control Improvement

- analyze quality control improvement principles as they relate to global supply chain logistics and synthesize how control systems are implemented in global supply chain logistics

### G - Communications

- examine and summarize the importance of effective communications in the logistics community

### H - Teamwork

- demonstrate an understanding of the role teamwork might play in solving problems in the logistics environment

### I - Technology in Logistics

- describe technology that you might use to improve efficiency in supply chain logistics

### J - Terminology and Vocabulary

- utilize current and acceptable abbreviations and terminology related to proper communications within distribution, logistics, and supply chain management

### K - Terminology and Vocabulary

- understand and apply terminology used in logistics and supply chain management

### L - Student Organizations

- examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Marketing and Entrepreneurship

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Successful Entrepreneur

- understand the concepts, processes, systems, strategies and tools needed to be a successful entrepreneur / business owner / manager

### C - Support of Entrepreneurs

- understand the concepts, strategies, and systems needed to implement and obtain support for an entrepreneurial entity

### D - Entrepreneurial Processes

- understand the processes, strategies, and systems needed to guide the financial organization of an entrepreneurial entity

### E - Successful Business Ventures

- understand the concepts, processes, systems, strategies and tools needed to create a successful business venture

### F - Marketing Plans

- understand the concepts, systems, and tools needed to complete the marketing plan

### G - Managing Business Ventures

- understand the concepts, processes, systems, strategies, and tools needed to be a successfully manage a business venture

### H - Career and Technical Student Organizations

- explain the goals, mission and objectives of a Career and Technical Student Organization (CTSO)

## High School Career and Technical Education

# Marketing Communications Essentials

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Organizational Tools

- distinguish the tools, techniques, and systems that businesses use to create exchanges and satisfy organizational objectives

### C - Day-to-Day Activity Monitoring

- compare and contrast the processes and systems implemented to monitor, plan, and control the day-to-day activities required for continued business functioning

### D - Evaluation Systems

- describe the tools, strategies, and systems needed to access, process, maintain, evaluate, and disseminate information to assist in marketing communications decision-making in Business-to-Business (B2B), Business-to-consumer (B2C), and Business-to-government (B2G) markets

### E - Marketing Decision-Making

- investigate the tools, strategies, and systems needed to access, process, maintain, evaluate, disseminate information to assist marketing information decision-making

### F - Price Adjustments

- analyze the concepts and strategies utilized in determining and adjusting prices to maximize return and meet customers' perceptions of value

### G - Product Mix

- formulate and apply the concepts and processes needed to obtain, develop, maintain, and improve a product or service mix in response to market opportunities

### H - Strategy Development

- develop a logical argument about the concepts and strategies needed to communicate information about products, services, images, and/or ideas to achieve a desired outcome

### I - Client Desires

- summarize the concepts and actions needed to determine client needs and wants and respond through planned, personalized communication that influences purchase decisions and enhances future business opportunities

### J - Marketing Communications

- construct the concepts and strategies needed to communicate information about products, services, images, and/or ideas to achieve a desired outcome using public relations

### K - Digital Marketing

- investigate and explain the concepts and strategies needed to communicate information about products, services, images, and/or ideas to achieve a desired outcome using digital marketing communications media

**High School Career and Technical Education****L - Social Media Marketing**

- differentiate the concepts and strategies needed to communicate information about products, services, images, and/or ideas to achieve a desired outcome using social communications media

**M - Social Media Summarization**

- summarize and apply the concepts and strategies needed to communicate information about products, services, images, and/or ideas to achieve a desired outcome using social communications media

**N - Promotional Sales**

- apply the concepts and strategies needed to communicate information about products, services, images, and/or ideas to achieve a desired outcome using sales promotions

## High School Career and Technical Education

# Marketing Management

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Communication Skills

- utilize communication skills and technology tools to facilitate information flow in marketing, sales, and service

### C - Marketing Legal Considerations

- examine marketing activities and related legal considerations to facilitate business development and growth

### D - Economics in Marketing

- apply economics skills in marketing, sales, and service to obtain understanding of customers and the economic environment in which they function

### E - Business Financial Systems

- evaluate financial systems to enhance their impact on businesses and marketing operations and systems

### F - Dissemination of Marketing Information

- gather, synthesize, evaluate, and disseminate marketing information to make business and marketing decisions

### G - Pricing Strategies

- apply pricing strategies to maximize return and meet customers' perception of value

### H - Product Service

- obtain, develop, maintain, and improve a product/service mix to respond to market opportunities

### I - Sales Knowledge

- analyze sales knowledge and skills to determine client needs and wants and to respond through planned, personalized marketing communications

### J - Promotional Knowledge

- describe promotional knowledge and skills for communication information to achieve a desired marketing outcome

### K - Distribution Knowledge

- explain distribution knowledge and skills to manage supply-chain activities

### L - Effective Sales Promotion

- analyze and apply the steps needed for an effective sales presentation

## High School Career and Technical Education

# Marketing Principles

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### A - Employability Skills

- demonstrate an understanding of concepts, strategies, techniques and systems used in communication, teamwork, human relations, problem solving, critical thinking, personal branding and career development (areas commonly referred to as "soft skills")
- demonstrate employability skills required by business and industry

### B - Marketing Concepts

- acquire foundational knowledge of marketing concepts to understand the scope and impact of marketing on the economy

### C - Business and Management

- implement, modify, and improve business and marketing systems to facilitate business activities

### D - Customer Behaviors

- demonstrate an understanding of customer behaviors and the economic environment in which customers function

### E - Marketing Decisions

- acquire foundational knowledge of marketing information and research to understand the scope on business and marketing decisions
- apply financial concepts and skills to facilitate marketing decisions

### F - Pricing Strategies

- utilize pricing strategies to maximize return and meet customer's perception of value

### G - Products and Services

- implement processes and techniques to develop, maintain, and improve a product/service mix to utilize market opportunities
- demonstrate processes and techniques to sell goods, services and ideas

### H - Promotions

- utilize promotional knowledge and skill for communicating information to achieve a desired marketing outcome

### I - Distribution

- utilize knowledge of distribution to manage supply-chain activities

### J - International Business

- acquire foundational knowledge of international business and marketing concepts to understand the scope and impact on the economy

**High School Career and Technical Education****K - Careers in Marketing**

- analyze the relationship between leadership development, school and community service projects with a career in the marketing industry

**L - Literacy Skills**

- demonstrate appropriate use of literacy skills

## High School Career and Technical Education

# Materials Management

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Receiving

- describe the process of receiving products

### C - Storage

- identify and describe proper product storage techniques based on product life, risk of damage, hazards, and weight and size

### D - Picking Processes

- describe order processing in terms of picking processes and how they impact warehouse operations

### E - Packaging Materials

- develop a logical argument of various types of packaging materials best suited for different product size, weight, function and design for shipment

### F - Inventory Control

- explain how inventory control affects overall materials operations

### G - Hazardous Material Safety

- identify and describe the safe handling of hazardous materials, including classification, regulations, specifications, and methods of shipping and routing of dangerous goods

### H - Modes of Transportation

- discuss and analyze common transportation modes used to transport goods and cargo, including air, marine, rail, pipeline, and intermodal

### I - Dispatch, Routing, and Tracking

- demonstrate understanding of concepts related to dispatch, routing, and tracking operations, and basic customs terminology and documentation

### J - Measurement and Conversion

- apply basic measurement and conversion techniques for handling and shipping materials

### K - Terminology and Vocabulary

- utilize current and acceptable abbreviations and terminology related to proper communications within distribution, logistics, and supply chain management
- understand and apply terminology used in logistics and supply chain management



## **High School Career and Technical Education**

### **L - Student Organizations**

- examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Multi-Channel and Applied Digital Audio

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### A - Multi-Channel Audio Application

- apply fundamental and differing multi-channel microphone placement techniques
- apply the finished, mixed multi-channel recording in the proper format and media
- create a music project for DVD
- employ various types of microphones for a multi-channel audio recording
- create music tracks utilizing multi-channel microphone techniques, equalization, and spatial positioning settings
- modify tracks by expanding the aural soundscape through overdubs
- apply multi-channel audio joystick positioning (panning) during the mixing process
- create a visual interface for the surround sound project
- explain the basics of surround sound encoding/decoding and their translation to various speaker arrays (consumer home audio-television broadcast)
- demonstrate encoding techniques for surround sound encoding
- demonstrate decoding techniques for surround sound decoding

### B - Core Skills

- communicate in a clear, concise, and courteous manner
- identify problems, analyze alternative solutions, and develop a plan of action
- use effective learning techniques to acquire and apply new knowledge and skills
- set goals and monitor progress toward meeting goals
- participate and interact as a team member and leader
- work to satisfy customer/client expectations
- acquire, store, allocate, and use materials and space efficiently
- apply mathematical concepts and calculations and solve problems using appropriate mathematical techniques
- use and create text and multimedia documents in a variety of formats and be able to troubleshoot problems with technical or electronic equipment
- identify the scope of a business, its organization, and activities, and the interrelationship of its parts
- discuss factors that impact career decisions and formulate appropriate plans to reach career goals

## High School Career and Technical Education

### B - Core Skills *(continued)*

- maintain safety, health, and environmental standards, and address ergonomic concerns

### C - Literacy Standards

- cite specific textual evidence to support analysis of technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account
- determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms
- follow precisely a complex multistep procedure when performing technical tasks; analyze the specific results based on explanations in the text
- determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific technical context relevant to grade level texts and topics
- analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas
- analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved
- integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem
- evaluate the hypotheses, data, analysis, and conclusions in technical texts, verifying the data when possible and corroborating or challenging conclusions with other sources of information
- synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible
- read and comprehend technical texts in the text complexity band independently and proficiently
- write arguments focused on discipline-specific content
- write informative/explanatory texts, including the narration of historical events or technical processes
- produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience
- develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience
- use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information
- conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation

**High School Career and Technical Education****C - Literacy Standards** *(continued)*

- gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation
- draw evidence from informational texts to support analysis, reflection, and research
- write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences

## High School Career and Technical Education

# Natural Resources Management

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Characteristics

- communicate the importance of natural resources management and determine demands and identify the role of government in natural resources management

### C - Ecosystems

- discuss and identify basic components of ecosystems describe the relationship of those components to one another and identify effects of human activities on ecosystems

### D - Soil

- describe the properties of soil and nutrient analysis determine the capability of the land and the effects of the erosion and describe soil stewardship in Georgia

### E - Water

- determine the use of water resources describe the hydrologic cycle and properties of water and explain watersheds and their functions as well as the reasons for monitoring water quality

### F - Waste

- identify sources of waste and describe methods and procedures for managing that minimize environmental impact

### G - Wildlife

- define wildlife explain the importance of wildlife and wildlife management and identify the role of government and private wildlife organizations in managing wildlife resources

### H - Forestry

- describe an awareness of interrelationships in the forest environment between plants, soil, animals, water, and man

### I - Role of Government

- explain the importance of the governments natural resources and recreational programs

### J - Safety

- identify safety practices in land-based activities such as hunting and four-wheeler riding and water-based activities such as fishing and boating

## High School Career and Technical Education

# Networking Fundamentals

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Fundamental Principles of Networking

- identify the fundamental principles of networking, local area networks (including but not limited to LAN elements, design, perimeter networks, IP addressing, and LAN types), network topologies and access methods (including topologies such as star, mesh, and ring); Ethernet architecture; and the client-server and peer-to-peer networking models

### C - OSI Model and Communications Sub-Network

- identify the layers of the OSI (Open Systems Interconnection) Model and define the communications sub-network

### D - Wired Networks, Media Types and Wireless Networks

- identify wired networks, media types and wireless networks

### E - Internet Protocol and Emerging Protocols In Industry

- explore Internet Protocol IPv4 and IPv6 and emerging protocols in industry

### F - Basic and Advanced Command Prompts

- demonstrate how to work with the basic and advanced command prompts

### G - Networking Services and Name Resolution Techniques

- demonstrate how to set up common networking services and define Name Resolution Techniques

### H - Wide Area Networks, Routing and WAN Technologies

- explore the concepts of Wide Area Networks, describe routing and define common WAN technologies and connections

### I - Network Infrastructure and Security

- explore network infrastructures and network security

### J - Student Organizations

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# Networking Systems and Support

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Fundamental Principles of Networking

- identify the fundamental principles of networking demonstrating installation, configuration, optimization, and upgrades of networking

### C - Interconnection of Networks

- explore local-area network, LAN, metropolitan area network, MAN, wide-area network, WAN, and wireless local-area network, WLAN, trends and issues including the basics of telecommunications and use in the interconnection of networks

### D - LAN Physical Media and Network Connectivity

- demonstrate knowledge of LAN physical media and knowledge of network connectivity basics

### E - OSI Layer and TCP/IP

- understand through explanation and demonstration of the two standard computer network communication protocols, OSI Layer and TCP/IP, and its importance to standards-based networks

### F - Sub-netting and Standards- Based Networks

- demonstrate the concept of sub-netting and the importance to standards-based networks

### G - Fundamental Principles of Network Security

- identify the fundamental principles of network security systems for optimal network operation and administration

### H - Network Troubleshooting

- troubleshoot network problems and functions

### I - Creating a Network

- create a network using design standards, analysis, and section for networks

### J - Network Operation and Management

- explain computer network operation and management procedures including network maintenance and diagnostic testing

### K - Network Architecture and Administration

- apply network applications and knowledge of network operating systems by installing basic system architectures using current windows operating system software and perform network administration

## **High School Career and Technical Education**

### **L - Student Organizations**

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events



## High School Career and Technical Education

# Non-Structural Analysis and Damage Repair I

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Proper Preparation of all Components

- demonstrate preparation by properly inspecting, removing, storing and installing components

### C - Outer Body Panel Repairs and Replacements

- demonstrate outer body panel repairs, replacements, and adjustments

### D - Metal Finishing Repair

- identify and demonstrate repairing metal finishing and body filling

### E - Glass and Hardware Repair and Replacement

- demonstrate moveable glass and hardware repair and replacement

### F - Metal Welding and Cutting

- demonstrate metal welding and cutting as it relates to vehicle repair

### G - Vehicle Repairs Using Plastics

- demonstrate vehicle repairs using plastics and adhesives

### H - SkillsUSA

- examine how SkillsUSA is a co-curricular part of career and technical education through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Non-Structural Analysis and Damage Repair II

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Preparation of Components

- demonstrate preparation by properly inspecting, removing, storing, and installing components

### C - Body Repair

- demonstrate outer body panel repairs, replacements, and adjustments

### D - Metal Finishing

- identify and demonstrate repairing metal finishing and body filling

### E - Moveable Glass and Hardware

- demonstrate moveable glass and hardware repair and replacement

### F - Welding

- demonstrate metal welding and cutting related to vehicle repair

### G - Plastic Vehicle Repairs

- demonstrate vehicle repairs using plastics and adhesives

### H - SkillsUSA

- examine how skillsUSA is a co-curricular part of career and technical education through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Painting and Refinishing I

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Safety Practices and Environmental Regulations

- comply with personal and environmental safety practices in accordance with local, state, and environmental regulations

### C - Vehicle Surface Preparations

- examine and practice various vehicle surface preparations

### D - Spray Gun Equipment Operations

- examine and practice spray gun and related equipment operations

### E - SkillsUSA

- examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects and competitive events

## High School Career and Technical Education

# Painting and Refinishing II

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Environmental Safety Practices and Regulations

- demonstrate compliance with personal and environmental safety practices in accordance with local, state, and environmental regulations

### C - Painting Techniques

- explore and demonstrate paint mixing, matching and applying techniques

### D - Paint Defect Causes

- determine paint defect causes

### E - Paint Defect Cures and Correction Techniques

- identify paint defect cures and practice various correction techniques

### F - Detailing Procedures

- perform final detailing procedures

### G - SkillsUSA

- examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects and competitive events

## High School Career and Technical Education

### Pathways in Marketing

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#### **A - Employability Skills**

- demonstrate employability skills required by business and industry

#### **B - Marketing Concepts**

- define and apply foundational concepts in business, marketing and entrepreneurship

#### **C - Hospitality, Recreation, and Tourism**

- define and apply basic concepts specific to Hospitality, Recreation and Tourism (HRT) to prepare for the high school HRT Pathway and/or careers in the industry

#### **D - Sports and Entertainment Marketing**

- define and apply basic concepts specific to Sports & Entertainment Marketing to prepare for the High School Sports & Entertainment Marketing Pathway and/or careers in the industry

#### **E - Fashion, Merchandising and Retail Management**

- define and apply basic concepts specific to fashion marketing to prepare for the High School Fashion, Merchandising and Retail Management Pathway and/or careers in the industry

#### **F - Marketing, Management and Communication**

- define and apply basic concepts specific to marketing and management to prepare for the related High School Marketing and Management and Marketing Communications and Promotions Pathways and/or careers in the industry

#### **G - Student Organizations**

- apply professional, leadership, and marketing skills resulting from participating in the local and state Marketing and Hospitality Student Organization, DECA

#### **H - Career Portfolio**

- develop a career portfolio

## High School Career and Technical Education

# Patient Care Fundamentals

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Elderly Needs and Well Being

- examine the needs of the elderly and how those needs can impact their care and well-being

### C - Employability in Patient Care

- apply the employability skills required for proficiency working in the Patient Care field

### D - Patient Privacy Guidelines

- maintain resident/patient's rights and practice resident/patient/client's privacy, according to Omnibus Budget Reconciliation Act (OBRA) and Health Insurance Portability and Accountability Act (HIPAA) guidelines

### E - Effective Communication

- communicate effectively with residents/patients/clients' healthcare team members and resident/patient/client family or visitors using appropriate customer service skills

### F - Appropriate Behaviors

- demonstrate appropriate behaviors meeting mental health and social service needs of resident/patient/client

### G - Organizational Structure

- analyze the organizational structure of the nursing facility and adhere to policies and procedures

### H - Scope of Practice for Patient Care

- adhere to the scope of practice for patient care assistant and demonstrate appropriate actions while respecting a patient's right to privacy and proper treatment

### I - Safety Measures in Patient Care

- adhere to regulations and practice appropriate safety measures in providing resident/patient/client care

### J - Infection Control Practices

- describe and demonstrate infection control practices

## High School Career and Technical Education

### Patient Care Technician

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#### **A - Employability Skills**

- demonstrate employability skills required by business and industry

#### **B - Professionalism**

- demonstrate professional demeanor at all times both in the classroom and within the healthcare facilities
- demonstrate an understanding of professional ethics and legal responsibilities

#### **C - Data Collection**

- demonstrate data collection as it relates to the goals, objectives, and implementation of the treatment plan according to their scope of practice

#### **D - Infectious Control**

- apply infection control guidelines including techniques for maintaining isolation

#### **E - Safety**

- examine the trends, financing, and principles of healthcare economics including the importance safety practices

#### **F - Respiratory Therapy**

- demonstrate advanced technical skills in respiratory care

#### **G - Wound Care**

- demonstrate advanced technical skills in wound care within their scope of practice

#### **H - Nutrition and Fluid Management**

- demonstrate advanced technical skills in nutrition and fluid intake elimination and ostomy care

#### **I - Phlebotomy**

- perform advanced technical skills in medical laboratory and phlebotomy through simulation

#### **J - Cardiovascular Care**

- perform advanced technical skills in cardiovascular care

## High School Career and Technical Education

# Pharmacy Operations and Fundamentals

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Pharmacy Basics

- describe the different types of pharmacies identify the team members needed and define terminology used in a pharmaceutical setting

### C - Safety

- support and explain the need for safety and proper infection control in the pharmacy and demonstrate precautions to prevent medication errors

### D - Legal Considerations

- summarize the history of government actions within the pharmaceutical industry, including pharmacy law, practice, regulations, and standards

### E - Terminology and Abbreviations

- interpret parts of a prescription and identify dosage forms delivery systems and the routes of drug administration
- utilize medical and pharmaceutical terms abbreviations symbols and classifications

### F - Mathematics

- formulate calculate and demonstrate proper drug doses to prepare medicine for dispensing for patient use

### G - Dosing Considerations

- compare and contrast the differences when dealing with pediatric and geriatric pharmacology including administration, dosage, compliance, and complications

### H - Skills

- perform necessary skills needed to prepare medication for patient

### I - IV Fluids

- calculate and demonstrate through simulation proper IV set up and simulated administration

### J - Compounding

- calculate and demonstrate proper compounding techniques and measurements through simulation

### K - Informatics

- demonstrate appropriate documentation, reports, billing procedures and other office skills that may be utilized in a pharmacy



**High School Career and Technical Education****L - Wellness**

- demonstrate necessary education of patients/caregivers to promote health and wellness and to prevent problems including patient noncompliance, drug interactions, and abuse and addiction

## High School Career and Technical Education

# Principles and Concepts of Animation

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Safety

- understand and follow safety procedures when working with computer and television equipment

### C - Terminology

- understand and utilize trade terminology in an appropriate manner

### D - Customer relations

- demonstrate effective professional communication skills and practices that enable positive customer relationships

### E - History of Animation

- develop an understanding of the history of animation and the evolution of 2-D to 3-D animation

### F - Storyboarding

- demonstrate storyboarding skills and document project goals in order to develop an animation project

### G - Software

- acquire knowledge of animation software and features

### H - Trade Terminology

- understand and use trade terminology in an appropriate manner

### I - 2-D and 3-D Animations

- compare and contrast methods used to modify 3-D models
- demonstrate knowledge of the movement cycles in animation
- demonstrate the ability to apply color to animations properly
- apply knowledge of effective use of lights on 2-D and 3-D objects
- demonstrate knowledge of creating 2-D and 3-D animations

### J - Camera Skills

- demonstrate knowledge of setting and modifying camera views

### K - Legal Issues

- identify logistical ethical and legal issues related to digital media and apply concepts to use of text, graphics, animation, sounds, video, and digital images in digital products

## **High School Career and Technical Education**

### **L - Portfolio**

- create and maintain a working portfolio of student projects and activities

### **M - Student Organizations**

- examine how related student organizations are integral parts of career and technology education courses through leadership development school and community service projects and competitive events

## High School Career and Technical Education

# Principles of Accounting I

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Responsibilities to Society

- analyze and evaluate the roll that accountants play in business and society

### C - Accounting Careers

- utilize career-planning concepts, tools and strategies to explore, obtain and/or consider an accounting career

### D - Accounting Cycle

- apply the steps of the accounting cycle to prepare financial statements for proprietorships and corporations

### E - Accounting Process

- apply generally accepted accounting principles (GAAP) and explain how the application of GAAP impacts the recording of financial transactions, and the preparation of financial statements

### F - Financial Statements

- demonstrate an understanding and working knowledge of the preparation of financial statements

### G - Data Analysis and Decision Making

- analyze the financial condition and operating results of a business for informed decision making

### H - Internal Controls

- evaluate and determine suitable internal accounting controls to ensure the safe guarding of assets

### I - Payroll

- summarize payroll procedures in order to calculate, record, and distribute payroll earnings and related tax liabilities

### J - CTSO/FBLA

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# Principles of Accounting II

---

### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Accounting Cycle

- apply the various steps of the accounting cycle for various business entities and explain the purpose of each step

### C - GAAP-Assets

- apply Generally Accepted Accounting Principles (GAAP) to determine the value of assets

### D - GAAP-Liabilities

- apply Generally Accepted Accounting Principles (GAAP) to determine the value of liabilities

### E - GAAP-Stockholders' Equity

- apply Generally Accepted Accounting Principles (GAAP) to determine the value of stockholders' equity

### F - GAAP-Revenues and Expenses

- apply Generally Accepted Accounting Principles (GAAP) to determine the value of revenues and expenses

### G - End-of-Cycle Activities and Financial Statements

- create, interpret, and analyze end-of-fiscal-period activities and financial statements

### H - Forms of Ownership

- apply appropriate accounting principles to various forms of ownership

### I - Income Taxation

- apply appropriate accounting principles to income taxation

### J - International Accounting

- compare and contrast appropriate accounting principles to international accounting

### K - Managerial Accounting Systems

- apply appropriate accounting principles to managerial accounting systems

### L - Organization Plan and Evaluation

- use management accounting techniques to plan and evaluate the performance of an organization

## **High School Career and Technical Education**

### **M - CTSO Integration**

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# Production Enterprises

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### A - History of Manufacturing

- explain the historical and societal impact of production

### B - Manufacturing Careers

- research careers in manufacturing

### C - Safe Work Environments

- explain how and why production enterprises value safe work environments

### D - Market Research

- conduct pre-production market research, product design, and product development

### E - Design of a Production System

- design a production system

### F - Implementation of a Production System

- implement a production system

### G - Student Reflection

- develop a reflective document on the completion of the production activity

## High School Career and Technical Education

# Programming, Games, Apps and Society

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Software Life Cycle

- describe the software application life cycle and use a prototype development model to develop applications

### C - Design Applications Using Objects

- design and develop applications using objects

### D - Design Interfaces

- design, develop, and implement accessible and usable interfaces, and analyze applications for engaging the user

### E - Digital Representations

- use and implement different digital representations of media

### F - Privacy, Legal and Intellectual Property

- evaluate an application design in terms of meeting privacy needs, legal and intellectual property requirements, and security considerations

### G - Incorporating Real-World Data

- develop applications that read real-world data from sensors, interpret the data, and respond to the real-world stimuli

### H - Needs for Information and Communication Technologies

- describe the unique needs for information and communications technologies for diverse audiences

### I - Student Organizations

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events



## High School Career and Technical Education

# Promotion and Professional Sales

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Advertising and Promotion Industry

- analyze the scope of the advertising and promotion industry

### C - Competitive Economic Environment

- critique the role of the promotional mix in a competitive economic environment

### D - Market Analyzation

- apply techniques used to analyze the potential market

### E - Planning Advertising Campaigns

- distinguish and summarize the steps in planning for advertising campaigns

### F - Calculating Media Costs

- calculate media costs that affect the elements of the promotional mix

### G - Advertising Techniques

- demonstrate advertising techniques used in a promotion plan for both profit and non-profit sectors

### H - Public Relations

- design and implement a public relations media campaign

### I - Visual Merchandising

- develop visual merchandising to compliment advertising campaigns

### J - Selling to the Economy

- identify and interpret the importance of selling to the economy

### K - Designing Promotional Materials

- design sales promotion materials

### L - Effective Sales Presentation

- analyze and apply the steps need for an effective sales presentation

### M - Follow-Up Techniques

- describe the importance of utilizing follow-up techniques after the sale has been completed

## **High School Career and Technical Education**

### **N - Career Opportunities**

- identify potential career opportunities in the Marketing Communications and Promotion pathway with appropriate career path credentials

## High School Career and Technical Education

# Robotics and Automated Systems

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### A - History of Manufacturing

- explain the history of automated systems and the benefits of those systems to manufacturing in a global society

### B - Major Engineering Tasks

- identify and explain the major engineering tasks in organizing automated manufacturing

### C - Automated Systems

- discuss the systems and applications of automation, including AGV, PLC, CNC, CIM, CAD, CAM, and robotics as essential to succeeding globally in a manufacturing market

### D - Utilizing Programmable Control Devices

- outline the utilization of programmable control devices and data transfer

### E - Robotics in Manufacturing

- apply the principles of PLC, CIM, CAD, CAM, and robotics in the manufacturing of a product

## High School Career and Technical Education

# SAT I Prep

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### A - Language Arts (Listening and Speaking)

- speak in a clear, understandable manner
- recognize speaker's purpose and identify verbal and nonverbal components of communication (body language, facial expressions, gestures)
- contribute to discussions, present prepared ideas, and use language appropriate to situation and audience
- take notes on the main and subordinate ideas in lectures and discussions and report accurately what others have said

### B - Language Arts (Reading)

- read poems, short stories, essays, novels, magazines, newspapers, charts, graphs, and technical documents for pleasure and self-improvement; expect reading to make sense, answer questions, or stimulate ideas
- read critically, ask pertinent questions, recognize assumptions and implications, and evaluate ideas
- identify, comprehend, and summarize the main and subordinate ideas in a written work
- distinguish between fact and opinion
- gain insight into human behavior from the study of literature
- make and defend inferences, conclusions, and comparisons
- evaluate quality of reading material and its content based on author's purpose
- evaluate writing relative to student's own purposes for reading
- interpret author's meaning
- read two passages; answer questions about each passage and about the relationship(s) between the two passages

### C - Language Arts (Vocabulary)

- use context clues to identify meaning (connotation and denotation) of unknown words while reading
- complete sentences based on context clues, meaning, and intent
- define unfamiliar words by using appropriate structural analysis skills including prefixes, suffixes, and root words
- acquire increased vocabulary through reading and listening; demonstrate progress through speaking and writing
- construct and complete word analogies

## High School Career and Technical Education

### D - Language Arts (Writing)

- write for many purposes, including, but not limited to, personal, social, academic, and business
- draft, revise, and edit writing to improve fluency, content, organization, and style; eliminate unnecessary wordiness
- write and support thesis statements
- develop a central idea with examples, illustrations, facts, and details
- write logical and effective transitions between ideas and paragraphs
- write using various methods of ordering: chronological, spatial, cause-to-effect, problem, cause, solution; order of importance; comparison and contrast
- edit for spelling, fragments, and run-on sentences, to clarify misplaced modifiers, to correct faulty parallelism and maintain consistent sentence structure, and to correct faulty coordination and subordination
- establish voice through tone, word choice, rhetorical devices, and literary devices
- use language appropriate to situation and audience
- use active and passive voice appropriately
- use available technology to assist in writing

### E - Language Arts (Grammar, Usage, and Mechanics)

- write Standard American English sentences with correct verb forms, punctuation, capitalization, possessives, plural forms and other mechanics, word choice, and spelling
- use the correct form of words such as accept/except, affect/effect
- correct mistakes when adjectives have been used as adverbs or adverbs have been used as adjectives
- correct double negatives
- maintain consistent number, gender, point-of-view, and verb tense
- correct subject-verb agreement: when subject follows verb, when subject and verb are separated, and when the subject seems plural
- correct problems with pronouns: pronoun in the wrong number, pronoun in the wrong case in compound noun phrases, pronoun shift, pronoun with ambiguous reference

### F - Mathematics (Accessing Information)

- use a variety of print and non-print resources (e.g., films, recordings, theatre, and computer databases) as parts of the study of literature
- use research process: selecting topic, formulating questions, identifying key words, choosing sources, skimming, paraphrasing, note-taking, organizing, summarizing, and presenting

## **High School Career and Technical Education**

### **G - Mathematics (Basic Numbers and Operation)**

- identify and compare the proper order of mathematical operations and the use of signed numbers and variables
- simplify and find fraction and decimal equivalents and how to add, subtract, multiply, and divide them
- identify, compare, and apply real, exponential, prime, composite, and irrational numbers
- recognize and apply the transitive and zero properties of multiplication
- apply the concepts of ratios
- apply concept of irrational numbers involving square roots and the Pythagorean Theorem

### **H - Mathematics (Algebra and Functions)**

- apply factoring and pattern recognition strategies
- model, simplify, and solve algebraic expressions
- apply problem-solving strategies to traditional geometry problems and problems using algebraic equations
- apply the concepts of ratio and proportion

### **I - Mathematics (Geometry and Measurement)**

- apply the concepts and properties of points, lines, angles, and planes
- identify, compare, and compute the areas of polygons and circles including perimeter, circumference, area, volume, and surface area
- classify and work with the angles formed by transversals and parallel lines
- identify and apply the concepts of congruency, similarity, and corresponding parts
- apply the properties of 45-45-90 and 30-60-90 triangles

### **J - Mathematics (Probability and Statistics)**

- interpret data from graphs
- read and interpret data from pie, bar, and line graphs
- apply the concepts of central tendency
- apply the concepts of mean, median, and mode
- calculate and analyze probabilities of an event

### **K - Mathematics (Problem Solving and Strategies)**

- apply number sense and estimation skills to understand alternative approaches to basic computation problems and word problems

**High School Career and Technical Education****K - Mathematics (Problem Solving and Strategies)** *(continued)*

- describe and analyze patterns in non-routine problem-solving situations
- apply the strategy of pattern recognition to find patterns and relationships among numbers
- model expressions and choose appropriate values for variables
- evaluate expressions by substituting real numbers and computing the results
- apply problem-solving strategies to non-routine problems

**L - Test Taking Strategies and Skills**

- correctly complete a SAT registration form
- state the significance of SAT scores and College Board requirements in college entrance and earning scholarships
- interpret SAT score
- evaluate various resources available to help prepare for the SAT
- understand the advantages and disadvantages of guessing an answer, leaving an answer blank, or choosing an incorrect answer on the SAT

## High School Career and Technical Education

# Semiconductors, Mechanical Systems, and Pump and Piping Systems

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Safety Procedures

- demonstrate appropriate industrial safety procedures in the manufacturing lab

### C - Diode Fundamentals

- apply the fundamentals of diodes

### D - Semiconductor Fundamentals

- demonstrate the fundamentals of semiconductors

### E - Field Devices

- connect field devices to IO cards

### F - Mechanical Systems

- explain introductory concepts of mechanical systems

### G - Applied Mathematics

- compute applied mathematics and measurements

### H - Tool Maintenance

- demonstrate proper use of maintenance tools and materials in industrial systems

### I - Manufacturing Processes

- describe various manufacturing processes

### J - Power Transmission Components

- demonstrate an understanding and identify components of power transmission systems

### K - Mechanical System Components

- examine and explain basic system principles and components for mechanical systems

### L - Pump and Piping Systems

- examine and explain pumps and piping systems

### M - NEC Electric Code

- utilize article 430 of the National Electrical Code (NEC) to calculate the installation requirements for motors and motor control systems



## High School Career and Technical Education

### Sheet Metal I

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#### A - Employability Skills

- demonstrate employability skills required by business and industry

#### B - Pattern and Line Development

- demonstrate proficiency in parallel line development

#### C - Using Mathematical Equations

- compute and solve mathematical problems relating to sheet metal

#### D - Sheet Metal Fasteners

- demonstrate the ability to use and identify fasteners, hangers, and supports

#### E - Metal Materials

- demonstrate the ability to identify and measure different types of metals used in sheet metal

#### F - SkillsUSA

- examine how SkillsUSA is a co-curricular part of career and technical education through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Sports Medicine

---

### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Appendicular Skeleton

- analyze anatomic positions, directional terms, movements, and postures as related to the appendicular skeleton

### C - Communication Within The Physical Medicine Setting

- utilize correct terminology, abbreviations, symbols and practices to appropriately communicate oral and written information within the physical medicine setting.

### D - Injury Classification and Evaluation

- demonstrate injury classifications and evaluations

### E - Principles and Concepts of Healing

- analyze and describe the basic principles and concepts of healing

### F - Basic Life Support

- demonstrate the steps of Basic Life Support (BLS) with Automated External Defibrillator (AED). assess and manage patients with bleeding, bony injuries, soft tissue as well as musculoskeletal injuries

### G - Pathogen and Infection Control

- identify and describe pathogens commonly encountered in physical medicine and demonstrate appropriate infection control principles

### H - Structure and Treatment of Upper Extremities

- analyze the anatomy, muscular structure, vascular structure, Range of Motion (ROM), Manual Muscle Tests (MMT) and special tests, as well as prevention and treatment, of the upper extremity

### I - Structure and Treatment of Lower Extremities

- analyze the anatomy, muscular structure, vascular structure, Range of Motion (ROM), Manual Muscle Tests (MMT) and special tests, as well as prevention and treatment, of the lower extremity

### J - Head and Facial Injuries

- analyze the anatomy, muscular structure, vascular structure, and describe the mechanisms signs and symptoms and potential complications associated with head and facial injuries

### K - Spinal Treatment and Injury Prevention

- analyze the anatomy, muscular structure, vascular structure, ROM, MMT and special tests, as well as prevention and treatment, of the spine

## **High School Career and Technical Education**

### **L - Thoracic and Abdominal Treatment and Injury Prevention**

- analyze the anatomy, muscular structure, vascular structure, ROM, and special tests, as well as prevention and treatment, of the thoracic and abdominal regions

### **M - Nutrition in Physical Medicine**

- evaluate the importance of nutrition in physical medicine

### **N - Monitoring Client Health**

- demonstrate the process for basic assessment (e.g., vital signs, height, weight, etc.), monitoring, and reporting/recording patient/client's health status

### **O - Principles of Rehabilitation**

- analyze and describe the basic principles and concepts of rehabilitation

### **P - Principles of Pharmacology**

- analyze and describe the principles of pharmacology

### **Q - Use of Therapeutic Modalities**

- analyze and describe the appropriate use of therapeutic modalities

## High School Career and Technical Education

# Surgical Technician I

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Careers

- explore options in the surgical industry including inpatient and outpatient surgery settings and the organizational structure

### C - Regulations

- abide by regulations governing workplace safety, infection control, operational standards, patient confidentiality, and facility protocol

### D - Terminology and Abbreviations

- utilize appropriate surgical and medical terminology

### E - Infection Control

- apply principles of asepsis and infection control in the perioperative and operative settings

### F - Patient Care

- identify the need to respond to changes in medical status of surgical patients

## High School Career and Technical Education

# Surgical Technician II

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Healthcare Skills

- utilize fundamental surgical technician knowledge to perform as a member of an operating room team including scope of practice legal and ethical regulations HIPPA and safety and infection control
- utilizing simulation apply basic surgical technician skills in the operating room

### C - Instruments and Sterilization

- perform common simulated tasks related to the role of surgical technician in the operating room

### D - Anesthesia

- correlate the elements action and use of medications and anesthetic agents used by medical personnel during the perioperative experience

### E - Roles and Responsibilities

- analyze the role of the circulator and how the surgery tech can assist with circulator duties

## High School Career and Technical Education

# Survey of Engineering Graphics

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### A - Employability

- demonstrate employability skills required by business and industry

### B - Workplace, Tools, Safety and Standards

- demonstrate and follow safety, health, and environmental standards related to the STEM workplace and apply specific engineering tools, machines, materials and processes in a safe and orderly manner to formulate, analyze, and verify engineering practices and solutions

### C - Applied Math for Engineering Graphics

- analyze applied math required by business and industry for engineering graphics

### D - Sectional Views

- demonstrate purpose and correct application of sectional views

### E - Auxiliary Views

- demonstrate purpose and correct application of auxiliary views

### F - Pictorial Views

- demonstrate purpose and correct application of pictorial views

### G - Cite Developments in Engineering Graphics and Engineering

- cite evidence of developments in engineering graphics and engineering

### H - Present Appropriate Views of an Object

- present appropriate views of an object

## High School Career and Technical Education

### Teaching as a Profession Practicum

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#### A - Employability

- demonstrate employability skills required by business and industry

#### B - Teaching Portfolio

- create a portfolio demonstrating knowledge, skills and experiences from the Teaching as a Profession Pathway

## High School Career and Technical Education

# Textile Science

---

### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Careers in Textile Industry

- examine the various career opportunities within the textile industry

### C - History of Textiles

- develop a general knowledge of textiles from a historical perspective to current applications

### D - Fiber Characteristics and Properties

- investigate, describe and recognize fiber characteristics and properties

### E - Fabrication and Properties of Yarn

- examine and identify the fabrication and properties of yarns

### F - Construction Methods of Textiles

- identify textiles according to construction methods

### G - Textile Finishes and Methods

- demonstrate an understanding of textile finishes and methods

### H - Maintenance of Textiles

- analyze the characteristics and maintenance concepts of textile products

### I - Appropriate use of Textiles

- distinguish the characteristics and identify the appropriate use of textiles for apparel and/or interiors

### J - New Product Development

- investigate how trends and color forecasting are used in the development of new products

### K - Technology in Textiles

- examine the continuing use of technology in advancing textile products using innovative skills and tests

### L - Legislation in the Textile Industry

- research legislation on the federal, state and local levels that regulate the textile industry



## High School Career and Technical Education

# Therapeutic Services and Applied Anatomy

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Infection Control Procedures

- explain and practice common safety and Infection control procedures found in various locations and settings

### C - Careers in Therapeutic Services

- compare and contrast the roles and responsibilities of careers in therapeutic services

### D - Anatomy and Physiological of the Human Body

- investigate an overview of the anatomy and physiological functions of the human body

### E - The Integumentary System

- distinguish and organize basic structures and function of the integumentary system

### F - The Human Skeletal System

- identify patterns and common features of the human skeletal system

### G - Student Organizations

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# Veterinary Science

---

### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Agriculture Lab Work

- learn to work safely in the agriculture lab and work sites, demonstrate selected competencies in leadership through the FFA and agricultural industry organizations, and develop plans for a supervised agricultural experience program (SAEP)

### C - Safety Standards

- define types of hazards common in the veterinary hospital and the organization that regulates safety standards in the workplace

### D - Sanitation, Disinfection, and Sterilization

- distinguish the differences between sanitation, disinfection, and sterilization, and be able to identify which cleaning method should be used in any given situation

### E - Greek and Latin Language

- recognize and explain Greek and Latin prefixes, suffixes, and roots that compose the language of veterinary medicine, as well as, dissect the meaning of veterinary terms

### F - Body Systems

- investigate body systems and construct a working knowledge of the function, and purpose, including the effect on diseases

### G - Directional Anatomical Structure

- define vocabulary of directional anatomical terms and identify anatomical structures of animals

### H - Animal Illness

- critique the various regions of an animal's body and the signs of illness that may be present

### I - Veterinary Procedures

- perform several common veterinary hospital procedures

### J - Internal and External Parasites

- differentiate common internal and external parasites of small and large animals and recall both the common and the scientific names

### K - Animal Health and Nutrition

- analyze animal nutrition required to maintain a healthy animal

### L - Animal Feed

- identify and describe the various components of an animal feed label and make an educated decision on which feed to purchase for an animal in each of the production periods

**High School Career and Technical Education****M - Animal Disease**

- identify the path a disease takes and assess the effects on various body systems

**N - Animals in Society**

- apply concepts of the importance of animals and the contributions that animals make in society

**O - Animal Breeds**

- identify and explain the purpose of the most common breeds of animal species and discuss specific temperament/behavior characteristics of the breed

**P - Animal Behavior**

- critique animal behavior through observation and draw conclusions on the interaction with other animals, humans and environment

## High School Career and Technical Education

# Web Design

---

### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Ethical Issues

- plan, develop, implement, and resolve ethical issues involved in creating and publishing a web site

### C - HTML

- create and use graphics to enhance web pages using a variety of tools

### D - Graphics

- create and use graphics to enhance webpages using a variety of tools

### E - Cascading Style Sheets

- define and apply essential aspects of the Cascading Style Sheets to format elements within a website

### F - GUI

- use (Graphic User-Interface) GUI-based HTML editing software to create websites

### G - e-commerce

- develop an understanding of e-commerce practices and related technologies necessary to create a secure, useful interface to conduct business online

### H - Website Publishing and Maintenance

- test, analyze, and identify performance issues related to publishing and maintaining web sites

### I - CTSOs

- explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events

## High School Career and Technical Education

# Web Development

---

### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - HTML

- develop a web page using Hypertext Markup Language (HTML) and Cascading Style Sheet (CSS)

### C - JavaScript

- apply concepts of JavaScript to webpage development

### D - Webpage Development

- use a server side language to build a multi-page website incorporating a web form, at least two templates with shared portions, and data-driven home page (Server Side Languages)
- create a single functional webpage based on a design mockup and user requirements, perhaps a résumé (Client Side Languages)
- explain the components needed to develop a dynamic website (Web Development Stack)

### E - Search Engine Optimization

- utilize on-page Search Engine Optimization (SEO) throughout a website

### F - Software Development Cycle

- apply concepts involved in the software development life cycle (SDLC) as it pertains to web development

### G - Regulations

- ensure websites meet all special considerations and are in compliance with industry and government regulations

### H - Student Organizations

- examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, and competitive events

## High School Career and Technical Education

# Welding I

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Arc Welding and Oxyfuel Safety

- demonstrate proficiency in Arc Welding and Oxyfuel Safety

### C - Oxyfuel Cutting with Acetylene and Alternative Fuel

- identify and use oxyfuel cutting equipment with acetylene and alternate fuels (propane)

### D - Welding Symbols and Detailed Drawings

- identify and use welding symbols and read detailed drawings

### E - Welding Procedures and Testing

- identify and explain welding procedures and testing

### F - Shielded Metal Arc Welding

- demonstrate knowledge of basic shielded metal arc welding, SMAW

### G - Shielded Gas Metal Arc Welding

- demonstrate knowledge of basic shielded gas metal arc welding, GMAW

### H - Plasma Arc Cutting

- demonstrate knowledge of plasma arc cutting

### I - SkillsUSA

- examine how SkillsUSA is a co-curricular part of career and technical education through leadership development, school and community service projects, and competitive events

## High School Fine Arts

# Acting and Production in Film I

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### A - Creating

- organize, design, and refine film work
- develop scripts through screenwriting techniques

### B - Performing

- execute artistic and technical elements of film
- act and direct by communicating and sustaining roles within a variety of situations and environments

### C - Responding

- engage actively and appropriately as an audience member
- critique various aspects of film using appropriate supporting evidence

### D - Connecting

- examine the role of film in a societal, cultural, and historical context
- explore how film connects to life experience, careers, and other content

## High School Fine Arts

# Acting and Production in Film II

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### A - Creating

- organize, design, and refine film work
- develop scripts through screenwriting techniques

### B - Performing

- act and direct by communicating and sustaining roles within a variety of situations and environments
- execute artistic and technical elements of film

### C - Responding

- engage actively and appropriately as an audience member
- critique various aspects of film using appropriate supporting evidence

### D - Connecting

- explore how film connects to life experience, careers, and other content
- examine the role of film in a societal, cultural, and historical context



## High School Fine Arts

### Acting and Production in Film III

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#### A - Creating

- develop scripts through screenwriting techniques
- organize, design, and refine film work

#### B - Performing

- act and direct by communicating and sustaining roles within a variety of situations and environments
- execute artistic and technical elements of film

#### C - Responding

- engage actively and appropriately as an audience member
- critique various aspects of film using appropriate supporting evidence

#### D - Connecting

- explore how film connects to life experience, careers, and other content
- examine the role of film in a societal, cultural, and historical context

**High School Fine Arts****Acting and Production in Film IV**

---

**A - Creating**

- organize, design, and refine film work
- develop scripts through screenwriting techniques

**B - Performing**

- execute artistic and technical elements of film
- act and direct by communicating and sustaining roles within a variety of situations and environments

**C - Responding**

- critique various aspects of film using appropriate supporting evidence
- engage actively and appropriately as an audience member

**D - Connecting**

- explore how film connects to life experience, careers, and other content
- examine the role of film in a societal, cultural, and historical context

## High School Fine Arts

### Acting I

---

#### A - Creating

- organize, design, and refine theatrical work
- develop scripts through theatrical techniques

#### B - Performing

- act and direct by communicating and sustaining roles within a variety of situations and environments

#### C - Responding

- engage actively and appropriately as an audience member
- critique various aspects of theatre and other media using appropriate supporting evidence

#### D - Connecting

- explore how theatre connects to life experience, careers, and other content
- examine the role of theatre in a societal, cultural, and historical context

## High School Fine Arts

### Acting II

---

#### A - Creating

- organize, design, and refine theatrical work
- develop scripts through theatrical techniques

#### B - Performing

- act and direct by communicating and sustaining roles within a variety of situations and environments

#### C - Responding

- engage actively and appropriately as an audience member
- critique various aspects of theatre and other media using appropriate supporting evidence

#### D - Connecting

- explore how theatre connects to life experience, careers, and other content
- examine the role of theatre in a societal, cultural, and historical context

## High School Fine Arts

### Acting III

---

#### A - Creating

- organize, design, and refine theatrical work
- develop scripts through theatrical techniques

#### B - Performing

- act and direct by communicating and sustaining roles within a variety of situations and environments

#### C - Responding

- engage actively and appropriately as an audience member
- critique various aspects of theatre and other media using appropriate supporting evidence

#### D - Connecting

- explore how theatre connects to life experience, careers, and other content
- examine the role of theatre in a societal, cultural, and historical context

## High School Fine Arts

### Acting IV

---

#### A - Creating

- organize, design, and refine theatrical work
- develop scripts through theatrical techniques

#### B - Performing

- act and direct by communicating and sustaining roles within a variety of situations and environments

#### C - Responding

- engage actively and appropriately as an audience member
- critique various aspects of theatre and other media using appropriate supporting evidence

#### D - Connecting

- examine the role of theatre in a societal, cultural, and historical context
- explore how theatre connects to life experience, careers, and other content

## High School Fine Arts

### Advanced Band I

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music

#### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances

#### D - Connecting

- understand relationships between music, other arts, other disciplines in varied contexts, and in daily life

## High School Fine Arts

### Advanced Band II

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music

#### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances

#### D - Connecting

- understand relationships between music, other arts, other disciplines in varied contexts, and in daily life



## High School Fine Arts

### Advanced Band III

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- read and identify elements of notated music
- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others

#### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances

#### D - Connecting

- understand relationships between music, other arts, other disciplines in varied contexts, and in daily life

## High School Fine Arts

### Advanced Band IV

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- read and identify elements of notated music
- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others

#### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances

#### D - Connecting

- understand relationships between music, other arts, other disciplines in varied contexts, and in daily life

**High School Fine Arts****Advanced Drama I**

---

**A - Creating**

- organize, design, and refine theatrical work
- develop scripts through theatrical techniques

**B - Performing**

- act and direct by communicating and sustaining roles within a variety of situations and environments
- execute artistic and technical elements of theatre

**C - Responding**

- engage actively and appropriately as an audience member
- critique various aspects of theatre and other media using appropriate supporting evidence

**D - Connecting**

- explore how theatre connects to life experience, careers, and other content
- examine the role of theatre in a societal, cultural, and historical context

## High School Fine Arts

### Advanced Drama II

---

#### **A - Creating**

- organize, design, and refine theatrical work
- develop scripts through theatrical techniques

#### **B - Performing**

- act and direct by communicating and sustaining roles within a variety of situations and environments
- execute artistic and technical elements of theatre

#### **C - Responding**

- engage actively and appropriately as an audience member
- critique various aspects of theatre and other media using appropriate supporting evidence

#### **D - Connecting**

- explore how theatre connects to life experience, careers, and other content
- examine the role of theatre in a societal, cultural, and historical context

**High School Fine Arts****Advanced Drama III**

---

**A - Creating**

- organize, design, and refine theatrical work
- develop scripts through theatrical techniques

**B - Performing**

- act and direct by communicating and sustaining roles within a variety of situations and environments
- execute artistic and technical elements of theatre

**C - Responding**

- engage actively and appropriately as an audience member
- critique various aspects of theatre and other media using appropriate supporting evidence

**D - Connecting**

- explore how theatre connects to life experience, careers, and other content
- examine the role of theatre in a societal, cultural, and historical context

**High School Fine Arts****Advanced Drama IV**

---

**A - Creating**

- organize, design, and refine theatrical work
- develop scripts through theatrical techniques

**B - Performing**

- execute artistic and technical elements of theatre
- act and direct by communicating and sustaining roles within a variety of situations and environments

**C - Responding**

- engage actively and appropriately as an audience member
- critique various aspects of theatre and other media using appropriate supporting evidence

**D - Connecting**

- explore how theatre connects to life experience, careers, and other content
- examine the role of theatre in a societal, cultural, and historical context

## High School Fine Arts

### Advanced Guitar I

---

#### A - Creating

- improvise melodies, variations, and accompaniments
- compose and arrange music within specified guidelines

#### B - Performing

- perform expressively, with appropriate interpretation and technical accuracy, through a varied repertoire of music, alone or with others
- read and notate music

#### C - Responding

- evaluate music and music performances
- listen to, analyze, and describe music

#### D - Connecting

- understand relationships between music, the other arts, and disciplines
- understand music in relation to history and culture

## High School Fine Arts

### Advanced Guitar II

---

#### **A - Creating**

- improvise melodies, variations, and accompaniments
- compose and arrange music within specified guidelines

#### **B - Performing**

- read and notate music
- perform expressively, with appropriate interpretation and technical accuracy, through a varied repertoire of music, alone or with others

#### **C - Responding**

- listen to, analyze, and describe music
- evaluate music and music performances

#### **D - Connecting**

- understand relationships between music, the other arts, and disciplines
- understand music in relation to history and culture



## High School Fine Arts

### Advanced Guitar III

---

#### **A - Creating**

- improvise melodies, variations, and accompaniments
- compose and arrange music within specified guidelines

#### **B - Performing**

- read and notate music
- perform expressively, with appropriate interpretation and technical accuracy, through a varied repertoire of music, alone or with others

#### **C - Responding**

- listen to, analyze, and describe music
- evaluate music and music performances

#### **D - Connecting**

- understand music in relation to history and culture
- understand relationships between music, the other arts, and disciplines

**High School Fine Arts****Advanced Guitar IV**

---

**A - Creating**

- improvise melodies, variations, and accompaniments
- compose and arrange music within specified guidelines

**B - Performing**

- read and notate music
- perform expressively, with appropriate interpretation and technical accuracy, through a varied repertoire of music, alone or with others

**C - Responding**

- listen to, analyze, and describe music
- evaluate music and music performances

**D - Connecting**

- understand relationships between music, the other arts, and disciplines
- understand music in relation to history and culture

## High School Fine Arts

### Advanced Instrumental Ensemble I

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- perform on instruments through a varied repertoire of music, alone and with others
- sing alone or with others
- read and identify elements of notated music

#### C - Responding

- respond to music and music performances
- listen to, analyze, and describe music

#### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

# Advanced Instrumental Ensemble II

---

### A - Creating

- improvise, compose, and arrange music within specified guidelines

### B - Performing

- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music

### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances

### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

### Advanced Instrumental Ensemble III

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music

#### C - Responding

- respond to music and music performances
- listen to, analyze, and describe music

#### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

### Advanced Instrumental Ensemble IV

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- sing alone or with others
- read and identify elements of notated music
- perform on instruments through a varied repertoire of music, alone and with others

#### C - Responding

- respond to music and music performances
- listen to, analyze, and describe music

#### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

### Advanced Jazz I

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- read and identify elements of notated music
- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others

#### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances

#### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

### Advanced Jazz II

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music

#### C - Responding

- respond to music and music performances
- listen to, analyze, and describe music

#### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life



## High School Fine Arts

### Advanced Jazz III

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- perform on instruments through a varied repertoire of music, alone and with others
- sing alone or with others
- read and identify elements of notated music

#### C - Responding

- respond to music and music performances
- listen to, analyze, and describe music

#### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

### Advanced Jazz IV

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- read and identify elements of notated music
- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others

#### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances

#### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

**High School Fine Arts****Advanced Men's Chorus I**

---

**A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

**B - Performing**

- convey meaning through the presentation of musical literature
- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation

**C - Responding**

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

**D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

**High School Fine Arts****Advanced Men's Chorus II**

---

**A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

**B - Performing**

- convey meaning through the presentation of musical literature
- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation

**C - Responding**

- apply criteria to evaluate musical literature
- perceive, analyze, and interpret meaning in musical literature

**D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

### Advanced Men's Chorus III

---

#### **A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### **B - Performing**

- develop and refine musical techniques and literature for presentation
- analyze, interpret, and select musical literature for presentation
- convey meaning through the presentation of musical literature

#### **C - Responding**

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### **D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

### Advanced Men's Chorus IV

---

#### **A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### **B - Performing**

- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature
- analyze, interpret, and select musical literature for presentation

#### **C - Responding**

- apply criteria to evaluate musical literature
- perceive, analyze, and interpret meaning in musical literature

#### **D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

### Advanced Mixed Chorus I

---

#### **A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### **B - Performing**

- convey meaning through the presentation of musical literature
- develop and refine musical techniques and literature for presentation
- analyze, interpret, and select musical literature for presentation

#### **C - Responding**

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### **D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

**High School Fine Arts****Advanced Mixed Chorus II**

---

**A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

**B - Performing**

- convey meaning through the presentation of musical literature
- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation

**C - Responding**

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

**D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding



**High School Fine Arts****Advanced Mixed Chorus III**

---

**A - Creating**

- organize, develop, and revise musical ideas and literature
- generate and conceptualize musical ideas and literature

**B - Performing**

- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature

**C - Responding**

- apply criteria to evaluate musical literature
- perceive, analyze, and interpret meaning in musical literature

**D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

**High School Fine Arts****Advanced Mixed Chorus IV**

---

**A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

**B - Performing**

- convey meaning through the presentation of musical literature
- develop and refine musical techniques and literature for presentation
- analyze, interpret, and select musical literature for presentation

**C - Responding**

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

**D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

# Advanced Music Technology

---

### A - Creating

- generate musical ideas (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) for various purposes and contexts
- select and develop musical ideas (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) for defined purposes and contexts
- evaluate and refine selected musical ideas to create musical work (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) that meets appropriate criteria
- share creative musical works (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) that convey intent, demonstrate craftsmanship, and exhibit originality
- select varied musical works to present (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) based on interest, knowledge, technical skill, and context

### B - Performing

- select varied musical works to present (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) based on interest, knowledge, technical skill, and context
- analyze the structure and context of varied musical works (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) and their effects on performance
- develop personal interpretations that consider creator intent
- evaluate and refine personal and ensemble performances, individually or in collaboration with others
- perform expressively, with appropriate interpretation and technical accuracy, and in a manner appropriate to the audience and context

### C - Responding

- support interpretations of musical works (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) that reflect the expressive intent of creators and performers
- support evaluations of musical works (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) and performances based on analysis, interpretation, and established criteria
- choose music appropriate for a specific purpose or situation
- analyze how the structure and context of varied musical works (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) inform the response

## **High School Fine Arts**

### **D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas to varied contexts and daily life to deepen understanding
- explore careers in music technology
- understand the major hardware and software components of a computer system, live sound amplification, recording techniques, and their interactions

## High School Fine Arts

# Advanced Music Theory and Composition

---

### A - Creating

- read and notate music
- introduction of improvised rhythms and melodies
- compose and arrange music within specified guidelines

### B - Performing

- sing a varied repertoire of music, alone and with other
- perform a varied repertoire of music on instruments, alone and with others

### C - Responding

- evaluate music and music performances
- listen to, analyze, and describe music

### D - Connecting

- understand relationships between music and other fine arts in interdisciplinary contexts
- understand music in relation to history and culture

## High School Fine Arts

### Advanced Orchestra I

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- demonstrate instrument care and maintenance
- perform, read, and notate music
- perform a varied repertoire of music on instruments, alone and with others

#### C - Responding

- evaluate music and music performances
- listen to, analyze, and describe music

#### D - Connecting

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

# Advanced Orchestra II

---

### A - Creating

- improvise, compose, and arrange music within specified guidelines

### B - Performing

- perform a varied repertoire of music on instruments, alone and with others
- perform, read, and notate music
- demonstrate instrument care and maintenance

### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

### D - Connecting

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

### Advanced Orchestra III

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- perform a varied repertoire of music on instruments, alone and with others
- perform, read, and notate music
- demonstrate instrument care and maintenance

#### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

#### D - Connecting

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture



**High School Fine Arts****Advanced Orchestra IV**

---

**A - Creating**

- improvise, compose, and arrange music within specified guidelines

**B - Performing**

- perform a varied repertoire of music on instruments, alone and with others
- perform, read, and notate music
- demonstrate instrument care and maintenance

**C - Responding**

- evaluate music and music performances
- listen to, analyze, and describe music

**D - Connecting**

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

### Advanced Piano I

---

#### A - Creating

- notate music
- compose and arrange music within specified guidelines

#### B - Performing

- analyze selection of repertoire
- perform a varied repertoire of music
- improvise melodies, variations, and accompaniments

#### C - Responding

- evaluate music and music performances

#### D - Connecting

- read about, listen to, analyze, and describe music
- understand relationships between music, the other arts, disciplines outside the arts, history, and culture
- understand music in relation to history and culture

## High School Fine Arts

### Advanced Piano II

---

#### A - Creating

- notate music
- compose and arrange music within specified guidelines

#### B - Performing

- analyze selection of repertoire
- perform a varied repertoire of music
- improvise melodies, variations, and accompaniments

#### C - Responding

- evaluate music and music performances

#### D - Connecting

- understand music in relation to history and culture
- read about, listen to, analyze, and describe music
- understand relationships between music, the other arts, disciplines outside the arts, history, and culture

## High School Fine Arts

### Advanced Piano III

---

#### A - Creating

- notate music
- compose and arrange music within specified guidelines

#### B - Performing

- analyze selection of repertoire
- perform a varied repertoire of music
- improvise melodies, variations, and accompaniments

#### C - Responding

- evaluate music and music performances

#### D - Connecting

- read about, listen to, analyze, and describe music
- understand relationships between music, the other arts, disciplines outside the arts, history, and culture
- understand music in relation to history and culture

## High School Fine Arts

### Advanced Piano IV

---

#### A - Creating

- notate music
- compose and arrange music within specified guidelines

#### B - Performing

- perform a varied repertoire of music
- improvise melodies, variations, and accompaniments
- analyze selection of repertoire

#### C - Responding

- evaluate music and music performances

#### D - Connecting

- read about, listen to, analyze, and describe music
- understand relationships between music, the other arts, disciplines outside the arts, history, and culture
- understand music in relation to history and culture

**High School Fine Arts****Advanced Repertory I**

---

**A - Creating**

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

**B - Performing**

- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance
- identify and demonstrate movement elements, skills, and terminology in dance

**C - Responding**

- demonstrate critical and creative thinking in all aspects of dance

**D - Connecting**

- demonstrate an understanding of dance as it relates to other areas of knowledge
- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness

**High School Fine Arts****Advanced Repertory II**

---

**A - Creating**

- demonstrate an understanding of dance as a form of communication
- demonstrate an understanding of creative/choreographic principles, processes, and structures

**B - Performing**

- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance

**C - Responding**

- demonstrate critical and creative thinking in all aspects of dance

**D - Connecting**

- demonstrate an understanding of dance as it relates to other areas of knowledge
- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness

**High School Fine Arts****Advanced Women's Chorus I**

---

**A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

**B - Performing**

- convey meaning through the presentation of musical literature
- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation

**C - Responding**

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

**D - Connecting**

- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding
- synthesize and relate knowledge and personal experiences to make music



## High School Fine Arts

# Advanced Women's Chorus II

---

### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

### B - Performing

- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature

### C - Responding

- apply criteria to evaluate musical literature
- perceive, analyze, and interpret meaning in musical literature

### D - Connecting

- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding
- synthesize and relate knowledge and personal experiences to make music

## High School Fine Arts

### Advanced Women's Chorus III

---

#### **A - Creating**

- organize, develop, and revise musical ideas and literature
- generate and conceptualize musical ideas and literature

#### **B - Performing**

- develop and refine musical techniques and literature for presentation
- analyze, interpret, and select musical literature for presentation
- convey meaning through the presentation of musical literature

#### **C - Responding**

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### **D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

### Advanced Women's Chorus IV

---

#### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### B - Performing

- convey meaning through the presentation of musical literature
- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation

#### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### D - Connecting

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

### Applied Anatomy/Kinesiology

---

#### A - Creating

- demonstrate an understanding and apply knowledge of kinesiology, somatics, and anatomy in movement

#### B - Performing

- identify and demonstrate movement elements, skills, and terminology in dance
- demonstrate an understanding of the relationship between dance as a form of physical activity, health, well-being, and quality of life
- identify and demonstrate the components of muscular fitness

#### C - Responding

- describe, understand, and apply energy system principles (bioenergetics) to the movements of dance
- understand and describe how dance as exercise influences the cardiovascular system, skeletal system, and muscular system for both health and performance

#### D - Connecting

- demonstrate an understanding of dance as it relates to other areas of knowledge
- recognize connections between dance and wellness

## High School Fine Arts

### Ballet I

---

#### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

#### B - Performing

- understand and apply music concepts to dance
- identify and demonstrate movement elements, skills, and terminology in dance
- recognize concepts of anatomy and kinesiology in movement
- understand and model dance etiquette as a classroom participant, performer, and observer

#### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

#### D - Connecting

- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge

## High School Fine Arts

### Ballet II

---

#### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

#### B - Performing

- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance
- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer

#### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

#### D - Connecting

- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge

## High School Fine Arts

### Ballet III

---

#### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

#### B - Performing

- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observe
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance

#### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

#### D - Connecting

- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge
- understand and demonstrate dance throughout history and in various cultures

## High School Fine Arts

### Ballet IV

---

#### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

#### B - Performing

- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance

#### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

#### D - Connecting

- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge



## High School Fine Arts

# Beginning Band I

---

### A - Creating

- improvise, compose, and arrange music within specified guidelines

### B - Performing

- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music

### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances of themselves and others

### D - Connecting

- understand relationships between music, other arts, other disciplines, varied context, and daily life

## High School Fine Arts

# Beginning Band II

---

### A - Creating

- improvise, compose, and arrange music within specified guidelines

### B - Performing

- read and identify elements of notated music
- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others

### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances of themselves and others

### D - Connecting

- understand relationships between music, other arts, other disciplines, varied context, and daily life

## High School Fine Arts

### Beginning Band III

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- read and identify elements of notated music
- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others

#### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances of themselves and others

#### D - Connecting

- understand relationships between music, other arts, other disciplines, varied context, and daily life

## High School Fine Arts

# Beginning Band IV

---

### A - Creating

- improvise, compose, and arrange music within specified guidelines

### B - Performing

- read and identify elements of notated music
- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others

### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances of themselves and others

### D - Connecting

- understand relationships between music, other arts, other disciplines, varied context, and daily life

## High School Fine Arts

# Beginning Guitar I

---

### A - Creating

- improvise melodies, variations, and accompaniments
- compose and arrange music within specified guidelines

### B - Performing

- read and notate music
- perform expressively, with appropriate interpretation and technical accuracy, through a varied repertoire of music, alone or with others

### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

### D - Connecting

- understand relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

# Beginning Guitar II

---

### A - Creating

- improvise melodies, variations, and accompaniments
- compose and arrange music within specified guidelines

### B - Performing

- perform expressively, with appropriate interpretation and technical accuracy, through a varied repertoire of music, alone or with others
- read and notate music

### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

### D - Connecting

- understand relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

### Beginning Guitar III

---

#### A - Creating

- improvise melodies, variations, and accompaniments
- compose and arrange music within specified guidelines

#### B - Performing

- perform expressively, with appropriate interpretation and technical accuracy, through a varied repertoire of music, alone or with others
- read and notate music

#### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

#### D - Connecting

- understand relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

### Beginning Guitar IV

---

#### A - Creating

- improvise melodies, variations, and accompaniments
- compose and arrange music within specified guidelines

#### B - Performing

- perform expressively, with appropriate interpretation and technical accuracy, through a varied repertoire of music, alone or with others
- read and notate music

#### C - Responding

- evaluate music and music performances
- listen to, analyze, and describe music

#### D - Connecting

- understand relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture



**High School Fine Arts****Beginning Instrumental Ensemble I**

---

**A - Creating**

- improvise, compose, and arrange music within specified guidelines

**B - Performing**

- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music

**C - Responding**

- listen to, analyze, and describe music
- respond to music and music performances of themselves and others

**D - Connecting**

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

# Beginning Instrumental Ensemble II

---

### A - Creating

- improvise, compose, and arrange music within specified guidelines

### B - Performing

- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music
- sing alone or with others

### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances of themselves and others

### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

### Beginning Instrumental Ensemble III

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music

#### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances of themselves and others

#### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

# Beginning Instrumental Ensemble IV

---

### A - Creating

- improvise, compose, and arrange music within specified guidelines

### B - Performing

- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music

### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances of themselves and others

### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

### Beginning Jazz I

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music.

#### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances

#### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

# Beginning Jazz II

---

### A - Creating

- improvise, compose, and arrange music within specified guidelines

### B - Performing

- sing alone or with others
- read and identify elements of notated music.
- perform on instruments through a varied repertoire of music, alone and with others

### C - Responding

- respond to music and music performances
- listen to, analyze, and describe music

### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

### Beginning Jazz III

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music

#### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances

#### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

### Beginning Jazz IV

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music

#### C - Responding

- respond to music and music performances
- listen to, analyze, and describe music

#### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life



**High School Fine Arts****Beginning Men's Chorus I**

---

**A - Creating**

- organize, develop, and revise musical ideas and literature
- generate and conceptualize musical ideas and literature

**B - Performing**

- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature

**C - Responding**

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

**D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

### Beginning Men's Chorus II

---

#### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### B - Performing

- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature

#### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### D - Connecting

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

**High School Fine Arts****Beginning Men's Chorus III**

---

**A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

**B - Performing**

- convey meaning through the presentation of musical literature
- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation

**C - Responding**

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

**D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

# Beginning Men's Chorus IV

---

### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

### B - Performing

- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature
- analyze, interpret, and select musical literature for presentation

### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

### D - Connecting

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

**High School Fine Arts****Beginning Mixed Chorus I**

---

**A - Creating**

- organize, develop, and revise musical ideas and literature
- generate and conceptualize musical ideas and literature

**B - Performing**

- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature
- analyze, interpret, and select musical literature for presentation

**C - Responding**

- apply criteria to evaluate musical literature
- perceive, analyze, and interpret meaning in musical literature

**D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

### Beginning Mixed Chorus II

---

#### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### B - Performing

- convey meaning through the presentation of musical literature
- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation

#### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### D - Connecting

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

**High School Fine Arts****Beginning Mixed Chorus III**

---

**A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

**B - Performing**

- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature

**C - Responding**

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

**D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

### Beginning Mixed Chorus IV

---

#### **A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### **B - Performing**

- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature
- analyze, interpret, and select musical literature for presentation

#### **C - Responding**

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### **D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding



## High School Fine Arts

# Beginning Music Technology

---

### A - Creating

- generate musical ideas for various purposes and contexts
- select and develop musical ideas for defined purposes and contexts
- evaluate and refine selected musical ideas to create musical works (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) that meets appropriate criteria
- share creative musical work (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) that conveys intent, demonstrates craftsmanship, and exhibits originality

### B - Performing

- evaluate and refine personal and ensemble performances, individually or in collaboration with others
- perform expressively, with appropriate interpretation and technical accuracy, and in a manner appropriate to the audience and context
- select varied musical works to present (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) based on interest, knowledge, technical skill context
- analyze the structure and context of varied musical works (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) and their effects on performance
- develop personal interpretations that consider the intent of the creator and/or performer

### C - Responding

- choose appropriate music for a specific purpose or situation
- analyze how the structure and context of varied musical works (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) inform the response
- support interpretations of musical works (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) that reflect the expressive intent of creators and performers
- support evaluations of musical works (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) and performances based on analysis, interpretation, and established criteria

### D - Connecting

- understand the major hardware and software components of a computer system, live sound amplification, recording techniques, and their interactions
- synthesize and relate knowledge and personal experiences to make music

## High School Fine Arts

### D - Connecting *(continued)*

- relate musical ideas to varied contexts and daily life to deepen understanding
- explore careers in music technology

## High School Fine Arts

# Beginning Music Theory and Composition

---

### A - Creating

- read and notate music
- improvise rhythms and melodies
- compose and arrange music within specified guidelines

### B - Performing

- sing alone and with others
- perform on instruments, alone and with others

### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

### D - Connecting

- understand relationships between music and other fine arts in interdisciplinary contexts
- understand music in relation to history and culture

## High School Fine Arts

# Beginning Orchestra I

---

### A - Creating

- improvise, compose, and arrange music within specified guidelines

### B - Performing

- perform, read, and notate music
- exhibit awareness of tuning mechanics
- perform a varied repertoire of music on instruments, alone and with others
- demonstrate instrument care and maintenance

### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

### D - Connecting

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

# Beginning Orchestra II

---

### A - Creating

- improvise, compose, and arrange music within specified guidelines

### B - Performing

- perform a varied repertoire of music on instruments, alone and with others
- exhibit awareness of tuning mechanics
- demonstrate instrument care and maintenance
- perform, read, and notate music

### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

### D - Connecting

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

# Beginning Orchestra III

---

### A - Creating

- improvise, compose, and arrange music within specified guidelines

### B - Performing

- exhibit awareness of tuning mechanics
- demonstrate instrument care and maintenance
- perform, read, and notate music
- perform a varied repertoire of music on instruments, alone and with others

### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

### D - Connecting

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

# Beginning Orchestra IV

---

### A - Creating

- improvise, compose, and arrange music within specified guidelines

### B - Performing

- perform a varied repertoire of music on instruments, alone and with others
- perform, read, and notate music
- exhibit awareness of tuning mechanics
- demonstrate instrument care and maintenance

### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

### D - Connecting

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

# Beginning Piano Techniques I

---

### A - Creating

- notate music
- compose and arrange music within specified guidelines

### B - Performing

- perform a varied repertoire of music
- improvise melodies, variations, and accompaniments
- analyze selection of repertoire

### C - Responding

- evaluate music and music performances

### D - Connecting

- read about, listen to, analyze, and describe music
- understand music in relation to history and culture



## High School Fine Arts

# Beginning Piano Techniques II

---

### A - Creating

- notate music
- compose and arrange music within specified guidelines

### B - Performing

- improvise melodies, variations, and accompaniments
- analyze selection of repertoire
- perform a varied repertoire of music

### C - Responding

- evaluate music and music performances

### D - Connecting

- read about, listen to, analyze, and describe music
- understand music in relation to history and culture

## High School Fine Arts

# Beginning Piano Techniques III

---

### A - Creating

- notate music
- compose and arrange music within specified guidelines

### B - Performing

- perform a varied repertoire of music
- improvise melodies, variations, and accompaniments
- analyze selection of repertoire

### C - Responding

- evaluate music and music performances

### D - Connecting

- read about, listen to, analyze, and describe music
- understand music in relation to history and culture

## High School Fine Arts

# Beginning Piano Techniques IV

---

### A - Creating

- notate music
- compose and arrange music within specified guidelines

### B - Performing

- perform a varied repertoire of music
- improvise melodies, variations, and accompaniments
- analyze selection of repertoire

### C - Responding

- evaluate music and music performances

### D - Connecting

- read about, listen to, analyze, and describe music
- understand music in relation to history and culture

**High School Fine Arts****Beginning Women's Chorus I**

---

**A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

**B - Performing**

- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature

**C - Responding**

- apply criteria to evaluate musical literature
- perceive, analyze, and interpret meaning in musical literature

**D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

**High School Fine Arts****Beginning Women's Chorus II**

---

**A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

**B - Performing**

- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature

**C - Responding**

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

**D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

**High School Fine Arts****Beginning Women's Chorus III**

---

**A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

**B - Performing**

- convey meaning through the presentation of musical literature
- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation

**C - Responding**

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

**D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

### Beginning Women's Chorus IV

---

#### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### B - Performing

- develop and refine musical techniques and literature for presentation
- analyze, interpret, and select musical literature for presentation
- convey meaning through the presentation of musical literature

#### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### D - Connecting

- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding
- synthesize and relate knowledge and personal experiences to make music

## High School Fine Arts

# Ceramics I

---

### A - Creating

- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art

### B - Presenting

- plan, prepare, and present completed works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom



## High School Fine Arts

# Ceramics II

---

### A - Creating

- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art

### B - Presenting

- plan, prepare, and present completed works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom
- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts

## High School Fine Arts

### Ceramics III

---

#### A - Creating

- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- incorporate formal and informal components to create works of art
- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art

#### B - Presenting

- plan, prepare, and present completed works of art for exhibition in school, virtual environment, and/or portfolio presentation

#### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

#### D - Connecting

- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom
- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts

**High School Fine Arts****Ceramics IV**

---

**A - Creating**

- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- incorporate formal and informal components to create works of art
- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art

**B - Presenting**

- plan, prepare, and present completed works of art for exhibition in school, virtual environment, and/or portfolio presentation

**C - Responding**

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

**D - Connecting**

- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom

**High School Fine Arts****Classical/Contemporary Partnering I**

---

**A - Creating**

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

**B - Performing**

- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance

**C - Responding**

- demonstrate critical and creative thinking in all aspects of dance

**D - Connecting**

- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge

**High School Fine Arts****Classical/Contemporary Partnering II**

---

**A - Creating**

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

**B - Performing**

- understand and model dance etiquette as a classroom participant, performer, and observer
- identify and demonstrate movement elements, skills, and terminology in dance
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance

**C - Responding**

- demonstrate critical and creative thinking in all aspects of dance

**D - Connecting**

- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge

## High School Fine Arts

### Classical/Contemporary Partnering III

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#### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

#### B - Performing

- identify and demonstrate movement elements, skills, and terminology in dance
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance
- understand and model dance etiquette as a classroom participant, performer, and observer

#### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

#### D - Connecting

- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge

**High School Fine Arts****Classical/Contemporary Partnering IV**

---

**A - Creating**

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

**B - Performing**

- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance

**C - Responding**

- demonstrate critical and creative thinking in all aspects of dance

**D - Connecting**

- demonstrate an understanding of dance as it relates to other areas of knowledge
- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness

## High School Fine Arts

# Crafts I

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### A - Creating

- keep an ongoing visual and verbal record to explore and develop works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom
- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts



## High School Fine Arts

### Crafts II

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#### A - Creating

- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- incorporate formal and informal components to create works of art
- visualize and generate ideas for creating works of art

#### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

#### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

#### D - Connecting

- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom

## High School Fine Arts

# Dance Composition

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### A - Creating

- demonstrate an understanding of dance as a form of communication
- demonstrate an understanding of creative/choreographic principles, processes, and structures

### B - Performing

- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance

### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

### D - Connecting

- demonstrate an understanding of dance as it relates to other areas of knowledge
- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness

## High School Fine Arts

# Dance for Theatre

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### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

### B - Performing

- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance

### C - Reflecting

- demonstrate critical and creative thinking in all aspects of dance

### D - Connecting

- understand and demonstrate dance throughout history in regard to theater production
- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge

## High School Fine Arts

# Dance History

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### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

### B - Performing

- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer

### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

### D - Connecting

- demonstrate an understanding of the connections between dance and other arts disciplines, other content areas, and the world
- understand and demonstrate dance throughout history and in various cultures

## High School Fine Arts

# Dance I

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### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

### B - Performing

- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance

### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

### D - Connecting

- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge
- understand and demonstrate dance throughout history and in various cultures

**High School Fine Arts****Dance II**

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**A - Creating**

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

**B - Performing**

- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance

**C - Responding**

- demonstrate critical and creative thinking in all aspects of dance

**D - Connecting**

- demonstrate an understanding of dance as it relates to other areas of knowledge
- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness

**High School Fine Arts****Dance III**

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**A - Creating**

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

**B - Performing**

- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance

**C - Responding**

- demonstrate critical and creative thinking in all aspects of dance

**D - Connecting**

- demonstrate an understanding of dance as it relates to other areas of knowledge
- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness

## High School Fine Arts

### Dance IV

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#### A - Creating

- demonstrate an understanding of dance as a form of communication
- demonstrate an understanding of creative/choreographic principles, processes, and structures

#### B - Performing

- understand and apply music concepts to dance
- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement

#### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

#### D - Connecting

- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge



## High School Fine Arts

# Dance Production I

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### A - Creating

- demonstrate an understanding of dance as a form of communication
- generate and conceptualize artistic ideas and work specifically pertaining to a dance production
- demonstrate an understanding of the required elements in producing a dance concert

### B - Performing

- understand and model dance etiquette as a classroom participant, performer, and observer
- identify and demonstrate movement elements, skills, and terminology in dance
- understand and apply music concepts to dance

### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

### D - Connecting

- demonstrate an understanding of dance as it relates to other areas of knowledge

## High School Fine Arts

# Dance Production II

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### A - Creating

- demonstrate an understanding of dance as a form of communication
- generate and conceptualize artistic ideas and work specifically pertaining to a dance production
- demonstrate an understanding of the required elements in producing a dance concert

### B - Performing

- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- understand and apply music concepts to dance

### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

### D - Connecting

- demonstrate an understanding of dance as it relates to other areas of knowledge

## High School Fine Arts

# Digital Design I

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### A - Creating

- visualize and generate ideas for works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of digital art and design

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- utilize a variety of resources to see how artistic learning extends beyond the walls of the classroom
- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art

## High School Fine Arts

# Digital Design II

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### A - Creating

- keep an ongoing visual and verbal record to explore and develop works of digital art and design
- visualize and generate ideas for works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to see how artistic learning extends beyond the walls of the classroom
- discuss the intent of digital works of art and design in context to historical events

## High School Fine Arts

# Dramatic Writing

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### A - Creating

- write original dramatic arts literature for film, television, or theatre that convey a real or imagined experience
- develop scripts through theatrical techniques
- produce clear and concise writing that includes the conventions of standard English grammar and usage

### B - Performing

- analyze and create characters in dramatic arts literature from the perspective of an actor/performer

### C - Responding

- evaluate various aspects of dramatic arts literature using appropriate supporting evidence

### D - Connecting

- demonstrate creativity by asking challenging questions and applying innovative procedures and methods (e.g., teamwork, problem solving, etiquette)
- exhibit critical thinking and problem solving skills to locate, analyze, and apply information in career planning and employment situations (e.g., problem solving, customer service, application process, interviewing skills, job searching)
- model work readiness traits required for success in the workplace including integrity, honesty, accountability, punctuality, time management, and respect for diversity (e.g., workplace ethics, personal characteristics, employer expectations, business etiquette, communicating at work)
- apply the appropriate skill sets to be productive in a changing, technological, diverse workplace to be able to work independently and apply teamwork skills (e.g., expected work traits, teamwork, time management)
- present a professional image through appearance, behavior, and language (e.g., on-the-job etiquette, person-to-person etiquette, communication etiquette, presenting yourself)
- connect film, television, and theatre literature to its dramaturgical contexts and other disciplines
- explore how writing for film, television, and theatre connects to careers in the entertainment industry and other opportunities
- examine the role of film in a societal, cultural, and historical contexts
- demonstrate employability skills required by business and industry (e.g., communicate effectively through writing, speaking, listening, reading, interpersonal abilities)

## High School Fine Arts

# Drawing and Painting I

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### A - Creating

- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art
- visualize and generate ideas for creating works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice and persistence

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art

## High School Fine Arts

# Drawing and Painting II

---

### A - Creating

- visualize and generate ideas for creating works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice and persistence
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- incorporate formal and informal components to create works of art

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom

## High School Fine Arts

# Drawing and Painting III

---

### A - Creating

- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice and persistence
- incorporate formal and informal components to create works of art

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- engage in the process of art criticism to make meaning and increase visual literacy
- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches

### D - Connecting

- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom



## High School Fine Arts

# Drawing and Painting IV

---

### A - Creating

- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- incorporate formal and informal components to create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice and persistence
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- engage in the process of art criticism to make meaning and increase visual literacy
- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches

### D - Connecting

- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom

## High School Fine Arts

# Film and Television I

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### A - Creating

- organize, design, and refine theatrical work
- develop scripts through screenwriting techniques

### B - Performing

- execute artistic and technical elements of film
- act by communicating and sustaining roles in formal and informal environments

### C - Responding

- engage actively and appropriately as an audience member
- critique various aspects of film using appropriate supporting evidence

### D - Connecting

- explore how film connects to life experiences, careers, and other content
- examine the role of film in a societal, cultural, and historical context

## High School Fine Arts

# Film and Television II

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### A - Creating

- organize, design, and refine theatrical work
- develop scripts through screenwriting techniques

### B - Performing

- act by communicating and sustaining roles in formal and informal environments
- execute artistic and technical elements of film

### C - Responding

- engage actively and appropriately as an audience member
- critique various aspects of film using appropriate supporting evidence

### D - Connecting

- examine the role of film in a societal, cultural, and historical context
- explore how film connects to life experiences, careers, and other content

## High School Fine Arts

### Film and Television III

---

#### A - Creating

- organize, design, and refine theatrical work
- develop scripts through screenwriting techniques

#### B - Performing

- act by communicating and sustaining roles in formal and informal environments
- execute artistic and technical elements of film

#### C - Responding

- engage actively and appropriately as an audience member
- critique various aspects of film using appropriate supporting evidence

#### D - Connecting

- explore how film connects to life experiences, careers, and other content
- examine the role of film in a societal, cultural, and historical context

## High School Fine Arts

# Film and Television IV

---

### A - Creating

- organize, design, and refine theatrical work
- develop scripts through screenwriting techniques

### B - Performing

- execute artistic and technical elements of film
- act by communicating and sustaining roles in formal and informal environments

### C - Responding

- engage actively and appropriately as an audience member
- critique various aspects of film using appropriate supporting evidence

### D - Connecting

- explore how film connects to life experiences, careers, and other content
- examine the role of film in a societal, cultural, and historical context

## High School Fine Arts

# Fundamentals of the Music Industry I

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### A - Creating

- generate musical ideas for various purposes and contexts
- select and develop musical ideas for defined purposes and contexts
- evaluate and refine selected musical ideas to create musical work that meet appropriate criteria
- share creative musical work that conveys intent, demonstrates craftsmanship, and exhibits originality
- select varied musical works to present based on interest, knowledge, technical skill, and context
- generate and develop appropriate music business resources

### B - Performing

- select varied musical works to present based on interest, knowledge, technical skill, and context
- analyze the structure and context of varied musical works and their implications for performance
- develop personal interpretations that consider creator intent
- evaluate and refine personal and ensemble performances, individually or in collaboration with others
- perform expressively, with appropriate interpretation and technical accuracy, and in a manner appropriate to the audience and context

### C - Responding

- support interpretations of musical works that reflect the expressive intent of the creators/performers
- support evaluations of musical works and performances based on analysis, interpretation, and established criteria
- choose music appropriate for a specific purpose or situation
- analyze how the structure and context of varied musical works inform the response

### D - Connecting

- explore careers in music technology
- relate ethical publication to the use of technological systems, media, information, and software as it relates to the music industry
- understand the major hardware and software components of a computer system, live sound amplification, recording techniques, and their interactions
- synthesize and relate knowledge and personal experiences to make music

**High School Fine Arts****D - Connecting** *(continued)*

- relate musical ideas to varied contexts and daily life to deepen understanding

**High School Fine Arts****Fundamentals of the Music Industry II**

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**A - Creating**

- generate musical ideas for various purposes and contexts
- select and develop musical ideas for defined purposes and contexts
- evaluate and refine selected musical ideas to create musical work that meets appropriate criteria
- share creative musical work that conveys intent, demonstrates craftsmanship, and exhibits originality
- select varied musical works to present based on interest, knowledge, technical skill, and context
- generate and develop appropriate music business resources

**B - Performing**

- perform expressively, with appropriate interpretation and technical accuracy, and in a manner appropriate to the audience and context
- analyze the structure and context of varied musical works and their implications for performance
- develop personal interpretations that consider creator intent
- evaluate and refine personal and ensemble performances, individually or in collaboration with others
- select varied musical works to present based on interest, knowledge, technical skill, and context

**C - Responding**

- choose music appropriate for a specific purpose or situation
- analyze how the structure and context of varied musical works inform the response
- support interpretations of musical works that reflect the expressive intent of the creators/performers
- support evaluations of musical works and performances based on analysis, interpretation, and established criteria

**D - Connecting**

- explore careers in music technology
- relate ethical publication to the use of technological systems, media, information, and software as it relates to the music industry
- understand the major hardware and software components of a computer system, live sound amplification, recording techniques, and their interactions
- synthesize and relate knowledge and personal experiences to make music



**High School Fine Arts****D - Connecting** *(continued)*

- relate musical ideas to varied contexts and daily life to deepen understanding

**High School Fine Arts****Fundamentals of Theatre I**

---

**A - Creating**

- organize, design, and refine theatrical work
- develop scripts through theatrical techniques

**B - Performing**

- act by communicating and sustaining roles in formal and informal environments
- execute artistic and technical elements of theatre

**C - Responding**

- engage actively and appropriately as an audience member
- critique various aspects of theatre and other media using appropriate supporting evidence

**D - Connecting**

- explore how theatre connects to life experiences, careers, and other content
- examine the role of theatre in a societal, cultural, and historical context

**High School Fine Arts****Fundamentals of Theatre II**

---

**A - Creating**

- organize, design, and refine theatrical work
- develop scripts through theatrical techniques

**B - Performing**

- act by communicating and sustaining roles in formal and informal environments
- execute artistic and technical elements of theatre

**C - Responding**

- engage actively and appropriately as an audience member
- critique various aspects of theatre and other media using appropriate supporting evidence

**D - Connecting**

- explore how theatre connects to life experiences, careers, and other content
- examine the role of theatre in a societal, cultural, and historical context

## High School Fine Arts

# Graphics I

---

### A - Creating

- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- incorporate formal and informal components to create works of art
- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom
- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts

## High School Fine Arts

# Graphics II

---

### A - Creating

- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice and persistence
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom

## High School Fine Arts

# Graphics III

---

### A - Creating

- engage in an array of processes, media, techniques, and technology through experimentation, practice and persistence
- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts

**High School Fine Arts****Graphics IV**

---

**A - Creating**

- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice and persistence
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art

**B - Presenting**

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

**C - Responding**

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

**D - Connecting**

- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom
- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art

## High School Fine Arts

### Intermediate Band I

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#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music

#### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances

#### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life



## High School Fine Arts

### Intermediate Band II

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music

#### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances

#### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

**High School Fine Arts****Intermediate Band III**

---

**A - Creating**

- improvise, compose, and arrange music within specified guidelines

**B - Performing**

- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music

**C - Responding**

- respond to music and music performances
- listen to, analyze, and describe music

**D - Connecting**

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

### Intermediate Band IV

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- read and identify elements of notated music
- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others

#### C - Responding

- respond to music and music performances
- listen to, analyze, and describe music

#### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

### Intermediate Guitar I

---

#### A - Creating

- improvise melodies, variations, and accompaniments
- compose and arrange music within specified guidelines

#### B - Performing

- perform expressively, with appropriate interpretation and technical accuracy, through a varied repertoire of music, alone or with others
- read and notate music

#### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

#### D - Connecting

- understand relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

**High School Fine Arts****Intermediate Guitar II**

---

**A - Creating**

- improvise melodies, variations, and accompaniments
- compose and arrange music within specified guidelines

**B - Performing**

- perform expressively, with appropriate interpretation and technical accuracy, through a varied repertoire of music, alone or with others
- read and notate music

**C - Responding**

- listen to, analyze, and describe music
- evaluate music and music performances

**D - Connecting**

- understand relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

### Intermediate Guitar III

---

#### A - Creating

- improvise melodies, variations, and accompaniments
- compose and arrange music within specified guidelines

#### B - Performing

- perform expressively, with appropriate interpretation and technical accuracy, through a varied repertoire of music, alone or with others
- read and notate music

#### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

#### D - Connecting

- understand relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

### Intermediate Guitar IV

---

#### A - Creating

- improvise melodies, variations, and accompaniments
- compose and arrange music within specified guidelines

#### B - Performing

- perform expressively, with appropriate interpretation and technical accuracy, through a varied repertoire of music, alone or with others
- read and notate music

#### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

#### D - Connecting

- understand relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

### Intermediate Instrumental Ensemble

---

#### **A - Skills and Techniques/Performance**

- sing or vocalize, alone and with others, a varied repertoire of music
- perform on instruments, alone and with others, a varied repertoire of music
- read and notate music

#### **B - Creation**

- improvise melodies, variations, and accompaniments
- compose and arrange music within specified guidelines

#### **C - Critical Analysis/Investigate**

- listen to, analyze, and describe music
- evaluate music and music performances

#### **D - Cultural and Historical Context**

- demonstrate or describe music in relation to history and culture
- describe or demonstrate relationships between music, the other arts, and disciplines outside the arts



## High School Fine Arts

### Intermediate Jazz I

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- read and identify elements of notated music
- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others

#### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances

#### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

### Intermediate Jazz II

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music

#### C - Responding

- respond to music and music performances
- listen to, analyze, and describe music

#### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

### Intermediate Jazz III

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music

#### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances

#### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life.

## High School Fine Arts

### Intermediate Jazz IV

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music

#### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances

#### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

### Intermediate Men's Chorus I

---

#### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### B - Performing

- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature
- analyze, interpret, and select musical literature for presentation

#### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### D - Connecting

- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding
- synthesize and relate knowledge and personal experiences to make music

## High School Fine Arts

### Intermediate Men's Chorus II

---

#### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### B - Performing

- analyze, interpret, and select musical literature for presentation
- convey meaning through the presentation of musical literature
- develop and refine musical techniques and literature for presentation

#### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### D - Connecting

- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding
- synthesize and relate knowledge and personal experiences to make music

## High School Fine Arts

### Intermediate Men's Chorus III

---

#### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### B - Performing

- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature

#### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### D - Connecting

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

**High School Fine Arts****Intermediate Men's Chorus IV**

---

**A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

**B - Performing**

- convey meaning through the presentation of musical literature
- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation

**C - Responding**

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

**D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding



## High School Fine Arts

### Intermediate Mixed Chorus I

---

#### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### B - Performing

- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature

#### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### D - Connecting

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

# Intermediate Mixed Chorus II

---

### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

### B - Performing

- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature

### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

### D - Connecting

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

### Intermediate Mixed Chorus III

---

#### **A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### **B - Performing**

- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature

#### **C - Responding**

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### **D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

### Intermediate Mixed Chorus IV

---

#### **A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### **B - Performing**

- develop and refine musical techniques and literature for presentation
- analyze, interpret, and select musical literature for presentation
- convey meaning through the presentation of musical literature

#### **C - Responding**

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### **D - Connecting**

- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding
- synthesize and relate knowledge and personal experiences to make music

## High School Fine Arts

# Intermediate Music Technology

---

### A - Creating

- generate musical ideas for various purposes and contexts
- select and develop musical ideas for defined purposes and contexts
- evaluate and refine selected musical ideas to create musical works (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) that meets appropriate criteria
- share creative musical work (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) that conveys intent, demonstrates craftsmanship, and exhibits originality

### B - Performing

- select varied musical works to present (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) based on interest, knowledge, technical skill and context
- analyze the structure and context of varied musical works (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) and their effects on performance
- develop personal interpretations that consider the intent of the creator and/or performer
- evaluate and refine personal and ensemble performances, individually or in collaboration with others
- perform expressively, with appropriate interpretation and technical accuracy, and in a manner appropriate to the audience and context

### C - Responding

- support interpretations of musical works (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) that reflect the expressive intent of creators and performers
- support evaluations of musical works (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) and performances based on analysis, interpretation, and established criteria
- choose appropriate music for a specific purpose or situation
- analyze how the structure and context of varied musical works (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) inform the response

### D - Connecting

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas to varied contexts and daily life to deepen understanding

**High School Fine Arts****D - Connecting** *(continued)*

- explore careers in music technology
- understand the major hardware and software components of a computer system, live sound amplification, recording techniques, and their interactions

## High School Fine Arts

# Intermediate Music Theory and Composition

---

### A - Creating

- read and notate music
- improvise rhythms and melodies
- compose and arrange music within specified guidelines

### B - Performing

- sing alone and with others
- perform on instruments, alone and with others

### C - Responding

- evaluate music and music performances
- listen to, analyze, and describe music

### D - Connecting

- understand relationships between music and other fine arts in interdisciplinary contexts
- understand music in relation to history and culture

## High School Fine Arts

### Intermediate Orchestra I

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- exhibit awareness of tuning mechanics
- demonstrate instrument care and maintenance
- perform, read, and notate music
- perform a varied repertoire of music on instruments, alone and with others

#### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

#### D - Connecting

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture



## High School Fine Arts

### Intermediate Orchestra II

---

#### **A - Creating**

- improvise, compose, and arrange music within specified guidelines

#### **B - Performing**

- perform a varied repertoire of music on instruments, alone and with others
- perform, read, and notate music
- exhibit awareness of tuning mechanics
- demonstrate instrument care and maintenance

#### **C - Responding**

- listen to, analyze, and describe music
- evaluate music and music performances

#### **D - Connecting**

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

### Intermediate Orchestra III

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- perform a varied repertoire of music on instruments, alone and with others
- exhibit awareness of tuning mechanics
- demonstrate instrument care and maintenance
- perform, read, and notate music

#### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

#### D - Connecting

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

### Intermediate Orchestra IV

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- perform a varied repertoire of music on instruments, alone and with others
- perform, read, and notate music
- exhibit awareness of tuning mechanics
- demonstrate instrument care and maintenance

#### C - Responding

- evaluate music and music performances
- listen to, analyze, and describe music

#### D - Connecting

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

### Intermediate Piano I

---

#### A - Creating

- notate music
- compose and arrange music within specified guidelines

#### B - Performing

- perform a varied repertoire of music on instruments, alone and with others
- improvise melodies, variations, and accompaniments
- analyze selection of repertoire

#### C - Responding

- evaluate music and music performances

#### D - Connecting

- read about, listen to, analyze, and describe music
- understand music in relation to history and culture

## High School Fine Arts

### Intermediate Piano II

---

#### A - Creating

- notate music
- compose and arrange music within specified guidelines

#### B - Performing

- perform a varied repertoire of music on instruments, alone and with others
- improvise melodies, variations, and accompaniments
- analyze selection of repertoire

#### C - Responding

- evaluate music and music performances

#### D - Connecting

- understand music in relation to history and culture
- read about, listen to, analyze, and describe music

## High School Fine Arts

### Intermediate Piano III

---

#### A - Creating

- notate music
- compose and arrange music within specified guidelines

#### B - Performing

- perform a varied repertoire of music on instruments, alone and with others
- improvise melodies, variations, and accompaniments
- analyze selection of repertoire

#### C - Responding

- evaluate music and music performances

#### D - Connecting

- read about, listen to, analyze, and describe music
- understand music in relation to history and culture

## High School Fine Arts

### Intermediate Piano IV

---

#### A - Creating

- notate music
- compose and arrange music within specified guidelines

#### B - Performing

- analyze selection of repertoire
- perform a varied repertoire of music on instruments, alone and with others
- improvise melodies, variations, and accompaniments

#### C - Responding

- evaluate music and music performances

#### D - Connecting

- read about, listen to, analyze, and describe music
- understand music in relation to history and culture

## High School Fine Arts

### Intermediate Women's Chorus I

---

#### **A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### **B - Performing**

- analyze, interpret, and select musical literature for presentation
- convey meaning through the presentation of musical literature
- develop and refine musical techniques and literature for presentation

#### **C - Responding**

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### **D - Connecting**

- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding
- synthesize and relate knowledge and personal experiences to make music



## High School Fine Arts

### Intermediate Women's Chorus II

---

#### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### B - Performing

- convey meaning through the presentation of musical literature
- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation

#### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### D - Connecting

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

### Intermediate Women's Chorus III

---

#### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### B - Performing

- convey meaning through the presentation of musical literature
- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation

#### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### D - Connecting

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

**High School Fine Arts****Intermediate Women's Chorus IV**

---

**A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

**B - Performing**

- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature

**C - Responding**

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

**D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

### Intermediate-Advanced Orchestra I

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- perform a varied repertoire of music on instruments, alone and with others
- exhibit awareness of tuning mechanics
- demonstrate instrument care and maintenance
- perform, read, and notate music

#### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

#### D - Connecting

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

### Intermediate-Advanced Orchestra II

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- perform a varied repertoire of music on instruments, alone and with others
- perform, read, and notate music
- exhibit awareness of tuning mechanics
- demonstrate instrument care and maintenance

#### C - Responding

- evaluate music and music performances
- listen to, analyze, and describe music

#### D - Connecting

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

### Intermediate-Advanced Orchestra III

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- perform, read, and notate music
- exhibit awareness of tuning mechanics
- demonstrate instrument care and maintenance
- perform a varied repertoire of music on instruments, alone and with others

#### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

#### D - Connecting

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

### Intermediate-Advanced Orchestra IV

---

#### A - Creating

- improvise, compose, and arrange music within specified guidelines

#### B - Performing

- perform a varied repertoire of music on instruments, alone and with others
- exhibit awareness of tuning mechanics
- demonstrate instrument care and maintenance
- perform, read, and notate music

#### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

#### D - Connecting

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

### Jazz Dance I

---

#### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

#### B - Performing

- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance

#### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

#### D - Connecting

- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge



## High School Fine Arts

### Jazz Dance II

---

#### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

#### B - Performing

- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance

#### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

#### D - Connecting

- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge

## High School Fine Arts

### Jazz Dance III

---

#### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

#### B - Performing

- understand and apply music concepts to dance
- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement

#### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

#### D - Connecting

- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge

## High School Fine Arts

### Jazz Dance IV

---

#### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

#### B - Performing

- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance
- identify and demonstrate movement elements, skills, and terminology in dance

#### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

#### D - Connecting

- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge
- understand and demonstrate dance throughout history and in various cultures

## High School Fine Arts

# Jewelry and Metalcrafts I

---

### A - Creating

- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- incorporate formal and informal components to create works of art
- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom
- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts

## High School Fine Arts

# Jewelry and Metalcrafts II

---

### A - Creating

- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy
- reflect on the context of personal works of art in relation to community, culture, and the world

### D - Connecting

- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art

## High School Fine Arts

# Jewelry and Metalcrafts III

---

### A - Creating

- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art
- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom

## High School Fine Arts

# Jewelry and Metalcrafts IV

---

### A - Creating

- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom
- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art

## High School Fine Arts

# Lighting Design I

---

### A - Creating

- create technical elements of theatre lighting (e.g., equipment, colors, themes)

### B - Producing

- produce lighting elements in theatre

### C - Responding

- respond to lighting elements of theatre using appropriate supporting evidence



## High School Fine Arts

# Lighting Design II

---

### A - Creating

- create technical elements of theatre lighting (e.g., equipment, colors, themes)

### B - Producing

- produce lighting elements in theatre

### C - Responding

- respond to lighting elements of theatre using appropriate supporting evidence

## High School Fine Arts

# Lighting Design III

---

### A - Creating

- create technical elements of theatre lighting (e.g., equipment, colors, themes)

### B - Producing

- produce lighting elements in theatre

### C - Responding

- respond to lighting elements of theatre using appropriate supporting evidence

## High School Fine Arts

# Lighting Design IV

---

### A - Creating

- create technical elements of theatre lighting (e.g., equipment, colors, themes)

### B - Producing

- produce lighting elements in theatre

### C - Responding

- respond to lighting elements of theatre using appropriate supporting evidence

## High School Fine Arts

# Mastery Band I

---

### A - Creating

- improvise, compose, and arrange music within specified guidelines

### B - Performing

- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music

### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances

### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

# Mastery Band II

---

### A - Creating

- improvise, compose, and arrange music within specified guidelines

### B - Performing

- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others
- read and identify elements of notated music

### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances

### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

# Mastery Band III

---

### A - Creating

- improvise, compose, and arrange music within specified guidelines

### B - Performing

- sing alone or with others
- read and identify elements of notated music
- perform on instruments through a varied repertoire of music, alone and with others

### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances

### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

# Mastery Band IV

---

### A - Creating

- improvise, compose, and arrange music within specified guidelines

### B - Performing

- read and identify elements of notated music
- sing alone or with others
- perform on instruments through a varied repertoire of music, alone and with others

### C - Responding

- listen to, analyze, and describe music
- respond to music and music performances

### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

# Mastery Guitar

---

### A - Creating

- improvise melodies, variations, and accompaniments
- compose and arrange music within specified guidelines

### B - Performing

- perform expressively, with appropriate interpretation and technical accuracy, through a varied repertoire of music, alone or with others
- read and notate music

### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

### D - Connecting

- understand relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture



**High School Fine Arts****Mastery Men's Chorus I**

---

**A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

**B - Performing**

- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature

**C - Responding**

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

**D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

# Mastery Men's Chorus II

---

### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

### B - Performing

- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature

### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

### D - Connecting

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

### Mastery Men's Chorus III

---

#### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### B - Performing

- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature

#### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### D - Connecting

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

### Mastery Men's Chorus IV

---

#### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### B - Performing

- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature

#### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### D - Connecting

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

# Mastery Mixed Chorus I

---

### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

### B - Performing

- develop and refine musical techniques and literature for presentation
- analyze, interpret, and select musical literature for presentation
- convey meaning through the presentation of musical literature

### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

### D - Connecting

- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding
- synthesize and relate knowledge and personal experiences to make music

**High School Fine Arts****Mastery Mixed Chorus II**

---

**A - Creating**

- organize, develop, and revise musical ideas and literature
- generate and conceptualize musical ideas and literature

**B - Performing**

- analyze, interpret, and select musical literature for presentation
- convey meaning through the presentation of musical literature
- develop and refine musical techniques and literature for presentation

**C - Responding**

- apply criteria to evaluate musical literature
- perceive, analyze, and interpret meaning in musical literature

**D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

### Mastery Mixed Chorus III

---

#### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### B - Performing

- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature

#### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### D - Connecting

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

### Mastery Mixed Chorus IV

---

#### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

#### B - Performing

- analyze, interpret, and select musical literature for presentation
- convey meaning through the presentation of musical literature
- develop and refine musical techniques and literature for presentation

#### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

#### D - Connecting

- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding
- synthesize and relate knowledge and personal experiences to make music



## High School Fine Arts

# Mastery Music Technology

---

### A - Creating

- select and develop musical ideas (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) for defined purposes and contexts
- evaluate and refine selected musical ideas to create musical work (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) that meets appropriate criteria
- share creative musical works (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) that convey intent, demonstrate craftsmanship, and exhibit originality
- select varied musical works to present (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) based on interest, knowledge, technical skill, and context
- generate musical ideas (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) for various purposes and contexts

### B - Performing

- select varied musical works to present (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) based on interest, knowledge, technical skill, and context
- analyze the structure and context of varied musical works (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) and their effects on performance
- develop personal interpretations that consider creator intent
- evaluate and refine personal and ensemble performances, individually or in collaboration with others
- perform expressively, with appropriate interpretation and technical accuracy, and in a manner appropriate to the audience and context

### C - Responding

- analyze how the structure and context of varied musical works (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) inform the response
- support interpretations of musical works (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) that reflect the expressive intent of creators and performers
- support evaluations of musical works (e.g., arrangement, composition, improvisation, mixed-media project, orchestration, sound design) and performances based on analysis, interpretation, and established criteria
- choose music appropriate for a specific purpose or situation

## **High School Fine Arts**

### **D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas to varied contexts and daily life to deepen understanding
- explore careers in music technology
- understand the major hardware and software components of a computer system, live sound amplification, recording techniques, and their interactions

## High School Fine Arts

# Mastery Orchestra I

---

### A - Creating

- improvise, compose, and arrange music within specified guidelines

### B - Performing

- perform a varied repertoire of music on instruments, alone and with others
- perform, read, and notate music
- demonstrate instrument care and maintenance

### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

### D - Connecting

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

# Mastery Orchestra II

---

### A - Creating

- improvise, compose, and arrange music within specified guidelines

### B - Performing

- perform, read, and notate music
- perform a varied repertoire of music on instruments, alone and with others
- demonstrate instrument care and maintenance

### C - Responding

- listen to, analyze, and describe music
- evaluate music and music performances

### D - Connecting

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

**High School Fine Arts****Mastery Orchestra III**

---

**A - Creating**

- improvise, compose, and arrange music within specified guidelines

**B - Performing**

- perform a varied repertoire of music on instruments, alone and with others
- perform, read, and notate music
- demonstrate instrument care and maintenance

**C - Responding**

- listen to, analyze, and describe music
- evaluate music and music performances

**D - Connecting**

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

**High School Fine Arts****Mastery Orchestra IV**

---

**A - Creating**

- improvise, compose, and arrange music within specified guidelines

**B - Performing**

- perform a varied repertoire of music on instruments, alone and with others
- perform, read, and notate music
- demonstrate instrument care and maintenance

**C - Responding**

- evaluate music and music performances
- listen to, analyze, and describe music

**D - Connecting**

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

# Mastery Piano

---

### A - Creating

- notate music
- compose and arrange music within specified guidelines

### B - Performing

- perform a varied repertoire of music
- improvise melodies, variations, and accompaniments
- analyze selection of repertoire

### C - Responding

- evaluate music and music performances

### D - Connecting

- read about, listen to, analyze, and describe music
- understand relationships between music, the other arts, disciplines outside the arts, history, and culture
- understand music in relation to history and culture

## High School Fine Arts

# Mastery Women's Chorus I

---

### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

### B - Performing

- develop and refine musical techniques and literature for presentation
- convey meaning through the presentation of musical literature
- analyze, interpret, and select musical literature for presentation

### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

### D - Connecting

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding



## High School Fine Arts

# Mastery Women's Chorus II

---

### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

### B - Performing

- analyze, interpret, and select musical literature for presentation
- convey meaning through the presentation of musical literature
- develop and refine musical techniques and literature for presentation

### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

### D - Connecting

- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding
- synthesize and relate knowledge and personal experiences to make music

## High School Fine Arts

# Mastery Women's Chorus III

---

### A - Creating

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

### B - Performing

- convey meaning through the presentation of musical literature
- develop and refine musical techniques and literature for presentation
- analyze, interpret, and select musical literature for presentation

### C - Responding

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

### D - Connecting

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

**High School Fine Arts****Mastery Women's Chorus IV**

---

**A - Creating**

- generate and conceptualize musical ideas and literature
- organize, develop, and revise musical ideas and literature

**B - Performing**

- convey meaning through the presentation of musical literature
- analyze, interpret, and select musical literature for presentation
- develop and refine musical techniques and literature for presentation

**C - Responding**

- perceive, analyze, and interpret meaning in musical literature
- apply criteria to evaluate musical literature

**D - Connecting**

- synthesize and relate knowledge and personal experiences to make music
- relate musical ideas and literature with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

# Media Arts I

---

### A - Creating

- generate and conceptualize artistic ideas and work
- organize and develop artistic ideas and work
- refine and complete artistic work

### B - Producing

- select, analyze, and interpret artistic work for presentation
- develop and refine artistic techniques and work for presentation
- convey meaning through the presentation of artistic work

### C - Responding

- perceive and analyze artistic work
- interpret intent and meaning in artistic work
- apply criteria to evaluate artistic work

### D - Connecting

- relate artistic ideas and works with societal, cultural, and historical context to deepen understanding
- synthesize and relate knowledge and personal experiences to make art

## High School Fine Arts

# Media Arts II

---

### A - Creating

- generate and conceptualize artistic ideas and work
- organize and develop artistic ideas and work
- refine and complete artistic work

### B - Producing

- select, analyze, and interpret artistic work for presentation
- develop and refine artistic techniques and work for presentation
- convey meaning through the presentation of artistic work

### C - Responding

- apply criteria to evaluate artistic work
- perceive and analyze artistic work
- interpret intent and meaning in artistic work

### D - Connecting

- relate artistic ideas and works with societal, cultural, and historical context to deepen understanding
- synthesize and relate knowledge and personal experiences to make art

## High School Fine Arts

### Media Arts III

---

#### A - Creating

- generate and conceptualize artistic ideas and work
- organize and develop artistic ideas and work
- refine and complete artistic work

#### B - Producing

- select, analyze, and interpret artistic work for presentation
- develop and refine artistic techniques and work for presentation
- convey meaning through the presentation of artistic work

#### C - Responding

- interpret intent and meaning in artistic work
- apply criteria to evaluate artistic work
- perceive and analyze artistic work

#### D - Connecting

- relate artistic ideas and works with societal, cultural, and historical context to deepen understanding
- synthesize and relate knowledge and personal experiences to make art

## High School Fine Arts

# Media Arts IV

---

### A - Creating

- generate and conceptualize artistic ideas and work
- organize and develop artistic ideas and work
- refine and complete artistic work

### B - Producing

- select, analyze, and interpret artistic work for presentation
- develop and refine artistic techniques and work for presentation
- convey meaning through the presentation of artistic work

### C - Responding

- perceive and analyze artistic work
- interpret intent and meaning in artistic work
- apply criteria to evaluate artistic work

### D - Connecting

- synthesize and relate knowledge and personal experiences to make art
- relate artistic ideas and works with societal, cultural, and historical context to deepen understanding

## High School Fine Arts

### Men's Dance

---

#### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

#### B - Performing

- understand and apply music concepts to dance
- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement

#### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

#### D - Connecting

- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge
- understand and demonstrate dance throughout history and in various cultures



## High School Fine Arts

# Modern Dance I

---

### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

### B - Performing

- understand and apply music concepts to dance
- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement

### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

### D - Connecting

- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge
- understand and demonstrate dance throughout history and in various cultures

## High School Fine Arts

# Modern Dance II

---

### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

### B - Performing

- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- identify and demonstrate movement elements, skills, and terminology in dance

### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

### D - Connecting

- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge

## High School Fine Arts

# Modern Dance III

---

### A - Creating

- demonstrate an understanding of dance as a form of communication
- demonstrate an understanding of creative/choreographic principles, processes, and structures

### B - Performing

- identify and demonstrate movement elements, skills, and terminology in dance
- understand and apply music concepts to dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement

### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

### D - Connecting

- demonstrate an understanding of dance as it relates to other areas of knowledge
- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness

## High School Fine Arts

# Modern Dance IV

---

### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

### B - Performing

- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance
- identify and demonstrate movement elements, skills, and terminology in dance

### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

### D - Connecting

- demonstrate an understanding of dance as it relates to other areas of knowledge
- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness

**High School Fine Arts****Music for Dancers I**

---

**A - Creating**

- read and notate music
- demonstrate an understanding of dance and/or music as a form of communication
- organize and develop artistic ideas and work

**B - Performing**

- understand and model dance etiquette as a classroom participant, performer, and observer
- understand and apply music concepts to dance
- select, analyze, and interpret artistic work using musical forms

**C - Responding**

- demonstrate critical and creative thinking in all aspects of dance
- perceive and analyze artistic work

**D - Connecting**

- demonstrate an understanding of the relationship between dance and music throughout history and in various cultures
- identify the connections between music and dance, and between musician and dancer

**High School Fine Arts****Music for Dancers II**

---

**A - Creating**

- read and notate music
- demonstrate an understanding of dance and/or music as a form of communication
- organize and develop artistic ideas and work

**B - Performing**

- understand and model dance etiquette as a classroom participant, performer, and observer
- understand and apply music concepts to dance
- select, analyze, and interpret artistic work using musical forms

**C - Responding**

- demonstrate critical and creative thinking in all aspects of dance
- perceive and analyze artistic work

**D - Connecting**

- identify the connections between music and dance, and between musician and dancer
- demonstrate an understanding of the relationship between dance and music throughout history and in various cultures

## High School Fine Arts

# Music History

---

### A - Elements of Music

- identify common tempo markings
- explore use of harmony in music, including consonance and dissonance, intervals, chord structure, scales, modes, atonality, and serialism
- explore dynamics in various musical styles
- explore texture in various musical styles, including monophony, polyphony, homophony, and counterpoint
- explore use of cadences as resting and finalizing sections of harmonic structure and their use as transitions into new tonalities
- follow written scores of music of various styles and genres
- explore development of major music forms, including keyboard, vocal, and orchestral
- recognize traditional pitch notation, including line and space names on the staff, in treble and bass clefs
- explore current rhythmic notation used in traditional and 20th century music, including notes, rests, meter signatures, and unmeasured scores
- explore key signatures, major, minor, modal, and atonal music
- explore phrase shape and movement of melodic line

### B - Cultural and Historical Context

- explore the history of rhythm and pitch notation
- examine development of orchestral and keyboard instruments and demonstrate familiarity with the most common instruments
- identify common voice classifications
- identify instrumental and vocal ensemble groupings commonly used in music
- name and provide dates for major historical periods related to music
- generalize characteristics of style for each major musical period
- analyze major composers' styles and periods during which they wrote
- explore lives of major composers
- analyze use of instruments and voices in each major period, including size of groups
- describe prevalence and function of sacred and secular music in each major period
- compare each major musical period with other arts, curriculum areas, and technology

## High School Fine Arts

### B - Cultural and Historical Context *(continued)*

- describe the impact of social, political, and cultural conditions on the arts of various periods
- use print and non-print media to locate information about music and musicians

### C - Listening

- listen with increasing discrimination and concentration
- identify common vocal ranges and instruments by timbre
- identify major historical periods from characteristic listening examples
- describe rhythmic, melodic, and harmonic composition in music examples and their effect on musical style and form
- identify common musical forms
- explore the influence of traditional music on the music of today
- identify music of other cultures
- explore nontraditional music forms
- demonstrate appropriate audience etiquette
- analyze the performance skill of performers
- analyze aesthetic properties of selected musical performances



## High School Fine Arts

# Music Studies I

---

### A - Creating

- improvise, compose, choreograph, and/or arrange music or music related performances within specified guidelines

### B - Performing

- perform using a varied repertoire of music, alone and with others
- identify elements of music

### C - Responding

- listen to, analyze, and describe music
- respond to music and performances of themselves and others

### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

# Music Studies II

---

### A - Creating

- improvise, compose, choreograph, and/or arrange music or music related performances within specified guidelines

### B - Performing

- perform using a varied repertoire of music, alone and with others
- identify elements of music

### C - Responding

- listen to, analyze, and describe music
- respond to music and performances of themselves and others

### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

# Music Studies III

---

### A - Creating

- improvise, compose, choreograph, and/or arrange music or music related performances within specified guidelines

### B - Performing

- perform using a varied repertoire of music, alone and with others
- identify elements of music

### C - Responding

- listen to, analyze, and describe music
- respond to music and performances of themselves and others

### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

# Music Studies IV

---

### A - Creating

- improvise, compose, choreograph, and/or arrange music or music related performances within specified guidelines

### B - Performing

- perform using a varied repertoire of music, alone and with others
- identify elements of music

### C - Responding

- listen to, analyze, and describe music
- respond to music and performances of themselves and others

### D - Connecting

- understand relationships between music, other arts, other disciplines, varied contexts, and daily life

## High School Fine Arts

# Musical Theatre I

---

### A - Creating

- organize, design, and refine musical theatre work

### B - Performing

- act and direct by communicating and sustaining roles within a variety of situations and environments
- execute artistic and technical elements of musical theatre

### C - Responding

- engage actively and appropriately as an audience member
- critique various aspects of musical theatre and other media using appropriate supporting evidence

### D - Connecting

- explore how musical theatre connects to life experience, careers, and other content
- examine the role of musical theatre in a societal, cultural, and historical context

## High School Fine Arts

# Musical Theatre II

---

### A - Creating

- organize, design, and refine musical theatre work

### B - Performing

- act and direct by communicating and sustaining roles within a variety of situations and environments
- execute artistic and technical elements of musical theatre

### C - Responding

- engage actively and appropriately as an audience member
- critique various aspects of musical theatre and other media using appropriate supporting evidence

### D - Connecting

- examine the role of musical theatre in a societal, cultural, and historical context
- explore how musical theatre connects to life experience, careers, and other content

## High School Fine Arts

# Musical Theatre III

---

### A - Creating

- organize, design, and refine musical theatre work

### B - Performing

- act and direct by communicating and sustaining roles within a variety of situations and environments
- execute artistic and technical elements of musical theatre

### C - Responding

- engage actively and appropriately as an audience member
- critique various aspects of musical theatre and other media using appropriate supporting evidence

### D - Connecting

- explore how musical theatre connects to life experience, careers, and other content
- examine the role of theatre in a societal, cultural, and historical context

## High School Fine Arts

# Musical Theatre IV

---

### A - Creating

- organize, design, and refine theatrical work

### B - Performing

- act and direct by communicating and sustaining roles within a variety of situations and environments
- execute artistic and technical elements of theatre

### C - Responding

- engage actively and appropriately as an audience member
- critique various aspects of theatre and other media using appropriate supporting evidence

### D - Connecting

- explore how theatre connects to life experiences, careers, and other content
- examine the role of theatre in societal, cultural, and historical context



## High School Fine Arts

# Performance Ensemble I

---

### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

### B - Performing

- understand and apply music concepts to dance
- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement

### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

### D - Connecting

- demonstrate an understanding of dance as it relates to other areas of knowledge
- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness

## High School Fine Arts

# Performance Ensemble II

---

### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

### B - Performing

- understand and model dance etiquette as a classroom participant, performer, and observer
- identify and demonstrate movement elements, skills, and terminology in dance
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance

### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

### D - Connecting

- demonstrate an understanding of dance as it relates to other areas of knowledge
- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness

## High School Fine Arts

# Photography I

---

### A - Creating

- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as personal artistic ideation
- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- manipulate and enhance photographic images within a photo-imaging program
- keep an ongoing visual and verbal record to explore and develop works of art

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning of works of art and increase visual literacy

### D - Connecting

- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom

## High School Fine Arts

# Photography II

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### A - Creating

- visualize and generate ideas for creating works of art
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as personal artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning of works of art and increase visual literacy

### D - Connecting

- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts

## High School Fine Arts

# Photography III

---

### A - Creating

- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as personal artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- visualize and generate ideas for creating works of art
- incorporate formal and informal components to create works of art

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning of works of art and increase visual literacy

### D - Connecting

- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom
- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts

## High School Fine Arts

# Photography IV

---

### A - Creating

- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as personal artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning of works of art and increase visual literacy

### D - Connecting

- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom
- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art

## High School Fine Arts

### Pointe Variation I

---

#### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

#### B - Performing

- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance

#### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

#### D - Connecting

- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge

## High School Fine Arts

### Pointe Variation II

---

#### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

#### B - Performing

- understand and model dance etiquette as a classroom participant, performer, and observer
- identify and demonstrate movement elements, skills, and terminology in dance
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance

#### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

#### D - Connecting

- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge



## High School Fine Arts

### Prelude to Orchestra

---

#### **A - Creating**

- improvise, compose, and arrange music within specified guidelines

#### **B - Performing**

- demonstrate instrument care and maintenance
- exhibit awareness of tuning mechanics
- perform a varied repertoire of music on instruments, alone and with others
- perform, read, and notate music

#### **C - Responding**

- listen to, analyze, and describe music
- evaluate music and music performances

#### **D - Connecting**

- demonstrate an understanding of the relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture

## High School Fine Arts

# Printmaking I

---

### A - Creating

- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom

## High School Fine Arts

# Printmaking II

---

### A - Creating

- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom

## High School Fine Arts

# Printmaking III

---

### A - Creating

- visualize and generate ideas for creating works of art
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy
- reflect on the context of personal works of art in relation to community, culture, and the world

### D - Connecting

- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom

## High School Fine Arts

# Printmaking IV

---

### A - Creating

- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom

## High School Fine Arts

# Sculpture I

---

### A - Creating

- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- keep an ongoing visual and verbal record to explore and develop works of art
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom

## High School Fine Arts

# Sculpture II

---

### A - Creating

- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- keep an ongoing visual and verbal record to explore and develop works of art
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom

## High School Fine Arts

# Sculpture III

---

### A - Creating

- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom
- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art



## High School Fine Arts

# Sculpture IV

---

### A - Creating

- keep an ongoing visual and verbal record to explore and develop works of art
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom

## High School Fine Arts

# Sound Design I

---

### A - Creating

- create sound design elements of theatre (e.g., equipment, placement, inventory)

### B - Producing

- produce sound design elements in theatre

### C - Responding

- respond to sound design elements of theatre using appropriate supporting evidence

## High School Fine Arts

# Sound Design II

---

### A - Creating

- create sound design elements of theatre (e.g., equipment, placement, inventory)

### B - Producing

- produce sound design elements in theatre

### C - Responding

- respond to sound design elements of theatre using appropriate supporting evidence

## High School Fine Arts

# Sound Design III

---

### A - Creating

- create sound design elements of theatre (e.g., equipment, placement, inventory)

### B - Producing

- produce sound design elements in theatre

### C - Responding

- respond to sound design elements of theatre using appropriate supporting evidence

## High School Fine Arts

### Sound Design IV

---

#### A - Creating

- create sound design elements of theatre (e.g., equipment, placement, inventory)

#### B - Producing

- produce sound design elements in theatre

#### C - Responding

- respond to sound design elements of theatre using appropriate supporting evidence

## High School Fine Arts

### Technical Theatre I

---

#### A - Creating

- create technical elements of theatre (e.g., sets, props, costumes, makeup, lighting, sound)

#### B - Performing

- produce technical elements in theatre

#### C - Responding

- respond to technical elements of theatre using appropriate supporting evidence

#### D - Connecting

- connect technical elements of theatre

## High School Fine Arts

# Technical Theatre II

---

### A - Creating

- create technical elements of theatre (e.g., sets, props, costumes, makeup, lighting, sound)

### B - Performing

- produce technical elements in theatre

### C - Responding

- respond to technical elements of theatre using appropriate supporting evidence

### D - Connecting

- connect technical elements of theatre

## High School Fine Arts

### Technical Theatre III

---

#### A - Creating

- create technical elements of theatre (e.g., sets, props, costumes, makeup, lighting, sound)

#### B - Performing

- produce technical elements in theatre

#### C - Responding

- respond to technical elements of theatre using appropriate supporting evidence

#### D - Connecting

- connect technical elements of theatre



## High School Fine Arts

### Technical Theatre IV

---

#### A - Creating

- create technical elements of theatre (e.g., sets, props, costumes, makeup, lighting, sound)

#### B - Performing

- produce technical elements in theatre

#### C - Responding

- respond to technical elements of theatre using appropriate supporting evidence

#### D - Connecting

- connect technical elements of theatre

## High School Fine Arts

# Theatre Arts Literature

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### A - Creation and Performance

- design and execute artistic and technical elements of theatre
- direct by conceptualizing, organizing, and conducting rehearsals for performance
- integrate various art forms, other content areas, and life experiences to create theatre
- develop scripts through improvisation and other theatrical methods
- act by developing, communicating, and sustaining roles within a variety of situations and environments

### B - Perception and Analysis

- critique various aspects of theatre and other media, using appropriate supporting evidence
- analyze and construct meaning from theatrical experiences, dramatic literature, and electronic media
- explore the business of theatre

### C - Cultural and Historical Context

- research cultural and historical information to support artistic choices
- examine the role of theatre as a reflection of past and present civilizations

## High School Fine Arts

# Theatre Marketing

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### A - Creation and Performance

- direct by conceptualizing, organizing, and conducting rehearsals for performance
- integrate various art forms, other content areas, and life experiences to create theatre

### B - Perception and Analysis

- analyze and construct meaning from theatrical dramatic literature and electronic media
- explore the business of theatre
- critique various aspects of marketing for theatre and other media, using appropriate supporting evidence
- engage actively and appropriately as an audience member in theatre or other media experiences

### C - Cultural and Historical Context

- research cultural and historical information to support artistic choices
- examine the roles of theatre as a reflection of past and present civilizations

## High School Fine Arts

# Theatre Technology I

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### A - Creation and Performance

- participate in and understand the theatrical chain of command
- understand the basic functions of each of the five main technical areas for a production
- analyze artistic and technical elements of theatre
- integrate various art forms, other content areas, and life experiences to create theatre
- act by developing, communicating, and sustaining roles within a variety of situations and environments
- research cultural and historical information to support artistic choices

### B - Perception and Analysis

- analyze and construct meaning from theatrical experiences, dramatic literature, and electronic media
- explore the business of theatre
- critique various aspects of theatre and other media, using appropriate supporting evidence
- engage actively and appropriately as an audience member in theatre and other media experiences

### C - Cultural and Historical Context

- examine the roles of theatre as a reflection of society

## High School Fine Arts

# Theatre Technology II

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### A - Creation and Performance

- understand the complex functions of each of the five main technical areas for a production
- analyze and implement artistic and technical elements of theatre
- participate in and understand the theatrical chain of command
- act by developing, communicating, sustaining, and refining roles within a variety of situations and environments
- research cultural and historical information to support artistic choices
- integrate various art forms, other content areas, and life experiences to create theatre
- participate in a major theatrical production

### B - Perception and Analysis

- analyze and construct meaning from theatrical experiences and environments
- implement the business of theatre
- analyze aspects of a theatrical performance
- engage actively and appropriately as an audience member in theatre and other media experiences

## High School Fine Arts

# Visual Art Comprehensive I

---

### A - Creating

- visualize and generate ideas for creating works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- incorporate formal and informal components to create works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom

## High School Fine Arts

# Visual Art Comprehensive II

---

### A - Creating

- visualize and generate ideas for creating works of art
- reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation
- keep an ongoing visual and verbal record to explore and develop works of art
- choose from a range of materials and methods of traditional and contemporary artistic practices to plan and create works of art
- engage in an array of processes, media, techniques, and technology through experimentation, practice, and persistence
- incorporate formal and informal components to create works of art

### B - Presenting

- plan, prepare, and present works of art for exhibition in school, virtual environment, and/or portfolio presentation

### C - Responding

- reflect on the context of personal works of art in relation to community, culture, and the world
- critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches
- engage in the process of art criticism to make meaning and increase visual literacy

### D - Connecting

- develop personal artistic voice through connecting uses of art within a variety of cultural, historical, and contemporary contexts
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art
- utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom

**High School Fine Arts****World Dance Forms I**

---

**A - Creating**

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

**B - Performing**

- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance

**C - Responding**

- demonstrate critical and creative thinking in all aspects of dance

**D - Connecting**

- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge



## High School Fine Arts

# World Dance Forms II

---

### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

### B - Performing

- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance

### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

### D - Connecting

- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge

**High School Fine Arts****World Dance Forms III**

---

**A - Creating**

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

**B - Performing**

- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance

**C - Responding**

- demonstrate critical and creative thinking in all aspects of dance

**D - Connecting**

- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge

## High School Fine Arts

# World Dance Forms IV

---

### A - Creating

- demonstrate an understanding of creative/choreographic principles, processes, and structures
- demonstrate an understanding of dance as a form of communication

### B - Performing

- identify and demonstrate movement elements, skills, and terminology in dance
- understand and model dance etiquette as a classroom participant, performer, and observer
- recognize concepts of anatomy and kinesiology in movement
- understand and apply music concepts to dance

### C - Responding

- demonstrate critical and creative thinking in all aspects of dance

### D - Connecting

- understand and demonstrate dance throughout history and in various cultures
- recognize connections between dance and wellness
- demonstrate an understanding of dance as it relates to other areas of knowledge

## High School Modern/Classical Language

# American Sign Language I

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### A - Communication: Interpersonal Mode - 1

- exchange simple information in the target language, using cultural references where appropriate

### B - Communication: Interpersonal Mode - 2

- demonstrate skills necessary to sustain exchanges in the target language

### C - Communication: Interpretive Mode - 1

- demonstrate an understanding of the target language through a variety of media and based on topics such as self, family, school, etc.

### D - Communication: Interpretive Mode - 2

- comprehend signed and non-manual markers to understand simple messages in the target language

### E - Communication: Presentational Mode - 1

- present information that contains a variety of vocabulary, phrases, and patterns

### F - Communication: Presentational Mode - 2

- present brief, rehearsed material, such as dialogues, skits, and poetry, in the target language

### G - Cultural Perspectives, Practices, and Products - 1

- develop an awareness of perspectives, practices, and products of the cultures in which the target language is used

### H - Connections, Comparisons, and Communities - 1

- use information acquired in the study of the target language and information acquired in other subject areas to reinforce one another

### I - Connections, Comparisons, and Communities - 2

- demonstrate an understanding of the significance of culture through comparisons between the culture studied and the student's own culture

### J - Connections, Comparisons, and Communities - 3

- compare basic elements of the target language to the English language

### K - Connections, Comparisons, and Communities - 4

- demonstrate an awareness of current events in the target culture

### L - Connections, Comparisons, and Communities - 5

- identify situations and resources in which the target language skills and cultural knowledge may be applied beyond the classroom setting for recreational, educational, and occupational purposes

## High School Modern/Classical Language

### American Sign Language II

---

#### **A - Communication: Interpersonal Mode - 1**

- exchange simple information in the target language, using cultural references where appropriate

#### **B - Communication: Interpersonal Mode - 2**

- demonstrate skills necessary to sustain exchanges in the target language

#### **C - Communication: Interpretive Mode - 1**

- understand information on new and familiar topics presented in the target language through a variety of media, including authentic narratives and materials

#### **D - Communication: Interpretive Mode - 2**

- comprehend signed and non-manual markers to understand simple messages in the target language

#### **E - Communication: Presentational Mode - 1**

- present information that contains a variety of vocabulary, phrases, and patterns

#### **F - Communication: Presentational Mode - 2**

- present brief, rehearsed material, such as dialogues, skits, and poetry, in the target language

#### **G - Cultural Perspectives, Practices, and Products - 1**

- develop an awareness of perspectives, practices, and products of the cultures in which the target language is used

#### **H - Connections, Comparisons, and Communities - 1**

- use information acquired in the study of the target language and information acquired in other subject areas to reinforce one another

#### **I - Connections, Comparisons, and Communities - 2**

- demonstrate an understanding of the significance of culture through comparisons between the culture studied and the student's own culture

#### **J - Connections, Comparisons, and Communities - 3**

- develop a better understanding of the English language through a study of the target language

#### **K - Connections, Comparisons, and Communities - 4**

- identify current events in the target culture

#### **L - Connections, Comparisons, and Communities - 5**

- develop and apply target language skills and cultural knowledge beyond the classroom setting for recreational, educational, and occupational purposes

## High School Modern/Classical Language

### American Sign Language III

---

#### **A - Communication: Interpersonal Mode - 1**

- use the target language to engage in interpersonal communication

#### **B - Communication: Interpretive Mode - 1**

- understand words and concepts presented in the target language (Fingerspelling)

#### **C - Communication: Interpretive Mode - 2**

- understand words and concepts presented in the target language (Receptive)

#### **D - Communication: Presentational Mode - 1**

- present information that contains a great variety of vocabulary, phrases, and patterns (Glossing)

#### **E - Communication: Presentational Mode - 2**

- use the target language to present information to an audience (Expressive)

#### **F - Connections, Comparisons, Communities, and Cultural Perspectives, Practices, and Products - 1**

- compare the student's culture and the target culture

## High School Modern/Classical Language

# Latin I

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### A - Communication

- provide accurate, written English translations
- write simple phrases and sentences in Latin as part of the process for understanding written Latin
- read passages aloud with proper intonation and rhythm
- read authentic and edited passages appropriate for Latin I
- comprehend spoken Latin phrases, quotations, and expressions

### B - Culture

- demonstrate an understanding of perspectives, practices, and products of the Greco-Roman culture
- interpret cultural practices of the Romans

### C - Connections, Comparisons, and Communities

- reinforce and further the knowledge of other disciplines through the study of Latin
- acquire information and recognize distinctive viewpoints via the study of Latin and the Greco-Roman civilization
- identify situations and resources in which Latin skills and cultural knowledge may be applied beyond the classroom setting for recreational, educational, and occupational purposes

## High School Modern/Classical Language

### Latin II

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#### A - Communication

- write increasingly complex phrases and sentences in Latin as a part of the process for understanding written Latin
- read Latin passages aloud with accurate pronunciation, proper intonation, and rhythm
- read and translate passages, edited and authentic, containing grammar and syntax appropriate for Latin II
- comprehend spoken Latin phrases, quotations, and expressions
- provide accurately written translations by applying more complex concepts and specialized vocabulary appropriate for Latin II

#### B - Culture

- identify contributions of the Roman culture
- discuss the perspectives, practices, and products of the Greco-Roman culture

#### C - Connections, Comparisons, and Communities

- improve language skills and expand cultural understanding by accessing information beyond the classroom setting for recreational, educational, and occupational purposes
- acquire information from reading passages in order to draw connections between modern and classical civilizations
- use information acquired through the study of Latin to correlate with other subject areas
- recognize and use elements of Latin to increase knowledge of English



## High School Modern/Classical Language

### Latin III, IV, V, and Higher

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#### A - Communication

- comprehend spoken Latin phrases, quotations, and expressions
- read Latin passages aloud with accurate pronunciation, proper intonation, and rhythm
- demonstrate mastery of advanced grammar topics and rhetorical/poetic devices
- read authentic passages with supporting notes and commentary appropriate for Advanced Latin

#### B - Culture

- describe and discuss the perspectives, practices, and products of Roman culture
- analyze the contributions of Roman culture to other civilizations

#### C - Connections, Comparisons, and Communities

- improve language skills and expand cultural understanding by accessing information beyond the classroom setting for recreational, educational, and occupational purposes
- read passages in order to compare and contrast contemporary culture with the Roman world
- reinforce and expand the knowledge of other disciplines through the study of the Latin language
- use elements of the Latin language and literature to gain added knowledge of English

## High School Modern/Classical Language

# Modern Languages Level I

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### A - Communication: Interpersonal Mode

- exchange simple spoken and written information in the target language
- conduct brief oral and written exchanges in the target language

### B - Communication: Interpretive Mode

- demonstrate understanding of simple spoken and written language presented through a variety of media in the target language, based on a variety of topics
- interpret verbal and nonverbal cues to understand simple spoken and written messages in the target language

### C - Communication: Presentational Mode

- present information orally and in writing containing a variety of vocabulary, phrases, and patterns
- present briefly rehearsed material in the target language

### D - Culture

- identify perspectives, practices, and products of the culture(s) where the target language is spoken

### E - Connections, Comparisons, and Communities

- recognize current events in the target culture(s)
- identify situations and resources in which target language skills and cultural knowledge may be applied beyond the classroom setting for recreational, educational, and occupational purposes
- compare basic elements of the target language to the English language
- use information acquired in the study of the target language and information acquired in other subject areas to reinforce one another
- discuss the significance of culture through comparisons of the culture(s) studied and the students' own culture

## High School Modern/Classical Language

# Modern Languages Level II

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### A - Communication: Interpersonal Mode

- conduct oral and written exchanges in the target language
- exchange oral and written information in the target language

### B - Communication: Interpretive Mode

- demonstrate understanding of spoken and written language on new and familiar topics presented through a variety of media in the target language, including authentic materials
- interpret verbal and nonverbal cues to understand spoken and written messages in the target language

### C - Communication: Presentational Mode

- present information orally and in writing using familiar and newly acquired vocabulary, phrases, and patterns
- present rehearsed and unrehearsed material in the target language, such as skits, poems, short narratives, and songs

### D - Culture

- identify perspectives, practices, and products of the culture(s) where the target language is spoken and how they are interrelated

### E - Connections, Comparisons, and Communities

- discuss similarities and differences between the culture(s) studied and the students' own culture
- recognize and use elements of the target language to increase knowledge of English
- identify current events and issues in the target culture(s)
- develop and apply target language skills and cultural knowledge beyond the classroom setting for recreational, educational, and occupational purposes
- use information acquired in the study of the target language to reinforce and correlate with other subject areas

## High School Modern/Classical Language

# Modern Languages Level III

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### A - Communication: Interpersonal Mode

- initiate, sustain, and close oral and written exchanges in the target language, applying familiar vocabulary and structures to new situations
- exchange (with some originality and spontaneity) oral and written information and ideas in the target language

### B - Communication: Interpretive Mode

- interpret verbal and nonverbal cues to understand more complex spoken and written messages in the target language
- demonstrate understanding of spoken and written language on new and familiar topics presented through a variety of media in the target language, including authentic materials

### C - Communication: Presentational Mode

- present information orally and in writing using familiar and newly acquired vocabulary, phrases, and patterns in increasingly complex sentences
- present student-created as well as culturally authentic material in the target language

### D - Culture

- discuss perspectives, practices, and products of the culture(s) studied and how they are interrelated

### E - Connections, Comparisons, and Communities

- improve language skills and expand cultural understanding by accessing information beyond the classroom setting for recreational, educational, and occupational purposes
- strengthen knowledge of the English language through the study and analysis of linguistic elements of the target language
- reinforce and broaden knowledge of connections between the target language and other disciplines
- analyze similarities and differences that exist within and among the culture(s) studied
- discuss current events and issues in the target culture(s)

## High School Modern/Classical Language

# Modern Languages Level IV

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### A - Communication: Interpersonal Mode

- exchange a variety of oral and written information and ideas in the target language related to history, literature, contemporary events, and issues
- initiate, sustain, and close oral and written exchanges in the target language, applying familiar vocabulary and structures to new situations

### B - Communication: Interpretive Mode

- demonstrate understanding of spoken and written language on new and familiar topics presented through a variety of media in the target language, including authentic materials
- interpret verbal and nonverbal cues to understand increasingly complex spoken and written messages in the target language

### C - Communication: Presentational Mode

- present information orally and in writing, using familiar and newly acquired vocabulary, phrases, and patterns in increasingly complex sentences
- present student-created as well as culturally authentic material in the target language

### D - Culture

- describe and discuss in the target language perspectives, practices, and products of the culture (s) studied and how they are interrelated

### E - Connections, Comparisons, and Communities

- apply language skills and expand cultural understanding by accessing information beyond the classroom setting for recreational, educational, and occupational purposes
- reinforce and broaden knowledge of the connections between the target language and other subject areas
- analyze the similarities and differences that exist within and among the culture(s) studied
- expand knowledge of the English language through the study and analysis of linguistic elements of the target language

## High School Modern/Classical Language

# Modern Languages Level V

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### A - Communication: Interpersonal Mode

- exchange oral and written information and ideas in the target language on topics related to contemporary events, history, and literature
- combine and extend known elements and conversational input to create sentences

### B - Communication: Interpretive Mode

- interpret verbal and nonverbal cues to understand more complex spoken and written messages in the target language
- demonstrate comprehension of more complex spoken and written language on topics related to contemporary, historical, and literary events and issues presented through a variety of media in the target language, including authentic materials

### C - Communication: Presentational Mode

- present previously learned as well as newly acquired information on topics related to contemporary, historical, and literary events and issues using cultural references where appropriate, in increasingly complex sentences
- present student-created as well as culturally authentic stories, poems, skits, and/or short plays in the target language

### D - Culture

- describe and discuss in the target language perspectives, practices, and products of the cultures studied and how they are interrelated

### E - Connections, Comparisons, and Communities

- reinforce and broaden knowledge of the connections between the target language and other subject areas
- analyze the similarities and differences that exist within and among the culture(s) studied
- expand knowledge of the English language through the study and analysis of linguistic elements of the target language
- apply language skills and expand cultural understanding by accessing information beyond the classroom setting for recreational, educational, and occupational purposes

## High School Modern/Classical Language

# Modern Languages Level VI

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### A - Communication: Interpersonal Mode

- exchange oral and written information and ideas in the target language on topics related to contemporary events, cultural nuances, history, the arts, and literature
- integrate and extend known elements and conversational input to create sentences and paragraphs

### B - Communication: Interpretive Mode

- demonstrate comprehension of increasingly complex spoken and written communication in the target language presented through a variety of media, including authentic materials
- interpret verbal and nonverbal cues to understand increasingly complex spoken and written messages in the target language

### C - Communication: Presentational Mode

- synthesize vocabulary, phrases, and patterns in extended oral and written discourse
- present student-created as well as culturally authentic stories, poems, skits, and/or short plays in the target language

### D - Culture

- describe and discuss in the target language perspectives, practices, and products of the culture(s) studied and how they are interrelated

### E - Connections, Comparisons, and Communities

- reinforce and broaden knowledge of connections between the target language and other subject areas
- analyze the similarities and differences that exist within and among the culture(s) studied
- expand knowledge of the English language through the study and analysis of linguistic elements of the target language
- apply language skills and expand cultural understanding by accessing information beyond the classroom setting for recreational, educational, and occupational purposes

## High School Modern/Classical Language

# Modern Languages Level VII

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### A - Communication: Interpersonal Mode

- exchange oral and written information and ideas in the target language on topics related to social and historical issues, political systems, the arts, and literature
- apply vocabulary and other linguistic elements to produce original extended oral and written discourse

### B - Communication: Interpretive Mode

- interpret verbal and nonverbal cues to understand increasingly complex spoken and written messages in the target language
- demonstrate comprehension of increasingly complex spoken and written communication in the target language presented through a variety of media, including authentic materials

### C - Communication: Presentational Mode

- synthesize vocabulary, phrases, and patterns in extended oral and written discourse
- present stories, poems, skits, short plays, and/or speeches in the target language

### D - Culture

- describe and discuss in the target language perspectives, practices, and products of the culture(s) studied and how they are interrelated

### E - Connections, Comparisons, and Communities

- apply language skills and expand cultural understanding by accessing information beyond the classroom setting for recreational, educational, and occupational purposes
- expand knowledge of the English language through the study and analysis of linguistic elements of the target language
- reinforce and broaden knowledge of connections between the target language and other subject areas
- evaluate the similarities and differences that exist within and among the culture(s) studied



## High School Modern/Classical Language

# Modern Languages Level VIII

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### A - Communication: Interpersonal Mode

- exchange oral and written information and ideas in the target language on topics related to social, philosophical and historical issues, regionalisms, traditions, the arts, and literature
- produce original extended oral and written discourse

### B - Communication: Interpretive Mode

- interpret verbal and nonverbal cues to understand increasingly complex spoken and written messages in the target language
- demonstrate comprehension of increasingly complex spoken and written communication in the target language presented through a variety of media, including authentic materials

### C - Communication: Presentational Mode

- synthesize vocabulary, phrases, and patterns in extended oral and written discourse
- present stories, poems, skits, short plays, and/or speeches in the target language

### D - Culture

- describe and discuss perspectives, practices, and products of the culture(s) studied and how they are interrelated

### E - Connections, Comparisons, and Communities

- apply language skills and expand cultural understanding by accessing information beyond the classroom setting for recreational, educational, and occupational purposes
- evaluate the similarities and differences that exist within and among the culture(s) studied
- expand knowledge of the English language through the study and analysis of linguistic elements of the target language
- expand knowledge of connections between the target language and other subject areas

## High School Modern/Classical Language

# Portuguese I

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### A - Communication: Interpersonal Mode

- conduct brief oral and written exchanges in the target language
- exchange simple spoken and written information in the target language

### B - Communication: Interpretive Mode

- demonstrate understanding of simple spoken and written language presented through a variety of media in the target language, based on a variety of topics
- interpret verbal and nonverbal cues to understand simple spoken and written messages in the target language

### C - Communication: Presentational Mode

- present information orally and in writing containing a variety of vocabulary, phrases, and patterns
- present briefly rehearsed material in the target language

### D - Cultural Perspectives, Practices, and Products

- identify perspectives, practices, and products of the cultures where the target language is spoken

### E - Connections, Comparisons, and Communities

- discuss the significance of culture through comparisons of the cultures studied and the students' own culture
- compare basic elements of the target language to the English language
- use information acquired in the study of the target language and information acquired in other subject areas to reinforce one another
- recognize current events in the target cultures
- identify situations and resources in which target language skills and cultural knowledge may be applied beyond the classroom setting for recreational, educational, and occupational purposes

## High School Modern/Classical Language

# Portuguese II

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### A - Communication: Interpersonal Mode

- exchange oral and written information in the target language
- conduct oral and written exchanges in the target language

### B - Communication: Interpretive Mode

- demonstrate understanding of spoken and written language on new and familiar topics presented through a variety of media in the target language, including authentic materials
- interpret verbal and nonverbal cues to understand spoken and written messages in the target language

### C - Communication: Presentational Mode

- present rehearsed and unrehearsed material in the target language (e.g., skits, poems, short narratives, and songs)
- present information orally and in writing using familiar and newly acquired vocabulary, phrases, and patterns

### D - Cultural Perspectives, Practices, and Products

- identify perspectives, practices, and products of the culture where the target language is spoken and how they are interrelated

### E - Connections, Comparisons, and Communities

- use information acquired in the study of the target language to reinforce and correlate with other subject areas
- develop and apply target language skills and cultural knowledge beyond the classroom setting for recreational, educational, and occupational purposes
- discuss similarities and differences between the cultures studied and the students' own culture
- recognize and use elements of the target language to increase knowledge of English
- identify current events and issues in the target culture

## High School Modern/Classical Language

### Portuguese III

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#### **A - Communication: Interpersonal Mode**

- exchange (with some originality and spontaneity) oral and written information and ideas in the target language
- initiate, sustain, and close oral and written exchanges in the target language, applying familiar vocabulary and structures to new situations

#### **B - Communication: Interpretive Mode**

- interpret verbal and nonverbal cues to understand more complex spoken and written messages in the target language
- demonstrate understanding of spoken and written language on new and familiar topics presented through a variety of media in the target language, including authentic materials

#### **C - Communication: Presentational Mode**

- present information orally and in writing using familiar and newly acquired vocabulary, phrases, and patterns in increasingly complex sentences
- present student-created as well as culturally authentic material in the target language

#### **D - Cultural Perspectives, Practices, and Products**

- discuss perspectives, practices, and products of the cultures studied and how they are interrelated

#### **E - Connections, Comparisons, and Communities**

- improve language skills and expand cultural understanding by accessing information beyond the classroom setting for recreational, educational, and occupational purposes
- discuss current events and issues in the target cultures
- strengthen knowledge of the English language through the study and analysis of linguistic elements of the target language
- reinforce and broaden knowledge of connections between the target language and other disciplines
- analyze similarities and differences that exist within and among the cultures studied

## High School Modern/Classical Language

# Portuguese IV

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### A - Communication: Interpersonal Mode

- exchange a variety of oral and written information and ideas in the target language related to history, literature, contemporary events, and issues
- initiate, sustain, and close oral and written exchanges in the target language, applying familiar vocabulary and structures to new situations

### B - Communication: Interpretive Mode

- interpret verbal and nonverbal cues to understand increasingly complex spoken and written messages in the target language
- demonstrate understanding of spoken and written language on new and familiar topics presented through a variety of media in the target language, including authentic materials

### C - Communication: Presentational Mode

- present information orally and in writing, using familiar and newly acquired vocabulary, phrases, and patterns in increasingly complex sentences
- present student-created as well as culturally authentic material in the target language

### D - Cultural Perspectives, Practices, and Products

- describe and discuss in the target language perspectives, practices, and products of the cultures studied and how they are interrelated

### E - Connections, Comparisons, and Communities

- analyze the similarities and differences that exist within and among the cultures studied
- expand knowledge of the English language through the study and analysis of linguistic elements of the target language
- apply language skills and expand cultural understanding by accessing information beyond the classroom setting for recreational, educational, and occupational purposes
- reinforce and broaden knowledge of the connections between the target language and other subject areas

## High School Modern/Classical Language

### Portuguese V

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#### **A - Communication: Interpersonal Mode**

- exchange oral and written information and ideas in the target language on topics related to contemporary events, history, and literature
- combine and extend known elements and conversational input to create sentences

#### **B - Communication: Interpretive Mode**

- interpret verbal and nonverbal cues to understand more complex spoken and written messages in the target language
- demonstrate comprehension of more complex spoken and written language on topics related to contemporary, historical, and literary events and issues presented through a variety of media in the target language, including authentic materials

#### **C - Communication: Presentational Mode**

- present student-created as well as culturally authentic stories, poems, skits, and/or short plays in the target language
- present previously learned as well as newly acquired information on topics related to contemporary, historical, and literary events and issues using cultural references where appropriate, in increasingly complex sentences

#### **D - Cultural Perspectives, Practices, and Products**

- describe and discuss in the target language perspectives, practices, and products of the cultures studied and how they are interrelated

#### **E - Connections, Comparisons, and Communities**

- analyze the similarities and differences that exist within and among the cultures studied
- expand knowledge of the English language through the study and analysis of linguistic elements of the target language
- apply language skills and expand cultural understanding by accessing information beyond the classroom setting for recreational, educational, and occupational purposes
- reinforce and broaden knowledge of the connections between the target language and other subject areas

**High School Modern/Classical Language****Spanish for Native Speakers Level 1**

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**A - Reading**

- determine a theme or central idea of text and closely analyze its development over the course of a text
- determine the meaning of words and phrases as they are used in the text
- analyze an author's point of view
- read and comprehend literature, including stories, legends, and poems
- read and evaluate the arguments and supporting evidence of informational text

**B - Writing**

- conduct short research projects to answer questions, demonstrating understanding of the subject under investigation
- write for a range of tasks and purposes
- develop writing as needed by planning, revising, editing, and rewriting
- use technology, including the Internet, to produce writing products. Abide by ethical and lawful copyright guidelines
- write summaries of literary and informational texts
- write informative/explanatory texts to examine and convey ideas, concepts, and information clearly and accurately
- write narratives to develop real or imagined experiences or events
- produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience

**C - Speaking and Listening**

- participate effectively in collaborative discussions (e.g., one-on-one, in groups, and teacher-led) with partners on a variety of topics, texts, and issues
- present information and findings clearly, concisely, and logically
- use digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding
- adapt speech to a variety of contexts, tasks, and points of view

**D - Language**

- determine or clarify the meaning of unknown and multiple-meaning words and phrases
- develop vocabulary in speaking, reading, and writing contexts to promote conversation, discussions, reading comprehension, and short essay writings

**High School Modern/Classical Language****D - Language** *(continued)*

- begin to use appropriate conventions of standard Spanish grammar and usage when writing or speaking
- use appropriate conventions of standard Spanish capitalization, punctuation, accentuation, and spelling when writing

**E - Culture and Connections**

- investigate the similarities that exist within and among Spanish-speaking cultures
- apply language skills and expand cultural understanding by accessing information beyond the classroom setting for recreational, educational, and occupational purposes
- identify and describe perspectives, practices, and products of Hispanic cultures



**High School Modern/Classical Language****Spanish for Native Speakers Level 2**

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**A - Reading**

- determine and discuss a theme or central idea of text and closely analyze its development over the course of a text
- determine the meaning of words and phrases as they are used in the text, including figurative meanings
- analyze an author's point of view and its impact on the text
- compare and contrast a variety of literature, including stories and poems
- analyze informational text to determine what is explicit as well as inferred

**B - Writing**

- write summaries and analyses of literary and informational texts
- produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience
- develop and strengthen writing as needed by planning, revising, editing, and rewriting
- use technology, including the Internet, to produce, publish, and update individual or shared writing products. Abide by ethical and lawful copyright guidelines
- conduct short, as well as more sustained, research projects to answer questions, demonstrating understanding of the subject under investigation
- write for a range of tasks, purposes, and audiences
- write informative/explanatory texts to examine and convey ideas, concepts, and information clearly and accurately
- write increasingly detailed narratives to develop real or imagined experiences or events

**C - Speaking and Listening**

- present detailed information, findings, and supporting evidence clearly, concisely, and logically
- use a variety of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding
- adapt speech to a variety of contexts, tasks, and points of view demonstrating command of standard Spanish
- initiate and participate effectively in collaborative discussions (e.g., one-on-one, in groups, and teacher-led) with partners on a variety of topics, texts, and issues, building on others' ideas and expressing their own

**D - Language**

- determine or clarify the meaning of unknown and multiple-meaning words and phrases

**High School Modern/Classical Language****D - Language** *(continued)*

- demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression
- demonstrate command of the conventions of standard Spanish grammar and usage when writing or speaking
- demonstrate command of the conventions of standard Spanish capitalization, punctuation, accentuation, and spelling when writing

**E - Culture and Connections**

- identify, describe, and discuss perspectives, practices, and products of Hispanic cultures
- investigate the similarities and differences that exist within and among Spanish-speaking cultures
- expand knowledge of the English language through the study and analysis of linguistic elements of the Spanish language
- apply language skills and expand cultural understanding by accessing information beyond the classroom setting for recreational, educational, and occupational purposes

**High School Modern/Classical Language****Spanish for Native Speakers Level 3**

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**A - Reading**

- analyze informational text to determine what is explicit as well as inferred
- integrate and evaluate multiple sources of information presented in different media or formats
- cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from a text
- determine two or more themes or central ideas of a text and closely analyze their development over the course of the text
- determine the meaning of words and phrases as they are used in the text, including figurative meanings
- analyze the impact of the author's choices regarding how to develop and relate elements of a story, drama, or informational text
- analyze multiple interpretations of a variety of literature, including stories, dramas, and poems

**B - Writing**

- write analyses of literary and informational texts using valid reasoning, in addition to relevant and sufficient evidence
- write informative/explanatory texts to examine and convey ideas, concepts, and information clearly and accurately
- write increasingly detailed narratives to develop real or imagined experiences or events
- produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience
- develop and strengthen writing as needed by planning, revising, editing, and rewriting
- use technology, including the Internet, to produce, publish, and update individual or shared writing products
- conduct sustained research projects to answer questions and solve problems, demonstrating understanding of the subject under investigation
- write for a range of tasks, purposes, and audiences

**C - Speaking and Listening**

- initiate and participate effectively in a range of collaborative discussions (e.g., one-on-one, in groups, and teacher-led) with partners on a variety of topics, texts, and issues, building on others' ideas and expressing their own
- present detailed information, findings, and supporting evidence clearly, concisely, and logically appropriate to the audience and task
- use a variety of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding

## High School Modern/Classical Language

### C - Speaking and Listening *(continued)*

- adapt speech to a variety of contexts, tasks, and points of view demonstrating command of standard Spanish

### D - Language

- determine or clarify the meaning of unknown and multiple-meaning words and phrases
- demonstrate command of the conventions of standard Spanish capitalization, punctuation, accentuation, and spelling when writing
- demonstrate command of the conventions of standard Spanish grammar and usage when writing or speaking
- demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression

### E - Culture and Connections

- investigate the similarities and differences that exist within and among Spanish-speaking cultures
- expand knowledge of the English language through the study and analysis of linguistic elements of the Spanish language
- apply language skills and expand cultural understanding by accessing information beyond the classroom setting for recreational, educational, and occupational purposes
- identify, describe, and discuss perspectives, practices, and products of Hispanic cultures

## High School Health and Physical Education

# Health

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### A - Personal Care

- demonstrate the ability to access valid personal health and wellness information and services to enhance personal health for home, school, and community
- demonstrate the ability to use decision-making skills to enhance personal health and relationships
- demonstrate the ability to use goal-setting skills related to personal care to enhance health

### B - Mental Health

- comprehend concepts, related to mental health promotion and relationships, to enhance health
- analyze the influence of family, peers, culture, media/technology, and other factors on relationships
- demonstrate the ability to access valid information and services to enhance emotional health
- demonstrate the ability to use interpersonal communication skills to enhance emotional health and to avoid or reduce health risks
- demonstrate the ability to use decision-making skills to enhance mental and emotional health

### C - Safety

- comprehend personal safety concepts to enhance health
- analyze the influence of family, peers, culture, media/technology, and other factors on personal-safety practices and behaviors
- demonstrate the ability to access valid safe-driving information and services to enhance personal health for home, school, and community
- demonstrate the ability to use decision-making skills on safety to enhance health by reducing aggressive behaviors

### D - Nutrition

- comprehend nutritional concepts to enhance health
- demonstrate the ability to use decision-making skills, related to nutrition to enhance health

### E - First Aid

- comprehend concepts related to first aid to enhance health
- demonstrate the ability to practice first aid procedures to promote health-enhancing behaviors and to avoid or reduce health risks

### F - Disease Prevention

- comprehend concepts, related to health promotion and disease prevention, to enhance health

## **High School Health and Physical Education**

### **F - Disease Prevention** *(continued)*

- analyze the influence of family, peers, culture, media/technology, and other factors on health behaviors related to disease prevention
- demonstrate the ability to use decision-making skills to prevent diseases

### **G - Tobacco, Alcohol, and Other Drugs**

- analyze the influence of family, peers, culture, media/technology, and other factors on tobacco, alcohol, and drug-related behaviors
- demonstrate the ability to access valid information and services, to enhance health, related to alcohol, tobacco, and ENDS (electronic nicotine delivery systems) and drugs
- demonstrate the ability to use decision-making skills, related to alcohol, tobacco, ENDS (electronic nicotine delivery systems) and drugs, to enhance health

### **H - Family Life**

- comprehend concepts, related to mental health promotion and relationships, to enhance health
- analyze the influence of family, peers, culture, media/technology, and other factors on physical relationships
- demonstrate the ability to use decision-making skills, related to physical relationships, to enhance health
- demonstrate the ability to use interpersonal communication skills to enhance emotional health and to avoid or reduce health risks
- demonstrate the ability to advocate for personal, family, and community health by creating a product that would provide information on one or more of the most serious diseases

### **I - Body Systems**

- comprehend anatomical concepts related to health promotion by differentiating between the different systems of the body and the general function of each

## High School Health and Physical Education

### Personal Fitness

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#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

# Introductory Gymnastics, Stunts, and Tumbling

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### A - Fitness

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

### B - Motor Skills and Movement Patterns

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

### C - Movement Concepts and Principles

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

### D - Personal and Social Behavior

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction



## High School Health and Physical Education

# Intermediate Gymnastics, Stunts, and Tumbling

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### A - Fitness

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

### B - Motor Skills and Movement Patterns

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

### C - Movement Concepts and Principles

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

### D - Personal and Social Behavior

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

# Advanced Gymnastics, Stunts, and Tumbling

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### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Introductory Lifetime Sports

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Intermediate Lifetime Sports

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Advanced Lifetime Sports

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Introductory Outdoor Education

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Intermediate Outdoor Education

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Advanced Outdoor Education

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competence while performing skills in a variety of settings or activities to include fitness activities, sport, rhythms, and other lifetime and recreational activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction



## High School Health and Physical Education

### Introductory Recreational Games

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Intermediate Recreational Games

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Advanced Recreational Games

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Introductory Team Sports

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Intermediate Team Sports

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Advanced Team Sports

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Intermediate Track and Field

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Advanced Track and Field

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction



## High School Health and Physical Education

### Advanced Aerobic Dance

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Advanced Body Sculpting

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Advanced Exercise and Weight Control

---

#### **A - Fitness**

- participate regularly in physical activity in order to achieve a healthy level of physical fitness
- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills, Movement Patterns, and Techniques**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- demonstrate an understanding of movement concepts, principles, strategies, and tactics as they apply to the learning and performance of physical activities

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- value physical activity for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Advanced Personal Fitness

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Advanced Physical Conditioning

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Advanced Rhythmic and Dance

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Advanced Weight Training

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Body Sculpting

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction



## High School Health and Physical Education

# Exercise and Weight Control

---

### A - Fitness

- participate regularly in physical activity in order to achieve a healthy level of physical fitness
- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

### B - Motor Skills, Movement Patterns, and Techniques

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

### C - Movement Concepts and Principles

- demonstrate an understanding of movement concepts, principles, strategies, and tactics as they apply to the learning and performance of physical activities

### D - Personal and Social Behavior

- exhibits responsible personal and social behavior that respects self and others in physical activity settings
- value physical activity for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### First Aid and Safety

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#### A - First Aid

- comprehend concepts related to first aid to enhance health
- analyze the influence of family, peers, culture, media/technology, and other factors on personal-safety practices and behaviors
- demonstrate the ability to access valid personal health and wellness information and services to enhance personal health for home, school, and community
- demonstrate the ability to use interpersonal communication skills to enhance emotional health and to avoid or reduce health risks
- demonstrate the ability to use decision-making skills, related to safety, to enhance health by reducing aggressive behaviors
- demonstrate the ability to practice first-aid procedures to promote health-enhancing behaviors and to avoid or reduce health risks

## High School Health and Physical Education

# General Physical Education I

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### A - Fitness

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

### B - Motor Skills and Movement Patterns

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

### C - Movement Concepts and Principles

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

### D - Personal and Social Behavior

- exhibit responsible personal and social behavior that respects self and others in physical activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

# General Physical Education II

---

### A - Fitness

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

### B - Motor Skills and Movement Patterns

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

### C - Movement Concepts and Principles

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

### D - Personal and Social Behavior

- exhibit responsible personal and social behavior that respects self and others in physical activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

# General Physical Education III

---

### A - Fitness

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

### B - Motor Skills and Movement Patterns

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

### C - Movement Concepts and Principles

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

### D - Personal and Social Behavior

- exhibit responsible personal and social behavior that respects self and others in physical activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

# General Physical Education IV

---

### A - Fitness

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

### B - Motor Skills and Movement Patterns

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

### C - Movement Concepts and Principles

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

### D - Personal and Social Behavior

- exhibit responsible personal and social behavior that respects self and others in physical activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Intermediate Aerobic Dance

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Intermediate Rhythmic and Dance

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction



## High School Health and Physical Education

### Introductory Aerobic Dance

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Introductory Rhythmic and Dance

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Introductory Track and Field

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Physical Conditioning

---

#### **A - Fitness**

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills and Movement Patterns**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

# Principles of Athletic Training / Sports Medicine

---

### A - Fitness

- participate regularly in physical activity in order to achieve a healthy level of physical fitness
- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

### B - Motor Skills, Movement Patterns, and Techniques

- demonstrate competency in motor skills needed to perform athletic training functions

### C - Movement Concepts and Principles

- demonstrate an understanding of athletic training concepts, principles, and strategies as they apply to the learning and performance of an athletic trainer

### D - Personal and Social Behavior

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- value physical activity for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

### Theory in Physical Education

---

#### **A - Fitness**

- participate regularly in physical activity in order to achieve a healthy level of physical fitness
- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

#### **B - Motor Skills, Movement Patterns, and Techniques**

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### **C - Movement Concepts and Principles**

- demonstrate an understanding of movement concepts, principles, strategies, and tactics as they apply to the learning and performance of physical activities

#### **D - Personal and Social Behavior**

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- value physical activity for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Health and Physical Education

# Weight Training

---

### A - Fitness

- demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical fitness

### B - Motor Skills, Movement Patterns, and Techniques

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

### C - Movement Concepts and Principles

- apply the knowledge of concepts, principles, strategies, and tactics related to movement and performance

### D - Personal and Social Behavior

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- recognize the value physical activity has for health, enjoyment, challenge, self-expression, and/or social interaction

## High School Peer Leadership

# Peer Leadership

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### A - Peer Leadership

- describe the role, functions, and characteristics of a peer leader
- adhere to established ground rules and the National Peer Helping Association ethical guidelines
- establish roles, responsibilities, and procedures related to peer tutoring including effective study habits, test-taking skills, and time management
- demonstrate knowledge and skills of peer leadership intervention strategies in a variety of settings

### B - Relationship and Communication Skills

- explore and apply the fundamental characteristics of facilitative relationships and communication skills

### C - Interpersonal Skills

- identify and demonstrate interpersonal skills necessary to maintain positive peer relationships

### D - Problem Solving

- demonstrate an understanding of problem-solving and/or mediation techniques

### E - Conflict Resolution

- identify methods of conflict/anger management

### F - Prejudice and Discrimination

- explore the concepts of prejudice and discrimination and their impact on peer relationships

### G - Group Dynamics

- identify elements of group interaction
- utilize elements of successful group interactions by participating in a variety of roles within group settings
- participate in assigned targeted groups within the school community
- utilize knowledge and understanding gained through individual and/or group projects

### H - Peer Pressure

- define positive and negative aspects of peer pressure
- indicate a variety of alternatives to negative peer pressure



## **High School Peer Leadership**

### **I - Goal-Setting**

- explore how personal responsibility relates to long- and short-range life and career goals

## High School JROTC Air Force

# Aerospace Leadership: Citizenship 100

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### A - Employment Skills

- demonstrate employability skills required by business and industry

### B - Introduction to Air Force JROTC

- identify the history, purpose, structure, and ideals of the Air Forces JROTC Program
- describe and demonstrate the proper wear of the Air Force JROTC uniform
- describe and apply customs and courtesies in the Junior ROTC environment
- identify and describe positive personal traits
- identify, define, and demonstrate ethical concepts
- describe and demonstrate proper etiquette in social settings

### C - Personal Behavior

- explore personal emotions and violence in society
- identify and describe facets and impacts of stress
- identify steps required to achieve personal goals
- describe and apply effective study habits

### D - Health and Fitness

- identify resources that can be used to make healthful dietary decisions
- identify and explain key systems of the human body
- describe the benefits and components of good personal fitness
- explain how body image, eating, and physical activity affect health
- explain basic first aid procedures

### E - Describe Healthy Lifestyle Choices

- explore the connection between the environment and your health
- compare and contrast the difference between medicine and drugs
- explain the dangers of tobacco and vaping

## **High School JROTC Air Force**

### **E - Describe Healthy Lifestyle Choices** *(continued)*

- describe the dangers of alcohol

### **F - Foundations, Duties, and Responsibilities of United States Citizenship**

- identify and describe selected content of the United States Constitution
- explain the history and courtesies rendered to the flag of the United States and other national symbols
- identify and describe the duties and responsibilities of United States citizenship
- identify and explain key aspects of the Bill of Rights
- summarize the duties and responsibilities of the three branches of government

### **G - Drill and Ceremonies**

- explain key components of drill and ceremony
- identify basic drill commands and movements
- demonstrate basic drill and parade positions and movements
- describe the purpose and definition of ceremonies and parades

## High School JROTC Air Force

# Aerospace Leadership: Communication 200

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### A - Employment Skills

- demonstrate employability skills required by business and industry

### B - Listening and Critical Thinking Skills

- describe and demonstrate good listening skills
- demonstrate the ability to use critical thinking skills
- describe the communication process

### C - Effective Communication Skills

- identify and explain the process within the basic checklist for writing
- identify and explain the elements of effective writing
- demonstrate the elements of effective speaking

### D - Attitudes, Experience, and Positive Personal Traits

- describe how interpreting events and experiences influences daily life and the future
- examine the traits leaders utilize in order to help them overcome challenges
- discuss the benefits of developing a positive attitude

### E - Integrity, Character, and Personality in Leadership

- explain how integrity and character affect behavior
- evaluate how your ability to take responsibility determines your ability to lead
- examine how personality affects your relations with other people

### F - Developing Teamwork and Vision

- examine how having a common vision helps a team achieve its goals
- analyze the importance of mutual respect in team building and performance
- evaluate how effective teams form and develop

### G - Solving Conflicts and Group Problems

- analyze the conflicts that arise in groups and the ways group members react to them
- identify and apply ways to build consensus in a group

## **High School JROTC Air Force**

### **G - Solving Conflicts and Group Problems** *(continued)*

- examine how to apply problem solving steps to group problems

### **H - The United States Air Force Leadership Model**

- analyze how applying the elements of Air Force leadership and core values result in more effective leaders
- examine why the Air Force leadership principles result in effective leadership
- identify and analyze the characteristics that make an effective leader

### **I - Leadership Behaviors and Preparation for Leadership**

- examine the relationship between effective followers and effective leaders
- analyze how leaders adapt their leadership styles to meet mission demands
- analyze leadership preparation and practice

### **J - Drill and Ceremonies**

- describe the importance of drill and ceremonies
- identify the basic commands and characteristics of the command voice
- perform basic drill and parade positions and movements
- describe the purpose and definition of ceremonies and parades

### **K - Health, Wellness, and Fitness**

- explain basic first aid measures
- explain how body image, eating, and physical activity affect health
- evaluate the importance of physical fitness
- identify resources that can be used to make healthful dietary decisions
- identify key components that make up the human body

## High School JROTC Air Force

# Aerospace Leadership: Career Exploration 300

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### A - Employment Skills

- demonstrate employability skills required by business and industry

### B - Personal Financial Planning

- identify and discuss the buying and selling issues that occur in real life
- identify and describe various banking services
- create a personal budget and financial plan

### C - Personal Credit and Insurance

- identify and explain various insurance options
- construct a plan for building your credit history

### D - Career Planning

- identify possible career paths as related to interests, aptitude, and attitude
- identify the requirements needed to pursue the career that best fits personal skills and interests
- create a career path strategy to assist in making career decisions

### E - Aiming Towards a College Degree

- create a personal plan for financing college
- identify and evaluate the criteria for selecting a college based on your personal goals and finances
- identify test taking strategies to promote success on college placement exams
- create a college application essay

### F - Planning for a College Lifestyle

- evaluate the importance of personal accountability
- explore careers associated with possible majors and your personal interests and aptitudes
- create a plan for managing your college schedule

### G - Applying for Jobs

- create a personal resume and cover letter specific to a job opening

## **High School JROTC Air Force**

### **G - Applying for Jobs** *(continued)*

- describe and evaluate how employers interview prospective employees
- identify and evaluate multiple sources for finding job openings

### **H - Military, Aerospace, and Public Service Careers**

- explore military service as a career
- identify and explore types of public service careers
- differentiate between various careers in the aerospace industry

### **I - Developing Career Skills**

- evaluate the positive aspects of civic responsibility
- analyze personal values that contribute to professional success
- evaluate barriers to effective collaboration and teamwork
- generate a career path strategy

### **J - Health, Wellness, and Fitness**

- identify key components that make up the human body
- identify resources that can be used to make healthful dietary decisions
- evaluate the importance of physical fitness
- explain how body image, eating, and physical activity affect health
- explain basic first aid measures

### **K - Drill and Ceremonies**

- describe the importance of drill and ceremonies
- identify the basic commands and characteristics of the command voice
- perform basic drill and parade positions and movements
- describe the purpose and definition of ceremonies and parades

## High School JROTC Air Force

# Aerospace Leadership: Management 400

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### A - Employment Skills

- demonstrate employability skills required by business and industry

### B - Introduction to Management

- analyze management and its application to Air Force JROTC
- describe the responsibilities of managing the Cadet Corps
- examine how management and leadership are both alike and different

### C - Project Management

- analyze what is involved in initiating and planning a project
- analyze what is involved in organizing and executing a project
- analyze the importance of closing a project

### D - Planning for Success

- examine the kind of planning that managers need to do
- analyze how to know how much planning is enough
- evaluate how to think together with others in meetings to make plans and set goals

### E - Decision Making and Choosing Wisely

- examine different approaches to making decisions
- evaluate issues needing a decision based on their urgency or importance

### F - Organizing and Managing Time and Change

- analyze the management of change in an organization
- analyze various elements necessary for effective time management

### G - Leading and Managing Individual and Group Behavior

- analyze issues in motivating others
- describe the challenges in evaluating performance of others
- examine how managers deal with difficult situations



## **High School JROTC Air Force**

### **H - Understanding Work Teams**

- analyze how to structure and build effective work teams
- analyze how effective work teams function
- examine communication problems and solutions for work teams

### **I - Interpersonal Skills**

- examine the art of delegating responsibility to subordinates
- analyze the elements of successful negotiation
- analyze the mentoring process from the standpoint of both mentor and protégé

### **J - Health, Wellness, and Fitness**

- identify key components that make up the human body
- identify resources that can be used to make healthful dietary decisions
- evaluate the importance of physical fitness
- explain how body image, eating, and physical activity affect health
- explain basic first aid measures

### **K - Drill and Ceremonies**

- describe the importance of drill and ceremonies
- identify the basic commands and characteristics of the command voice
- perform basic drill and parade positions and movements
- describe the purpose and definition of ceremonies and parades

## High School JROTC Air Force

# Aerospace Science: Science of Flight

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### A - Weather

- explain the basic facts and general principles of the atmosphere and weather elements

### B - Weather Forecasting

- identify and explain the instruments and communications used in weather forecasting

### C - Aviation Weather

- explain the difference between regular weather and aviation weather

### D - Physiology of Flight

- discuss the physiology of flight

### E - Aerospace Medicine

- explain the history of aerospace medicine and human engineering

### F - Flight Equipment

- describe the protective equipment used for actual and simulated flight

### G - Basic Aeronautics

- explain the principles of basic aeronautics

### H - Engine Principles

- describe basic engine principles
- list the basic and general operating principle of rocket engines

### I - Aerospace Vehicles

- discuss the types of civilian and military aerospace vehicles

### J - Navigation and Navigational Tools

- explain the types and functions of navigation instruments
- describe dead reckoning techniques
- describe navigational aids
- demonstrate the four elements of navigation

## High School JROTC Army

# JROTC Army Leadership Education I

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### **A - Employment Skills**

- demonstrate employability skills required by business and industry

### **B - Foundations and Introduction to Army JROTC**

- describe the origins, history, organization, and traditions of Army JROTC
- identify and describe the Army JROTC uniform, rank, and awards

### **C - Customs and Courtesies in Army JROTC**

- identify, describe, and demonstrate customs and courtesies in the Army JROTC environment
- describe the proper etiquette for various social settings

### **D - Describe and Demonstrate Methods for Personal Growth**

- describe and utilize thinking maps to enhance learning
- describe and apply an appreciation of diversity to interpersonal situations
- identify and determine personal behavioral preferences

### **E - Thinking and Learning Skills**

- identify the thinking/learning skills necessary for improving active learning

### **F - Personal Academic Skill Improvement**

- identify and practice personal study and test taking strategies
- identify and practice effective reading skills

### **G - Personal Conduct and Growth**

- develop a personal code of conduct
- describe and practice good decision making and goal development
- develop a plan for personal growth
- identify, describe, and apply conflict resolution practices
- identify and practice strategies for managing stress
- identify, describe, and demonstrate anger management strategies

## **High School JROTC Army**

### **H - Team Building, Drill, and Fitness**

- demonstrate proper squad drill movements and marching on command
- discuss the history, skills, and team building capacity of drill
- demonstrate stationary drill movements and marching on command
- describe and participate in the Cadet Challenge and associated physical exercise

## High School JROTC Army

# JROTC Army Leadership Education II

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### A - Employment Skills

- demonstrate employability skills required by business and industry

### B - Leadership

- analyze individual leadership competencies
- identify and evaluate the traits of successful leaders
- apply appropriate leadership styles

### C - Personal Growth, Communication, Career, and Ethics

- define ethics within personal and leadership contexts
- evaluate various career opportunities
- identify and demonstrate effective oral speaking skills
- identify, describe, and demonstrate communication skills, evaluate career options, and describe ethics
- identify and demonstrate good writing techniques

### D - Team Building and Drill

- identify and demonstrate basic squad leader duties and responsibilities
- identify and describe the qualities of team members and leaders
- identify and demonstrate drill leaders skills and responsibilities

### E - First Aid and Emergency Response

- describe and demonstrate first aid for severe emergencies
- identify, describe, and demonstrate appropriate responses to basic medical and other emergencies
- describe and demonstrate basic first aid measures

### F - Preventing Bullying and Violence

- identify and describe ways to prevent violence in society
- identify types of bullying and methods to deter bullying

## **High School JROTC Army**

### **G - Physical Fitness, Nutrition, and Body Image**

- describe and participate in the Cadet Challenge activity
- explain why exercise is important and describe components of a well rounded fitness regime
- identify and explain the components and importance of good nutrition
- explain the concept of body image and explore factors related to the concept

### **H - Define and Evaluate the Concept of Service Learning**

- define and explore service learning opportunities

### **I - United States Citizenship and Government**

- identify, define, and discuss key traits of American government
- identify and explain the rights of United States citizens

## High School JROTC Army

# JROTC Army Leadership Education III

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### A - Employment Skills

- demonstrate employability skills required by business and industry

### B - Leadership

- identify and explain key command and staff roles
- identify and describe measures for planning and effectively executing a project
- identify and demonstrate effective management skills
- describe and implement a continuous improvement plan
- define and explain the application of ethics in leadership
- identify and demonstrate good supervision techniques
- explain and demonstrate leading effective meetings

### C - Personal Growth Behaviors

- construct a career portfolio and prepare for job interviews
- explain good techniques for personal planning and effective time management
- explore post secondary educational opportunities and describe measures for personal time management

### D - Platoon Leadership and Drill

- identify and describe key platoon leadership duties and responsibilities and platoon drill actions
- prepare for, and direct platoon drill activities

### E - Cultural Awareness and Productive Conversations

- discuss elements of culture, prejudice, and discrimination, and effective means of sharing differing ideas
- identify and demonstrate methods of having productive conversations about controversial topics, and explore negotiating tactics

### F - Health and Fitness

- explain elements of a healthy lifestyle, including avoidance of controlled substances, and the importance of fitness to health
- explain the negative impacts of illegal drug use

**High School JROTC Army****F - Health and Fitness** *(continued)*

- explain the hazards of alcohol, tobacco, and vaping
- describe and model discussions with peers regarding substance abuse
- participate in a personal fitness program

**G - Service Learning, Citizenship, and Civic Duties and Responsibilities**

- explain the concept of service learning and assist with a service learning project
- differentiate the rights and responsibilities of United States citizens



## High School JROTC Army

# JROTC Army Leadership Education IV

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### **A - Employment Skills**

- demonstrate employability skills required by business and industry

### **B - Leadership and Teaching**

- apply leadership skills to continuous improvement and program outcomes
- apply teaching strategies to a lesson plan or mentoring project
- demonstrate the use of feedback from learners

### **C - Personal Growth**

- explain keys to success after high school
- identify long term personal and professional goals

### **D - Team Building and Drill**

- identify and apply motivation strategies to teams
- provide feedback and direction to team members
- identify, describe, and demonstrate company drill
- identify, describe, and demonstrate battalion drill
- manage a service learning project

### **E - American Society, Principles, and Citizen Rights**

- develop solutions to sustain and protect citizens' rights
- examine how competing principles and values challenge the fundamental principles of our society

### **F - Personal Fitness**

- develop, implement, and evaluate a personal exercise program

## High School JROTC Army

# JROTC Army Leadership Education 5

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### A - Organization of U.S. Government Agencies

- explore the organization and mission of the U.S. Navy
- explore the organization and mission of the U.S. Marine Corps
- explore the organization and mission of the U.S. Air Force
- explore the organization and mission of the U.S. Coast Guard and U. S. Merchant Marine
- explore the purpose and structure of the Peace Corps
- explore the purpose and structure of AmeriCorps

### B - Leadership Skills

- assess personal management skills
- demonstrate the components of leadership
- prepare for meeting
- establish performance goals
- create a plan of action to develop leadership skills through the leadership development program

### C - Service Learning

- evaluate the effectiveness of a service learning project
- prepare a service learning project

### D - Personal Financial Planning

- create a personal financial plan
- create a personal budget
- create a personal saving and investing plan
- select strategies to use in handling credit and managing debt
- demonstrate how to use various financial services
- create a personal insurance plan that will minimize personal or financial losses
- explain how a career choices and lifestyle affect your financial plan

## **High School JROTC Army**

### **E - Career Planning**

- create a college preparation action plan
- relate the military to personal career goals
- assemble a personalized career portfolio

### **F - Geography and Map Skills**

- build map reading and land navigation skills, applying them to the sport of orienteering and air navigation

### **G - Cadet Challenge**

- develop a personal exercise program and learn to take responsibility for their actions and choices

### **H - Cadet Battalion Leadership**

- demonstrate command and staff principles while performing the duties of an earned leadership position within the cadet battalion

### **I - Employability Skills**

- students will demonstrate employability skills required by business and industry

## High School JROTC Army

# JROTC Army Leadership Education 6

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### A - History of Tuskegee Airmen

- describe the contributions and sacrifices of the Tuskegee Airmen during World War II

### B - Leadership

- create a plan of action to develop leadership skills through the leadership development program

### C - Goal Setting

- establish performance goals

### D - Planning Meetings

- prepare for a meeting

### E - Elements of Leadership

- understand the components of leadership and explain how learning styles and preferences impact learning

### F - World Geography

- show how geographic characteristics interact to form unique cultures of North America
- show how geographic characteristics interact to form unique cultures of South America
- describe how geographic characteristics interact to form unique cultures of Europe
- explore the unique geographic characteristics of Asia
- describe how geographic characteristics interact to form unique cultures of Africa
- identify the unique geographic characteristics of Australia and Oceania

### G - Personal Fitness

- develop a personal exercise program and learn to take responsibility for their choices and actions

### H - Service Learning

- prepare a service learning project
- evaluate the effectiveness of a service learning project

### I - Battalion Command and Staff

- demonstrate command and staff principles while performing the duties of an earned leadership position within the cadet battalion

**High School JROTC Army****J - Employability Skills**

- demonstrate employability skills required by business and industry

## High School JROTC Army

# JROTC Army Leadership Education 7

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### A - World War II

- investigate the significant events leading up to World War II in Europe and evaluate American military contributions
- investigate the events leading up to and including the war in the Pacific and the end of Japanese aggression

### B - Vietnam War

- identify and evaluate America's past and present humanitarian efforts in Vietnam

### C - Environmental Issues

- investigate and describe the causes and effects of a local environmental issue
- identify and describe an environmental issue with global impact

### D - Leader Development

- teach and co-facilitate Junior ROTC curriculum subjects as student instructors
- prepare a service learning project
- create a plan of action to develop leadership skills through the leadership development program
- create a Gantt chart to plan a project
- create a mentorship plan

### F - Physical Fitness

- students will develop a personal exercise program and learn to take responsibility for their actions and choices

### G - Leadership and Problem Solving

- demonstrate leadership and problem solving

### H - Ethics

- continue the development as leaders by presenting instruction in the three foundational areas of leadership, interpersonal communication, and values and ethics

### I - Employability Skills

- demonstrate employability skills required by business and industry

## High School JROTC Marine Corps

# MCJROTC Leadership Education I

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### A - Employability Skills

- demonstrate employability skills required by business and industry

### B - Leadership Values

- know, understand, and apply objectives of leadership and core values

### C - Citizenship

- describe and demonstrate characteristics of good citizenship

### D - Fitness and Health

- describe, understand, and apply good fitness and health practices

### E - Marine Corps and Marine Corps JROTC Fundamentals

- identify, understand, and apply basic Marine Corps and Marine Corps JROTC fundamentals as related to administration, uniforms, customs, courtesies, traditions, rank structure, and chain of command

### F - Marine Drill and Ceremony

- explain the purposes and objectives of basic drill and Marine ceremonies and demonstrate proficiency in teamwork, confidence, pride, alertness, and attention to detail through basic drill

## High School JROTC Marine Corps

# MCJROTC Leadership Education II

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### **A - Employability Skills**

- demonstrate employability skills required by business and industry

### **B - Leadership Principles**

- identify and demonstrate leadership traits and apply principles of leadership

### **C - Civic Responsibility**

- monitor current events; identify and define civic responsibilities

### **D - Personal Growth and Responsibility**

- identify and practice good physical fitness, social, and communication skills

### **E - Marine Corps and Marine Corps JROTC Fundamentals**

- identify, understand, and apply basic Marine Corps and Marine Corps JROTC fundamentals as related to uniform, Marine Corps history, and first aid

### **F - Core Marine Corps Skills**

- demonstrate basic skills including individual and unit drill and weapon manipulation



## High School JROTC Marine Corps

# MCJROTC Leadership Education III

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### **A - Employability Skills**

- demonstrate employability skills required by business and industry

### **B - Leadership**

- apply the leadership principles and objectives of leadership and understand the application and differences in authority, responsibility, and accountability

### **C - Civic Responsibility**

- demonstrate awareness of current events and knowledge of the U. S. Government and U. S. citizenship

### **D - Health and Fitness**

- evaluate the importance of physical fitness, physical training, health, hygiene, and nutrition

### **E - Job Applications and Interviews**

- demonstrate job search skills

### **F - Marine Corps and Marine Corps JROTC Fundamentals**

- demonstrate knowledge and skills regarding the Marine Corps and MCJROTC

## High School JROTC Marine Corps

# MCJROTC Leadership Education IV

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### **A - Employability Skills**

- demonstrate employability skills required by business and industry

### **B - Principles of Motivation, Discipline, and Leadership**

- explain elements of motivation, discipline, and leadership

### **C - Government and Economic Systems**

- compare and contrast various government and economic systems

### **D - Demonstrate Writing Skills**

- demonstrate grade appropriate writing skills and evaluate other students' writing

### **E - Career Exploration**

- explore potential careers and demonstrate job search skills

### **F - Marine Corps and Marine Corps JROTC Fundamentals**

- demonstrate knowledge and skills for various facets of the Marine Corps and Marine Corps JROTC

### **G - Drill**

- demonstrate proficiency and teamwork during drill activities

## High School JROTC Navy

# Naval Science I - Cadet Field Manual

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### A - Employment Skills

- demonstrate employability skills required by business and industry

### B - Naval Junior Reserve Officer Training Corps (NJROTC) Uniform

- demonstrate the knowledge and ability to present himself/herself properly groomed in a correctly composed designated uniform

### C - U. S. Navy and Navy JROTC Rates and Ranks

- recognize the various NJROTC rates and ranks and understand the different assignments associated with each billet; recognize and understand the rates and ranks of active duty U. S. Navy personnel

### D - Citizenship

- explain and demonstrate knowledge and respect for the responsibilities of loyal citizens in a democratic society

### E - Inspection Procedures

- explain and fulfill the proper procedures for inspection

### F - Introduction to Drill

- explain and demonstrate unarmed drill movements
- explain and demonstrate armed drill movements
- explain and demonstrate prescribed movements from the Sword Manual
- demonstrate movements prescribed in the Guidon Manual
- describe the purposes of military drill, define terms used in military drill, identify different kinds of commands, and demonstrate proper techniques for giving commands and general rules for drill

### G - Unit Drill Procedures

- explain and demonstrate squad drill with and without arms
- explain and demonstrate platoon drill
- explain and demonstrate company drill
- explain and demonstrate the actions of a color guard

### H - Wellness, Fitness, and First Aid

- evaluate individual fitness level

**High School JROTC Navy****H - Wellness, Fitness, and First Aid** *(continued)*

- describe the relationship between diet and health
- identify and describe elements of proper body nourishment
- describe proper dietary goals and eating disorders
- identify the risks of obesity and excess body fat
- explain the reasons for good personal hygiene and proper storage of food items
- identify elements of a good exercise program
- identify and describe ways to effectively manage stress and anxiety
- identify impacts of substance abuse including alcohol and drugs
- explain and demonstrate selected first aid skills and knowledge

## High School JROTC Navy

# Naval Science I - Introduction to NJROTC

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### A - Employment Skills

- demonstrate employability skills required by business and industry

### C - Naval Junior Reserve Officer Training Corps (NJROTC) and Career Planning

- differentiate between a job versus a careers and plan for a future career
- describe the history of NJROTC

### D - Leadership

- define motivation and identify methods to improve individual and group motivation levels
- identify and demonstrate traits of good leadership
- identify and demonstrate the traits of good followership
- explain how building relationships is related to good leadership
- explain how attitudes and emotions contribute to positive leadership

### E - Citizenship and American Government

- explain the origins and foundations of laws and the role of government and productive citizens
- identify key components of selected foundational documents of the United States
- describe the organization of the U. S. defense structure
- identify and describe selected elements of the United States Navy

### F - Wellness, Fitness, and First Aid

- identify the risks of obesity and excess body fat
- explain the reasons for good personal hygiene and proper storage of food items
- identify and describe ways to effectively manage stress and anxiety
- identify impacts of substance abuse including alcohol and drugs
- explain and demonstrate selected first aid skills and knowledge
- identify elements of a good exercise program
- evaluate individual fitness level

## **High School JROTC Navy**

### **F - Wellness, Fitness, and First Aid** *(continued)*

- describe the relationship between diet and health
- describe proper dietary goals and eating disorders
- identify and describe elements of proper body nourishment

### **G - Geography, Map Skills, and Survival**

- describe basic survival skills in a variety of settings
- demonstrate basic map and orientation skills

### **H - Unit Drill Procedures**

- explain and demonstrate squad drill with and without arms
- explain and demonstrate platoon drill
- explain and demonstrate company drill
- explain and demonstrate the actions of a color guard

## High School JROTC Navy

# Naval Science II - Maritime History

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### A - Employment Skills

- demonstrate employability skills required by business and industry

### B - The Influence of Sea Power on Western Civilizations

- demonstrate an understanding of how sea power influenced the growth of early western civilization

### C - Naval Power in the American Revolution

- demonstrate an understanding of how sea power influenced the American Revolution

### D - Growth of American Sea Power, 1783-1860

- demonstrate an understanding of changes in economy and international relations from 1783-1860

### E - Demonstrate Knowledge of the American Civil War

- demonstrate knowledge of the United States Civil War

### F - The Rise to World Power, 1865-1914

- demonstrate knowledge of the Navy's role in America's rise in power from 1865-1914
- explain America's evolving relationship with the world at the turn of the twentieth century

### G - The United States Navy in World War I

- describe the United States Navy's role in World War I
- describe the origins and impact of United States involvement in World War I

### H - The Interwar Years

- demonstrate an understanding of the Interwar years, 1918-1941

### I - Major Actions in the Atlantic and Pacific Theaters of World War II

- demonstrate an understanding of naval history in World War II
- demonstrate an understanding of naval history during World War II in the Pacific from 1941-1945

### J - The Cold War Era

- demonstrate an understanding of naval history in the Cold War Era, 1945-1991

### K - The Post Cold-War Era

- analyze the domestic and international impact of the Cold War on the United States

## **High School JROTC Navy**

### **L - Wellness, Fitness, and First Aid**

- identify elements of a good exercise program
- evaluate individual fitness level
- describe the relationship between diet and health
- identify and describe elements of proper body nourishment
- describe proper dietary goals and eating disorders
- identify the risks of obesity and excess body fat
- explain the reasons for good personal hygiene and proper storage of food items
- identify and describe ways to effectively manage stress and anxiety
- identify impacts of substance abuse including alcohol and drugs
- explain and demonstrate selected first aid skills and knowledge

### **M - Unit Drill Procedures**

- explain and demonstrate the actions of a color guard
- explain and demonstrate squad drill with and without arms
- explain and demonstrate platoon drill
- explain and demonstrate company drill



## High School JROTC Navy

# Naval Science II - Nautical Science

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### A - Employment Skills

- demonstrate employability skills required by business and industry

### B - Leadership

- demonstrate an understanding of Maslow's Hierarchy of Needs and the importance of morale in an organization
- demonstrate an understanding of the basic principles of effective leadership
- demonstrate an understanding of the importance of discipline in an organization and the different approaches to leadership

### C - Maritime Geography

- demonstrate an understanding of maritime geography as it relates to our national resources, land forms, climate, soil, bodies of water, people, governments, military, and geopolitics of the western seas
- demonstrate an understanding of maritime geography as it relates to our national resources, land forms, climate, soil, bodies of water, people, governments, military, and geopolitics of the eastern seas

### D - Oceanography

- demonstrate an understanding of how the oceans were created and continue to transform
- demonstrate an understanding of the significance of oceanographic study as it relates to undersea landscapes
- demonstrate an understanding of the significance of oceanographic study as it relates to the makeup and movement of sea water
- demonstrate an understanding of the significance of oceanographic study as it relates to life in the seas

### E - Meteorology

- demonstrate a working knowledge of meteorology and how it affects humans
- demonstrate a working knowledge of meteorology as it relates to wind and weather
- demonstrate knowledge of meteorology as it relates to fronts and storms
- demonstrate a working knowledge of meteorology as it relates to weather forecasting
- demonstrate a working knowledge of meteorology as it relates to clouds and fog

### F - Astronomy

- demonstrate an understanding of astronomy

## High School JROTC Navy

### F - Astronomy *(continued)*

- demonstrate an understanding of the moon and how it pertains to our solar system and its related bodies
- demonstrate an understanding of the Sun and how it pertains to our solar system and its related bodies
- demonstrate an understanding of astronomy the planets and how they pertain to our solar system and its related bodies
- demonstrate an understanding of asteroids, comets, and meteors and how they pertain to our solar system and its related bodies
- demonstrate an understanding of stars and how they pertain to our solar system and its related bodies

### G - Physical Science

- demonstrate an understanding of physical science as it relates to sound and sonar
- demonstrate an understanding of physical science as it relates to computers and the internet
- demonstrate an understanding of physical science as it relates to buoyancy
- demonstrate an understanding of physical science as it relates to basic electricity
- demonstrate an understanding of physical science as it relates to electronics
- demonstrate an understanding of physical science as it relates to motion, force, and aerodynamics

### H - Wellness, Fitness, and First Aid

- identify elements of a good exercise program
- evaluate individual fitness level
- describe the relationship between diet and health
- identify and describe elements of proper body nourishment
- describe proper dietary goals and eating disorders
- identify the risks of obesity and excess body fat
- explain the reasons for good personal hygiene and proper storage of food items
- identify and describe ways to effectively manage stress and anxiety
- identify impacts of substance abuse including alcohol and drugs
- explain and demonstrate selected first aid skills and knowledge

## **High School JROTC Navy**

### **I - Unit Drill Procedures**

- explain and demonstrate the actions of a color guard
- explain and demonstrate squad drill with and without arms
- explain and demonstrate platoon drill
- explain and demonstrate company drill

## High School JROTC Navy

# Naval Science III - Naval Knowledge

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### A - Employment Skills

- demonstrate employability skills required by business and industry

### B - Sea Power, National Security, and the Merchant Marine

- demonstrate an understanding of how sea power strongly impacts our nation's political, economic, and military well being
- investigate the role of the Merchant Marine in national defense

### C - Grand Strategy and Preparedness

- investigate the role of sea power and national security
- investigate national security and modern conflict
- investigate United States strategy and the Navy

### D - Naval Operations, Communications, and Intelligence

- demonstrate knowledge of the intelligence community, the intelligence cycle, types of intelligence, and the value of good intelligence to include the need to protect that intelligence
- demonstrate understanding and knowledge of major organizations of the Navy and how naval communication among naval units is accomplished
- demonstrate understanding and knowledge of naval operations and support functions

### E - Navy Logistics, Research, and Development

- demonstrate understanding and knowledge of naval research and development
- demonstrate knowledge of naval logistics to include the functional areas of the Navy's supply system

### F - Military Justice and International Law

- demonstrate an understanding of international law as it applies to countries using the sea
- demonstrate knowledge of the fundamentals of international law
- demonstrate knowledge of the fundamentals of the law of war at sea
- demonstrate an understanding of military justice and how it relates to the Navy
- demonstrate knowledge of military discipline and punishment

### G - Naval Missiles, Weapons, and Atypical Warfare Capabilities

- demonstrate an understanding of naval guns and projectiles

## High School JROTC Navy

### **G - Naval Missiles, Weapons, and Atypical Warfare Capabilities** *(continued)*

- demonstrate a basic understanding of naval laser weapons and rail guns
- demonstrate an understanding of navy ship, submarine, and aircraft missiles
- demonstrate an understanding of the evolution and basic elements of naval weapons
- describe key aspects of Chemical, Biological, and Nuclear (CBN) warfare
- demonstrate understanding and knowledge of the responsibilities of Navy watchstanders
- demonstrate an understanding of the Navy's mission and organization to ensure combat effectiveness
- describe command relationships in the Naval cyber warfare organization
- identify and explain naval special warfare capabilities
- explain the history and uses of mine warfare

### **H - Unit Drill Procedures**

- explain and demonstrate squad drill with and without arms
- explain and demonstrate platoon drill
- explain and demonstrate company drill
- explain and demonstrate the actions of a color guard

### **I - Wellness, Fitness, and First Aid**

- evaluate individual fitness level
- identify elements of a good exercise program
- identify impacts of substance abuse including alcohol and drugs
- describe the relationship between diet and health
- identify and describe elements of proper body nourishment
- describe proper dietary goals and eating disorders
- identify the risks of obesity and excess body fat
- explain the reasons for good personal hygiene and proper storage of food items
- identify and describe ways to effectively manage stress and anxiety
- explain and demonstrate selected first aid skills and knowledge

## High School JROTC Navy

# Naval Science III - Naval Orientation Skills

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### A - Employment Skills

- demonstrate employability skills required by business and industry

### B - Leadership

- describe the challenge of leadership as it relates to the performance evaluation of subordinates
- explain the various methods of giving instruction and how they relate to the challenge of leadership
- identify and describe the qualities of an effective leader
- compare and contrast the different philosophies and challenges of leadership

### C - Naval Ship Construction and Characteristics

- demonstrate knowledge of Navy ships, their construction, characteristics, and naming
- demonstrate knowledge of damage control and firefighting onboard a vessel

### D - Deck Seamanship

- describe the basic seamanship skills
- demonstrate an understanding of ground tackle and deck equipment used in basic seamanship
- demonstrate an understanding of the various types of equipment and terminology used in small boat seamanship

### E - Navigation

- demonstrate a basic understanding of navigation as it relates to use of aids to navigation
- describe the tools and terminology of navigation and time; demonstrate basic navigational plotting
- demonstrate a basic understanding of navigation and the significant instruments used for navigation
- describe key processes and equipment related to navigation

### F - Nautical Rules and the Maneuvering Board

- demonstrate the uses of the maneuvering board
- demonstrate knowledge of basic theory of the nautical rules of the road

## **High School JROTC Navy**

### **G - Unit Drill Procedures**

- explain and demonstrate the actions of a color guard
- explain and demonstrate squad drill with and without arms
- explain and demonstrate platoon drill
- explain and demonstrate company drill

### **H - Wellness, Fitness, and First Aid**

- identify and describe ways to effectively manage stress and anxiety
- identify elements of a good exercise program
- evaluate individual fitness level
- describe the relationship between diet and health
- identify and describe elements of proper body nourishment
- describe proper dietary goals and eating disorders
- identify the risks of obesity and excess body fat
- explain the reasons for good personal hygiene and proper storage of food items
- explain and demonstrate selected first aid skills and knowledge
- identify impacts of substance abuse including alcohol and drugs

## High School JROTC Navy

# Naval Science IV - Effective Communications

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### A - Employment Skills

- demonstrate employability skills required by business and industry

### B - Effective Communication Skills

- describe methods to increase the effectiveness of communication
- evaluate historic examples of effective communicators
- describe the advantages and uses of written orders
- describe the qualities of effective verbal orders
- demonstrate knowledge of how to avoid communication pitfalls
- describe how communication requires a leader to engage in a continual exchange of ideas, requirements, and objectives with others
- demonstrate an understanding of the aspects involved in achieving effective communications
- explain the importance of concise communication and recipient reactions to communication
- discuss general principles that contribute to effective communication

### C - Unit Drill Procedures

- explain and demonstrate platoon drill
- explain and demonstrate the actions of a color guard
- explain and demonstrate squad drill with and without arms
- explain and demonstrate company drill

### D - Wellness, Fitness, and First Aid

- identify elements of a good exercise program
- evaluate individual fitness level
- describe the relationship between diet and health
- identify and describe elements of proper body nourishment
- identify the risks of obesity and excess body fat
- explain the reasons for good personal hygiene and proper storage of food items



**High School JROTC Navy****D - Wellness, Fitness, and First Aid** *(continued)*

- identify and describe ways to effectively manage stress and anxiety
- identify impacts of substance abuse including alcohol and drugs
- explain and demonstrate selected first aid skills and knowledge
- describe proper dietary goals and eating disorders

## High School JROTC Navy

# Naval Science IV - Naval Leadership and Ethics

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### A - Employment Skills

- demonstrate employability skills required by business and industry

### B - Fundamentals of Leadership, Education, and Motivation

- demonstrate knowledge of leadership group dynamics and how and why groups behave as they do
- discuss the basis for human motivation and psysiological needs
- understand that the human capacity to capture the essence of a purpose in life is based on working, creating, excelling and being concerned about the world and its affairs

### C - Qualities of an Effective Leader

- identify, explain, and demonstrate techniques of positive leadership
- describe how effective leaders utilize communication and supervision
- understand that leadership begins with the leader's personal example
- describe personal attributes of a caring leader

### D - Chain of Command, Authority, and Discipline

- explain how orders are properly issued and received
- explain how authority and responsibility is invested in the leader
- explain the unique features of the military chain of command and it's importance

### E - Duties and Responsibilities of the Naval Officer

- explain a naval officer's moral responsibility for all aspects of what happens to his unit
- describe how leaders take responsibility in a variety of situations
- explain the officer's responsibility, accountability, and authority
- describe effective methods to give and receive criticism from up and down the chain of command

### F - Unit Drill Procedures

- explain and demonstrate the actions of a color guard
- explain and demonstrate squad drill with and without arms
- explain and demonstrate platoon drill

## High School JROTC Navy

### F - Unit Drill Procedures *(continued)*

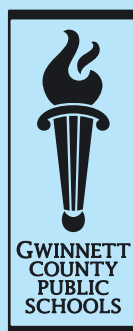
- explain and demonstrate company drill

### G - Wellness, Fitness, and First Aid

- identify impacts of substance abuse including alcohol and drugs
- explain and demonstrate selected first aid skills and knowledge
- identify and describe ways to effectively manage stress and anxiety
- identify elements of a good exercise program
- evaluate individual fitness level
- describe the relationship between diet and health
- identify and describe elements of proper body nourishment
- describe proper dietary goals and eating disorders
- identify the risks of obesity and excess body fat
- explain the reasons for good personal hygiene and proper storage of food items







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