

Audubon Public Schools



Computer Science Technology

Curriculum Guide

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Course Description

Computer Science Technology

This course teaches the basic techniques of computer operations and prepares students to succeed in today's knowledge-based economy by providing equitable and expanded access to high-quality, standards-based computer science and technological design education. This course will enable students to think critically and systematically about leveraging technology to solve local and global issues. This course will provide authentic learning experiences that enable students to apply content knowledge, integrate concepts across disciplines, develop computational thinking skills, acquire, and incorporate varied perspectives, and communicate with diverse audiences about the use and effects of computing that prepares students for college and careers.

Overview / Progressions

| Overview | Focus Indicator # | Overview | Focus Indicator # | Overview | Focus Indicator # |
|----------|---|----------|--|----------|--|
| Unit 1 | <ul style="list-style-type: none"> ● 8.1.12.CS.1. ● 8.1.12.CS.2 ● 8.1.12.CS.3 ● 8.1.12.CS.4 | Unit 2 | <ul style="list-style-type: none"> ● 8.1.12.NI.1 ● 8.1.12.NI.2 ● 8.1.12.NI.3 ● 8.1.12.NI.4 | Unit 3 | <ul style="list-style-type: none"> ● 8.1.12.IC.1 ● 8.1.12.IC.2 ● 8.1.12.IC.3 |
| Unit 4 | <ul style="list-style-type: none"> ● 8.2.12.E.1 ● 8.2.12.E.2 ● 8.2.12.E.4 ● 9.3.12.K1.3 ● 9.3.IT-SUP.3 | Unit 5 | <ul style="list-style-type: none"> ● 8.2.12.E.3 ● 9.3.IT-SUP.2 ● 9.3.IT-SUP.4 | Unit 6 | <ul style="list-style-type: none"> ● 8.2.12.E.3 ● 9.3.12.K1.3 ● 9.3.IT-SUP.7 ● 9.3.IT.12 |
| Unit 7 | <ul style="list-style-type: none"> ● 8.2.12.E.1 ● 9.3.IT-SUP.5 ● 9.3.IT-SUP.7 ● 9.3.IT-SUP.8 | Unit 8 | <ul style="list-style-type: none"> ● 8.2.12.E.1 ● 9.3.12.K1.3 ● 9.3.IT-SUP.1 ● 9.3.IT.12 | Unit 9 | <ul style="list-style-type: none"> ● 8.2.12.ETW.1 ● 8.2.12.ETW.2 ● 8.2.12.ETW.3 |
| | | Unit 10 | <ul style="list-style-type: none"> ● 8.2.12.EC.1 ● 8.2.12.EC.2 ● 8.2.12.ETW.4 ● 8.1.12.D.4 | | |

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| Computer Science Technology | Unit 1 | Marking Period 1 |
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| Focus Indicator | |
| Computing Systems | |
| 8.1.12.CS.1 | Describe ways in which integrated systems hide underlying implementation details to simplify user experiences. |
| 8.1.12.CS.2 | Model interactions between application software, system software, and hardware. |
| 8.1.12.CS.3 | Compare the functions of application software, system software, and hardware. |
| 8.1.12.CS.4 | Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors. |

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| Formative Assessments | Summative Assessments |
| <ul style="list-style-type: none"> ● Group Work ● Notebook ● Worksheets ● Practical Factors | <ul style="list-style-type: none"> ● Vocabulary Quiz ● Component Quiz ● Hands- on project ● Weekly Participation rubric |
| Suggested Primary Resources | Suggested Supplemental Resources |
| <ul style="list-style-type: none"> ● Textbook/Google Classroom ● Various parts and computers | <ul style="list-style-type: none"> ● Internet |
| Cross-Curricular Connections | |
| <ul style="list-style-type: none"> ● Informational reading in information technology ● Informational writing in information technology using similar structures. | |
| Enduring Understanding | Essential Questions |
| <ul style="list-style-type: none"> ● Internal makeup of a personal computer ● Increase information technology vocabulary | <ul style="list-style-type: none"> ● What are the various IT certifications? ● What is the importance of the computer industry? |

Differentiation & Real-World Connections

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| 504 | <ul style="list-style-type: none"> ● preferential seating ● extended time on tests and assignments ● reduced homework or classwork. ● verbal, visual, or technology aids | <ul style="list-style-type: none"> ● modified textbooks or audio-video materials. ● behavior management support ● adjusted class schedules or grading. ● verbal testing |
| Enrichment | <ul style="list-style-type: none"> ● Utilize collaborative media tools. ● Provide differentiated feedback. ● Opportunities for reflection ● Opportunities for self-evaluation | <ul style="list-style-type: none"> ● Encourage student voice and input. ● Model close reading ● Distinguish long term and short-term goals |
| IEP | <ul style="list-style-type: none"> ● Utilize “skeleton notes” where some required information is already filled in for the student. ● Provide access to a variety of tools for responses. ● Provide opportunities to build familiarity and to practice with multiple media tools. ● Graphic organizers | <ul style="list-style-type: none"> ● Leveled text and activities that adapt as students build skills. ● Provide multiple means of action and expression. ● Consider learning styles and interests. ● Provide differentiated mentors. |
| ELLs | <ul style="list-style-type: none"> ● Pre-teach new vocabulary and meaning of symbols. ● Embed glossaries or definitions. ● Provide translations. ● Connect new vocabulary to background knowledge | <ul style="list-style-type: none"> ● Provide flash cards. ● Incorporate as many learning senses as possible. ● Portray structure, relationships, and associations through concept webs. ● Graphic organizers |
| At-risk | <ul style="list-style-type: none"> ● Purposeful seating ● Counselor involvement ● Parent involvement | <ul style="list-style-type: none"> ● Contracts ● Alternate assessments ● Hands-on learning |
| 21st Century Skills | | |
| <ul style="list-style-type: none"> ● Creativity ● Innovation ● Critical Thinking | | <ul style="list-style-type: none"> ● Problem Solving ● Communication ● Collaboration |

Integrating Technology

- Chromebooks
- Internet research
- Online programs

- Virtual collaboration and projects
- Presentations using presentation hardware and software

Career education

- Weekly Discussions: The value of mastering multiple languages in the workforce.

- Equity Discussions: People who benefit from knowing multiple languages.

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| Computer Science Technology | Unit 2 | Marking Period 1 |
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| Focus Indicator | |
| Networks and the Internet | |
| 8.1.12.NI.1 | Evaluate the scalability and reliability of networks, by describing the relationship between routers, switches, servers, topology, and addressing. |
| 8.1.12.NI.2 | Evaluate security measures to address various common security threats. |
| 8.1.12.NI.3 | Explain how the needs of users and the sensitivity of data determine the level of security implemented. |
| 8.1.12.NI.4 | Explain how decisions on methods to protect data are influenced by whether the data is at rest, in transit, or in use |

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| Formative Assessments | Summative Assessments |
| <ul style="list-style-type: none"> ● Group Work ● Notebook ● Worksheets ● Practical Factors | <ul style="list-style-type: none"> ● Vocabulary Quiz ● Project rubric ● Weekly Participation rubric ● Summative Assessment |
| Suggested Primary Resources | Suggested Supplemental Resources |
| <ul style="list-style-type: none"> ● Textbook/Google Classroom ● Chromebooks | <ul style="list-style-type: none"> ● Internet Research |
| Cross-Curricular Connections | |
| <ul style="list-style-type: none"> ● Informational reading in information technology | |
| Enduring Understanding | Essential Questions |
| <ul style="list-style-type: none"> ● Identify basic network concepts and technologies. ● Identify the structure of the internet. ● List the hardware that is used in the transmission of data. | <ul style="list-style-type: none"> ● What are the basic network concepts and technologies? ● How do the network physical components work? |

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| <ul style="list-style-type: none"> ● Identify how the internet has impacted everyday life. ● Describe the different topologies and architectures of the various networks. ● Increase computer science vocabulary | <ul style="list-style-type: none"> ● What are the different topologies and architectures of the various networks? ● How is data transmitted? ● How does the internet impact everyday life? |
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| Differentiation & Real-World Connections | | |
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| 504 | <ul style="list-style-type: none"> ● preferential seating ● extended time on tests and assignments ● reduced homework or classwork. ● verbal, visual, or technology aids | <ul style="list-style-type: none"> ● modified textbooks or audio-video materials. ● behavior management support ● adjusted class schedules or grading. ● verbal testing |
| Enrichment | <ul style="list-style-type: none"> ● Utilize collaborative media tools. ● Provide differentiated feedback. ● Opportunities for reflection ● Opportunities for self-evaluation | <ul style="list-style-type: none"> ● Encourage student voice and input. ● Model close reading ● Distinguish long term and short-term goals |
| IEP | <ul style="list-style-type: none"> ● Utilize “skeleton notes” where some required information is already filled in for the student. ● Provide access to a variety of tools for responses. ● Provide opportunities to build familiarity and to practice with multiple media tools. ● Graphic organizers | <ul style="list-style-type: none"> ● Leveled text and activities that adapt as students build skills. ● Provide multiple means of action and expression. ● Consider learning styles and interests. ● Provide differentiated mentors. |
| ELLs | <ul style="list-style-type: none"> ● Pre-teach new vocabulary and meaning of symbols. ● Embed glossaries or definitions. ● Provide translations. ● Connect new vocabulary to background knowledge | <ul style="list-style-type: none"> ● Provide flash cards. ● Incorporate as many learning senses as possible. ● Portray structure, relationships, and associations through concept webs. ● Graphic organizers |

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| At-risk | <ul style="list-style-type: none"> ● Purposeful seating ● Counselor involvement ● Parent involvement | <ul style="list-style-type: none"> ● Contracts ● Alternate assessments ● Hands-on learning |
| 21st Century Skills | | |
| <ul style="list-style-type: none"> ● Creativity ● Innovation ● Critical Thinking | <ul style="list-style-type: none"> ● Problem Solving ● Communication ● Collaboration | |
| Integrating Technology | | |
| <ul style="list-style-type: none"> ● Chromebooks ● Internet research ● Online programs | <ul style="list-style-type: none"> ● Virtual collaboration and projects ● Presentations using presentation hardware and software | |
| Career education | | |
| <ul style="list-style-type: none"> ● Weekly Discussions: The value of mastering multiple languages in the workforce. | <ul style="list-style-type: none"> ● Equity Discussions: People who benefit from knowing multiple languages. | |

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| Computer Science Technology | Unit 3 | Marking Period 2 |
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| Focus Indicator | |
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| Impacts of Computing | |
| 8.1.12.IC.1 | Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices |
| 8.1.12.IC.2 | Test and refine computational artifacts to reduce bias and equity deficits |
| 8.1.12.IC.3 | Predict the potential impacts and implications of emerging technologies on larger social, economic, and political structures, using evidence from credible sources. |

| Formative Assessments | Summative Assessments |
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| <ul style="list-style-type: none"> ● Group Work ● Notebook ● Worksheets ● Practical Factors | <ul style="list-style-type: none"> ● Vocabulary Quiz ● Component Quiz ● Hands on project ● Weekly Participation rubric |
| Suggested Primary Resources | Suggested Supplemental Resources |
| <ul style="list-style-type: none"> ● Textbook/Google Classroom ● Various parts and computers | <ul style="list-style-type: none"> ● Internet |
| Cross-Curricular Connections | |
| <ul style="list-style-type: none"> ● Informational reading in information technology/computer science ● Informational writing in information technology using similar structures. | |
| Enduring Understanding | Essential Questions |
| <ul style="list-style-type: none"> ● Describe artificial intelligence. ● List the roles a computer has on in your life. ● Explore new ways to store data | <ul style="list-style-type: none"> ● What type of artificial Intelligence in use now? ● What roles do computers play in your life? ● What are new ways to store data? |

Differentiation & Real-World Connections

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| 504 | <ul style="list-style-type: none"> ● preferential seating ● extended time on tests and assignments ● reduced homework or classwork. ● verbal, visual, or technology aids | <ul style="list-style-type: none"> ● modified textbooks or audio-video materials. ● behavior management support ● adjusted class schedules or grading. ● verbal testing |
| Enrichment | <ul style="list-style-type: none"> ● Utilize collaborative media tools. ● Provide differentiated feedback. ● Opportunities for reflection ● Opportunities for self-evaluation | <ul style="list-style-type: none"> ● Encourage student voice and input. ● Model close reading ● Distinguish long term and short-term goals |
| IEP | <ul style="list-style-type: none"> ● Utilize “skeleton notes” where some required information is already filled in for the student. ● Provide access to a variety of tools for responses. ● Provide opportunities to build familiarity and to practice with multiple media tools. ● Graphic organizers | <ul style="list-style-type: none"> ● Leveled text and activities that adapt as students build skills ● Provide multiple means of action and expression. ● Consider learning styles and interests. ● Provide differentiated mentors. |
| ELLs | <ul style="list-style-type: none"> ● Pre-teach new vocabulary and meaning of symbols. ● Embed glossaries or definitions. ● Provide translations. ● Connect new vocabulary to background knowledge | <ul style="list-style-type: none"> ● Provide flash cards. ● Incorporate as many learning senses as possible. ● Portray structure, relationships, and associations through concept webs. ● Graphic organizers |
| At-risk | <ul style="list-style-type: none"> ● Purposeful seating ● Counselor involvement ● Parent involvement | <ul style="list-style-type: none"> ● Contracts ● Alternate assessments ● Hands-on learning |
| 21st Century Skills | | |
| <ul style="list-style-type: none"> ● Creativity ● Innovation ● Critical Thinking | | <ul style="list-style-type: none"> ● Problem Solving ● Communication ● Collaboration |

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| Integrating Technology | |
| <ul style="list-style-type: none"> ● Chromebooks ● Internet research ● Online programs | <ul style="list-style-type: none"> ● Virtual collaboration and projects ● Presentations using presentation hardware and software |
| Career education | |
| <ul style="list-style-type: none"> ● Weekly Discussions: The value of mastering multiple languages in the workforce. | <ul style="list-style-type: none"> ● Equity Discussions: People who benefit from knowing multiple languages. |

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| Computer Science Technology | Unit 4 | Marking Period 2 |
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| Focus Indicator | |
| Data Analysis | |
| 8.1.12.DA.1 | Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change. |

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| 8.1.12.DA.2 | Describe the trade-offs in how and where data is organized and stored |
| 8.1.12.DA.3 | Translate between decimal numbers and binary numbers |
| 8.1.12.DA.4 | Explain the relationship between binary numbers and the storage and use of data in a computing device. |

| Formative Assessments | Summative Assessments |
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| <ul style="list-style-type: none"> ● Group Work ● Notebook ● Worksheets ● Practical Factors | <ul style="list-style-type: none"> ● Vocabulary Quiz ● Hands on project ● Weekly Participation rubric |
| Suggested Primary Resources | Suggested Supplemental Resources |
| <ul style="list-style-type: none"> ● Textbook/Google Classroom | <ul style="list-style-type: none"> ● Internet |
| Cross-Curricular Connections | |
| <ul style="list-style-type: none"> ● Informational reading in data analysis ● Informational writing in data analysis | |
| Enduring Understanding | Essential Questions |
| <ul style="list-style-type: none"> ● Process of completing data analysis ● Increase information data analysis vocabulary | <ul style="list-style-type: none"> ● What is data analysis? ● What is the importance of data analysis? |

| Differentiation & Real-World Connections | | |
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| 504 | <ul style="list-style-type: none"> ● preferential seating ● extended time on tests and assignments ● reduced homework or classwork. ● verbal, visual, or technology aids | <ul style="list-style-type: none"> ● modified textbooks or audio-video materials. ● behavior management support ● adjusted class schedules or grading. ● verbal testing |

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| Enrichment | <ul style="list-style-type: none"> ● Utilize collaborative media tools. ● Provide differentiated feedback. ● Opportunities for reflection ● Opportunities for self-evaluation | <ul style="list-style-type: none"> ● Encourage student voice and input. ● Model close reading ● Distinguish long term and short-term goals |
| IEP | <ul style="list-style-type: none"> ● Utilize “skeleton notes” where some required information is already filled in for the student. ● Provide access to a variety of tools for responses. ● Provide opportunities to build familiarity and to practice with multiple media tools. ● Graphic organizers | <ul style="list-style-type: none"> ● Leveled text and activities that adapt as students build skills. ● Provide multiple means of action and expression. ● Consider learning styles and interests. ● Provide differentiated mentors. |
| ELLs | <ul style="list-style-type: none"> ● Pre-teach new vocabulary and meaning of symbols. ● Embed glossaries or definitions. ● Provide translations. ● Connect new vocabulary to background knowledge | <ul style="list-style-type: none"> ● Provide flash cards. ● Incorporate as many learning senses as possible. ● Portray structure, relationships, and associations through concept webs. ● Graphic organizers |
| At-risk | <ul style="list-style-type: none"> ● Purposeful seating ● Counselor involvement ● Parent involvement | <ul style="list-style-type: none"> ● Contracts ● Alternate assessments ● Hands-on learning |
| 21st Century Skills | | |
| <ul style="list-style-type: none"> ● Creativity ● Innovation ● Critical Thinking | | <ul style="list-style-type: none"> ● Problem Solving ● Communication ● Collaboration |
| Integrating Technology | | |
| <ul style="list-style-type: none"> ● Chromebooks ● Internet research ● Online programs | | <ul style="list-style-type: none"> ● Virtual collaboration and projects ● Presentations using presentation hardware and software |
| Career education | | |

- Weekly Discussions: The value of mastering multiple languages in the workforce.

- Equity Discussions: People who benefit from knowing multiple languages.

Computer Science Technology

Unit 5

Marking Period 2

Focus Indicator

Algorithms & Programming

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| 8.1.12.AP.3 | Select and combine control structures for a specific application based upon performance and readability, and identify trade-offs to justify the choice |
| 8.1.12.AP.4 | Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue. |
| 8.1.12.AP.5 | Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects. |
| 8.1.12.AP.6 | Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs. |

| Formative Assessments | Summative Assessments |
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| <ul style="list-style-type: none"> ● Group Work ● Notebook ● Worksheets ● Practical Factors | <ul style="list-style-type: none"> ● Vocabulary Quiz ● Programming Quiz ● Programming Projects ● Weekly Participation rubric |
| Suggested Primary Resources | Suggested Supplemental Resources |
| <ul style="list-style-type: none"> ● Textbook/Google Classroom ● Various programming commands | <ul style="list-style-type: none"> ● Internet |
| Cross-Curricular Connections | |
| <ul style="list-style-type: none"> ● Informational reading regarding Python ● Informational writing in Python | |
| Enduring Understanding | Essential Questions |
| <ul style="list-style-type: none"> ● How to program a computer to do what you want. ● Increase knowledge using the Python language | <ul style="list-style-type: none"> ● What are the various python commands? ● What is the importance of programming? |

| Differentiation & Real-World Connections | | |
|--|---|---|
| 504 | <ul style="list-style-type: none"> ● preferential seating ● extended time on tests and assignments ● reduced homework or classwork. ● verbal, visual, or technology aids | <ul style="list-style-type: none"> ● modified textbooks or audio-video materials. ● behavior management support ● adjusted class schedules or grading. ● verbal testing |
| Enrichment | <ul style="list-style-type: none"> ● Utilize collaborative media tools. ● Provide differentiated feedback. ● Opportunities for reflection ● Opportunities for self-evaluation | <ul style="list-style-type: none"> ● Encourage student voice and input. ● Model close reading ● Distinguish long term and short-term goals |

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| IEP | <ul style="list-style-type: none"> ● Utilize “skeleton notes” where some required information is already filled in for the student. ● Provide access to a variety of tools for responses. ● Provide opportunities to build familiarity and to practice with multiple media tools. ● Graphic organizers | <ul style="list-style-type: none"> ● Leveled text and activities that adapt as students build skills ● Provide multiple means of action and expression. ● Consider learning styles and interests. ● Provide differentiated mentors. |
| ELLs | <ul style="list-style-type: none"> ● Pre-teach new vocabulary and meaning of symbols. ● Embed glossaries or definitions. ● Provide translations. ● Connect new vocabulary to background knowledge | <ul style="list-style-type: none"> ● Provide flash cards. ● Incorporate as many learning senses as possible. ● Portray structure, relationships, and associations through concept webs. ● Graphic organizers |
| At-risk | <ul style="list-style-type: none"> ● Purposeful seating ● Counselor involvement ● Parent involvement | <ul style="list-style-type: none"> ● Contracts ● Alternate assessments ● Hands-on learning |
| 21st Century Skills | | |
| <ul style="list-style-type: none"> ● Creativity ● Innovation ● Critical Thinking | <ul style="list-style-type: none"> ● Problem Solving ● Communication ● Collaboration | |
| Integrating Technology | | |
| <ul style="list-style-type: none"> ● Chromebooks ● Internet research ● Online programs | <ul style="list-style-type: none"> ● Virtual collaboration and projects ● Presentations using presentation hardware and software | |
| Career education | | |
| <ul style="list-style-type: none"> ● Weekly Discussions: The value of mastering multiple languages in the workforce. | <ul style="list-style-type: none"> ● Equity Discussions: People who benefit from knowing multiple languages. | |

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| Computer Science Technology | Unit 6 | Marking Period 3 |
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| Focus Indicator | |
| Engineering Design | |
| 8.2.12.ED.3 | Evaluate several models of the same type of product and make recommendations for a new design based on a cost benefit analysis. |
| 8.2.12.ED.5 | Evaluate the effectiveness of a product or system based on factors that are related to its requirements, specifications, and constraints (e.g., safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, ergonomics). |
| 8.2.12.ED.6 | Analyze the effects of changing resources when designing a specific product or system (e.g., materials, energy, tools, capital, labor). |
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| Formative Assessments | Summative Assessments |
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| <ul style="list-style-type: none"> ● Group Work ● Notebook ● Worksheets ● Practical Factors | <ul style="list-style-type: none"> ● Vocabulary Quiz ● Component Quiz ● Hands on project ● Weekly Participation rubric |
| Suggested Primary Resources | Suggested Supplemental Resources |
| <ul style="list-style-type: none"> ● Textbook/Google Classroom ● Various parts and no directions | <ul style="list-style-type: none"> ● Internet |
| Cross-Curricular Connections | |
| <ul style="list-style-type: none"> ● Informational reading regarding the engineering design process ● Informational writing regarding the engineering design process using similar structures. | |
| Enduring Understanding | Essential Questions |
| <ul style="list-style-type: none"> ● Engineering Design Process ● Increase information technology vocabulary | <ul style="list-style-type: none"> ● What are the steps of the engineering design process? ● What is the importance of the engineering design process? |

| Differentiation & Real-World Connections | | |
|---|---|---|
| 504 | <ul style="list-style-type: none"> ● preferential seating ● extended time on tests and assignments ● reduced homework or classwork. ● verbal, visual, or technology aids | <ul style="list-style-type: none"> ● modified textbooks or audio-video materials. ● behavior management support ● adjusted class schedules or grading. ● verbal testing |
| Enrichment | <ul style="list-style-type: none"> ● Utilize collaborative media tools. ● Provide differentiated feedback. ● Opportunities for reflection ● Opportunities for self-evaluation | <ul style="list-style-type: none"> ● Encourage student voice and input. ● Model close reading ● Distinguish long term and short-term goals |
| IEP | <ul style="list-style-type: none"> ● Utilize “skeleton notes” where some required information is already filled in for the student. ● Provide access to a variety of tools for responses. ● Provide opportunities to build familiarity and to practice with multiple media tools ● Graphic organizers | <ul style="list-style-type: none"> ● Leveled text and activities that adapt as students build skills ● Provide multiple means of action and expression. ● Consider learning styles and interests. ● Provide differentiated mentors. |

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| ELLs | <ul style="list-style-type: none"> ● Pre-teach new vocabulary and meaning of symbols. ● Embed glossaries or definitions. ● Provide translations. ● Connect new vocabulary to background knowledge | <ul style="list-style-type: none"> ● Provide flash cards. ● Incorporate as many learning senses as possible. ● Portray structure, relationships, and associations through concept webs. ● Graphic organizers |
| At-risk | <ul style="list-style-type: none"> ● Purposeful seating ● Counselor involvement ● Parent involvement | <ul style="list-style-type: none"> ● Contracts ● Alternate assessments ● Hands-on learning |
| 21st Century Skills | | |
| <ul style="list-style-type: none"> ● Creativity ● Innovation ● Critical Thinking | <ul style="list-style-type: none"> ● Problem Solving ● Communication ● Collaboration | |
| Integrating Technology | | |
| <ul style="list-style-type: none"> ● Chromebooks ● Internet research ● Online programs | <ul style="list-style-type: none"> ● Virtual collaboration and projects ● Presentations using presentation hardware and software | |
| Career education | | |
| <ul style="list-style-type: none"> ● Weekly Discussions: The value of mastering multiple languages in the workforce. | <ul style="list-style-type: none"> ● Equity Discussions: People who benefit from knowing multiple languages. | |

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| Computer Science Technology | Unit 7 | Marking Period 3 |
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| Focus Indicator | |
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| Interaction of Technology and Humans | |
| 8.2.12.ITH.1 | Analyze a product to determine the impact that economic, political, social, and/or cultural factors have had on its design, including its design constraints. |
| 8.2.12.ITH.2 | Propose an innovation to meet future demands supported by an analysis of the potential costs, benefits, trade-offs, and risks related to the use of the innovation |
| 8.2.12.ITH.3 | Analyze the impact that globalization, social media, and access to open-source technologies has had on innovation and on a society's economy, politics, and culture |
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| Formative Assessments | Summative Assessments |
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| <ul style="list-style-type: none"> ● Group Work ● Notebook ● Worksheets ● Practical Factors | <ul style="list-style-type: none"> ● Vocabulary Quiz ● Component Quiz ● Hands on project ● Weekly Participation rubric |
| Suggested Primary Resources | Suggested Supplemental Resources |
| <ul style="list-style-type: none"> ● Textbook/Google Classroom ● Various parts and computers | <ul style="list-style-type: none"> ● Internet |

| Cross-Curricular Connections | |
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| <ul style="list-style-type: none"> ● Informational reading in information technology ● Informational writing in information technology using similar structures. | |
| Enduring Understanding | Essential Questions |
| <ul style="list-style-type: none"> ● Internal make up of a personal computer. ● Increase information technology vocabulary | <ul style="list-style-type: none"> ● What are the various IT certifications? ● What is the importance of the computer industry? |

| Differentiation & Real-World Connections | | |
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| 504 | <ul style="list-style-type: none"> ● preferential seating ● extended time on tests and assignments ● reduced homework or classwork. ● verbal, visual, or technology aids | <ul style="list-style-type: none"> ● modified textbooks or audio-video materials. ● behavior management support ● adjusted class schedules or grading. ● verbal testing |
| Enrichment | <ul style="list-style-type: none"> ● Utilize collaborative media tools. ● Provide differentiated feedback. ● Opportunities for reflection ● Opportunities for self-evaluation | <ul style="list-style-type: none"> ● Encourage student voice and input. ● Model close reading ● Distinguish long term and short-term goals |
| IEP | <ul style="list-style-type: none"> ● Utilize “skeleton notes” where some required information is already filled in for the student ● Provide access to a variety of tools for responses. ● Provide opportunities to build familiarity and to practice with multiple media tools. ● Graphic organizers | <ul style="list-style-type: none"> ● Leveled text and activities that adapt as students build skills. ● Provide multiple means of action and expression. ● Consider learning styles and interests. ● Provide differentiated mentors. |
| ELLs | <ul style="list-style-type: none"> ● Pre-teach new vocabulary and meaning of symbols. ● Embed glossaries or definitions. ● Provide translations. ● Connect new vocabulary to background knowledge | <ul style="list-style-type: none"> ● Provide flash cards. ● Incorporate as many learning senses as possible. ● Portray structure, relationships, and associations through concept webs. ● Graphic organizers |

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| At-risk | <ul style="list-style-type: none"> ● Purposeful seating ● Counselor involvement ● Parent involvement | <ul style="list-style-type: none"> ● Contracts ● Alternate assessments ● Hands-on learning |
| 21st Century Skills | | |
| <ul style="list-style-type: none"> ● Creativity ● Innovation ● Critical Thinking | <ul style="list-style-type: none"> ● Problem Solving ● Communication ● Collaboration | |
| Integrating Technology | | |
| <ul style="list-style-type: none"> ● Chromebooks ● Internet research ● Online programs | <ul style="list-style-type: none"> ● Virtual collaboration and projects ● Presentations using presentation hardware and software | |
| Career education | | |
| <ul style="list-style-type: none"> ● Weekly Discussions: The value of mastering multiple languages in the workforce. | <ul style="list-style-type: none"> ● Equity Discussions: People who benefit from knowing multiple languages. | |

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| Computer Science Technology | Unit 8 | Marking Period 3 |
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| Focus Indicator | |
| Nature of Technology | |
| 8.2.12.NT.1 | Explain how different groups can contribute to the overall design of a product. |
| 8.2.12.NT.2 | Redesign an existing product to improve form or function. |

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| Formative Assessments | Summative Assessments |
| <ul style="list-style-type: none"> ● Group Work ● Notebook ● Worksheets ● Practical Factors | <ul style="list-style-type: none"> ● Vocabulary Quiz ● Component Quiz ● Hands on project ● Weekly Participation rubric |
| Suggested Primary Resources | Suggested Supplemental Resources |
| <ul style="list-style-type: none"> ● Textbook/Google Classroom ● Various parts and computers | <ul style="list-style-type: none"> ● Internet |
| Cross-Curricular Connections | |
| <ul style="list-style-type: none"> ● Informational reading in information technology ● Informational writing in information technology using similar structures. | |
| Enduring Understanding | Essential Questions |
| <ul style="list-style-type: none"> ● Internal make up of a personal computer. ● Increase information technology vocabulary | <ul style="list-style-type: none"> ● What are the various IT certifications? ● What is the importance of the computer industry? |

Differentiation & Real-World Connections

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| 504 | <ul style="list-style-type: none"> ● preferential seating ● extended time on tests and assignments ● reduced homework or classwork. ● verbal, visual, or technology aids | <ul style="list-style-type: none"> ● modified textbooks or audio-video materials. ● behavior management support ● adjusted class schedules or grading. ● verbal testing |
| Enrichment | <ul style="list-style-type: none"> ● Utilize collaborative media tools. ● Provide differentiated feedback. ● Opportunities for reflection ● Opportunities for self-evaluation | <ul style="list-style-type: none"> ● Encourage student voice and input. ● Model close reading ● Distinguish long term and short-term goals |
| IEP | <ul style="list-style-type: none"> ● Utilize “skeleton notes” where some required information is already filled in for the student. ● Provide access to a variety of tools for responses. ● Provide opportunities to build familiarity and to practice with multiple media tools. ● Graphic organizers | <ul style="list-style-type: none"> ● Leveled text and activities that adapt as students build skills ● Provide multiple means of action and expression. ● Consider learning styles and interests. ● Provide differentiated mentors. |
| ELLs | <ul style="list-style-type: none"> ● Pre-teach new vocabulary and meaning of symbols. ● Embed glossaries or definitions. ● Provide translations. ● Connect new vocabulary to background knowledge | <ul style="list-style-type: none"> ● Provide flash cards. ● Incorporate as many learning senses as possible. ● Portray structure, relationships, and associations through concept webs. ● Graphic organizers |
| At-risk | <ul style="list-style-type: none"> ● Purposeful seating ● Counselor involvement ● Parent involvement | <ul style="list-style-type: none"> ● Contracts ● Alternate assessments ● Hands-on learning |

21st Century Skills

- Creativity
- Innovation
- Critical Thinking

- Problem Solving
- Communication
- Collaboration

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| Integrating Technology | |
| <ul style="list-style-type: none"> ● Chromebooks ● Internet research ● Online programs | <ul style="list-style-type: none"> ● Virtual collaboration and projects ● Presentations using presentation hardware and software |
| Career education | |
| <ul style="list-style-type: none"> ● Weekly Discussions: The value of mastering multiple languages in the workforce. | <ul style="list-style-type: none"> ● Equity Discussions: People who benefit from knowing multiple languages. |

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| Computer Science Technology | Unit 9 | Marking Period 4 |
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| Focus Indicator |
| Effects of Technology on the Natural World |

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| 8.2.12.ETW.1 | Evaluate ethical considerations regarding the sustainability of environmental resources that are used for the design, creation, and maintenance of a chosen product. |
| 8.2.12.ETW.2 | Synthesize and analyze data collected to monitor the effects of a technological product or system on the environment. |
| 8.2.12.ETW.3 | Identify a complex, global environmental or climate change issue, develop a systemic plan of investigation, and propose an innovative sustainable solution. |

| Formative Assessments | Summative Assessments |
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| <ul style="list-style-type: none"> ● Group Work ● Notebook ● Worksheets ● Practical Factors | <ul style="list-style-type: none"> ● Vocabulary Quiz ● Component Quiz ● Hands on project ● Weekly Participation rubric |
| Suggested Primary Resources | Suggested Supplemental Resources |
| <ul style="list-style-type: none"> ● Textbook/Google Classroom ● Various parts and computers | <ul style="list-style-type: none"> ● Internet |
| Cross-Curricular Connections | |
| <ul style="list-style-type: none"> ● Informational reading in computer science/technology education ● Informational writing in computer science/technology education using similar structures. | |
| Enduring Understanding | Essential Questions |
| <ul style="list-style-type: none"> ● Describe negative and positive effects of technology. ● Explain how technology can be improved to lessen the negative impact | <ul style="list-style-type: none"> ● What are the negative effects of technology on the world? ● What is the importance of the computer industry? |

| Differentiation & Real-World Connections | | |
|---|--|---|
| 504 | <ul style="list-style-type: none"> ● preferential seating ● extended time on tests and assignments ● reduced homework or classwork. ● verbal, visual, or technology aids | <ul style="list-style-type: none"> ● modified textbooks or audio-video materials. ● behavior management support ● adjusted class schedules or grading. ● verbal testing |

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| Enrichment | <ul style="list-style-type: none"> ● Utilize collaborative media tools. ● Provide differentiated feedback. ● Opportunities for reflection ● Opportunities for self-evaluation | <ul style="list-style-type: none"> ● Encourage student voice and input. ● Model close reading ● Distinguish long term and short-term goals |
| IEP | <ul style="list-style-type: none"> ● Utilize “skeleton notes” where some required information is already filled in for the student. ● Provide access to a variety of tools for responses. ● Provide opportunities to build familiarity and to practice with multiple media tools. ● Graphic organizers | <ul style="list-style-type: none"> ● Leveled text and activities that adapt as students build skills ● Provide multiple means of action and expression. ● Consider learning styles and interests. ● Provide differentiated mentors. |
| ELLs | <ul style="list-style-type: none"> ● Pre-teach new vocabulary and meaning of symbols. ● Embed glossaries or definitions. ● Provide translations. ● Connect new vocabulary to background knowledge | <ul style="list-style-type: none"> ● Provide flash cards. ● Incorporate as many learning senses as possible. ● Portray structure, relationships, and associations through concept webs. ● Graphic organizers |
| At-risk | <ul style="list-style-type: none"> ● Purposeful seating ● Counselor involvement ● Parent involvement | <ul style="list-style-type: none"> ● Contracts ● Alternate assessments ● Hands-on learning |
| 21st Century Skills | | |
| <ul style="list-style-type: none"> ● Creativity ● Innovation ● Critical Thinking | <ul style="list-style-type: none"> ● Problem Solving ● Communication ● Collaboration | |
| Integrating Technology | | |
| <ul style="list-style-type: none"> ● Chromebooks ● Internet research ● Online programs | <ul style="list-style-type: none"> ● Virtual collaboration and projects ● Presentations using presentation hardware and software | |
| Career education | | |

- Weekly Discussions: The value of mastering multiple languages in the workforce.

- Equity Discussions: People who benefit from knowing multiple languages.

Computer Science Technology

Unit 10

Marking Period 4

Focus Indicator

Ethics & Culture

8.2.12.EC.1

Analyze controversial technological issues and determine the degree to which individuals, businesses, and governments have an ethical role in decisions that are made.

8.2.12.EC.2

Assess the positive and negative impacts of emerging technologies on developing countries and evaluate how individuals, non-profit organizations, and governments have responded.

8.2.12.ETW.4

Research historical tensions between environmental and economic considerations as driven by human needs and wants in the development of a technological product and present the competing viewpoints.

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| 8.1.12.D.4 | Explain the impact of cybercrimes on society. |
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| Formative Assessments | Summative Assessments |
|---|---|
| <ul style="list-style-type: none"> ● Group Work ● Notebook ● Worksheets ● Practical Factors | <ul style="list-style-type: none"> ● Vocabulary Quiz ● Component Quiz ● Hands on project ● Weekly Participation rubric |
| Suggested Primary Resources | Suggested Supplemental Resources |
| <ul style="list-style-type: none"> ● Textbook/Google Classroom | <ul style="list-style-type: none"> ● Internet |
| Cross-Curricular Connections | |
| <ul style="list-style-type: none"> ● Informational reading in cyber literacy ● Informational writing in cyber literacy using similar structures. | |
| Enduring Understanding | Essential Questions |
| <ul style="list-style-type: none"> ● Summarize and discuss recent cyber-attacks. ● Define Digital Footprint and Reputation ● List the types of Cyberbullying and define each | <ul style="list-style-type: none"> ● What is Cybersecurity? ● What is a Digital Footprint and Reputation? ● What is cyberbullying? |

| Differentiation & Real-World Connections | | |
|--|--|---|
| 504 | <ul style="list-style-type: none"> ● preferential seating ● extended time on tests and assignments ● reduced homework or classwork. ● verbal, visual, or technology aids | <ul style="list-style-type: none"> ● modified textbooks or audio-video materials. ● behavior management support ● adjusted class schedules or grading. ● verbal testing |

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| Enrichment | <ul style="list-style-type: none"> ● Utilize collaborative media tools. ● Provide differentiated feedback. ● Opportunities for reflection ● Opportunities for self-evaluation | <ul style="list-style-type: none"> ● Encourage student voice and input. ● Model close reading ● Distinguish long term and short-term goals |
| IEP | <ul style="list-style-type: none"> ● Utilize “skeleton notes” where some required information is already filled in for the student. ● Provide access to a variety of tools for responses. ● Provide opportunities to build familiarity and to practice with multiple media tools. ● Graphic organizers | <ul style="list-style-type: none"> ● Leveled text and activities that adapt as students build skills. ● Provide multiple means of action and expression. ● Consider learning styles and interests. ● Provide differentiated mentors. |
| ELLs | <ul style="list-style-type: none"> ● Pre-teach new vocabulary and meaning of symbols. ● Embed glossaries or definitions. ● Provide translations. ● Connect new vocabulary to background knowledge | <ul style="list-style-type: none"> ● Provide flash cards. ● Incorporate as many learning senses as possible. ● Portray structure, relationships, and associations through concept webs. ● Graphic organizers |
| At-risk | <ul style="list-style-type: none"> ● Purposeful seating ● Counselor involvement ● Parent involvement | <ul style="list-style-type: none"> ● Contracts ● Alternate assessments ● Hands-on learning |
| 21st Century Skills | | |
| <ul style="list-style-type: none"> ● Creativity ● Innovation ● Critical Thinking | | <ul style="list-style-type: none"> ● Problem Solving ● Communication ● Collaboration |
| Integrating Technology | | |
| <ul style="list-style-type: none"> ● Chromebooks ● Internet research ● Online programs | | <ul style="list-style-type: none"> ● Virtual collaboration and projects ● Presentations using presentation hardware and software |
| Career education | | |

- Weekly Discussions: The value of mastering multiple languages in the workforce.

- Equity Discussions: People who benefit from knowing multiple languages.

Appendix