



Computer Science 6

Curriculum

Board Approved: 05/21/2026

Course Information

Middle School Quarter-Elective

Course Description:

This course builds on students' prior experiences with digital tools and introduces foundational computer science concepts through hands-on activities and collaborative projects. Students explore responsible technology use, examine how computing impacts people and communities, and use digital tools to communicate ideas and solve problems. Throughout the course, students design interactive digital artifacts, develop introductory programming skills, and use 3D modeling software to create solutions to real-world design challenges.

Transfer Goals:

- Recognize cybersecurity threats and apply strategies that protect personal information and promote responsible participation in digital environments.
- Use digital tools collaboratively to design and improve digital artifacts that communicate ideas or solve problems.
- Apply basic programming concepts such as variables, loops, and conditionals to design, test, and debug simple programs.
- Use digital design tools to create and refine 3D models that address real-world challenges.

Vertical Articulation:

- **Computer Science 6:**
Provides foundational exposure to computer science concepts including cybersecurity, digital design, and introductory programming. Students develop basic computational thinking skills while working in structured and scaffolded learning environments.
- **Computer Science 7:**
Builds on these foundational skills by having students evaluate digital technologies, design solutions with defined constraints, and develop algorithms to solve problems. Students collaborate to create digital artifacts, apply programming concepts, and refine their solutions through testing and feedback.

priority standards indicated in **bold*

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	• Computer Science 8: Students apply these concepts more independently as they integrate hardware and software systems to engineer solutions to more complex problems. Students design, test, and refine systems that use advanced programming structures and physical computing devices. •
Curriculum Standards: Missouri K-12 Computer Science Standards Proficiency Scales: Computer Science 6 Proficiency Scales	
Curriculum Resource(s): N/A	

priority standards indicated in **bold*

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Unit 1: Digital Responsibility

Timeframe: 2 weeks

Unit Description: In this unit, students learn how to recognize common cybersecurity threats such as phishing, scams, and unsafe online behavior. Students examine strategies for protecting personal information and explore how online actions affect individuals and communities. They also discuss the tradeoffs between sharing information publicly and maintaining privacy while considering how technology can be used responsibly and respectfully in digital environments.

Enduring Understandings:

- Cybersecurity threats such as phishing and scams can compromise personal information if users do not recognize warning signs.
- Sharing information online involves tradeoffs between privacy and public communication.
- Computing technologies can impact individuals and communities in both positive and negative ways.
- Responsible technology use requires thoughtful decision-making about online behavior and communication.

Essential Questions:

- How can we recognize common online threats and protect personal information?
- What should we consider before sharing information online?
- How do computing technologies affect people and communities?
- How can we use technology responsibly when interacting with others online?

Unit 1 Standards	
STANDARD CODE	STUDENTS WILL KNOW, BE ABLE TO, AND UNDERSTAND:
<u>6-8.NI.C.01</u>	• I can recognize common cybersecurity threats such as viruses, malware, phishing or scams. • I can describe ways to protect personal information and electronic data from these threats.
6-8.IC.SLE.01	• I can explain the tradeoffs between sharing information publicly and keeping information private and secure.
6-8.IC.C.01	• I can describe how computing technologies affect people and communities. • I can explain ways technology can have both positive and negative impacts.

priority standards indicated in **bold*

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Unit 2: Collaborative Digital Tools

Timeframe: 2 weeks

Unit Description: In this unit, students collaborate to design and create an interactive digital story using shared digital tools. Students plan the structure of their projects and organize branching “if/then” pathways that determine how a user moves through the story. Through this process, students apply basic computational thinking skills while managing shared responsibilities and project timelines. Students use feedback from peers to revise and improve their digital artifacts while exploring how collaborative technologies can support communication, creativity, and problem solving.

Enduring Understandings:

- Feedback from peers and users helps improve digital artifacts and refine solutions.
- Collaborative digital projects require team members to manage tasks, timelines, and shared responsibilities.
- Computing technologies allow people to communicate, share ideas, and solve problems in new ways.
- Interactive digital artifacts often require testing and revision to improve how users experience them.

Essential Questions:

- How does planning help teams organize and complete a collaborative digital project?
- Why is feedback important when improving a digital artifact?
- How does managing tasks and timelines help teams complete collaborative projects?
- How do digital tools change the way people communicate and share information?
- How can interactive pathways respond to the choices of a user?

Unit 2 Standards

STANDARD CODE	STUDENTS WILL KNOW, BE ABLE TO, AND UNDERSTAND:
<u>6-8.AP.PD.05</u>	• I can manage project tasks when working with others. • I can help complete a digital project by meeting timelines and shared responsibilities.
6-8.AP.PD.02	• I can use feedback from others to improve a digital artifact.
6-8.IC.SI.01	• I can collaborate with others to create a digital artifact.
6-8.IC.C.01	• I can explain how digital technologies change the way people communicate and share ideas.

priority standards indicated in **bold*

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Unit 3: Programming Foundations

Timeframe: 3 weeks

Unit Description: In this unit, students learn foundational programming concepts and apply computational thinking to solve problems with code. Students use block-based and introductory text-based programming environments to create simple programs that use variables, loops, and conditionals. They practice breaking complex problems into smaller steps, testing their programs, and using debugging strategies to identify and fix errors. Through guided coding activities, students build and refine programs that complete specific tasks while developing the foundational programming skills needed for more advanced computer science learning.

Enduring Understandings:

- Complex problems can be solved by designing algorithms and organizing steps before writing code.
- Breaking down large problems into smaller, manageable parts helps programmers design and build effective solutions.
- Programs use variables to store and update information while the program is running.
- Control structures such as loops and conditionals allow programs to repeat actions and respond to different situations.
- Testing and debugging help programmers identify errors and improve how a program works.

Essential Questions:

- How can we plan the steps of a program before we start coding?
- Why is it helpful to break a problem into smaller parts when creating a program?
- How do variables help programs store and change information?
- How do loops and conditionals change how a program behaves?
- How can testing and debugging help us improve our programs?

Unit 3 Standards

STANDARD CODE	STUDENTS WILL KNOW, BE ABLE TO, AND UNDERSTAND:
<u>6-8.AP.C.01</u>	• I can use loops to repeat actions in a program. • I can use conditionals to control what a program does.
6-8.AP.V.01	• I can create variables to store information in a program. • I can use variables to update or change information while a program runs.
6-8.AP.M.01	• I can break a problem into smaller steps when designing a program.
6-8.AP.PD.04	• I can test a program to see if it works correctly. • I can debug a program to identify and fix errors.
6-8.AP.A.01	• I can design an algorithm that shows the steps needed to solve a problem.

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Unit 4: 3D Design Foundations

Timeframe: 2 weeks

Unit Description: In this unit, students use 3D modeling software to create digital models that represent solutions to design challenges. Students learn how digital design tools allow users to build and modify three-dimensional models while considering space, layout, and safety. Through the design process, students plan and develop a digital model that represents their ideas. Students manage project tasks and timelines while using feedback to revise and improve their models as they explore how digital tools support problem solving and design.

Enduring Understandings:

- The effectiveness of a digital tool, such as 3D modeling software, depends on how well its design supports user interaction and the design process.
- Creating a detailed digital artifact requires managing tasks, timelines, and responsibilities to ensure a project is completed.
- Computing technologies can be used to solve real-world problems by helping people design solutions to practical challenges.
- Successful digital design often involves gathering information and feedback to improve how well a solution meets user needs.

Essential Questions:

- How can we evaluate digital design tools based on how users interact with them?
- Why is it necessary to manage tasks and deadlines when completing a multi-step design project?
- How can technology be used to help solve real-world problems?
- How can feedback from others help improve a digital design?

Unit 4 Standards

STANDARD CODE	STUDENTS WILL KNOW, BE ABLE TO, AND UNDERSTAND:
<u>6-8.CS.D.01</u>	• I can evaluate how the design of a digital tool supports user interaction. • I can explain how digital design tools help users create and modify digital models.
6-8.AP.C.02	• I can create and use procedures to organize my project.
6-8.AP.PD.05	• I can manage tasks and timelines when working on a design project.
6-8.AP.PD.02	• I can use feedback from others to improve a digital design.
6-8.IC.C.01	• I can explain how computing technologies help people solve real-world problems.

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