

# Grades 6, 7, 8

Adopted 2020

## STEM Technologies I

- 1. Incorporate safety procedures in handling, operating, and maintaining tools and machinery; handling materials; utilizing personal protective equipment; maintaining a safe work area; and following protocols for fire and electrical safety.** S1.FS.1

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- 2. Demonstrate effective workplace and employability skills, including communication, awareness of diversity, positive work ethic, problem-solving, time management, and teamwork.** S1.FS.2

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- 3. Explore the range of careers available in the field and investigate their educational requirements, and demonstrate job-seeking skills including resume-writing and interviewing.** S1.FS.3

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- 4. Demonstrate digital literacy by using digital and electronic tools appropriately, safely, and ethically.** S1.FS.4

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- 5. Participate in a Career and Technical Student Organization (CTSO) to increase knowledge and skills and to enhance leadership and teamwork.** S1.FS.5

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- 1. Describe the development of technology as a human activity that is the result of creatively meeting individual or collective needs.** S1.1

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- 2. Explain the close link between technology and creativity and how it results in innovation.** S1.2

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- 3. Describe technological systems, including input, processes, output, and feedback.** S1.3

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- 4. Explain how technological systems can be connected to one another.** S1.4

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- 5. Identify the difference between open loop and closed loop systems.** S1.5

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- 6. Identify positive and negative ways the use of technology affects humans.** S1.6

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- 7. Investigate the management of waste produced by technological systems as a societal issue.** S1.7

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- 8. Describe how technologies can be used to repair damage caused by natural disasters and to break down waste from various products and systems.** S1.8

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- 9. Describe the development of a technology from the demands, values, and interests of employers. S1.9**

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  - 10. Identify inventions and innovations that have evolved through slow and methodical processes of testing and refinement. S1.10**

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  - 11. Utilize the design process to produce products and systems. S1.11**

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  - 12. Identify the steps of an engineering design process. S1.12**

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  - 13. Identify criteria and constraints in a design. S1.13**

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  - 14. Describe how the design process is used to develop solutions for a problem. S1.14**

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  - 15. Describe the importance of documentation and how it is used to communicate ideas. S1.15**

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  - 16. Model designs to transform ideas into practical solutions. S1.16**

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  - 17. Obtain, evaluate, and share information to support the assertion that there is no perfect design. S1.17**

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  - 18. Practice brainstorming as a group problem-solving design process in which each person in the group presents ideas in an open forum. S1.18**

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  - 19. Identify two-dimensional and three-dimensional representations of the design solution. S1.19**

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  - 20. Describe the permanence of digital data and the importance of managing one's digital identity and reputation. S1.20**

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  - 21. Engage in positive, safe, legal, and ethical behaviors when using technology, including during social interactions online and when using networked devices. S1.21**

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  - 22. Identify research strategies to locate information and other resources for their intellectual and/or creative pursuits. S1.22**

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  - 23. Identify information from digital resources, using a variety of tools and methods to create a collection of artifacts that demonstrates meaningful connections or conclusions. S1.23**

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  - 24. Identify real-world issues, develop ideas, and pursue solutions to address the issues. S1.24**
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## STEM Technologies II

- 1. Incorporate safety procedures in handling, operating, and maintaining tools and machinery; handling materials; utilizing personal protective equipment; maintaining a safe work area; and following protocols for fire and electrical safety.** S2.FS.1

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- 2. Demonstrate effective workplace and employability skills, including communication, awareness of diversity, positive work ethic, problem-solving, time management, and teamwork.** S2.FS.2

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- 3. Explore the range of careers available in the field and investigate their educational requirements, and demonstrate job-seeking skills including resume-writing and interviewing.** S2.FS.3

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- 4. Demonstrate digital literacy by using digital and electronic tools appropriately, safely, and ethically.** S2.FS.4

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- 5. Participate in a Career and Technical Student Organization (CTSO) to increase knowledge and skills and to enhance leadership and teamwork.** S2.FS.5

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- 1. Investigate how technological systems can be connected to one another.** S2.1

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- 2. Explore different technologies that involve different sets of processes.** S2.2

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- 3. Gather and present information about ways corporations may create demand for a product by bringing it onto the market and advertising it.** S2.3

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- 4. Differentiate between positive and negative effects of technology usage on human beings, including their safety, comfort, choices, and attitudes about technology's development and use.** S2.4

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- 5. Analyze the management of waste produced by technological systems as a societal issue.** S2.5

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- 6. Research and communicate how technologies can be used to repair damage caused by natural disasters and to break down waste from the use of various products and systems.** S2.6

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- 7. Identify ethical issues associated with the development and use of technology.** S2.7

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- 8. Describe how social and cultural priorities and values are reflected in technological devices.** S2.8

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- 9. Explain how meeting societal expectations can be a driving force behind the acceptance and use of products and systems.** S2.9

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- 10. Design a plan to produce products and systems.** S2.10

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- 11. Create criteria and constraints in a design.** S2.11

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- 12. Use the design process to develop solutions for a problem.** S2.12

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  - 13. Employ brainstorming in a group problem-solving setting where each person presents design process related ideas in an open forum as part of the design process.** S2.13

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  - 14. Model two-dimensional and three-dimensional solutions of a design.** S2.14

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  - 15. Test and modify designs to transform ideas into practical solutions.** S2.15

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  - 16. Accurately identify different resources used in projects.** S2.16

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  - 17. Make a product or system to solve a problem and document the solution.** S2.17

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  - 18. Create and maintain a digital identity and reputation, demonstrating an awareness of the permanence of one's actions in the digital world.** S2.18

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  - 19. Demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.** S2.19

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  - 20. Manage their personal data to maintain digital privacy and security.** S2.20

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  - 21. Create strategies to locate information and other resources for their intellectual or creative pursuits.** S2.21

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  - 22. Generate ideas about real-world issues and problems and pursue answers and solutions to them.** S2.22
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### STEM Technologies III

- 1. Incorporate safety procedures in handling, operating, and maintaining tools and machinery; handling materials; utilizing personal protective equipment; maintaining a safe work area; and following protocols for fire and electrical safety.** S3.FS.1

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- 2. Demonstrate effective workplace and employability skills, including communication, awareness of diversity, positive work ethic, problem-solving, time management, and teamwork.** S3.FS.2

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- 3. Explore the range of careers available in the field and investigate their educational requirements, and demonstrate job-seeking skills including resume-writing and interviewing.** S3.FS.3

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- 4. Demonstrate digital literacy by using digital and electronic tools appropriately, safely, and ethically.** S3.FS.4

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- 5. Participate in a Career and Technical Student Organization (CTSO) to increase knowledge and skills and to enhance leadership and teamwork.** S3.FS.5

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- 1. Design a technological system that can be connected to another system.** S3.1

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- 2. Design a variety of technologies that involve different sets of processes.** S3.2

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  - 3. Demonstrate how every part of a system relates to another.** S3.3

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  - 4. Analyze malfunctions of any part of a system that may affect the system's function and quality.** S3.4

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  - 5. Compare and contrast trade-offs as a decision process and describe the need for careful compromises among competing factors.** S3.5

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  - 6. Perform basic maintenance on systems within the program.** S3.6

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  - 7. Analyze the ways, both positive and negative, that the use of technology affects humans, including their safety, comfort, choices, and attitudes about technology's development and use.** S3.7

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  - 8. Critique the management of waste produced by technological systems as a societal issue.** S3.8

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  - 9. Design a solution to alleviate and/or repair the damage caused by various disasters.** S3.9

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  - 10. Make decisions about the development and use of technologies that put environmental and economic concerns in direct competition with one another.** S3.10

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  - 11. Develop a plan to produce products and systems.** S3.11

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  - 12. Critique criteria, constraints, and tradeoffs in a design.** S3.12

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  - 13. Synthesize elements of the design process to develop solutions for a problem.** S3.13

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  - 14. Analyze results of solutions to problems using the steps in the design process.** S3.14

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  - 15. Design two-dimensional and three-dimensional representations of a design solution.** S3.15

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  - 16. Evaluate designs to transform ideas into practical solutions.** S3.16

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  - 17. Critique a product or system and document the evaluation.** S3.17

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  - 18. Apply a design process to solve problems in and beyond the classroom.** S3.18

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  - 19. Test, evaluate, and modify a design in relation to criteria and constraints.** S3.19

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  - 20. Cultivate a digital identity and reputation, demonstrating an awareness of the permanence of one's actions in the digital world.** S3.20

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- 21. Manage their personal data to maintain digital privacy and security, demonstrating awareness of data-collection technology used to track their navigation online. S3.21**

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  - 22. Employ research strategies to locate information and other resources for their intellectual or creative pursuits. S3.22**

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  - 23. Evaluate the accuracy, perspective, credibility, and relevance of information, media, data, or other resources. S3.23**

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  - 24. Curate information from digital resources using a variety of tools and methods to create a collection of artifacts that demonstrate meaningful connections or conclusions. S3.24**

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  - 25. Develop solutions to real-world issues by analyzing ideas and solutions. S3.25**