STEM Technologies I

Course duration (to be determined by LEA)	6 weeks (24 hours) OR 9 weeks (35 hours) OR 1 semester (70 hours) OR 1 year (140 hours)
Grade Level(s)	6-8
Prerequisite(s)	N/A

STEM Technologies I provides students with knowledge and processes needed to begin their attainment of technological literacy and awareness of careers in science, technology, engineering, and mathematics. Students gain knowledge and skills in the application, design, production, and assessment of products, services, and systems in a variety of areas.

Foundational standards, shown in the chart below, are an important part of every course. Through these standards, students learn and apply safety concepts, explore career opportunities and requirements, practice the skills needed to succeed in the workplace, learn and practice essential digital literacy skills, develop leadership, and take advantage of the opportunities afforded by Career and Technical Student Organizations (CTSOs). Students in this course may be affiliated with the Technology Student Association (TSA). The foundational standards are to be incorporated throughout the course.

Foundational Standards	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. 2. Demonstrate effective workplace and employability skills, including communication, awareness of diversity, positive work ethic, problem-solving, time management, and teamwork. 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. 4. Demonstrate digital literacy by using digital and electronic tools appropriately, safely, and ethically. 5. Participate in a Career and Technical Student Organization (CTSO) to increase knowledge and skills and to enhance leadership and teamwork.

STEM Technologies I Content Standards

Each content standard completes the stem *"Students will…"*

Scope of Technology	1. Describe the development of technology as a human activity that is the result of creatively meeting individual or collective needs. 2. Explain the close link between technology and creativity and how it results in innovation. 3. Describe technological systems, including input, processes, output, and feedback. 4. Explain how technological systems can be connected to one another. 5. Identify the difference between open loop and closed loop systems.
Technology and Society	6. Identify positive and negative ways the use of technology affects humans. 7. Investigate the management of waste produced by technological systems as a societal issue. 8. Describe how technologies can be used to repair damage caused by natural disasters and to break down waste from various products and systems. 9. Describe the development of a technology from the demands, values, and interests of employers. 10. Identify inventions and innovations that have evolved through slow and methodical processes of testing and refinement.
Design Process	11. Utilize the design process to produce products and systems. 12. Identify the steps of an engineering design process.

	13. Identify criteria and constraints in a design. 14. Describe how the design process is used to develop solutions for a problem. 15. Describe the importance of documentation and how it is used to communicate ideas. 16. Model designs to transform ideas into practical solutions. 17. Obtain, evaluate, and share information to support the assertion that there is no perfect design. 18. Practice brainstorming as a group problem-solving design process in which each person in the group presents ideas in an open forum. 19. Identify two-dimensional and three-dimensional representations of the design solution.

Digital Literacy	20. Describe the permanence of digital data and the importance of managing one's digital identity and reputation. 21. Engage in positive, safe, legal, and ethical behaviors when using technology, including during social interactions online and when using networked devices. 22. Identify research strategies to locate information and other resources for their intellectual and/or creative pursuits. 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. 24. Identify real-world issues, develop ideas, and pursue solutions to address the issues.