

**Career and Technical Education**

ALSDE - approved CTE Course of Study Standards linked [HERE](#).

**Supplemental Resources:** Subject area courses may utilize the following supplemental resources:

**Below are the adopted textbooks for CTE courses as well as the course outline and description.**

Course	Textbook Title	Author	Edition	Publisher	Copyright Year	Tentative Course of Study	Course Descriptions
APPLICATION OF ENGINEERING AND TECHNOLOGY	ENGINEERING FUNDAMENTALS	Brown, Brown, Berkeihiser	3rd Edition	GOODHEART	2023	<a href="#">2020 Alabama Course of Study: STEM: Science, Technology, Engineering, and Mathematics</a>	Applications of Engineering and Technology offers students an investigative view of the engineering profession and the fundamental skills utilized in the field. Students continue investigating engineering disciplines and related career paths. Students will expand leadership and teamwork skills through creativity, collaboration, communication, and critical thinking. Additionally, students will increase their understanding of science, technology, engineering, and mathematics (STEM) principles used in problem-solving through the engineering design process.
BASIC PROGRAMMING FOR ENGINEERS	ENGINEERING FUNDAMENTALS	Brown, Brown, Berkeihiser	3rd Edition	GOODHEART	2023	<a href="#">2020 Alabama Course of Study: STEM: Science, Technology, Engineering, and Mathematics</a>	A one-credit course designed to provide students with an introduction to computer tools and computer programming languages used by engineers. Emphasis is placed on language fundamentals, algorithm analysis and solutions, program structures, data structures, object-oriented/modular structure, and overviews of computer hardware and software tools.
CAPSTONE OF ENGINEERING AND TECHNOLOGY	ENGINEERING FUNDAMENTALS	Brown, Brown, Berkeihiser	3rd Edition	GOODHEART	2023	<a href="#">2020 Alabama Course of Study: STEM: Science, Technology, Engineering, and Mathematics</a>	Capstone of Engineering and Technology allows students to expand and apply previous knowledge to solve engineering problems. In this course, students will conduct research and develop solutions to complete a capstone project in the engineering field. Project-based learning reinforces the application of science, technology, engineering, and mathematics (STEM) concepts and skills. Technology applications are utilized in this course to enable students to visualize, model, prototype, solve, and report on comprehensive design problems. Collaboration and teamwork are vital components of the producing the capstone project.
ENVIRONMENTAL ENGINEERING	ENGINEERING FUNDAMENTALS	Brown, Brown, Berkeihiser	3rd Edition	GOODHEART	2023	<a href="#">2020 Alabama Course of Study: STEM: Science, Technology, Engineering, and Mathematics</a>	Environmental Engineering is designed to offer students an overview of environmental sustainability. It allows students to explore training, education, and career opportunities related to environmental engineering. Students will investigate and design solutions in response to real-world challenges related to clean and abundant drinking water, food supply, and renewable energy. Applying their knowledge through hands-on activities and simulations, students research and design potential solutions to these real-life challenges. And finally, students will describe the careers associated with environmental engineering and what roles they play in society.
FOUNDATIONS OF ENGINEERING AND TECHNOLOGY	ENGINEERING FUNDAMENTALS	Brown, Brown, Berkeihiser	3rd Edition	GOODHEART	2023	<a href="#">2020 Alabama Course of Study: STEM: Science, Technology, Engineering, and Mathematics</a>	Foundations of Engineering and Technology offers students an exploratory view of the engineering profession and the fundamental skills utilized in the field. Students investigate various engineering disciplines and related career paths. Students will develop leadership and teamwork skills through creativity, collaboration, communication, and critical thinking. Additionally, students will increase their understanding of science, technology, engineering, and mathematics (STEM) principles used in problem-solving as they use the engineering design process. Upon completion of this course students may be ready to earn a credential in a Computer-Aided Design (CAD) software such as Autodesk Inventor, SolidWorks, or SolidEdge.
ROBOTIC SYSTEMS	ENGINEERING FUNDAMENTALS	Brown, Brown, Berkeihiser	3rd Edition	GOODHEART	2023	<a href="#">2020 Alabama Course of Study: STEM: Science, Technology, Engineering, and Mathematics</a>	Robotic Systems is designed to offer students an overview of robotics. It allows students to explore training, educational, and career opportunities related to the automation of robotics in industry. Students will investigate and create a plan to achieve industry certifications, incorporate proper ethics in submitted projects, demonstrate basic technical skills necessary for following safety precautions, utilize engineering principles and fundamental physics, and demonstrate the technological product design processes and methodologies of systems.
CTE LAB IN STEM	ENGINEERING FUNDAMENTALS	Brown, Brown, Berkeihiser	3rd Edition	GOODHEART	2023	<a href="#">2020 Alabama Course of Study: STEM: Science, Technology, Engineering, and Mathematics</a>	This one-credit course is an extended laboratory experience to address the advancement and specialization of careers within STEM through individualized or small group instruction. This course allows students to enhance the essential and intermediate skills learned through program courses within the career cluster and prepare for industry credentialing opportunities.
STEM TECHNOLOGIES I	FOUNDATIONS OF ENGINEERING AND TECHNOLOGY	Wright, Stremmel, Grubbs	7th Edition	GOODHEART	2019	<a href="#">2020 Alabama Course of Study: STEM: Science, Technology, Engineering, and Mathematics</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.
STEM TECHNOLOGIES II	FOUNDATIONS OF ENGINEERING AND TECHNOLOGY	Wright, Stremmel, Grubbs	7th Edition	GOODHEART	2019	<a href="#">2020 Alabama Course of Study: STEM: Science, Technology, Engineering, and Mathematics</a>	STEM Technologies II provides students with knowledge and processes needed to further their attainment of technological literacy and awareness of careers in science, technology, engineering, and mathematics. Students gain skills in the application, design, production, and assessment of products, services, and systems in a variety of areas.
STEM TECHNOLOGIES III	FOUNDATIONS OF ENGINEERING AND TECHNOLOGY	Wright, Stremmel, Grubbs	7th Edition	GOODHEART	2019	<a href="#">2020 Alabama Course of Study: STEM: Science, Technology, Engineering, and Mathematics</a>	STEM Technologies III provides students with knowledge and processes needed to extend their attainment of technological literacy and awareness of careers in science, technology, engineering, and mathematics. Students gain skills in the application, design, production, and assessment of products, services, and systems in a variety of areas.
WE BUILD IT BETTER	ALABAMA FLIGHT WORKS	NA	NA	NA	NA	<a href="https://www.webuilditbetter.org/middle-school">https://www.webuilditbetter.org/middle-school</a>	We Build It Better provides students with the knowledge that goes along with understanding the process behind developing a new product. Students learn foundational skills so they can create unique solutions to real-world industry-based challenges. This course is powered by Flight Works Alabama.Â