



Mechanics & Safety Sciences

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Emergency Preparedness

Personal Safety

- Describe how to prevent threats to one's personal safety
- Create a plan to respond in case of a personal safety incident

Public Safety

- Explain the role public safety officers play in keeping people safe
- Describe how best to help others in a public safety emergency
- Create a list of people who help with emergencies

Workplace Safety

Workplace Safety Basics

- Describe the basic safety procedures in a job setting where physical safety risks are present (e.g., agriculture, forestry, landscaping, manufacturing, etc.)
- Select appropriate personal protective equipment (PPE) for safety risks in specific job settings

Safety Awareness

- Interpret caution signs
 - Categorize safety procedures for workplace environments
- Identify OSHA regulations for a specific business or setting related to construction, mechanics, manufacturing, or agriculture



Engineering Fundamentals

Engineering Design

- Describe the function of each of the steps in the engineering design process
- Outline the manufacturing process for a specific product from raw materials to the finished product

Measurements

- Demonstrate ability to convert inches to millimeters and ounces to grams
- Create a chart visualizing the comparison of metric and US Customary System measurements
- Demonstrate the appropriate use of measuring tools (ruler, tape measure, caliper)
- Demonstrate the ability to add measurements that contain fractions
- Explain the importance of accuracy and precision in measurements

Mechanical Systems

Structures

- Select appropriate materials for building specific structures
- Create a scaled drawing for a specific structure

Electricity

- Explain when we use specific electrical components in a system
- Differentiate between AC and DC electrical systems, where they are commonly found, and their uses
- Explain the appropriate procedures for maintaining and storing batteries

Plumbing

- Explain when to use specific plumbing components in a system (fixtures, fittings, etc.)
- Identify water supply and drainage needs in a system

Engines and Machinery

- Compare and contrast different engines
- Explain the combustion cycle for four-cycle gasoline, two-cycle gasoline, and diesel engines
- Classify engines as two-cycle or four-cycle
- Diagnose a simple malfunction in a machine

Careers and Skills

- Describe the various careers related to construction, engines and mechanics including career preparation (license, certifications, etc.)
- List the business skills needed for a career in building trades
- Describe what constitutes a contract between a service provider and a client
- Create a bill of materials and outline the process needed to construct a project
- Communicate the various steps required to construct a project



Programs in agriculture and natural resources, 4-H youth development, family and consumer sciences, and resource development. University of Tennessee Institute of Agriculture, U.S. Department of Agriculture and county governments cooperating. UT Extension provides equal opportunities in programs and employment.