

# Engineering and Safety Science

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## Emergency Preparedness

### Personal Safety

- Provide at least three behaviors that someone who is safety conscious would exhibit.
- Identify potential hazards to personal safety at home, at school and in a workplace.

### Public Safety

- Create a poster with basic rules for being safe in public.
- Explain the role public safety officers play in keeping people safe.

### Natural Disasters

- Define and give examples of a natural disaster.
- Identify types of natural disasters that are common in Tennessee.

## Workplace Safety

### Workplace Safety Basics

- Illustrate the basic steps in a manufacturing process or other job setting where physical safety risks are present (e.g., agriculture, forestry, landscaping, etc.).
- Identify points for safety awareness in a workplace.

### Occupational Safety and Health Administration (OSHA)

- Create a timeline of workplace safety history.

## Engineering Fundamentals

### Engineering Technology and Careers

- Explain the function of engineering programs/software, such as ArcGIS, AutoCAD and AutoDesk Inventor.
- Identify major categories or types of engineering careers.



## Engineering Design

- Identify the steps in the engineering design process.
- Recognize the value of following processes, such as the engineering design process.

## Physics

- Define the following terms: kinematics, friction, work, energy, net force, momentum, equilibrium and thermodynamics.
- Differentiate between scalar and vector values.
- Identify the major subject areas within the physics field.
- Give examples of both static and dynamic forces.

## Measurements

- List the major units used in different measurement systems for length, time, mass and temperature.
- Define the following terms: significant figures, precision, accuracy.
- Differentiate between mass and weight.
- Perform basic unit conversions between SI and English units.
- List the standard tools used to perform measurements.

## Drafting and Spatial Data

- Define the following terms: drafting, isometric, orthogonal and spatial manipulation.
- Value the importance of a properly completed engineering drafting.
- Identify methods of using computer aided drafting.

## Transportation

### Modes of Transportation

- Identify modes of transportation associated with each of the following: water, railway, highway/greenway/roadway, airway and supply chain.

### Car and Bicycle Mechanics

- Match the major parts of a car and bicycle to a parts diagram.

### Engines

- Classify different types of engines, including diesel, gasoline and steam.

### Machines

- Distinguish between simple and complex machines.
- Give examples of simple and complex machines.

## Workplace Building Trades and Home Repair

- Describe the various careers and jobs related to construction and grounds management.
- List the business skills needed for a career in building trades and home repair.
- Describe what entails a contract between a service provider and a client.



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