

Engineering and Safety Science

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Andrea Ludwig, Stormwater Specialist, University of Tennessee Extension

Jennifer Richards, Curriculum Specialist, University of Tennessee Extension

James Swart, Graduate Assistant, University of Tennessee Extension

Emergency Preparedness

Personal Safety

- Prevent threats to personal safety.
- Create a plan to respond in case of a personal safety incident.

Public Safety

- Discover how to help others in a public safety emergency.
- Create a list of people who help with emergencies.

Natural Disasters

- Develop a home safety plan for a natural disaster.
- Research famous natural disasters.

Workplace Safety

Workplace Safety Basics

- Outline a basic workflow process for a given project from start to finish.
- Summarize the step-by-step processes followed in given field of work.
- Illustrate the manufacturing process in a flow chart.

Safety Awareness

- Interpret caution signs.
- Categorize safety procedures for workplace environments.

Occupational Safety and Health Administration (OSHA)

- Practice the use of national standards.
- Modify OSHA standards for a given workplace scenario.



Engineering Fundamentals

Engineering Technology and Careers

- Research the requirements for careers in engineering that interest you.
- Identify situations in which you would use various engineering programs/software.
- Describe each of the major disciplines within engineering fields, such as civil, chemical, environmental, mechanical, etc.

Engineering Design

- Describe the function of each of the steps in the engineering design process.

Physics

- Illustrate examples in which Newton's first, second and third laws of motion would apply.
- Identify situations where each of the laws of thermodynamics would apply.

Measurements

- Convert between standard and metric measurements for length, time, mass and temperature.
- Define the terms: dimensional analysis and engineering estimation.
- Understand that all measurements can be expressed as a product of mass, time and length.
- Create an equivalence table between the SI system of units and the English system of units.
- Describe the function of tools used to make measurements including a micrometer, thermometer and scale.
- Explain the difference between accuracy and precision.

Drafting and Spatial Data

- Complete an engineering draft of a project, complete with isometric and orthogonal views.
- Compare the various ways of manipulating a drawing (translation, rotation, scaling).

Transportation

Modes of Transportation

- Connect modes of transportation to an engineering concept.
- Provide an example of the major function of the different modes of transportation.

Car and Bicycle Mechanics

- Explain each car/bicycle part's major purpose.
- Describe how different parts function together.

Engines

- Compare and contrast different engines.
- Explain the combustion cycle for different types of engines.
- Classify engines as 2-cycle or 4-cycle.

Machines

- Solve a simple machines malfunction.

Workplace Building Trades and Home Repair

- Describe the career preparation for the professionals involved with building a house.
- Create elements of a business plan for a specific building trade to include an example contract, advertisement means and example workday schedule.



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