

Engineering and Design

Students recognize historical and current events related to engineering design and their effects on society. **EGD1**

- 1 Know historical and current events that have relevance to engineering and design. **EGD1.1**
- 2 Understand the development of graphical language in relation to engineering design. **EGD1.2**

Students understand the effective use of engineering design equipment. **EGD2**

- 1 Use the appropriate methods and techniques for employing all engineering design equipment. **EGD2.1**
- 2 Apply conventional engineering design processes and procedures accurately appropriately and safely. **EGD2.2**
- 3 Apply the concepts of engineering design to the tools, equipment, projects, and procedures of engineering and design projects. **EGD2.3**

Students understand measurement systems as they apply to engineering design. **EGD3**

- 1 Know how the various measurement systems are used in engineering drawings. **EGD3.1**
- 2 Understand the degree of accuracy necessary for engineering design. **EGD3.2**

Students understand how the principles of force, work, rate, power, energy and resistance relate to mechanical, electrical, fluid and thermal engineering systems. **EGD4**

- 1 Know the six simple machines and their applications. **EGD4.1**
- 2 Know how energy is transferred; know the effects of resistance in mechanical, electrical, fluid and thermal systems. **EGD4.2**
- 3 Solve problems by using the appropriate units applied in mechanical, electrical, fluid and thermal engineering systems. **EGD4.3**

Students understand the effective use of engineering design equipment. **EGD5**

- 1 Understand the steps in the design process. **EGD5.1**
- 2 Determine what information and principles are relevant to a problem and its analysis. **EGD5.2**
- 3 Choose between alternate solutions in solving a problem and be able to justify the choices made in determining a solution. **EGD5.3**

4 Understand the process of developing multiple details into a single solution. EGD5.4

5 Build a prototype from plans and test it. EGD5.5

6 Evaluate and redesign a prototype on the basis of collected test data. EGD5.6

Students understand industrial engineering processes, including the use of tools and equipment, methods of measurement and quality assurance. EGD6

1 Know the common structure and processes of a quality assurance cycle. EGD6.1

2 Understand the major manufacturing processes. EGD6.2

3 Use tools, fasteners and joining systems employed in selected engineering processes. EGD6.3

4 Estimate and measure the size of objects in both Standard International and United States units. EGD6.4

5 Calibrate and measure objects by using precision measurement tools and instruments. EGD6.5

Students understand the concepts of physics that are fundamental to engineering technology. EGD7

1 Understand Newton's laws and how they affect and define the movement of objects. EGD7.1

2 Understand how the laws of conservation of energy and momentum provide a way to predict and describe the movement of objects. EGD7.2

Students understand the fundamentals of systems and products as they are developed and released to production and marketing. EGD8

1 Understand the process of product development. EGD8.1

2 Understand charting and the use of graphic tools in illustrating the development of a product and the processes involved. EGD8.2

Students understand the effective use of engineering technology equipment. EGD9

1 Use methods and techniques for employing all engineering technology equipment appropriately. EGD9.1

2 Apply conventional engineering technology processes and procedures accurately, appropriately and safely. EGD9.2

3 Apply the concepts of engineering technology to the tools, equipment, projects and procedures of the program. EGD9.3
