

11-12 Engineering Research and Design

Engineering Pathway **ERD:1-2**

- a** Explain professional, legal, and ethical responsibilities in the field of engineering, including the need for a diverse work force. **ERD1.A**
- b** Demonstrate effective skills for seeking employment in a specific engineering pathway, including the attributes that contribute to a successful engineering career. **ERD 1.B**

Project Proposal **ERD:3**

- a** Create a formal, narrative proposal for an engineering design brief. **ERD:3A**

Reserach **ERD:4**

- a** Conduct independent research related to a chosen engineering design brief. **ERD:4A**

Design and Evaluation **ERD: 5-6**

- a** Demonstrate the engineering design process, including defining the problem, developing and selecting solutions, constructing prototypes testing, evaluating and documenting results, and redesigning as needed. **ERD:5A**
- b** Apply a standard experimental method to the evaluation process of a given engineering design. **ERD:6B**

Product and Process **ERD:7-10**

- a** Create a written technical report and a multimedia presentation for an engineering design problem, concept, or issue using industry recognized guidelines.
- b** Demonstrate the correct use and selection of tools, materials, procedures, and equipment in the construction of models, prototypes, and finished products.
- c** Apply correct drafting techniques using computer-aided design (CAD) programs to produce plans, diagrams, and working drawings for the construction of models, prototypes, and final products.
- d** Design a project portfolio that includes all project-related documentation.