EGR 220 - ENGINEERING PRACTICE I

Course Description

Students develop the laboratory and computer skills necessary for success in engineering. Topics include benchmarking, prototyping, data acquisition devices and methods, data post processing and interpretation using engineering software, and use of finite element analysis methods. Group 2 course.

Credit Hours

2

Contact Hours

4

Lab Hours

4

Required Prerequisites

EGR 113 and EGR 201 (both may be taken concurrently), ENG 111.

General Education Outcomes supported by this course

Critical Thinking - Direct

Course Learning Outcomes

Knowledge:

- Develop and demonstrate a working knowledge of engineering analysis software, such as Matlab and SolidWorks FEA.
- Understand the principles of precision, accuracy, and repeatability in lab exercises.
- Be capable of identifying sources of error in experimental data.

Application:

- Use of basic tools and 3-D printers to construct prototypes of design proposals.
- Select and install the correct measurement equipment.
- Select and utilize adequate data acquisition schemes to provide appropriate spatial and temporal data resolution.
- Apply knowledge of analysis software to evaluate both test data and solid models.
- Draw conclusions and clearly communicate findings.

Integration:

- Principles learned in previous courses, such as basic FEA, solid modelling, report writing, and rigid body analysis, will be built upon through application in laboratory based projects.
- Disassembly and analysis of consumer products to identify approaches for satisfying user needs, engineering performance, and manufacturing.

Human Dimension:

- Practice and refine teamwork skills through course projects.

Caring - Civic Learning:

- Develop an appreciation for the importance of ethical experimental design and accurate data interpretation.

Learning How to Learn:

- Be open-ended, requiring students to utilize creative solving processes.
- Apply experiential learning to design, experimentation, data acquisition, and implementation of lab projects.
- Practice finding, vetting, and utilizing external sources of information.