MOHAWK VALLEY COMMUNITY COLLEGE UTICA, NEW YORK

ENGINEERING SCIENCE DESIGN ES 175

Catalog Description

ES175 Engineering Science Design C 2, P 3, Cr 3

This course covers project proposal writing, project costing, drawing preparation and project specifications, group dynamics, and making a product. The course practicum may include assignment to a practicing engineer. Required for Engineering Science Students after completing the equivalent of one full-time semester.

Prerequisite: ES161 Introduction to Engineering and Science

Student Learning Outcomes

*Upon successful completion of the course, the student will be able to:*

1. Apply techniques of technical writing, including completion of an engineering project report.
2. Demonstrate techniques of public speaking, by preparing and giving a professional oral presentation.
3. Apply the concepts of open-ended design problems, project scheduling, team dynamics, and product risks.
4. Generate a design that meets the design constraints, capture design intent in technical documents, and evaluate the proposed design.
5. Produce a physical product and/or process according to the design requirements.
6. Gather data related to the performance of the product/process and perform appropriate data analysis.

Major Course Topics

Course Introduction Overview of Development

Ethics

Social Context of Design

Specification Development Product Documents

Technical Documentation Solid Modeling

2D Drawings Design Process

Scheduling - GANTT Charts, PERT Networks

Decision Matrices

Designing for Manufacturing and Production

Product Safety and Risk Process Planning

Mathematical Models Computer Modeling Optimization Methods MatLab Applications

Design Evaluation, Reverse Engineering

Verification of Models

Applied Engineering Design Professional Practices