ME/CEE 1770 Introduction to Engineering Graphics and Visualization (Required)

Catalog Description: ME/CEE 1770 Introduction to Engineering Graphics and Visualization (2-3-3)

Crosslisted with AE, CEE, and ME.

Prerequisites/Corequisites: None

Introduction to engineering graphics and visualization including sketching, line drawing, and solid modeling. Development and interpretation of drawings and specifications for product realization.

Textbook: Dennis K. Lieu and Sheryl Sorby, *Visualization, Modeling, and Graphics for Engineering Design*, 1st Edition, Delmar, Cengage Learning, 2009.

Topics Covered:

1. Introduction: need for spatial representation and visualization.
2. Drawing projections: multiview orthographic, isometric, etc.
3. Three dimensional representations and model construction processes.
4. Graphic and written requirements for product realization.

Course Outcomes:

Outcome 1: Students gain familiarity with the elements of 3D visualization and good sketching technique.

1.1 Students are able to prepare elementary sketches of 3D objects with correct interpretation of 3D geometry and topology and comprehend a sketch.

Outcome 2: Students gain familiarity with the basic structure and content of engineering drawings.

2.1 Students are able to sketch and use 2-D computer-aided design software to draw multiview orthographic and other projections including isometric, auxiliary, and sectional views, and are able to properly provide dimensions and tolerances and common drawing notation to a drawing.

Outcome 3: Students get hands-on experience with solid modeling and visualization.

3.1 Students are able to generate 3-D parametric, feature-based solid models and generate two dimensional views from these three dimensional solids.

3.2 Students are able to generate assembly models and use rendering techniques and create simulations and animations of the moving parts of an assembly.

Outcome 4: Students are exposed to the visual, written, and team work requirements associated with engineering product realization.

4.1 Students understand requirements for complete product specifications (e.g., drawings and technical specifications) and can read, understand, and interpret drawings (e.g., assembly, articulation, quantity take-offs).

4.2 Students are able to work in a team project and understand the importance of communication, scheduling, and attainment of project goals.

Correlation between Course Outcomes and Student Outcomes:

ME/CEE 1770											
	Mechanical Engineering Student Outcomes										
Course Outcomes	a	b	c	d	e	f	g	h	i	j	k
Course Outcome 1.1											X
Course Outcome 2.1					X						X
Course Outcome 3.1											X
Course Outcome 3.2											X
Course Outcome 4.1					X						X
Course Outcome 4.2				X			X				X

GWW School of Mechanical Engineering Student Outcomes:

(a) an ability to apply knowledge of mathematics, science and engineering

(b) an ability to design and conduct experiments, as well as to analyze and interpret data

(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

(d) an ability to function on multidisciplinary teams

(e) an ability to identify, formulate, and solve engineering problems

(f) an understanding of professional and ethical responsibility

(g) an ability to communicate effectively

(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

(i) a recognition of the need for, and an ability to engage in life-long learning

(j) a knowledge of contemporary issues

(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

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