ME 4182 Capstone Design (Required)

Catalog Description: ME 4182 Capstone Design Project (1-6-3)
Prerequisites: ME 2110 Creative Decisions and Design and ME 3180 Machine Design or ME 4315 Energy Systems Design
Co-requisite: ME 4210 Manufacturing Processes and Engineering
Teams apply a systematic design process to real multidisciplinary problems. Problems selected from a broad spectrum of interest areas, including biomedical, ecological, environmental, mechanical, and thermal.

Textbook: No text. Suggested reference is *Mark's Standard Handbook*.

Topics Covered:

1. Project selection.
2. Specification formulation within given constraints
3. Project planning.
4. Product and patent research.
5. Manufacturing considerations.
6. Engineering standards.
7. Environmental, sustainability, health, and safety considerations.
8. Proof-of-Concept methods.

Course Outcomes:

Outcome 1: To enable students to synthesize the knowledge and skills acquired in their undergraduate curriculum, in the context of a realistic design project.

1.1 Students will be able to identify relevant topics from earlier courses, then apply them to their design project.
1.2 Students will be able to critically evaluate designs using engineering criteria and predictive usage.

Outcome 2: To develop in students the ability to address a broad range of requirements, including most of the following: performance, economic, marketing, environmental, sustainable, manufacturing, ethical, safety, and social and political.

2.1 Students will demonstrate an ability to identify and specify design requirements, from general problem descriptions within the applicable realistic constraints.
2.2 Students will be able to systematically develop a design from the problem statement to a detailed, proof-of-concept design meeting all of the specifications.

Outcome 3: To prepare for the professional design environment by learning how to learn, through teamwork and by enhancing student's communication abilities.

3.1 Students will be able to clearly communicate design ideas and information.
3.2 Students will be able to work collaboratively and responsibly as a team.
3.3 Students will demonstrate the ability to facilitate their learning by identifying design issues and questions that require additional investigation, then formulating appropriate courses of action.

Correlation between Course Outcomes and Program Educational Outcomes:

ME 4182												
	Mechanical Engineering Program Educational Outcomes											
Course Outcomes	a	b	c	d	e	f	g	h	i	j	k	l
Course Outcome 1.1	X		X	X	X	X	X	X	X	X	X	X
Course Outcome 1.2	X		X	X	X	X	X	X	X	X	X	X
Course Outcome 2.1			X	X	X	X	X			X	X	X
Course Outcome 2.2	X		X	X	X	X	X		X	X	X	X
Course Outcome 3.1							X					X
Course Outcome 3.2				X			X					X
Course Outcome 3.3								X	X			

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