IHE 7020 – Systems Engineering and Analysis

Course Description
Exposes students to the design of systems and tools for the analysis of complex technological systems.

Offered both face-to-face and online
Graduate level – 3 credit hours

Course Learning Objectives
Students enrolled in this course will learn to:

- Develop an appreciation for systems engineering in the organizational context;
- Understand the engineering design process;
- Understand the human-centered design process;
- Gain Awareness of tools for the systems engineering design process;
- Gain Awareness of tools and techniques supporting the product definition, design, and development process.
- Develop an appreciation of the need for concise, but clear and comprehensive, communication of ideas, designs, and other material.

Course Learning Outcomes
Upon successful completion of this course, students can:

- Develop an appreciation for systems engineering in the organizational context;
- Understand the engineering design process;
- Understand the human-centered design process;
- Gain Awareness of tools for the systems engineering design process;
- Gain Awareness of tools and techniques supporting the product definition, design, and development process.
- Develop an appreciation of the need for concise, but clear and comprehensive, communication of ideas, designs, and other material.

Tentative Weekly Schedule

Week 1	Course Administration & Introduction
	Development Processes and Organizations
Week 2	Product Planning
	Product Planning
Week 3	Customer Needs & House of Quality
	House of Quality
Week 4	House of Quality
	Quantitative Forecasting
Week 5	Assignment 1 Feedback & RWW
	Qualitative Forecasting

Week 6	Concept Generation & Selection
	Concept Generation & Testing
Week 7	Exam 1 Review
	Exam 1
Week 8	Exam1 Feedback
	Human Centered Design (HCD)
Week 9	Human Centered Design
	Product Architecture
Week 10	Systems Engineering and Covid
	Design for X
Week 11	Design for X
	Robust Design
Week 12	Robust Design
	Exam 2 Review
Week 13	Exam 2
	Intellectual Property Rights for Engineers
Week 14	Proposal Writing 101
	Semester Review
Week 15	Final Exam