**IHE 7360 – Cognitive Systems Engineering**

**Course Description**
Students will acquire knowledge and experience that will aid them in developing quantitative means of modeling, analyzing, and predicting the performance of human-machine systems. Topics include human-system integration, automation, cognitive engineering, discrete control modeling, cognitive field research, information processing, decision theory, heuristics and biases, and expert and analytical reasoning.

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

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

- Students will be able to:

- Apply cognitive engineering techniques for improved human-system integration

- Develop quantitative means of modeling, analyzing, and predicting the performance of human-machine systems.

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

- Students will be able to:

- Apply cognitive engineering techniques for improved human-system integration

- Develop quantitative means of modeling, analyzing, and predicting the performance of human-machine systems.

**Tentative Weekly Schedule**

Whether taught in-person, online, or partially online, the course outline remains the same.

| Week | Topic |
| --- | --- |
| Week 1 | Intro, Cognitive Systems Engineering |
| Week 2 | Cognitive Field Research; Naturalistic Decision-Making |
| Week 3 | Joint Cognitive Systems |
| Week 4 | Discrete Control |
| Week 5 | Information Processing Models |
| Week 6 | Decision Making |
| Week 7 | Midterm; Project Work |
| Week 8 | Expert & Analytical Reasoning |
| Week 9 | Human Interaction with Automation |
| Week 10 | Supervisory Control |

Week 11    Heuristics & Biases
Week 12    Project Work
Week 13    Review and Project Presentations
Week 14    Project Presentations
Week 15    Final Exam