SYSTEMS DESIGN ENGINEERING

Cognitive Ergonomics – Advanced Topics

SYDE 740 - *Topic 7* **Fall**

All engineered systems have a human component of some description – even those that might seem to be without an obvious human participant (e.g. an automated system still needs someone to start, monitor, stop, and maintain the system). This course is designed for students who have a keen interest in understanding how understanding human information processing can be applied in engineering design and as a variable worth considering in engineering research.

The course focus is on the role cognitive ergonomic principles and research play in the assessment of human performance in simple and complex cognitive tasks, as well as the design of information displays that go along with those tasks. Through readings, written assignments, and class discussions, students will explore the relationships between various components of human information processing and the impact those relationships have on the performance of everyday cognitive-based tasks. By the end of the course, the students should be able to apply basic theories, principles, and research of cognitive ergonomics to the analysis of that contribute to the field of cognitive ergonomics.

Main topics to be covered include:
Signal Detection Tasks and Information Processing; Tracking & Target Location Tasks; Navigation and Control Tasks; Communication Tasks; Decision Making Tasks (Individual and Collaborative); Automated and Human-In-The-Loop Tasks

- More specific topics will be determined based on the research interests of the students enrolled.

This course is held with SYDE 543 (Cognitive Ergonomics) an upper year undergraduate technical elective. All students will complete the CE Work/Design assignments and write the same midterm examination. Graduate students will have additional requirements for their in-class presentations above what will be expected of the undergraduate students. Instead of a final examination (written by undergraduate students), graduate students will be expected to submit an in-depth final term paper relating to advanced concepts in Cognitive Ergonomics (to be discussed with the instructor).

INSTRUCTOR: J. Histon
EMAIL: jhiston@uwaterloo.ca