



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Cognitive Engineering Systems: Human-Centered Automation

ISE 5740

Credit Hours:

3.00 - 3.00

Course Levels:

Graduate

Course Components:

Lecture

Course Description:

Provides key concepts to make autonomous systems, robots, and artificially intelligent systems team players with responsible people.

Prerequisites and Co-requisites:

Prereq: Sr or Grad standing, or permission of instructor.

Course Goals / Objectives:

- Learn how to avoid the pitfalls of clumsy automation
 - Analyze team work between people and automated systems in open situations
 - Design to make automated systems observable and directable
 - Know the basic techniques to overcome the brittleness of automated systems
 - Amplify the performance of joint human-automation systems
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Course Topics:

- Introduction: Automation and Teamwork Supervisory control and teleoperation Automation surprises Substitution myth Cases from aviation automation; infusion devices in anesthesiology
 - Basic concepts in human-centered automation Clumsy automation Open worlds and brittle automation Software agents Autonomy, authority, animacy, initiative, responsibility Delegation, trust in automation
 - Making automation team players Observability, directability, directed attention Synchronizing interdependent activities Integrating multiple perspectives
 - Robotic systems Robot handler; mission problem holder Human robot ratio Case: Rescue robots
 - How to Make Intelligent Systems Team Players Expert computer systems, Advisory Interactions Critiquing Systems
 - Assessing Human-Automation Interaction
 - Laws that Govern Cognitive Work in Human-Automation Systems
 - Integration Review of fundamental principles Overcoming the brittleness of automation
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Designation:

Elective