

ISYE 9000 – Doctoral Thesis

Semester: Summer/Fall 2026

Instructor: Mohsen Moghaddam, Ph.D.

Course End Date: —

Course Overview

This course supports doctoral students in conducting independent dissertation research under faculty supervision. Research topics align with areas such as extended reality (XR), artificial intelligence (AI)/machine learning, and human–robot/machine interaction, with applications including human–AI–robot teaming, immersive training and guidance, and human augmentation. The course emphasizes the development of original research contributions that advance human-centered computational models, algorithms, and interactive systems. Students will engage in rigorous inquiry to design, implement, and evaluate novel approaches that enhance human capabilities and enable effective collaboration between humans and intelligent systems.

Learning Outcomes

- Formulate and refine a doctoral research problem and dissertation objectives
- Conduct independent, original research contributing to their dissertation
- Develop and implement novel methods, models, or systems
- Design and execute appropriate evaluation methodologies (e.g., experiments, user studies, simulations)
- Communicate research findings through publications, presentations, and dissertation writing

Course Structure

- Regular meetings with the faculty advisor
- Literature review and research planning
- System/model development and experimentation
- Data collection and analysis
- Preparation of publications and dissertation materials

Deliverables

- Research plan or progress report
- Prototype system, model, or framework
- Experimental results or analytical findings
- Draft or submitted conference/journal paper
- Dissertation chapters or related documentation

Grading Basis

- S Satisfactory:** Demonstrates meaningful progress toward dissertation research goals; meets expectations for effort, quality, and engagement
- U Unsatisfactory:** Insufficient progress, lack of engagement, or failure to meet agreed-upon research expectations

Expectations

- Maintain regular communication with the advisor
- Demonstrate consistent research progress throughout the semester
- Engage in scholarly activities such as writing, presenting, and literature review
- Uphold academic integrity and research ethics

Notes

- This syllabus applies to all students enrolled in doctoral thesis hours and is not project-specific.
- Research topics and expectations are individualized and defined in consultation with the advisor.
- Students are encouraged to align their work with ongoing research in human-centered AI, XR, and human–robot interaction.