

MIE1070H: Intelligent Robots for Society

INSTRUCTOR: Prof. G. Nejat E-mail: nejat@mie.utoronto.ca

LECTURE: Tuesday-Thursday 2:00 - 5:00 PM, Online Synchronous
Meeting on: May 4th- May 6th,
May 11th-May 13th,
May 18th- May 19th, and
June 15th -June 17th – these dates are for course presentations only

COURSE DESCRIPTION: This course introduces the design of intelligent robots- focusing on the principles and algorithms needed for robots to function in real world environments with people. Topics that will be covered include autonomy, social and rational intelligence, multi-modal sensing, biologically inspired and anthropomorphic robots, and human-robot interaction. Class discussions will centre on the interactive, personal assistive and service robotics fields.

Prerequisites: MIE404 AND MIE444, or equivalent courses. Please note that the course builds on already existing knowledge of feedback control theory and mechatronics systems. Students taking this course should already be adept in these topics as they will not be covered again here.

MARKING: Final Project: 55% (Due June 22nd 2021)
Final Presentation: 45% (Start Date: June 15th 2021, number of days dependent on total number of groups)

Please kindly note: No late submissions will be accepted for reports, projects or presentations.

REQUIRED MATERIAL:

- i) Notes provided by the Instructor

REFERENCE MATERIAL:

- ii) Introduction to AI Robotics, Robin R. Murphy, MIT Press
- iii) Behavior-based Robotics, Ronald C. Arkin, MIT Press

OUTLINE OF TOPICS:

- Introduction to Intelligent Robotic Systems/Agents
- Robot Building Blocks
- AI
- Robot Behaviours and Control
- Bio-Inspired Robots
- Androids
- Methodologies in Human-Robot Interactions
- Roboethics