

# SPECIAL TOPICS COURSE

## ECE 8843a: Control of Robotic Systems

**Overview:** This course discusses some of the major issues associated with controlling robots that operate in the real world - from a biological perspective that forms the basis of many current developments in robotics. Students will become immersed in understanding current state-of-the-art robotic techniques that have arisen to address problems in mobility, space robotics, and multi-agent systems, to name a few.



### Course Outline

1. Overview and Problems in Robot Control
2. Autonomy and Control
3. Low-level Robot Control
  - a. Sensors
  - b. Computation
  - c. Communication
4. High-level Robot Control
  - a. Hierarchical and Deliberative Architectures
  - b. Reactive and Behavior-Based Architectures
  - c. Hybrid Architectures
5. Learning and Control
6. Motion and Locomotion
  - a. Wheeled and Legged Robots
  - b. Localization, Navigation, Mapping
7. Advanced Topics



### Textbook:

George A. Bekey, Autonomous Robots: From Biological Inspiration to Implementation and Control, MIT Press, 2005.

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