Introduction
Our Robotics curriculum offers courses in Computation Sensors and Actuators, Controls, Computer and Neuromorphics System, Perception, Learning and Medical Robotics. These courses span various departments in the Whiting School of Engineering, and can also be taken in other divisions of the University, per the ECE MSE Program guidelines.

General Requirements
Students are expected to satisfy all the requirements of the ECE Master’s program. In addition, they are expected to satisfy the following requirements:

- Completion of eight one-semester graduate courses (400-799 level), and
- Completion of (1) two additional graduate courses, or (2) a master’s essay, or (3) a special research project approved by an ECE faculty member.

List of ECE Courses Relevant to the Concentration

520.450 Advanced Microprocessor Lab
520.416 Processing of Audio Visual Signals
520.427 Product Design Lab
520.432 Medical Imaging Systems
520.433 Medical Image Analysis
520.483 Bio-Photonics Lab
520.491 CAD Design of Digital VLSI Systems
520.601 Introduction to Linear Systems Theory
520.618 Hybrid Systems
520.621 Introduction to Nonlinear Systems
520.633 Introduction to Robust Control
520.761 Large Scale Analog Computing

Relevant Courses in Other Departments

Mechanical Engineering
530.420 Robot Sensors/Actuators
530.421 Mechatronics
530.470 Space Vehicle Dynamics and Control
530.485 Physics and Feedback in Living Systems
530.603 Applied Optimal Control
530.624 Dynamics of Robots and Spacecraft
530.646 Robot Devices, Kinematics, Dynamics, and Control
530.649 Adaptive Systems and System Identification
530.653 Advanced Systems Modeling
530.676 Locomotion in Mechanical and Biological Systems
530.678 Nonlinear Control and Planning in Robotics
Biomedical Engineering
580.481 Computer Vision
580.616 Introduction to Linear Dynamical Systems

Computer Science
600.435 Artificial Intelligence
600.436/636 Algorithms for Sensor-Based Robotics
600.445 Computer-Integrated Surgery I
600.446 Computer-Integrated Surgery II
600.475 Machine Learning

Courses in the Johns Hopkins Engineering for Professionals (EP) Program

Electrical and Computer Engineering (EP)
525.410 - Microprocessors for Robotic Systems
525.786 - Human Robotics Interaction

Computer Science (EP)
605.713 – Robotics

Mechanical Engineering (EP)
535.422 - Robot Motion Planning
535.426 - Kinematics and Dynamics of Robots
535.726 - Robot Control

ECE Activity in Robotics

Core Faculty:

- Professor Ralph Etienne-Cummings
- Professor Pablo A. Iglesias
- Professor Jin U. Kang
- Professor Jerry L. Prince
- Professor Emad Boctor (Secondary appointment in ECE)
- Professor Noah Cowan (Secondary appointment in ECE)
- Professor Dennice Gayme (Secondary appointment in ECE)
- Professor Gregory D. Hager (Secondary appointment in ECE)
- Professor Marin Kobilarov (Secondary appointment in ECE)
- Professor Suchi Saria (Secondary appointment in ECE)
- Professor René Vidal (Secondary appointment in ECE)

Research Activity:

- HARMONIE: A Hybrid Augmented Reality Multimodal Operation Neural Integration Environment
- Bidirectional Neuro-prostheses
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