

PhD Course Requirements

CORE COURSES

Required (12 credits)

MECHANICS

ROBOT 6000
Robotics I:
Mechanics

CONTROL

ROBOT 6100
Robotics II:
Control

COGNITION

ROBOT 6200
Motion Planning
or
CS 6300
Artificial Intelligence

PERCEPTION

CS 6640
Image Processing
or
CS 6320
Computer Vision

SEMINARS

Required (3 credits)

ME EN 6890
or **CS 7930**
or **ECE 6900**

ROBOT 6800
Robotics Seminar
(Enroll in 2 semesters for
1 credit each semester)

ALLIED COURSES

3 engineering courses (9+ credits, as needed to reach the 30-credit hour minimum)

RESEARCH

Minimum 14 credits required

ELECTIVE COURSES

Select 3 courses from two different categories (9 credits):

ROBOT 7970
PhD Dissertation

MECHANICS

ROBOT 7000
Manipulation, Mobility
ROBOT 7010
System Identification for
Robotics

COGNITION

CS 6350
Machine Learning
ROBOT Special Topics
Robot Learning
ROBOT Special Topics
Advanced AI

CONTROL

ME EN 6200/ ECE 6615
Classical Control Systems
ECE 6670
Control of Electric Motors
ME EN 6210/ ECE 6652/
CH EN 6203
State Space Control
ME EN 7200
Nonlinear Control
ME EN 7210
Optimal Control
ECE 6570
Adaptive Control

DESIGN

ROBOT 6500
Advanced Mechatronics
ROBOT 6960
Wearable Robotics
ECE 6780/ CS 6780
Embedded System Design
ECE 6960
Robotic Millisystems
ROBOT Special Topics
Medical Robotics
ROBOT Special Topics
Adv Design in Robotics

HUMAN-ROBOT INTERACTION

CS 6360
Virtual Reality
ROBOT 7400
Haptics for VR, Tele-
operation, and Physical
Human-Robot Interaction
ROBOT 6400
Neural Engineering
and NeuroRobotics
ROBOT Special Topics
Intro to Physical
Human-Robot Interaction

PERCEPTION

CS 7640
Adv. Image Processing
CS 6353
Deep Learning for
Image Analysis
ECE 6530
Digital Signal
Processing
ROBOT Special Topics
Algorithmic
Foundations
of Robotics