

## CORE COURSES

Required

<p><b>ROBOT 6000</b> Robotics I: Mechanics</p>	<p><b>ROBOT 6100</b> Robotics II: Control</p>	<p><b>ROBOT 6200</b> Motion Planning or <b>CS 6300</b> Artificial Intelligence</p>	<p><b>CS 6640</b> Image Processing or <b>CS 6320</b> Computer Vision</p>
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## SEMINARS

Required

<p><b>ME EN 6890</b> or <b>CS 7930</b> or <b>ECE 6900</b></p>	<p><b>ROBOT 6800</b> Robotics Seminar (Enroll in 2 semesters for 1 credit each semester)</p>
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## ALLIED COURSES

9-10 Cr. (as needed to reach the 30-credit hour coursework minimum requirement)

## ELECTIVE COURSES

Select 3 classes from two different categories:

## RESEARCH

<p><b>ROBOT 7970</b> PhD Dissertation (14 credits minimum)</p>
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### MECHANICS

<p><b>ROBOT 7000</b> Manipulation, Mobility <b>ROBOT 7010</b> System Identification for Robotics</p>
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### COGNITION

<p><b>CS 6350</b> Machine Learning <b>CS 6958</b> Robot Learning</p>
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### CONTROL

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

<p><b>ROBOT 6500</b> Advanced Mechatronics <b>ROBOT 6960</b> Wearable Robotics <b>ECE 6780/ CS 6780</b> Embedded System Design <b>ECE 6960</b> Robotic Millisystems <b>CS 6956</b> Medical Robotics</p>
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### HUMAN-ROBOT INTERACTION

<p><b>CS 6360</b> Virtual Reality <b>ROBOT 7400</b> Haptics for VR, Teleoperation, and Physical Human-Robot Interaction <b>ROBOT 6400</b> Neural Engineering and NeuroRobotics</p>
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### PERCEPTION

<p><b>CS 7640</b> Adv. Image Processing <b>CS 6353</b> Deep Learning for Image Analysis</p>
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