

**Brief Course Description**  
(50-words or less)

This is an introduction to robotics with a focus on autonomous mobile robots. The two major issues dealt with are: (1) cognitive behavior, and (2) motion. Cognitive behavior addresses problem solving using sensory inputs and desired goals. Motion deals with aspects of movement from simple robotic arm movement to autonomous rovers in unknown environments.

**Extended Course  
Description / Comments**

This course is cross-listed with ARTI 4530

**Pre-Requisites and/or Co-  
Requisites**

CSCI 2720: Data Structures

And Permission of Department

**Required, Elective or  
Selected Elective**

Selected Elective Course

**Approved Textbooks**  
(if more than one listed, the  
textbook used is up to the  
instructor's discretion)

Author(s): Maja Mataric  
Title: *The Robotics Primer*  
Edition: MIT Press, 2007. 1st  
ISBN-13: 978-0-262-63354-3

Author(s): Siegwart & Nourbakhsh  
Title: *Introduction to Autonomous Mobile Robots*  
Edition: MIT Press, 2<sup>nd</sup> Edition  
ISBN-13: 978-0-01535-6

**Specific Learning Outcomes  
(Performance Indicators)**

1. Students are familiar with constructing small mobile autonomous robots that achieve some goal.
2. Students are familiar with robot control architectures.
3. Students are familiar with the historical development of autonomous mobile robots.
4. Students are familiar with the complexities of constructing autonomous mobile robots that achieve some specific goal.
5. Students are familiar with the state-of-the-art of autonomous mobile robotics.

**Relationship Between Student Outcomes and Learning Outcomes**

		Student Outcomes										
		a	b	c	d	e	f	g	h	i	j	k
Learning Outcomes	☐	●	●	●	●		●		●	●	●	●
	☐	●	●	●	●		●		●	●	●	●
	☐	●	●	●	●		●		●	●	●	●
	☐	●	●	●	●		●		●	●	●	●
	☐	●	●	●	●		●		●	●	●	●

**Major Topics Covered**  
(Approximate Course Hours)

3 credit hours = 37.5 contact hours

4 credit hours = 50 contact hours

Note: Exams count as a major topic covered

Week1: Introduction and History of Robotics (7.0)

Week 3: Robot Control Architectures (7.0)

Week 5: What Can We Learn From Animal Behavior? (3.5)

Week 6: What Are Robotic Behaviors? (7.0)

Week 8: Construction Architectures (14.0)

Week 12: Intelligent Behavior (14.0)

Week 16: Robot Applications (3.5)

Week 17: Advanced Topics (3.5)

**Course Master**

Dr. Prashant Doshi