

Course Syllabus

1. **Program of Study** Bachelor of Science (Computer Science)
Faculty/Institute/College Mahidol University International College
 Mahidol University

- Course Code** ICCS 452 **Course Title** Intelligent robotics

2. **Number of Credits** **4 (Lectures/lab) (3 - 2)**

3. **Prerequisite(s)** ICCS 316, ICCS 321

4. **Type of Course** Elective

5. **Trimester / Academic Year** Trimester III / Year 2005 - 2006

6. **Course Description**
 Artificial intelligence; intelligent behavior in the physical world; sensing the real world, acting intelligently; building robots to demonstrate the theories

7. **Course Objective(s)**
 By the end of the course students should be able to:
 - Describe and explain how robots sense, interpret, plan, and operate in the real world
 - Identify issues related to real-time software development
 - Gain knowledge in designing and programming various mechanisms of robots, such as motion and vision
 - build simple automated robots

8. Course Outline

Week	Topic				Instructor
	Lecture	Hour	Lab	Hour	
1	Robotic Paradigm	3	Session #1: Design, build and program simple autonomous robots. (week 1-4)	8	Mr. Pornchai Olarikded
2	Navigation	3			
3	Biological Foundations of the Reactive Paradigm	3			
4	The Reactive Paradigm	3			
5	Designing a Reactive Implementation	3	Session #2: Implement standard signal processing and control algorithms. (week 5-6)	4	
6	Common Sensing Techniques for Reactive Robots	3			
7	The Hybrid Deliberative / Reactive Paradigm	3	Session #3: Describe and analyze robot processes using appropriate methods. (week 7-8)	4	
8	Multi-agents	3			

Week	Topic			Instructor
	Lecture	Hour	Lab	
8	Multi-agents	3		
9	Topological Path Planning	3	Session #4: Carry out and write up investigations using appropriate experimental methods (week 9-10)	4
10	Metric Path Planning	3		
11	Localization and Map Planning	3	Show appreciation of the research literature in one subfield of intelligent robotics.	2
	Total	33		22

9. Teaching Method(s)

Lectures, hand-on practices, discussion, group work, and self-study

10. Teaching Media

Text and teaching materials, Powerpoint, handouts, and robot kits

11. Measurement and Evaluation of Student Achievement

Assessment made from stated criteria: students with 85% obtain grade A

12. Course Evaluation

1. Participation	5%	4. Mid-term exam	20%
2. Project	20%	5. Final exam	30%
3. Assignments (×5)	25%		

13. Reference(s)

Mruphy, R. R., 2000. An Introduction to AI Robotics. MIT Press, Cambridge, MA.

Arkin, R. C., 1998. Behavior-based Robotics. MIT Press, Cambridge, MA.

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

14. Instructor(s)

Mr. Pornchai Olarikded

15. Course Coordinator

Mr. Pornchai Olarikded