Al Imam Mohammad ibn Saud Islamic University
College of Computer and Information Sciences

Computer Science Department

Course Syllabus
CS463 - Robotics

Catalog Description:	The course is intended to understand the underlying principles which distinguish robot control programs from computer programs. Their specific features are presented by introducing the general notion of situated agent. In the same perspective behavior-based systems are also considered: the direct coupling of perception to action and the dynamic interaction with the environment are discussed as a general method to implement autonomous robot control including legged and humanoid robotics. Multi-robot systems are also presented.

Credit Hours: **3 Credit hours:** **3** Lectures per week **0** Labs. per week **0** Recitation per week

Prerequisites: CS340

Course Learning Outcomes:
1. Provide the practical tools to understand and implement programs which are able to control autonomous vehicles.
2. Introduce the general notion of situated agent is presented by introducing behavior-based systems, the direct coupling of perception to action and the dynamic interaction with the environment.

Major Topics:
- Situated Agents
- Autonomous Vehicles
- Dynamical Agents
- Implementing Behaviours
- Locomotion
- Experimental Activity

Text Books:
- Required: An Introduction to AI Robotics, Murphy, 1st edition, The MIT Press, 2000.
- Required: Behavior-Based Robotics, Arkin, The MIT Press, 1998.
- Required: Understanding Intelligence, Rolf Pfeifer and Christian Scheier, The MIT Press, 1999.
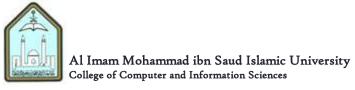- Optional: Probabilistic Robotics, Thrun, Burgard, and Fox, MIT Press, 2005.
- Optional: Principles of Robot Motion: Theory, Algorithms, and Implementations, Choset, Lynch, Hutchinson, Kantor, Burgard, Kavraki, and Thrun, MIT Press, 2005.
- Optional: Introduction to Robotics: Mechanics and Control, Craig, Prentice Hall PTR, 2004.
- Optional: Robotics: The Marriage of Computers and Machines, Thro, Facts on File, 1993.

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Grading:

◉ The grading scale for this course is:
- . 95 - 100 A+ Passing
- . 90 - 94   A   Passing
- . 85 - 89   B+ Passing
- . 80 - 84   B   Passing
- . 75 - 79   C+ Passing
- . 70 - 74   C   Passing
- . 65 - 69   D+ Passing
- . 60 - 64   D   Passing
- . 0 - 59   F   Failing

◉ Final grades will be determined based on the following components:
- . 60% Semester Work
- . 40% Final Exam

◉ Students may not do any additional work for extra credit nor resubmit any graded activity to raise a final grade.

◉ Late submissions will not be accepted for any graded activity for any reason.

◉ Studentshave one week to request the re-grading of any semester work.
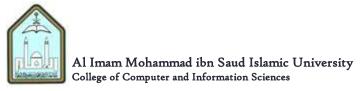
Attendance Policy:

Students should attend 80% of the overall course hours taught in the semester as per the University regulations.

If a student fails to achieve this portion, he/she shall not be allowed to appear in the final exam and shall be awarded "DN" grade and repeat the course.

Cheating and Plagiarism Policy:

The instructor will use several manual and automated means to detect cheating and/or plagiarism in any work submitted by students for this course.

When a student is suspected of cheating or plagiarism, the instructor raises the issue to the disciplinary committee.

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Communications: Registered students will be given access to a section of the Blackboard Learning System for this course. Bb will used as the primary mechanism to disseminate course information, including announcements, lecture slides, assignments, and grades.

Communication with the instructor on issues relating to the individual student should be conducted using CIS email, via telephone, or in person.