UNIVERSITY OF CALIFORNIA
UCMERCED

Syllabus for CSE180-01: Introduction to Robotics

Spring 2019
Instructor: Stefano Carpin

Designation:	CSE 180 Introduction to robotics
Catalog Description:	Mathematical modeling of mobile robots with an emphasis on planning algorithms. Fundamentals of robot sensors and sensor processing algorithms. Robot control architectures and programming. ROS: the robot operating system.
Text Books and Other Required Materials:	- Lecture notes distributed by the instructor in class. - Jason O'Kane, "A gentle introduction to ROS". Freely available for download at https://cse.sc.edu/~jokane/agitr/
Course Objectives/ Student Learning Outcomes:	Course objectives. - To provide a solid background understanding of the pertinent computer science, mathematical, and engineering concepts that make up the foundation of robotics. - To provide our students with the knowledge needed to correctly apply the laws of nature to the creative formulation and solution of robotics problems through the use of analytical, computational, and experimental techniques. - To educate students as independent thinkers who are prepared to work effectively with others, demonstrating an appreciation of the importance of continuing education, self-learning, and diversity in the workplace. - To instill a sense of community and ethical responsibility associated with the professional use of the knowledge acquired. - To expand the reach of computer science and engineering to non-traditional areas by continually seeking to incorporate new methodologies and research findings into our curriculum. Learning outcomes. - An ability to apply knowledge of computing and mathematics appropriate to the robotics discipline; - An ability to analyze a robotics problem and identify the computing requirements appropriate for its solution; - An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs; - An ability to apply mathematical foundations, algorithmic principles, and computer science theory to the modeling and design of computer-based systems in a way that demonstrates comprehension of the trade-offs involved in design choices; - An ability to apply design and development principles in the construction of software systems of varying complexity.
Program Learning Outcomes:	
Prerequisites by Topic:	Class prerequisite: CSE31. Good programming skills in C/C++. Basic knowledge of linear algebra.
Course Policies:	All course material and relevant information will be posted on CROPS and emails will be sent only to university email accounts. It is the students' responsibility to

Designation:	CSE 180 Introduction to robotics regularly check CROPS and their UCM email.
Academic Dishonesty Statement:	a. Each student in this course is expected to abide by the University of California, Merced's Academic Honesty Policy. Any work submitted by a student in this course for academic credit will be the student's own work. b. You are encouraged to study together and to discuss information and concepts covered in lecture and the sections with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an e mail, an e mail attachment file, a diskette, or a hard copy. Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive a zero for the assignment. Penalty for violation of this Policy can also be extended to include failure of the course and University disciplinary action. c. During examinations, you must do your own work. Talking or discussion is not permitted during the examinations, nor may you compare papers, copy from others, or collaborate in any way. Any collaborative behavior during the examinations will result in failure of the exam, and may lead to failure of the course and University disciplinary action.
Disability Statement:	Accommodations for Students with Disabilities: The University of California Merced is committed to ensuring equal academic opportunities and inclusion for students with disabilities based on the principles of independent living, accessible universal design and diversity. I am available to discuss appropriate academic accommodations that may be required for student with disabilities. Requests for academic accommodations are to be made during the first three weeks of the semester, except for unusual circumstances. Students are encouraged to register with Disability Services Center to verify their eligibility for appropriate accommodations.
Topics:	Selected topics from mobile robotics (kinematics, localization, mapping, navigation and motion planning). Robot programming and control architectures. ROS (the Robot Operating System)
Class/laboratory Schedule:	As per official schedule published by the registrar
Midterm/Final Exam Schedule:	Midterm: None Final: May 13, 2019 Final Projects Presentation: TBD
Course Calendar:	See registrar website
Professional Component:	
Assessment/Grading Policy:	Homeworks 20% Labs 30% Final Project 20% Final 30%
Coordinator:	Stefano Carpin
Contact Information:	scarpin@ucmerced.edu
Office Hours:	Tuesday 4:15pm-5:00pm or by appointment