California State University Channel Islands

NEW COURSE PROPOSAL

Courses must be submitted by October 15, 2013, and finalized by the end of that fall semester for the next catalog production.

Use YELLOWED areas to enter data.

DATE (*Change if modified and redate file with current date)*) 10/15/14, REV 2/6/2015

PROGRAM AREA(S) COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

1. Course Information. *[Follow accepted catalog format.]*

Prefix(es) (Add additional prefixes if cross-listed) **and Course No. COMP 470**

Title: MOBILE ROBOTICS Units: 3

x Prerequisites COMP 350, COMP 362, MATH 240, or Consent of the Instructor

Corequisites

Consent of Instructor Required for Enrollment

Catalog Description (Do not use any symbols): Introduces students to the design, construction and programming of mobile robots. Included are traditional topics of robot architecture, sensors, actuators, robot kinematics and dynamics. In addition, topics such as adaptive control and human-robot interaction will also be studied. Students will have the opportunity to design and build their own robot and to program it to perform some useful task.

Grading Scheme:

X A-F Grades

Credit/No Credit

Optional (Student Choice)

Repeatability:

Repeatable for a maximum of units

Total Completions Allowed

Multiple Enrollment in Same Semester

Course Level Information:

X Undergraduate

Post-Baccalaureate/Credential

Graduate

Mode of Instruction/Components (*Hours per Unit are defaulted*).

	Units	Hours per Unit	Default Section Size	Graded Component	CS & HEGIS # (Filled in by the Provost's Office)
Lecture	2	1	20	Y	
Seminar		1			
Laboratory	1	3	20	~~y~~	
Activity		2			
Field Studies					
Indep Study					
Other Blank					

Leave the following hours per week areas blank. The hours per week will be filled out for you.

hours lecture per week

hours blank per week

2. Course Attributes:

General Education Categories: All courses with GE category notations (including deletions) must be submitted to the GE website: http://summit.csuci.edu/geapproval. Upon completion, the GE Committee will forward your documents to the Curriculum Committee for further processing.

A (English Language, Communication, Critical Thinking)

A-1 Oral Communication

A-2 English Writing

A-3 Critical Thinking

B (Mathematics, Sciences & Technology)

B-1 Physical Sciences

B-2 Life Sciences – Biology

B-3 Mathematics – Mathematics and Applications

B-4 Computers and Information Technology

C (Fine Arts, Literature, Languages & Cultures)

C-1 Art
C-2 Literature Courses
C-3a Language
C-3b Multicultural

D (Social Perspectives)
E (Human Psychological and Physiological Perspectives)
UDIGE/INTD Interdisciplinary
Meets University Writing Requirement (Graduation Writing Assessment Requirement)
Meets University Language Requirement

American Institutions, Title V Section 40404: Government US Constitution US History
Regarding Exec Order 405, for more information: http://senate.csuci.edu/comm/curriculum/resources.htm
Service Learning Course (Approval from the Center for Community Engagement must be received before you can request this course attribute).
Online Course (Answer YES if the course is ALWAYS delivered online).
Lab Fee Request – Lab fee requests should be directed to the Student Fee Committee.

3. Justification and Requirements for the Course. (Make a brief statement to justify the need for the course)

A. Justification: This is a required course in the ~~Secure Systems~~ Robotics minor and may also be used as an elective by Computer Science and Information Technology majors

B. Degree Requirement:
Requirement for the Major/Minor
X Elective for the Major/Minor
Free Elective

Note: Submit Program Modification if this course changes your program.

4. Student Learning Outcomes. List in numerical order. Please refer to the Curriculum Committee's "Learning Outcomes" guideline for measurable outcomes that reflect elements of Bloom's Taxonomy: *http://senate.csuci.edu/comm/curriculum/resources.htm*. The committee recommends 4 to 8 student learning outcomes, unless governed by an external agency (e.g., Nursing).

Upon completion of the course, the student will be able to:

1. apply knowledge of mathematics, science, and engineering to the analysis and design of mobile robots.

2. describe mobile robot kinematics and dynamics in a mathematical framework.

3. identify and use different types of locomotion for mobile robots.

4. describe the theoretical and practical aspects of various sensors and actuators.

5. design and conduct experiments with mobile robots and to analyze and interpret the data.

6. work in a team-oriented lab environment and present results in a professional manner.

5. Course Content in Outline Form. *[Be as brief as possible, but use as much space as necessary]*

1. Introduction, history, definitions
2. Kinematics of mobile robots
3. Locomotion
4. Sensing
5. Control
6. Navigation
7. Localization
8. Human-robot interaction

Does this course content overlap with a course offered in your academic program? **Yes** **No** X
If YES, what course(s) and provide a justification of the overlap.

Does this course content overlap a course offered in another academic area? **Yes** **No** X
If YES, what course(s) and provide a justification of the overlap.

Overlapping courses require Chairs' signatures.

6. **Cross-listed Courses (***Please note each prefix in item No. 1) Beyond three disciplines consult with the Curriculum Committee.*
   A. List Cross-listed Courses (Signature of Academic Chair(s) of the other academic area(s) is required).
   List each cross-listed prefix for the course: COMP

   B. Program responsible for staffing: Computer Science and Information Technology

7. **References.** *[Provide 3 - 5 references]*

   Jones, Joseph L.: Robot Programming: A practical guide to Behavior-Based Robotics. McGraw-Hill, 2004.

   Corke, Peter: Robotics, Vision & Control. Springer, 2011.

   Siegwart, R., Nourbakhsh, I.R., Scaramuzza, D.: Introduction to autonomous mobile robots. MIT Press, 2011.

8. **Tenure Track Faculty Qualified to Teach This Course.**

   All Computer Science faculty

9. **Requested Effective Date:**
   First semester offered: Fall 2015

10. **New Resources Requested. Yes** **No** X
    If YES, list the resources needed.

    A. Computer Needs (data processing, audio visual, broadcasting, other equipment, etc.)

    B. Library Needs (streaming media, video hosting, databases, exhibit space, etc.)

    C. Facility/Space/Transportation Needs

    D. Lab Fee Requested **Yes** **No** X **(Lab fee requests should be directed to the Student Fee Committee)**

    E. Other

11. **Will this new course alter any degree, credential, certificate, or minor in your program? Yes** **No** X
    If, YES attach a program update or program modification form for all programs affected.
    Priority deadline for New Minors and Programs: October 1, 2013 of preceding year.
    Priority deadline for Course Proposals and Modifications: October 15, 2013, of preceding year.
    Last day to submit forms to be considered during the current academic year: April 15th.

David Claveau 10/15/14

Proposer of Course (Type in name. Signatures will be collected after Curriculum approval) Date

Approval Sheet

Program/Course: COMP 470

If your course has a General Education Component or involves Center affiliation, the Center will also sign off during the approval process.

Multiple Chair fields are available for cross-listed courses.

The CI program review process includes a report from the respective department/program on its progress toward accessibility requirement compliance. By signing below, I acknowledge the importance of incorporating accessibility in course design.

Program Chair		
	Signature	Date
Program Chair		
	Signature	Date
Program Chair		
	Signature	Date
General Education Chair		
	Signature	Date
Center for International Affairs Director		
	Signature	Date
Center for Integrative Studies Director		
	Signature	Date
Center for Multicultural Engagement Director		
	Signature	Date
Center for Civic Engagement Director		
	Signature	Date
Curriculum Chair		
	Signature	Date
AVP		
	Signature	Date