California State University Channel Islands

Program Update

For Minor Program Updates Only

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

Date (Change if modified and update the file name with the new date): 10.24.12
Program Area: COMPUTER SCIENCE
Semester/Year first affected:

Instructions: Please use this Program Update form for minor changes to existing programs. Highlight all changes in YELLOW. Appropriate updates for this form include faculty or address changes, additions of approved electives, minor editing for clarity, and other minor updates. Any change to program requirements, units, outcomes, emphases or options, or other programmatic concerns require the standard two column Program Modification form, available at the Curriculum website.

CURRENTLY APPROVED PROGRAM WITH CHANGES TRACKED

Paste the latest approved version of your entire program in the below the line and before the Summary of Changes before you begin (If you are unsure about which version is the most recent, contact Kathy Musashi). If the form does not preset to the tracked changes mode, turn on tracked changes using Word Tools before making the necessary edits. Please set the view to ORIGINAL SHOWING MARKUP.

Programs Offered

- Master of Science in Computer Science
- Bachelor of Science in Computer Science
- Minor in Computer Science
- Minor in Computer Game Design & Development (see Computer Game Design and Development)
- Minor in Robotics Engineering
- Bachelor of Science in Information Technology
- Minor in Information Technology (see Information Technology)

Careers

The program prepares students for careers in high-tech, computer and Internet-driven industries, where interdisciplinary, dynamic and innovative professionals trained in the latest technologies are increasingly sought.

Program Learning Outcomes

Students graduating from the Computer Science program will be able to:

- Demonstrate critical thinking and problem solving skills by identifying, evaluating, analyzing and presenting fundamental software solutions and their applications;

- Demonstrate the knowledge of current computing practices and broad technology use in industry and society, including a working knowledge of software development techniques;
- Be cognizant of emerging new technologies and industrial practices connected to the computer industry;
- Demonstrate communication, research and cooperation skills by working effectively with others in interdisciplinary group settings - both inside and outside the classroom; and
- Demonstrate a sense of exploration that enables them to pursue rewarding careers in high-tech and bio-tech industries with life-learning.

Faculty

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Contact Information

http://compsci.csuci.edu

Bachelor of Science in Computer Science - (120~~123~~ units)

Special Grade Requirement

A grade of C- or better is required in all pre-requisite courses in the major

Lower Division Required Major Courses 42
Upper Division Required Major Courses ..... 26~~9~~
Upper Division Elective Major Courses 12
Elective Courses..... 6
General Education..... 28
American Institutions Requirement 6
TOTAL ....12~~0~~3 units

Note: General Education Included in Major Requirements11~~4~~

Lower Division Requirements - 42 units

COMP	150	Object-Oriented Programming, GE B4	4
COMP	151	Data Structures and Program Design	4
COMP	162	Computer Architecture and Assembly Language	3
COMP	232	Programming Languages	3
COMP	262	Computer Organization and Architecture	3
MATH	150	Calculus I, GE B3	4
MATH	151	Calculus II	4
MATH	230	Logic and Mathematical Reasoning, GE A3, B3	3
MATH	240	Linear Algebra	3

Science

Choose either:

a. Physics 200 General Physics I (*4*), Physics 201 General Physics II (*4*) and a course from GE section B2 (*3*).

or

b. Physics 200 General Physics I (*4*), Biology 200 Principles of Organismal and Population Biology (*4*), Biology 212 Neurobiology and Cognitive Science (*3*) GE B1 and B2

Upper Division Requirements - 38~~41~~ units

Major Requirements - 26~~29~~ units

COMP	350	Introduction to Software Engineering	3
COMP	362	Operating Systems	4
~~COMP~~	~~447~~	~~Societal Issues in Computing, GE B4, D, INTD~~	~~3~~
COMP	454	Automata, Languages and Computation	3
COMP	491	Capstone Preparation	1
COMP	499	Capstone Project	3

MATH	300	Discrete Mathematics	3
MATH	352	Probability and Statistics	3
MATH	354	Analysis of Algorithms	3

Choose three units from the following:

COMP	420	Database Theory and Design	3
COMP	464	Computer Graphic Systems and Design I	3

Electives - 12 units

Choose 12 Elective units from:

COMP	345	Digital Image Processing, (MATH/PHYS) GE B1, B4, INTD	3
COMP	351	Distributed Computing	3
COMP	420	Database Theory and Design	3
COMP	421	Unix System Programming II……	…3
COMP	424	Computer System Security	3
COMP	425	Computer Game Programming	3
COMP	429	Computer Networks	3
COMP	445	Image Analysis & Pattern Recognition, (MATH/PHYS), GE B1, B4, INTD	3
COMP	451	Advanced Object Oriented Programming	3
COMP	452	Computational Bioinformatics (MATH)	4
COMP	462	Embedded Systems	3
COMP	464	Computer Graphic Systems and Design I	3
COMP	469	Artificial Intelligence/Neural Nets	3
COMP	490	Topics in Computer Science	3
COMP	492	Internship	1-3
COMP	494	Independent Research	1-3
COMP	497	Directed Studies	3
ENGL	482	Technical Writing	3
IT		380 Web Programming	3
IT		400 eCommerce	3
IT		402 Advanced Web Programming	3
MATH	429	Operations Research	3
MATH	448	Scientific Computing, GE B3, B4, INTD	3

General Education Courses Included in Major Requirements - 114 units

COMP	150	Object-Oriented Programming, GE B4	4
~~COMP~~	~~447~~	~~Societal Issues in Computing Sciences, GE B4, D~~	~~3~~

MATH 150 Calculus I, GE B3 4
MATH 230 Logic and Mathematical Reasoning, GE A3, B3 3

Minor in Computer Science
(20-23 units)

The Computer Science minor teaches the fundamentals of computer systems and programming. This minor includes the fundamentals of computer programming, including design, implementation, and testing of object-oriented programs. It also teaches the basic architecture of the computer hardware, including the fundamental components of a computer system and the logical reasoning that it is based upon. Since these computer skills are extremely useful in most other disciplines, enhancing the students knowledge of technology no matter which major they have chosen.

Careers
Computer Programmer; Computer Systems Analyst; Any career that requires a basic knowledge of computer systems and programming

Requirements - 20-23 units
Lower Division Requirements - 11-14 units
COMP 105 Computer Programming Introduction.... 3
**This course is waived for students with equivalent programming experience*
COMP 150 Object Oriented Programming 4
COMP 151 Data Structures and Program Design... 4
COMP 162 Computer Architecture and Assembly .. 3

Upper Division Requirements - 9 units
Three upper-division courses from the CS program approved by the advisor.

Minor in Robotics
Engineering - (24 units)

After completing the courses in the minor, students will be able to explain the interaction between hardware and software. They will be able to describe the role of an operating system in managing the resources of a computer. On the hardware side they will be able to build, test and use analog and digital circuits. They will be able to demonstrate the role of electronics in data acquisition, metrology and control of devices. On the
software side they will be able to design, implement and test
algorithms in both C and a representative assembly language.
They will build one or more robotics systems, directly experiencing the challenges and solutions such an implementation requires.

Requirements 24 units

Required Courses - 18 units
COMP 162 Computer Architecture and

		Assembly Language	3
COMP	362	Operating Systems	4
COMP	462	Embedded Systems	3
COMP	491	Capstone Preparation	1
COMP	499	Capstone	3
PHYS	310	Electronics	4

Elective Courses - 6 units

Choose 2 courses from:

COMP	445	Image Analysis & Pattern Recognition, (MATH/PHYS), GE B1, B4,UDIGE	3
COMP	469	Artificial Intelligence and Neural Nets	3
MATH	437	Mathematics for Games, Simulations and Robotics, GE B3, UDIGE	3

Master of Science in Computer Science (32 units)

(Offered through CI Extended University Program)

The MS in Computer Science prepares students for advanced careers in high-tech, computer-driven industries, including applications to business, aerospace, education, military, and government where interdisciplinary, dynamic and innovative professionals trained in latest technologies are increasingly sought. Students develop a strong background in computer theory, software and hardware, as well as skills to conduct applied research. The program stresses interdisciplinary applications while preparing students for a wide range of industry, academic, and research positions.

Admission

Students seeking admission are expected to have an undergraduate degree in Computer Science. Applicants will be evaluated according to the program guidelines which will consider the applicants in the context of the total applicant pool using our general admission standards, including all academic work, GPA, standardized test scores (such as GRE), personal statement of purpose, reference letters, relevant work experience, and other factors that may have a bearing on the individual's potential for success.

Candidates with undergraduate degrees from other disciplines will be considered on a case-by-case basis and may be provisionally accepted. The conditions will usually include a selection of foundation Computer Science and Math courses as determined by the admission committee.

The current guidelines and admission procedures are described in detail on the program Web pages at http://compsci.csuci.edu.

Graduation

To obtain the degree, the student must complete each course with a minimum grade of B, and successfully defend a thesis before an examination committee.

Note: Any remedial courses are in addition to the following graduation requirements

Required Coursework - 32 units

Graduate Seminar	2
Master Thesis	6
Electives	24

Required Courses - 8 units*

COMP	599	Graduate Seminar	1
COMP	597	Master Thesis	1-3

*Required: *2* units of 599 and *6* units of 597

Electives - 24 units

COMP	510	Advanced Image Analysis Techniques (MATH/PHYS)	3
COMP	520	Advanced Database Systems	3
COMP	524	Security	3
COMP	529	Network Computing	3
COMP	532	Computational Bioinformatics	3
COMP	546	Pattern Recognition (MATH/PHYS)	3
COMP	549	Human-Computer Interaction	3
COMP	550	Advanced Software Engineering	3
COMP	554	Algorithms (MATH)	3
COMP	566	Geometry and Computer Graphics	3
COMP	569	Artificial Intelligence	3
COMP	571	Biologically Inspired Computing	3
COMP	572	Neural Networks	3
COMP	575	Multi-agent Systems	3
COMP	578	Data Mining	3
COMP	581	Mathematical Methods in Artificial Intelligence (MATH)	3
COMP	590	Special Topics in Computer Science	3

To accommodate the need to acquire multidisciplinary experience and knowledge beneficial to their research, MSCS students may take up to *6* units of any other course upon obtaining authorization from the MSCS program director in consultation with the Master Thesis advisor.

Graduate students may also get credit for taking 400-level courses under some exceptional circumstances. Permission to take such a course has to be granted by the program director in consultation with the Master Thesis advisor and the course instructor prior to enrolling into the course. No more than *9* units can be credited in this way.

Graduate Writing Assessment Requirement

Writing proficiency prior to the awarding of the degree is demonstrated by successful completion of COMP 597 Masters Thesis with a grade of B or higher.

Continuous Registration Requirement

A student, who is not on an Academic Leave of Absence, must register every semester until graduating. If all other course requirements have been satisfied, a student

should register in ***one*** unit of COMP 597 to satisfy the requirement.

SUMMARY OF CHANGES (Mark applicable change box below)

___ Adding elective courses
___ Updating faculty or addresses
___ Minor editing for clarity
___ Other, Please briefly explain

_____

Proposer of Program Modification Date

APPROVAL SHEET

Program:
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

Curriculum Chair		
	Signature	Date

AVP		
	Signature	Date