BS IN COMPUTER SCIENCE

In Workflow
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Approval Path
1. Wed, 30 Sep 2020 21:31:23 GMT
   Anna Baynes (shaverdian): Approved for CSC Committee Chair
2. Wed, 30 Sep 2020 23:45:19 GMT
   Nikrouz Faroughi (faroughi): Rollback to CSC Committee Chair for CSC Chair
3. Thu, 01 Oct 2020 00:12:47 GMT
   Anna Baynes (shaverdian): Rollback to Initiator
4. Thu, 01 Oct 2020 17:00:33 GMT
   Anna Baynes (shaverdian): Approved for CSC Committee Chair
5. Thu, 01 Oct 2020 17:51:51 GMT
   Nikrouz Faroughi (faroughi): Approved for CSC Chair
6. Fri, 23 Oct 2020 18:24:37 GMT
   Gareth Figgess (figgess): Approved for ECS College Committee Chair
7. Fri, 23 Oct 2020 18:39:48 GMT
   Kevan Shafizadeh (kevan): Approved for ECS Dean

History
1. May 2, 2018 by clmig-jwehrheim
2. Sep 17, 2018 by 212408496
3. Mar 4, 2019 by 212408496
4. Apr 28, 2020 by Celena Showers (celena.showers)

Date Submitted: Thu, 01 Oct 2020 03:18:35 GMT

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Changes proposed by: Ted Krovetz (101058577)

Academic Group: (College)

Engineering & Computer Science

Academic Organization: (Department)

Computer Science

Catalog Year Effective:
2021-2022 Catalog

Individual(s) primarily responsible for drafting the proposed degree major program:

Name (First Last)	Email	Phone 999-999-9999
Ted Krovetz	tdk@csus.edu	916-278-6834

Type of Program Proposal:
Major

Program Change Type:
Substantive

Title of the Program:
BS in Computer Science

Designation: (degree terminology)
Bachelor of Science

Briefly describe the program proposal (new or change) and provide a justification:

(i) Adjust math and science requirements to better match accreditation requirements; (ii) remove CSC 60 from the pre-major (but not the BS program); (iii) increase pre-major rigor to improve student preparation; (iv) remove CSC 135 as a GE B5 class.

Note: CSC 135 was previously double-counted as GE B5 to maintain the ability of students to graduate within 120 units. The adjustment to the math and science requirements in this proposal frees 3 units, allowing us to rescind CSC 135's GE B5 status and for students to continue graduating with 120 units. The CSC GE B5 rescinding is in progress.

Objectives of the degree program:

Three to five years after graduation, a graduate of the B.S. in computer science should have....
1. Made contributions to development, maintenance, and support of real world computing systems.
2. Taken initiative and assumed responsibilities as an effective member of project teams.
3. Worked independently and functioned effectively in an environment with incomplete information.
4. Progressed in computing field, engaged in professional development, and/or pursued an advanced degree.
5. Produced quality technical and non-technical documents and presentations for a variety of audiences.
6. Adhered to ethical standards of the profession and understood the implications of his/her professional activities.

University Learning Goals

Undergraduate Learning Goals:

Competence in the disciplines
Knowledge of human cultures and the physical and natural world
Integrative learning
Personal and social responsibility
Intellectual and practical skills

Will this program be required as part of a teaching credential program, a single subject, or multiple subject waiver program (e.g., Liberal Studies, Biology) or other school personnel preparation program (e.g., School of Nursing)?
No

Please attach a Comprehensive Program Assessment Plan (required)
CS_BS_Assessment_Plan_new_09-10-2018_final.docx

Please attach a Curriculum Map Matrix (required)
CS_BS_Assessment_Plan_new_09-10-2018_final.docx

Do these changes impact the Smart Planner roadmap?
Yes

Please attach the Smart Planner roadmap:
4 Year Plan Template (CSC) UCC.docx

Briefly describe the change:
(i) Adjust math and science requirements to better match accreditation requirements; (ii) remove CSC 60 from the pre-major (but not the BS program); (iii) increase pre-major rigor to improve student preparation; (iv) remove CSC 135 as a GE B5 class.

In the four year plan, this means CSC 60 is taken later, GE B5 is added, and some options are removed.

Catalog Description:

Units required for Major: 78
Total units required for BS: 120

Program Description

The Bachelor of Science degree in Computer Science is accredited by the Computing Accreditation Commission (CAC) of ABET, Inc. (http://www.abet.org/), providing majors with a sound educational base in Computer Science.

Admission Requirements: Course prerequisites and other criteria for admission of students to the degree major program, and for their continuation in it.

Pre-Major Requirements

Students requesting to become Computer Science majors must first complete the lower-division (pre-major) courses listed in this section. If a student requests to become a Computer Science major but has not yet completed these courses, they should change their major to pre-Computer Science. Changing to the pre-Computer Science major requires either completion of or enrollment in MATH 30 and a Sacramento State and overall GPA of at least 2.5.

To change to the Computer Science or pre-Computer Science major, students are required to complete and submit a Change of Major form to the Computer Science Department Office along with transcript copies.

Registration in Computer Science courses numbered 133 and above is restricted to Computer Science and Computer Engineering majors. Other students need to obtain approval from the CSC Department Chair.

Code	Title	Units
CSC 15	Programming Concepts and Methodology I	3
CSC 20	Programming Concepts and Methodology II	3
CSC 28	Discrete Structures for Computer Science	3
CSC 35	Introduction to Computer Architecture	3
MATH 30	Calculus I	4
MATH 31	Calculus II	4
PHYS 11A	General Physics: Mechanics	4

Minimum Grade Requirement

Grade of 'C-' or better required in all courses applied to the Computer Science major.

As defined by policy http://www.csus.edu/umanual/acadaff/fsm00010.htm, a change in units constitutes a substantive change to the program. If your changes constitute a substantive change, please refer back to the 'Program Change Type' field above to ensure that 'Substantive' is selected.

Program Requirements: (If new courses are being created as part of a new program, it will be useful to propose courses first.)

Program Requirements

Code	Title	Units
Required Lower Division Courses (15 Units)		
CSC 15	Programming Concepts and Methodology I	3
CSC 20	Programming Concepts and Methodology II	3
CSC 28	Discrete Structures for Computer Science	3
CSC 35	Introduction to Computer Architecture	3
CSC 60	Introduction to Systems Programming in UNIX	3
Required Mathematics and Science Courses (21-24 Units)		
MATH 30	Calculus I [1]	4
MATH 31	Calculus II	4
PHYS 11A	General Physics: Mechanics [1]	4
Select one of the following:		3 - 4
STAT 50	Introduction to Probability and Statistics	
ENGR 115	Statistics For Engineers	
Select one of the following:		3
MATH 35	Introduction to Linear Algebra [2]	
MATH 100	Applied Linear Algebra [2]	
MATH 101	Combinatorics	
MATH 102	Number Theory	

MATH 150	Introduction to Numerical Analysis	
PHIL 160	Deductive Logic II	
STAT 103	Intermediate Statistics	
STAT 115A	Introduction to Probability Theory	
STAT 155	Introduction to Techniques of Operations Research	
Select one of the following:		3 - 5
BIO 1	Biodiversity, Evolution and Ecology [1]	
BIO 10	Basic Biological Concepts [1]	
CHEM 1A	General Chemistry I	
CHEM 1E	General Chemistry for Engineering	
PHYS 11B	General Physics: Heat, Light, Sound, Modern Physics	
PHYS 11C	General Physics: Electricity and Magnetism	
Required Upper Division Courses (33 Units)		
CSC 130	Data Structures and Algorithm Analysis	3
CSC 131	Computer Software Engineering	3
CSC 133	Object-Oriented Computer Graphics Programming	3
CSC 134	Database Management Systems	3
CSC 135	Computing Theory and Programming Languages	3
CSC 137	Computer Organization	3
CSC/CPE 138	Computer Networks and Internets	3
CSC 139	Operating System Principles	3
CSC 190	Senior Project: Part I	2
CSC 191	Senior Project-Part II	2
PHIL 103	Business and Computer Ethics [1]	3
Select two units from the following:		2
CSC 192	Career Planning	
CSC 194	Computer Science Seminar	
CSC 195	Fieldwork in Computer Science	
CSC 195A	Professional Practice	
CSC 198	Co-Curricular Activities in Computer Science	
CSC 199	Special Problems	
Electives (9 Units)		
Select 9 units of CSC courses 140 or above **excluding** the following: [3]		9
CSC 192	Career Planning	
CSC 194	Computer Science Seminar	
CSC 195	Fieldwork in Computer Science	
CSC 195A	Professional Practice	
CSC 198	Co-Curricular Activities in Computer Science	
CSC 199	Special Problems	
Total Units		78-81

[1]   Course also satisfies General Education (GE)/Graduation Requirement.

[2]   Computer science students choosing between MATH 35 and MATH 100 should normally choose MATH 100 because it is more applied. MATH 35 at Sacramento State is designed for math majors.

[3]   In addition to the required lower-division and upper-division Computer Science courses, Computer Science majors must take additional elective courses, totaling at least nine (9) units, from undergraduate Computer Science courses numbered CSC 140 or above (excluding the listed courses).

Course choices should be made with advisor consultation. With advance written approval from their advisor, the course instructor, and the Department Chair, students with a GPA of 3.0 or greater may take graduate courses as electives. In any case students must meet any course prerequisite stated in the catalog prior to taking any elective course.

General Education Requirements [4]

Code	Title	Units
Area A: Basic Subjects (9 Units)		
A1 - Oral Communication		3
A2 - Written Communication		3
A3 - Critical Thinking		3
Area B: Physical Universe and Its Life Forms (3-6 Units)		

B1 - Physical Science [5]	0
B2 - Life Forms [6]	0 - 3
B3 - Lab (Note: Lab experience to be taken with one of the following: B1, B2 or B5 [5]	0
B4 - Math Concepts [5]	0
B5 - Additional Course (Any B to reach 12 units) - Take upper-division course to complete Area & upper division requirements.	3
Area C: Arts and Humanities (12 Units)	
C1 - Arts	3
C2 - Humanities	3
C1/C2 - Area Course C	3
C1/C2 - Area C Course - Take upper-division course to complete Area & upper division requirements.	3
Area D: The Individual and Society (9 Units)	
Area D Course	3
Area D Course	3
Area D Course	3
Area D Course - Take upper-division course to complete Area & upper division requirements. [5]	0
Area E: Understanding Personal Development (3 Units)	
Area E Course	3
Total Units	36-39

Graduation Requirements [4]

Code	Title	Units
Graduation Requirements (required by CSU) (9 Units)		
American Institutions: U.S. History		3
American Institutions: U.S. Constitution & CA Government		3
Writing Intensive (WI)		3
Graduation Requirements (required by Sacramento State) (6 Units)		
English Composition II		3
Race and Ethnicity in American Society (RE)		3
Foreign Language Proficiency Requirement [7]		0

[4] To help you complete your degree in a timely manner and not take more units than absolutely necessary, there are ways to use single courses to meet more than one requirement (overlap). For further information, please visit the General Education page (http://catalog.csus.edu/colleges/academic-affairs/general-education/).
Note: There is no way to list all possible overlaps so please consult with a professional advisor. The Academic Advising Center can be visited online (http://www.csus.edu/acad/), by phone (916) 278-1000, or email (advising@csus.edu).

[5] A required course in the major satisfies this GE area.

[6] Choosing BIO 1 or BIO 10 as the Computer Science science elective satisfies GE Area B2.

[7] Students with a declared major of BS in Computer Science are exempt from the Foreign Language Graduation Requirement.

Fiscal Impact to Change an Existing Program

Indicate programmatic or fiscal impact which this change will have on other academic units' programs, and describe the consultation that has occurred with affected units:

Math will see a change in demand due to the elimination of one math course from our requirements. Both Math and Physics will see a change in course demand between courses since we eliminated some course options for students. When notified, neither department objected.

Attach a copy of correspondence with these units:

Re Computer Science Electives.pdf
phys_confer.pdf

Provide a fiscal analysis of the proposed changes:

This proposal is fiscally neutral. Unit requirements are unchanged overall and there are no changes to modes of instruction.

How will the above changes be accommodated within the department/College existing fiscal resources?

This proposal is fiscally neutral. Unit requirements are unchanged overall and there are no changes to modes of instruction.

Will the proposed changes require additional resources?

No

What additional space, equipment, operating expenses, library, computer, or media resources, clerical/technical support, or other resources will be needed?

None.

Estimate the cost and indicate how these resource needs will be accommodated:

Not applicable.

Reviewer Comments:

Nikrouz Faroughi (faroughi) (Wed, 30 Sep 2020 23:45:19 GMT): Rollback: make additional updates
Anna Baynes (shaverdian) (Thu, 01 Oct 2020 00:12:47 GMT): Rollback: Asked to roll back.

Key: 131