Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

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Proposing Department/Unit Computer Science	Phone 7-4478

Check all appropriate lines and complete all information. Use a separate cover sheet for each course proposal and/or program proposal.

1. Course Proposals (check all that apply)

☐ New Course   ☐ Course Prefix Change   ☐ Course Deletion

☐ Course Revision   ☐ Course Number and/or Title Change   ☐ Catalog Description Change

Current course prefix, number and full title: _____

Proposed course prefix, number and full title, if changing: _____

2. Liberal Studies Course Designations, as appropriate

This course is also proposed as a Liberal Studies Course (please mark the appropriate categories below)

☐ Learning Skills   ☐ Knowledge Area   ☐ Global and Multicultural Awareness   ☐ Writing Across the Curriculum (W Course)

☐ Liberal Studies Elective (please mark the designation(s) that applies – must meet at least one)

☐ Global Citizenship   ☐ Information Literacy   ☐ Oral Communication

☐ Quantitative Reasoning   ☐ Scientific Literacy   ☐ Technological Literacy

3. Other Designations, as appropriate

☐ Honors College Course   ☐ Other: (e.g. Women's Studies, Pan African)

4. Program Proposals

☐ Catalog Description Change   ☑ Program Revision   ☐ Program Title Change   ☐ New Track

☐ New Degree Program   ☐ New Minor Program   ☐ Liberal Studies Requirement Changes   ☐ Other

Current program name: Bachelor of Science - Computer Science / Languages and Systems Track

Proposed program name, if changing: _____

5. Approvals	Signature	Date
Department Curriculum Committee Chair(s)	*[signature]*	2/6/12
Department Chairperson(s)	Wm. Oblitz	2/10/2012
College Curriculum Committee Chair	*[signature]*	3/8/2012
College Dean	*[signature]*	3/12/12
Director of Liberal Studies (as needed)	*[signature]*	3/22/12
Director of Honors College (as needed)		
Provost (as needed)	*[signature]* W. Intemann	3/26/12
Additional signature (with title) as appropriate		
UWUCC Co-Chairs	Gail Sechrist	5/1/12

Program Revision- B.S. Computer Science (Languages and Systems Track)
Part II. Description of Curriculum Change

1.   Catalog Description for the Revised Bachelor of Science- Computer Science/Language and Systems Track

Note: Retain COSC preamble in catalog as it currently appears.

Liberal Studies: As outlined in Liberal Studies	44

Section with the following specifications:
Natural Science: 8cr, must choose two lab science sequence
Mathematics: 3cr, MATH 125 (1)
Liberal Studies Electives: 3cr, MATH 126 (1), no courses with COSC prefix.

Major:		48
Core Courses:		
COSC 105 Fundamentals of Computer Science	3cr	
COSC 110 Problem Solving and Structured Programming	3cr	
COSC 210 Object-Oriented and GUI Programming	3cr	
COSC 300 Computer Organization and		
Assembly Language	3cr	
COSC 310 Data Structures and Algorithms	3cr	
COSC 319 Software Engineering Concepts	3cr	
COSC 341 Introduction to Database Management Systems	3cr	
COSC 380 Seminar in Computing Profession and Ethics	2cr	
COSC 480 Seminar on Technical Topics	1cr	

Required Courses:

COSC 345 Computer Networks	3cr
COSC 432 Introduction to Operating Systems	3cr
COSC 460 Theory of Computation	3cr

Electives: 15cr from the following elective courses

COSC/MATH 250 Introduction to Numerical Methods (4)	3cr
COSC 316 Host Computer Security	3cr
COSC 473 Software Engineering Practice or	3cr
COSC 493 Internship in Computer Science (2)	3-6cr
COSC 355 Computer Graphics	3cr
COSC 362 Unix Systems	3cr
COSC 365 Web Architecture and Application	3cr
Development or	
COSC 444 Productivity Tools and 4th Generation	
Languages	
COSC 405 Artificial Intelligence	3cr
COSC 410 Computer Architecture	3cr
COSC 420 Modern Programming Languages *or*	
COSC 424 Compiler Construction	3cr
COSC 465 Distributed Processing and Web Services	3cr
COSC 481 Special Topics in Computer Science	
(as approved for majors)	1-4cr

Other Requirements:	25

ENGL 222 Technical Writing	3cr
One Science with lab in addition to the Liberal Studies requirement	4cr
Mathematics: A minor in mathematics including	18cr

the following courses: (3)
MATH 171 Introduction to Linear Algebra
MATH 216 Probability and Statistics for Natural Sciences
MATH 219 Discrete Mathematics
MATH 225 Calculus-III for Physics, Chemistry & Mathematics *or*
    MATH 250 Introduction to Numerical Methods (4)

Free Electives:	3

Total Degree Requirements:	120

(1) MATH 125 and 126 can be substituted by MATH 121 and 122.

Program Revision- B.S. Computer Science (Languages and Systems Track)

(2) COSC 493 may be selected after completion of sophomore year. Note: Only 3cr of first 6cr of COSC 493 or 6cr of a total 12cr of COSC 493 can be counted towards COSC electives.

(3) MATH 125 and 126 (taken as Liberal Studies requirements) are also counted towards the minor.

(4) COSC/MATH 250 may be counted as a Computer Science elective or as a part of the Mathematics minor, but not both.

Program Revision- B.S. Computer Science (Languages and Systems Track)
2. a.   Summary of Changes

Side-by-side comparison of Current and Proposed programs (additions and changes are shown in italics).

Current Program

Bachelor of Science - Computer Science/Languages and Systems Track.
Liberal Studies: As outlined in Liberal Studies   48
Section with the following specifications:
Natural Science: Must choose Liberal Studies Science option one
Mathematics: 3cr, MATH 125 (1)
Liberal Studies Electives: 3cr, MATH 126 (1), no courses with COSC prefix.

Major: 45
Core Courses:
COSC 105 Fundamentals of Computer Science   3cr
COSC 110 Problem Solving and Structured Programming   3cr
COSC 210 Object-Oriented and GUI Programming   3cr
COSC 300 Computer Organization and
            Assembly Language   3cr
COSC 310 Data Structures and Algorithms   3cr
COSC 319 Software Engineering Concepts   3cr
COSC 341 Introduction to Database Management Systems   3cr
COSC 380 Seminar in Computing Profession and
            Ethics   2cr
COSC 480 Seminar on Technical Topics   1cr

Required Courses:
COSC 345 Computer Networks   3cr
COSC 432 Introduction to Operating Systems   3cr
COSC 460 Theory of Computation   3cr

Electives: ~~12cr~~ *from the following elective courses*
COSC/MATH 250 Introduction to Numerical Methods (4) 3cr
COSC 316 Host Computer Security   3cr
~~COSC 320 Software Engineering Practice~~ *or*   3cr
        COSC 493 Internship in Computer Science (2)   12cr
COSC 355 Computer Graphics   3cr
COSC 362 Unix Systems   3cr
COSC 365 Web Architecture and Application   3cr
        Development   *or*
        COSC 444 Productivity Tools and 4th Generation
            Languages
COSC 405 Artificial Intelligence   3cr
COSC 410 Computer Architecture   3cr
COSC 420 Modern Programming Languages   *or*
        COSC 424 Compiler Construction   3cr
COSC 481 Special Topics in Computer Science
    (as approved for majors)   1-4cr

Proposed Program

Bachelor of Science - Computer Science/Languages and Systems Track.
Liberal Studies: As outlined in Liberal Studies   *44*
Section with the following specifications:
Natural Science: *8cr, must choose two lab science sequence*
Mathematics: 3cr, MATH 125 (1)
Liberal Studies Electives: 3cr, MATH 126 (1), no courses with COSC prefix.

Major: *48*
Core Courses:
COSC 105 Fundamentals of Computer Science   3cr
COSC 110 Problem Solving and Structured Programming   3cr
COSC 210 Object-Oriented and GUI Programming   3cr
COSC 300 Computer Organization and
            Assembly Language   3cr
COSC 310 Data Structures and Algorithms   3cr
COSC 319 Software Engineering Concepts   3cr
COSC 341 Introduction to Database Management Systems   3cr
COSC 380 Seminar in Computing Profession and
            Ethics   2cr
COSC 480 Seminar on Technical Topics   1cr

Required Courses:
COSC 345 Computer Networks   3cr
COSC 432 Introduction to Operating Systems   3cr
COSC 460 Theory of Computation   3cr

Electives: 15cr from the following elective courses
COSC/MATH 250 Introduction to Numerical Methods (4) 3cr
COSC 316 Host Computer Security   3cr
COSC 473 Software Engineering Practice or   3cr
        COSC 493 Internship in Computer Science (2)   *3-6cr*
COSC 355 Computer Graphics   3cr
COSC 362 Unix Systems   3cr
COSC 365 Web Architecture and Application   3cr
        Development   or
        COSC 444 Productivity Tools and 4th Generation
            Languages
COSC 405 Artificial Intelligence   3cr
COSC 410 Computer Architecture   3cr
COSC 420 Modern Programming Languages *or*
        COSC 424 Compiler Construction   3cr
COSC 465 Distributed Processing and Web Services 3cr
COSC 481 Special Topics in Computer Science
        (as approved for majors)   1-4cr

Program Revision- B.S. Computer Science (Languages and Systems Track)

Current Program	Proposed Program

Current Program

Other Requirements: *19*

ENGL ~~322~~ Technical Writing 3cr
One Science with lab in addition to the Liberal Studies
requirement 4cr
Mathematics: A minor in mathematics including ~~12cr~~
the following courses: (3)
MATH 171 Introduction to Linear Algebra
MATH 216 Probability and Statistics for Natural Sciences
MATH 219 Discrete Mathematics
MATH 225 Calculus-III for Physics, Chemistry & Mathematics
    or
    MATH 250 Introduction to Numerical Methods (4)

Free Electives: 8

Total Degree Requirements: 120

(1) MATH 125 and 126 can be substituted by MATH 121 and 122.
(2) COSC 493 may be selected ~~in either the second semester of the junior year or the first semester of the senior year. If COSC 493 is selected and approved, COSC 380 should be taken in the immediately preceding semester. Only 4cr~~ can be counted towards major.
(3) MATH 125 and 126 (taken as Liberal Studies requirements) are also counted towards the minor.
(4) COSC/MATH 250 may be counted as a Computer Science elective or as a part of the Mathematics minor, but not both

Proposed Program

Other Requirements: *25*

ENGL *222* Technical Writing 3cr
One Science with lab in addition to the Liberal Studies
requirement 4cr
Mathematics: A minor in mathematics including 18cr
the following courses: (3)
MATH 171 Introduction to Linear Algebra
MATH 216 Probability and Statistics for Natural Sciences
MATH 219 Discrete Mathematics
MATH 225 Calculus-III for Physics, Chemistry & Mathematics
    or
    MATH 250 Introduction to Numerical Methods (4)

Free Electives: *3*

Total Degree Requirements: 120

(1) MATH 125 and 126 can be substituted by MATH 121 and 122.
(2) COSC 493 may be selected after completion of sophomore year. Note: Only *3cr of first 6cr of COSC 493 or 6cr of a total 12cr* of COSC 493 can be counted towards major.
(3) MATH 125 and 126 (taken as Liberal Studies requirements) are also counted towards the minor.
(4) COSC/MATH 250 may be counted as a Computer Science elective or as a part of the Mathematics minor, but not both.

Program Revision- B.S. Computer Science (Languages and Systems Track)

b) List of associated course changes

The following courses have changed course numbers:

COSC 320 Software Engineering Practice, re-numbered
    as **COSC 473 Software Engineering Practice**

The following courses have been revised:

COSC 493 Internship in Computer Science

The following courses have been added:

COSC 465 Distributed Processing and Web Services

3. Rationale

This program revision represents a few changes based on recommendations from the Computer Science Corporate Advisory board together with minor curriculum changes to replace an outdated course with an alternative, and renumber a course to better align with level and purpose. Specifics are:

a) COSC 320 Software Engineering Practice is the practicum that is intended to be a capstone of the Computer Science program where student apply their skills and knowledge to sizable projects that are representative to industry. It is the on-campus counterpart to an internship experience. Given this, it is being renumbered to 473 to indicate a senior level course that is on par with COSC 493 Internship experience. Furthermore, this change provides alignment with the department's ABET accreditation plan in which COSC 493 or COSC 473 are the designated capstone courses.

b) The number of credits hours of COSC 493 that can be counted toward a major was increased from 2cr per 6cr of 493 to 3cr per 6cr of 493. This change enabled the first 6cr of 493 to be counted as a controlled elective and the last 6cr of 493 to be counted as fulfilling the practicum requirement of the Applied and Information Assurance tracks (or as a second controlled elective in the remaining tracks). In making this change, students may undertake an internship without incurring excessive credits beyond the 120 required for graduation.

c) COSC 465 Distributed Processing and Web Services is an upper level elective that follows COSC 365 Web Architecture and Application Programming. Distributed Processing and Web Services is an area that is experiencing considerable growth and demand in the industry and is above and beyond the material that can be covered in 365. The topics related to distributed processing and web services can only be covered at a cursory level in 365 due to the volume of content encompassing web technologies. 365 provides minimal discussion of web services and then only in the context of future directions. 465 thus provide a detailed study of web services technologies providing students hand-on labs/exercises/and assignments to use these technologies.

d) ENGL 322 was changed to ENGL 222 as a result of a change in course number initiated by the English department. Course content was not changed.

e) Change the number of credits for the minor in mathematics and the number of free electives. This change was made to accurately reflect the requirements of the minor.

f) Change the number of credits in COSC electives and the number of free electives. This change was made to accommodate changes in the new Liberal Studies curriculum.

Part III. Implementation

1. Proposed Date of Change.

It is proposed that the changes be implemented for the academic year after the Senate approval.

2. Effects on Currently Enrolled Students.

Students currently enrolled in the program may elect to not complete the foreign language requirement provided they complete the additional Computer Science elective. Conversely, students that have completed a foreign language requirement are not required to complete the additional elective.

All currently enrolled students may elect to take 465 as the required controlled or upper level elective.

3. Effects on Faculty/Resources.

There are no overall effects to the Computer Science faculty. COSC 465 will be scheduled on a rotating basis with other electives. The frequency that these courses are offered will depend on student demand/interest. Current faculty are prepared to present the content of these courses.

4. Effects on the Number of Students.

It is expected that there will be no significant effects on the number of students in the program. It is anticipated that the requirement of an additional controlled elected to be taken by all students will result in increased enrollment in the controlled and upper level electives, but will not exceed the class capacity. These changes are needed to maintain the department's reputation on preparing students to become software development professionals.

Part IV. Periodic Assessment

The assessment of the success of the proposed changes described in this proposal will be performed as part of the Computer Science Department's overall curriculum assessment policies. This change is minor and will not affect the way current assessment is done.

Part V. Course Proposals

The course proposals for:

COSC 465 Distributed Processing and Web Services

are attached.

Part VI. Letters of Support or Acknowledgement

N/A