Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

Contact Person(s) David T. Smith	Email Address dtsmith@iup.edu
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 Arts - Computer Science

Proposed program name, if changing: _____

5. Approvals

Approvals	Signature	Date
Department Curriculum Committee Chair(s)	*[signature]*	2/6/12
Department Chairperson(s)	*Wm. Oblitas*	2/10/2012
College Curriculum Committee Chair	*Anne Rorda*	3/7/12
College Dean	*Deane*	3/12/12
Director of Liberal Studies (as needed)	*H. Pute*	3/22/12
Director of Honors College (as needed)		
Provost (as needed)	*Gerald W. Gleman*	3/27/12
Additional signature (with title) as appropriate		
UWUCC Co-Chairs	*Gail Sechrist*	4/3/12

Part II. Description of Curriculum Change

1.   Catalog Description for the Revised Bachelor of Arts- Computer Science

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

Bachelor of Arts - Computer Science

Liberal Studies: As outlined in Liberal Studies		43-44
section with the following specifications:		
Mathematics: 3cr, MATH 125 (3cr) (1)		
Liberal Studies Electives: 3cr, MATH 216		

Major:		**40**
Required 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 220 Applied Computer Programming	4cr	
COSC 300 Computer Organization and		
Assembly Language	3cr	
COSC 310 Data Structures and Algorithms	3cr	
COSC 341 Intro to Database Management Systems	3cr	
COSC 380 Seminar in Computing Profession and		
Ethics	2cr	
COSC 480 Seminar on Technical Topics	1cr	

Controlled Electives: 9cr from the following: (2)		
COSC/MATH 250 Introduction to Numerical Methods	3cr	
COSC 316 Host Computer Security (3)	3cr	
COSC 319 Software Engineering Concepts	3cr	
COSC 345 Computer Networks	3cr	
COSC/IFMG 354 Testing and Controlling LANs	3cr	
COSC 355 Computer Graphics	3cr	
COSC 356 Network Security	3cr	
COSC 362 Unix Systems	3cr	
COSC 365 Web Architecture and Application Development	3cr	
COSC 473 Software Engineering Practice (4)	3cr	
COSC 481 Special Topics in Computer Science		
(only sections approved for majors)	1-4cr	
COSC 482 Independent Study	1-4cr	
COSC 493 Internship in Computer Science (4)	12cr	
IFMG 455 Data Warehousing & Mining	3cr	

Upper-level Electives by Categories: (5)	6cr	
Artificial Intelligence: COSC 405		
Computer Architecture: COSC 410		
Data Base Management: COSC 444		
Distributed Systems: COSC 465		
Numerical Methods: COSC 427, 451		
Systems Programming: COSC 430, 432		
Theory of Languages: COSC 420, 424, 460		

Other Requirements:		**6**
Additional Writing:		
ENGL 222 Technical Writing	3cr	
Additional Mathematics:	3cr	
MATH 219 Discrete Mathematics		

Free Electives:	30-31

Total Degree Requirements:	120

(1)   MATH 125 can be substituted by MATH 121.
(2)   Upper-level electives may be counted as controlled electives. 3cr of Intermediate Level foreign language may be applied toward controlled electives.
(3)   COSC 316 cannot be counted for major credit if a student does an Information Assurance minor.

(4)   Credit for both COSC 320 and 493 may be counted toward the degree, but only one will be counted toward the major requirements. Note: Only 3cr of first 6cr of COSC 493 or 6cr of a total 12cr of COSC 493 can be counted towards major. COSC 493 may be selected after completion of sophomore year.

(5)   Select at least two additional courses, from at least two different categories, from the list of upper-level electives.

2. Summary of Changes

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

Current Program

Bachelor of Arts - Computer Science

Liberal Studies: As outlined in Liberal Studies section with the following specifications:	**48**
Mathematics: 3cr, MATH 125 (3cr) (1)	
Liberal Studies Electives: 3cr, *MATH* 216	

Major:	**37**
Required 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 220 Applied Computer Programming	4cr
COSC 300 Computer Organization and Assembly Language	3cr
COSC 310 Data Structures and Algorithms	3cr
COSC 341 Intro to Database Management Systems	3cr
COSC 380 Seminar in Computing Profession and Ethics	2cr
COSC 480 Seminar on Technical Topics	1cr
Controlled Electives: 6cr from the following:	**(2)**
COSC/MATH 250 Introduction to Numerical Methods	3cr
COSC 316 Host Computer Security	3cr (3)
COSC 319 Software Engineering Concepts	3cr
~~COSC 320 Software Engineering Practice~~	~~3cr(4)~~
COSC 345 Computer Networks	3cr
COSC/IFMG 354 Testing and Controlling LANs	3cr
COSC 355 Computer Graphics	3cr
COSC 356 Network Security	3cr
COSC 362 Unix Systems	3cr
COSC 365 Web Architecture and Application Development	3cr
COSC 481 Special Topics in Computer Science (only sections approved for majors)	1-4cr
COSC 482 Independent Study	1-4cr
COSC 493 Internship in Computer Science	12cr (4)
IFMG 455 Data Warehousing & Mining	3cr

Upper-level Electives by Categories:	**6cr (5)**
Artificial Intelligence: COSC 405	
Computer Architecture: COSC 410	
Data Base Management: COSC 444	
Numerical Methods: COSC 427, 451	
Systems Programming: COSC 430, 432	
Theory of Languages: COSC 420, 424, 460	

Other Requirements:	**6-12**
Additional Writing:	
ENGL 322 Technical Writing	3cr
~~Foreign Language Intermediate Level~~	~~0-6cr~~
Additional Mathematics:	3cr
MATH 219 Discrete Mathematics	

Free Electives:	**22-28**
Total Degree Requirements:	**120**

Bachelor of Arts - Computer Science

Liberal Studies: As outlined in Liberal Studies section with the following specifications:	*43-44*
Mathematics: 3cr, MATH 125 (3cr) (1)	
Liberal Studies Electives: 3cr, MATH 216	

Major:	*40*
Required 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 220 Applied Computer Programming	4cr
COSC 300 Computer Organization and Assembly Language	3cr
COSC 310 Data Structures and Algorithms	3cr
COSC 341 Intro to Database Management Systems	3cr
COSC 380 Seminar in Computing Profession and Ethics	2cr
COSC 480 Seminar on Technical Topics	1cr
Controlled Electives: 6cr from the following: (2)	
COSC/MATH 250 Introduction to Numerical Methods	3cr
COSC 316 Host Computer Security (3)	3cr
COSC 319 Software Engineering Concepts	3cr
COSC 345 Computer Networks	3cr
COSC/IFMG 354 Testing and Controlling LANs	3cr
COSC 355 Computer Graphics	3cr
COSC 356 Network Security	3cr
COSC 362 Unix Systems	3cr
COSC 365 Web Architecture and Application Development	3cr
COSC 473 Software Engineering Practice (4)	*3cr*
COSC 481 Special Topics in Computer Science (only sections approved for majors)	1-4cr
COSC 482 Independent Study	1-4cr
COSC 493 Internship in Computer Science (4)	12cr
IFMG 455 Data Warehousing & Mining	3cr

Upper-level Electives by Categories: (5)	**6cr**
Artificial Intelligence: COSC 405	
Computer Architecture: COSC 410	
Data Base Management: COSC 444	
Distributed Systems: COSC 465	
Numerical Methods: COSC 427, 451	
Systems Programming: COSC 430, 432	
Theory of Languages: COSC 420, 424, 460	

Other Requirements:	**6**
Additional Writing:	
ENGL *222* Technical Writing	3cr
Additional Mathematics:	3cr
MATH 219 Discrete Mathematics	

Free Electives:	*30-31*
	9-15
Total Degree Requirements:	**120**

Proposed Program

4

Current Program

(1)   MATH 125 can be substituted by MATH 121.
(2)   Select at least 6cr from the list of controlled electives.
(3)   COSC 316 cannot be counted for major credit if a
        student does an Information Assurance minor.
(4)   Credit for both COSC 320 and 493 may be counted
        toward the degree, but only one will be counted
        toward the major requirements. Note: Only 4cr of
        COSC 493 can be counted toward these 6cr.
        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 may be taken in the immediately preceding
        semester.
(5)   Select at least two additional courses, from at least two
        different categories, from the list of upper-level
        electives

Proposed Program

(1)   MATH 125 can be substituted by MATH 121.
(2)   *Upper-level electives may be counted as controlled
        electives. 3cr of Intermediate Level foreign language
        may be applied toward controlled electives.*
(3)   COSC 316 cannot be counted for major credit if a
        student does an Information Assurance minor.
(4)   Credit for both COSC 320 and 493 may be counted
        toward the degree, but only one will be counted
        toward the major requirements. Note: *Only 3cr of first
        6cr of COSC 493 or 6cr of a total 12cr of COSC 493
        can be counted towards major.* COSC 493 may be
        selected *after completion of sophomore year.*
(5)   Select at least two additional courses, from at least two
        different categories, from the list of upper-level
        electives..

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
COSC 341 Introduction to Database Management Systems**

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) Due to the expansion of the field and the need to cover leading-edge technologies, additional courses in the field are required by many majors. On the advice of the Corporate Advisory Board, the mandate for a foreign language has been removed from the curriculum for pragmatic reasons. In addition, the removal of this mandate provides flexibility for majors to switch tracks with minimal impact. However, the Computer Science department acknowledges the benefits of studying a foreign language and has provided the option to include an intermediate level foreign language course as a controlled elective. The department will continue to encourage the foreign language option when a student's area of concentration permits.

e) 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.

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. Any foreign language credits will count towards free electives.

All currently enrolled students may elect to take 465 as a 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

A request for a letter of support or acknowledgement has been sent to the Department of Foreign Languages.