LSC Use Only No: LSC Action-Date:	**UWUCC USE Only** No. 02-101b UWUCC Action-Date: App 4/22/03 Senate App 4/29/03 Senate Action Date:

Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

Contact Person: **Sanwar Ali**	Email Address: **sanwar@iup.edu**
Proposing Department/Unit: **Computer Science**	Phone: **7-7994**

Check all appropriate lines and complete information as requested. Use a separate cover sheet for each course proposal and for each 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. Additional Course Designations: check if appropriate

_____ This course is also proposed as a Liberal Studies Course.

_____ This course is also proposed as an Honors College Course.

_____ Other: (e.g., Women's Studies, Pan-African)

3. Program Proposals

_____Catalog Description Change _____Program Title Change _____New Track

_____New Degree Program _____New Minor Program

__X__Program Revision _____Other

Bachelor of Science- Computer Science/ Languages and Systems Track *Current program name*	*Proposed program name, if changing*

4. Approvals		**Date**
Dept Curriculum Committee Chair	Sanwar Ali	3/10/03
Department Chair		10 Mar 03
Coll. Curriculum Committee Chair		03/21/03
College Dean	John D.	3/21/03
Director of Liberal Studies *		
Director of Honors College *		
Provost *		
Additional signatures as appropriate:		
(include title)		
UWUCC Co-Chairs	Gail Sechrist	4/22/03

* where applicable

RECEIVED MAR 21 2003 LIBERAL STUDIES

APR 23 2003

RECEIVED APR - 3 2003 LIBERAL STUDIES

RECEIVED APR 11 2003 LIBERAL STUDIES

Part II. Description of Curriculum Change

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

Liberal Studies: As outlined in Liberal Studies section with the following specifications: **50**
Mathematics: MATH 123
Liberal Studies Electives: 4 cr. MATH 124

Major: **42**
Required Courses:

COSC 105 Fundamentals of Computer Science	3sh
COSC 110 Problem Solving and Structured Programming	3sh
COSC 210 Object Oriented and GUI Programming	3sh
COSC 220 Applied Computer Programming	4sh
COSC 300 Assembly Language Programming	3sh
COSC 310 Data Structures and Algorithms	3sh
COSC 319 Software Engineering Concepts	3sh
COSC 341 Intro to Database Management Systems	3sh
COSC 380 Seminar on the Computer Profession	1sh
COSC 480 Seminar on Technical Topics	1sh

Select 9sh from the following upper-level electives:

COSC 405 Artificial Intelligence	3sh
COSC 410 Processor Architecture and Microprogramming	3sh
COSC 420 Modern Programming Languages	3sh
COSC 424 Compiler Construction	3sh
COSC 432 Introduction to Operating Systems	3sh
COSC 460 Theory of Computation	3sh

Controlled Electives:
Select 6sh from the following: (1)

COSC 250 Introduction to Numerical Methods	3sh
COSC 304 Interactive Internet Programming with Java	3sh(2)
COSC 316 Cybersecurity Basics	3sh(3)
COSC 320 Software Engineering Practice	3sh(4)
COSC 344 Productivity Tools and 4th Generation Languages	3sh(2)
COSC 345 Data Communications	3sh
COSC/IFMG 354 Testing and Controlling LANs	3sh
COSC 355 Computer Graphics	3sh
COSC 356 Network Security	3sh
COSC 360 IBM Job Control Language	1sh
COSC 362 Unix Systems	3sh
COSC 415 Internet Architecture and Programming	3sh
COSC 419 Software Development with ADA	3sh
COSC 427 Cryptography	3sh
COSC 430 Intro to Systems Programming	3sh
COSC 450 Applied Numerical Methods	3sh
COSC 451 Numerical Methods for Supercomputers	3sh
COSC 481 Special Topics in Computer Science (only sections approved for majors)	1-4sh
COSC 482 Independent Study	1-4sh
COSC 493 Internship in Computer Science	12sh (4)(5)
IFMG 455 Data Warehousing & Mining	3sh

Other Requirements: **19**

Additional Writing:

ENGL 322 Technical Writing	3sh
Foreign Language	6sh
Mathematics: A minor in mathematics including the following courses:	10 sh

MATH 123 Calculus I (MATH 121 and 122 may be substituted)
MATH 124 Calculus II
MATH 171 Introduction to Linear Algebra
MATH 216 Probability and Statistics for Natural Sciences
MATH 219 Discrete Mathematics

Free Electives: **9**

Total Degree Requirements: **120**

(1) MATH 123 can be substituted by taking both MATH 121 and 122

(2) Select at least 6sh from the list of controlled electives. Note: Only 4sh of COSC 493 may be counted toward these 6sh.

(3) Credit for both COSC 304 and 344 may be counted toward the degree, but only one will be counted toward the major requirements.

(4) COSC 316 cannot be counted for major credit if a student does an Information Assurance minor.

(5) Credit for both COSC 320 and 493 may be counted toward the degree, but only one will be counted toward the major requirements.

(6) 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 immediate preceding semester.

(7) In addition to MATH 171, 216 and 219, MATH 123-124 (taken as Liberal Studies requirement) are also counted towards the minor.

2. Summary of Changes

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

Current Program

Bachelor of Science - Computer Science/Languages and Systems Track

Liberal Studies: As outlined in Liberal Studies section with the following specifications: **Mathematics:** MATH 123 (or MATH 121 and 122) **Liberal Studies Electives:** MATH 124, no courses with COSC prefix	**54-58**
Major:	**42**
Required Courses:	
COSC 105 Fundamentals of Computer Science	3sh
COSC 110 Problem Solving and Structured Programming	3sh
COSC 210 Object Oriented and GUI Programming	3sh
COSC 220 Applied Computer Programming	4sh
COSC 300 Assembly Language Programming	3sh
COSC 310 Data Structures and Algorithms	3sh
COSC 319 Software Engineering Concepts	3sh
COSC 341 Intro to Database Management Systems	3sh
COSC 380 Seminar on the Computer Profession	1sh
COSC 410 Processor Architecture and Microprogramming	3sh
COSC 420 Modern Programming Languages	3sh
COSC 432 Introduction to Operating Systems	3sh
COSC 480 Seminar on Technical Topics	1sh
Controlled Electives:	
Select 6sh from the following: (1)	
COSC 250 Introduction to Numerical Methods	3sh
COSC 304 Interactive Internet Programming with Java	3sh(2)
COSC 320 Software Engineering Practice	3sh(3)
COSC 344 Productivity Tools and 4th Generation Languages	3sh(2)
COSC 345 Data Communications	3sh
COSC/IFMG 354 Testing and Controlling LANs	3sh
COSC 355 Computer Graphics	3sh
COSC 360 IBM Job Control Language	1sh
COSC 362 Unix Systems	3sh
COSC 405 Artificial Intelligence	3sh
COSC 415 Internet Architecture and Programming	3sh
COSC 419 Software Development with ADA	3sh
COSC 424 Compiler Construction	3sh
COSC 430 Intro to Systems Programming	3sh
COSC 450 Applied Numerical Methods	3sh
COSC 451 Numerical Methods for Supercomputers	3sh
COSC 460 Theory of Computation	3sh
COSC 481 Special Topics in Computer Science (only sections approved for majors)	1-4sh
COSC 482 Independent Study	1-4sh
COSC 493 Internship in Computer Science	12sh(4)
IFMG 455 Data Warehousing & Mining	3sh
Other Requirements:	**13-25**
Additional Writing:	
ENGL 322 Technical Writing	3sh
Foreign Language Intermediate Level	0-6sh(5)
Mathematics: A minor in mathematics including the following courses:	10-15sh(6)
MATH 123 Calculus I for Physics, Chemistry, and	

Proposed Program

Bachelor of Science - Computer Science/Languages and Systems Track

Liberal Studies: As outlined in Liberal Studies section with the following specifications: **Mathematics:** MATH 123 **Liberal Studies Electives:** 4 cr. MATH 124	**50**
Major:	**42**
Required Courses:	
COSC 105 Fundamentals of Computer Science	3sh
COSC 110 Problem Solving and Structured Programming	3sh
COSC 210 Object Oriented and GUI Programming	3sh
COSC 220 Applied Computer Programming	4sh
COSC 300 Assembly Language Programming	3sh
COSC 310 Data Structures and Algorithms	3sh
COSC 319 Software Engineering Concepts	3sh
COSC 341 Intro to Database Management Systems	3sh
COSC 380 Seminar on the Computer Profession	1sh
COSC 480 Seminar on Technical Topics	1sh
Select 9sh from the following the upper-level electives:	
COSC 405 Artificial Intelligence	3sh
COSC 410 Processor Architecture and Microprogramming	3sh
COSC 420 Modern Programming Languages	3sh
COSC 424 Compiler Construction	3sh
COSC 432 Introduction to Operating Systems	3sh
COSC 460 Theory of Computation	3sh
Controlled Electives:	
Select 6sh from the following: (1)	
COSC 250 Introduction to Numerical Methods	3sh
COSC 304 Interactive Internet Programming with Java	3sh(2)
COSC 316 Cybersecurity Basics	*3sh(3)*
COSC 320 Software Engineering Practice	3sh(4)
COSC 344 Productivity Tools and 4th Generation Languages	3sh(2)
COSC 345 Data Communications	3sh
COSC/IFMG 354 Testing and Controlling LANs	3sh
COSC 355 Computer Graphics	3sh
COSC 356 Network Security	*3sh*
COSC 360 IBM Job Control Language	1sh
COSC 362 Unix Systems	3sh
COSC 415 Internet Architecture and Programming	3sh
COSC 419 Software Development with ADA	3sh
COSC 427 Cryptography	*3sh*
COSC 430 Intro to Systems Programming	3sh
COSC 450 Applied Numerical Methods	3sh
COSC 451 Numerical Methods for Supercomputers	3sh
COSC 481 Special Topics in Computer Science (only sections approved for majors)	1-4sh
COSC 482 Independent Study	1-4sh
COSC 493 Internship in Computer Science	12sh(4)(5)
IFMG 455 Data Warehousing & Mining	3sh

Current Program

MATH 124 Calculus II for Physics, Chemistry, and Mathematics
MATH 171 Introduction to Linear Algebra
MATH 216 Probability and Statistics for Natural Sciences
(MATH 363 and 364 may be substituted)
MATH 219 Discrete Mathematics

Free Electives: **0-15**

Total Degree Requirements: **124**

(1) Select at least 6sh from the list of controlled electives. Note: Only 4sh of COSC 493 may be counted toward these 9sh.
(2) Credit for both COSC 304 and 344 may be counted toward the degree, but only one will be counted toward the major requirements.
(3) Credit for both COSC 320 and 493 may be counted toward the degree, but only one will be counted toward the major requirements.
(4) 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) Foreign Language intermediate-level courses are counted as Liberal Studies electives.
(6) Credit for MATH 123 and 124 are counted in Liberal Studies.

Proposed Program

Other Requirements: **19**

Additional Writing:
ENGL 322 Technical Writing 3sh
Foreign Language 6sh
Mathematics: A minor in mathematics including *10 sh*
the following courses:
MATH 123 Calculus I (MATH 121 and 122 may be substituted)
MATH 124 Calculus II
MATH 171 Introduction to Linear Algebra
MATH 216 Probability and Statistics for Natural Sciences
MATH 219 Discrete Mathematics

Free Electives: **9**

Total Degree Requirements: **120**

(1) MATH 123 can be substituted by taking both MATH 121 and 122.
(2) Select at least 6sh from the list of controlled electives. Note: Only 4sh of COSC 493 may be counted toward these 6sh.
(3) Credit for both COSC 304 and 344 may be counted toward the degree, but only one will be counted toward the major requirements.
(4) COSC 316 cannot be counted for major credit if a student does an Information Assurance minor.
(5) Credit for both COSC 320 and 493 may be counted toward the degree, but only one will be counted toward the major requirements.
(6) 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.
(7) In addition to MATH 171, 216 and 219, MATH 123-124 (taken as Liberal Studies requirement) are also counted towards the minor.

3. Summary of Changes and Justification:

a) MATH 122 is deleted because only 3 or 4sh are needed for the Math component of Liberal Studies. If student takes MATH 121, she/he must also take MATH 122 for the Computer Science requirement (equivalent to MATH 123) but not as a Liberal Studies requirement.

b) We made an upper-level electives group and moved COSC 405, 410, 420, 424, 432, and 460 into this group. Because of scheduling conflict, students were sometimes not able to get the three courses required previously. This change, allowing the students to choose three courses out of six, gives them greater flexibility without impairing their chances to go to graduate school.

c) Three new courses, COSC 316, 356, and 427 were added in the controlled electives in the proposed program. COSC 316 and 356 are required courses and COS 427 is controlled elective for the Information Assurance (IA) track. Students from BS/Language & Systems expressed interest to take these courses. To provide more opportunity to students we added the above courses in controlled electives group for the LaS track.

d) MATH 363 has been deleted from the proposed program because the prerequisite for this course is MATH 216. Our students must take MATH 216, which by itself satisfies the statistics requirement for Computer Science majors. Therefore, it is redundant in keeping MATH 363. (Please see the supporting letter from the Mathematics department). MATH 364 is also deleted because the prerequisite for this course is MATH 363. (Please see the supporting letter from the Mathematics department).

4. Supporting Letter: Attached

From: Jim Wolfe <jlwolfe@iup.edu>
Subject: [Fwd: Support for COSC Changes]
Date: Mon, 03 Feb 2003 09:59:04 -0500
To: Sanwar Ali <sanwar@iup.edu>

Here is the letter of support from Math.

From: "Gary Stoudt" <gary.stoudt@verizon.net>
Subject: Support for COSC Changes
Date: Mon, 3 Feb 2003 09:54:15 -0500
To: "'Jim Wolfe'" <jlwolfe@iup.edu>

Jim,

The Mathematics Department supports the removal of MATH 363/364 from the choices for "Additional Mathematics" in all Computer Science degree programs. MATH 363/364 is a course sequence in the theory of probability and statistics and carries a prerequisite of MATH 216. MATH 216 by itself will satisfy the statistics requirement for Computer Science majors. This change will have no impact on enrollments in the Mathematics Department.

Gary

Gary Stoudt, Chairperson
Mathematics Department