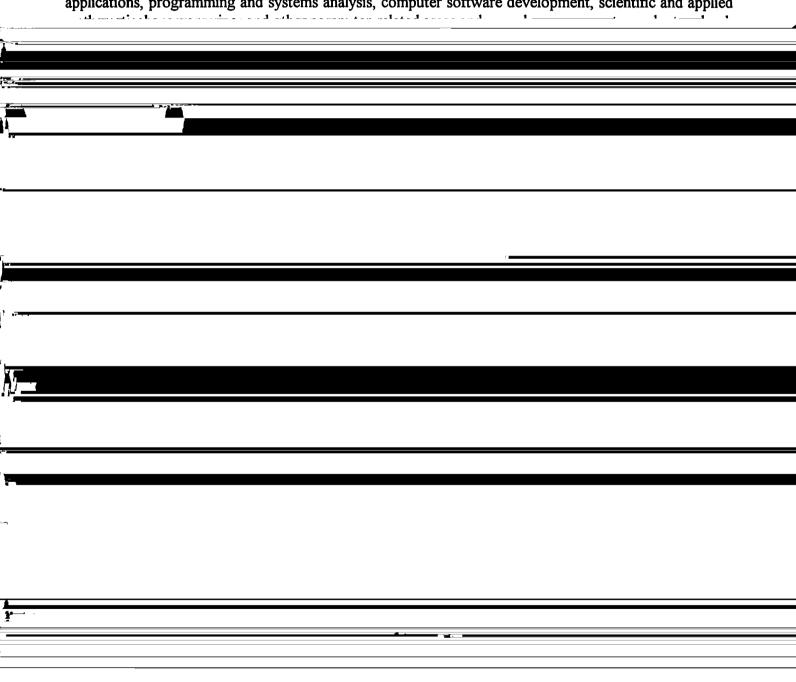Part II. Description of Curriculum Change

1. Catalog Description for the Revised Program.

Department of Computer Science
The programs in Computer Science at IUP leading to a B.S. or B.A. degree are designed primarily to prepare graduates for productive work in highly computer-dependent areas of business, government, and industry. In recent years, majors graduating from the program have attained their first jobs in business applications, programming and systems analysis, computer software development, scientific and applied

In a rapidly developing field such as Computer Science, it is important that the graduate's education be broad and fundamental so that new trends can more readily be followed. Our goal is to balance the fundamentals and breadth of the discipline with sufficient supervised practice so that our graduates are productive at the time they graduate and are also ready and willing to change with the field.

Most applied computer scientists work in cooperation with professionals trained in other areas and with

Bachelor of Arts-Computer Science

with the following specifications:

Mathematics: MATH 123 (or MATH 121-122)

Liberal Studies Electives: MATH 216 (or MATH 214 or 217), no courses with COSC prefix

Major:		36
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 341	Data Base Management	3sh
COSC 380	Seminar on the Computer Profession	1sh
COSC 480	Seminar on Technical Topics	1sh

Controlled Electives: Select 6sh (1)		
COSC 250	Introduction to Numerical Methods	3sh
COSC 304	Interactive Internet Programming with Java	3sh
COSC 319	Software Engineering Concepts	3sh
COSC 320	Software Engineering Practice	3sh
COSC 344	Productivity Tools and 4th Generation Languages	3sh
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 481	Special Topics in Computer Science	

Other Requirements: **6-22**
Additional Writing:
ENGL 322   Technical Writing   3sh
Foreign Language Intermediate Level   0-6sh (4)
Additional Mathematics: 3-13sh (5)

MATH 216   Probability and Statistics for Natural Sciences
           (MATH 363 and 364, MATH 214 and 417, or
           MATH 217 and 417 may be substituted)
MATH 219   Discrete Mathematics

Free Electives: **8-27**

Total Degree Requirements: **124**

(1)   Select at least 6sh from the list of controlled electives and/or the list of upper-level electives. Note:

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	Data Base Management	3sh
COSC 380	Seminar on the Computer Profession	1sh
COSC 480	Seminar on Technical Topics	1sh

Select one of the following two courses: (1)

COSC 304	Interactive Internet Programming with Java	3sh
COSC 344	Productivity Tools and 4th Generation Languages	3sh

Select one of the following two courses: (2)

COSC 320	Software Engineering Practice	3sh
COSC 493	Internship in Computer Science	12sh (3)

Controlled Electives:		Select	3sh (4)
COSC 250	Introduction to Numerical Methods		3sh
COSC 345	Data Communications		3sh
COSC/IFMG 354	Testing and Controlling LANs		3sh
COSC 355	Computer Graphics		3sh

Complete a minor from one of the following areas: 6-18
a) From any department in the College of Natural Sciences
   and Mathematics   6-18sh

c) From designated Economics courses   15sh
d) From designated Geography courses   15sh
e) From designated Communications Media courses   18sh

Free Electives: **0-19**

Total Degree Requirements: **124**

Tools and 4th Generation Languages may be counted toward the degree, but only one will be counted toward the major requirements.

COSC 300	Assembly Language Programming	3sh

COSC 341	Data Base Management	3sh
COSC 380	Seminar on the Computer Profession	1sh

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 6sh.

Tools and 4th Generation Languages may be counted toward the degree, but only one will be counted toward the major requirements.

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

trends can more readily be followed. Our goal is to balance fundamentality and breadth with sufficient

that new trends can more readily be followed. Our goal is to balance the fundamentals and breadth of

supervised practice so that our graduates are

the discipline with sufficient supervised practice so

productive at the time they graduate but ready and willing to change with the field.

    Most applied computer scientists work in cooperation with professionals trained in other

that our graduates are productive at the time they graduate and are also ready and willing to change with the field.

    Most applied computer scientists work in cooperation with professionals trained in other

Bachelor of Arts - Computer Science

with the following specifications:
Mathematics: MATH 123 (or MATH 121-122)
Liberal Studies Electives: MATH 216 (or MATH 214 or 217),
no courses with COSC prefix

Major:	**35**
Required Courses:	

with the following specifications:
Mathematics: MATH 123 (or MATH 121 and 122)
Liberal Studies Electives: MATH 216 (or MATH 214 or 217),
no courses with COSC prefix

Major:	**36**
Required Courses:	

COSC 110 Problem Solving and Structured Programming	3sh

COSC 110 Problem Solving and Structured Programming	3sh

categories, from the list of upper-level electives.
(4)   Foreign Language intermediate-level courses are counted as Liberal Studies electives.
(5)   Any of the Mathematics options satisfy the Learning Skill

MATH 219 Discrete Mathematics

Complete a minor from one of the following areas:	6-18sh
a) From any department in the College of Natural Sciences and Mathematics	6-18sh
b) From designated Business courses	18sh
c) From designated Economics courses	15sh
d) From designated Geography courses	15sh
e) From designated Communications Media courses	18sh

Free Electives: 0-20

Total Degree Requirements: 124

COSC 360 IBM Job Control Language	1sh	COSC/IFMG 354 Testing and Controlling LANs	3sh
COSC 362 Unix Systems	3sh	COSC 355 Computer Graphics	3sh
COSC 405 Artificial Intelligence	3sh	COSC 360 IBM Job Control Language	1sh
COSC 419 Software Development and Ada	3sh	COSC 362 Unix Systems	3sh
COSC 424 Compiler Construction	3sh	COSC 405 Artificial Intelligence	3sh
COSC 430 Introduction to Systems Programming	3sh	COSC 415 Internet Architecture and Programming	3sh
COSC 441 Data Base Management	3sh	COSC 419 Software Development and Ada	3sh
COSC 444 Productivity Tools and 4th Generation Languages	3sh	COSC 424 Compiler Construction	3sh
COSC 450 Applied Numerical Methods	3sh	COSC 430 Introduction to Systems Programming	3sh
COSC 451 Numerical Methods for Supercomputers	3sh	COSC 450 Applied Numerical Methods	3sh
COSC 460 Theory of Computation	3sh	COSC 451 Numerical Methods for Supercomputers	3sh

COSC 481 Special Topics in Computer Science

COSC 460 Theory of Computation

(as approved for majors)	1-4sh	COSC 481 Special Topics in Computer Science	
COSC 482 Independent Study	1-4sh	(as approved for majors)	1-4sh
COSC 493 Internship in Computer Science	12sh(3)	COSC 482 Independent Study	1-4sh

IFMG 455 Data Warehousing & Mining	3sh	COSC493 Internship in Computer Science	12sh(4)
		IFMG 455 Data Warehousing and Mining	3sh
Other Requirements:	**13-25**		
Additional writing:		**Other Requirements:**	**13-25**
ENGL 322 Technical Writing	3sh	Additional writing:	
Foreign Language Intermediate Level	0-6sh (4)	ENGL 322 Technical Writing	3sh
Mathematics: A minor in mathematics	10-16sh (5)	Foreign Language Intermediate Level	0-6sh (5)

b.   List of all associated course changes:

New Courses:
COSC 210 Object Oriented and GUI Programming.

COSC 415 Internet Architecture and Programming.

Course Revisions:
COSC 220   Applied Computer Programming - credit change and content update.

COSC 310   Data Structures and Algorithms - name change, prerequisite change, and content update.

COSC 319   Software Engineering Concepts - prerequisite change.

COSC 341   Data Base Management - course number change (was 441) and content update.

COSC 344   Productivity Tools and 4th Generation Languages - course number change was 444

Course Status Changes:

Graphical User Interface (GUI) paradigm is included to further reinforce the OOP concepts. This course is a prerequisite to COSC 310, Data Structures and Algorithms.

b. Add COSC 415, Internet Architecture and Programming, to the appropriate lists of controlled or

upper level electives for each degree path.

Rationale:
This course is designed to enhance the Computer Science curriculum with an advanced web based

development component, and is to be taken by junior or senior level Computer Science majors or

prerequisite. That additional course is COSC 310; COSC 310 will provide both the data structures and the additional programming maturity seen as necessary by the faculty.

f.   Change the course number of COSC 441, Data Base Management, to COSC 341. Add COSC 341,

Rationale:
Movement of the COSC 441 course to earlier in the student's coursework is required

Part III. Implementation

1. Students already in the existing program and who have taken or will take any of the new courses will be allowed to count them in the designated categories toward their requirements for a degree.

    Students entering IUP in the Fall of 2001 (or after) will be required to complete the new curriculum. All other students will be able to select either the old or the new curriculum.

    Students who select the old program must complete COSC 315 by Fall 2001. COSC 341 may be substituted for COSC 441. Students who select the new program may substitute COSC 441 for

    COSC 341.

2. Affects on faculty teaching loads have already been addressed in the new course proposals.

3. Resources, as outlined in the course proposals, are adequate.