### California State University Channel Islands

# **Program Modification**

Program modifications must be submitted by October 15, 2010 for priority catalog review

Date (Change if modified and update the file name with the new date): 2011 2012 Catalog Copy; rev 11.24.10 rev 1 27 11; rev 3.3.11

Program Area: Computer Science

Semester /Year First affected: Fall 2011

**Instructions:** Please use this <u>Program Modification</u> form for changes to existing program requirements, units, outcomes, emphases or options, or for other programmatic concerns. For minor changes (faculty or address changes, additions of approved electives, minor editing for clarity, and other minor updates) use the <u>Program Update</u> form, available at the Curriculum website.

Paste the latest approved version of your entire program in the left AND right boxes below. Make your deletions in the LEFT column by using the strikeout feature in Word or underlining, and highlight. Insert new language or other changes to the program on the RIGHT and highlight in YELLOW for easy identification. If possible, please align the two columns so that changes appear side-by-side with the original text.

#### **CURRENTLY APPROVED PROGRAM**

#### PROPOSED PROGRAM

# **COMPUTER SCIENCE**

# **COMPUTER SCIENCE**

# **Programs Offered**

- Bachelor of Science in Computer Science
- Minor in Computer Science
- Minor in Computer Game Design and Development
- Master of Science in Computer Science
- Bachelor of Science in Information Technology

The Computer Science degree offers the latest cutting edge education for various industrial and applied fields. Students are given a strong background in computer hardware and software, as well as a substantial amount of "hands-on" experience. The program stresses interdisciplinary applications in other sciences and business and prepares students for graduate studies.

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#### Careers

The program prepares students for careers in high-tech, computer and Internetdriven industries, where interdisciplinary, dynamic and innovative professionals trained in the latest technologies are increasingly sought.

# **Program Learning Outcomes**

Students graduating from the Computer Science program will be able to:

- Demonstrate critical thinking and problem solving skills by identifying, evaluating, analyzing and presenting
  - fundamental software solutions and their applications;
- Demonstrate the knowledge of current computing practices and broad technology use in industry and society, including a working knowledge of software development techniques;
- Be cognizant of emerging new technologies and industrial practices connected to the computer industry;
- Demonstrate communication, research and cooperation skills by working effectively with others in interdisciplinary group settings both inside and outside the classroom; and
- Demonstrate a sense of exploration that enables them to pursue rewarding careers in high- tech and bio-tech industries with life-learning.

# Faculty

William J. Wolfe, Ph.D.
Professor of Computer Science
Chair, Computer Science Program
Bell Tower West, Room 2225
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Andrzej A. J. Bieszczad, Ph.D.

Associate Professor of Computer Science

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Director of the Masters Program Director of the Masters Program Bell Tower West, Room 2285 Bell Tower West, Room 2285 (805) 437-2773 (805) 437-2773 ai.bieszczad@csuci.edu ai.bieszczad@csuci.edu Contact Information Contact Information http://compsci.csuci.edu http://compsci.csuci.edu Bachelor of Science in Computer Science - (123 units) Bachelor of Science in Computer Science - (123 units) **Special Grade Requirement Special Grade Requirement** A grade of C- or better is required in all pre-requisite courses in the major A grade of C- or better is required in all pre-requisite courses in the major Upper Division Required Major Courses ......29 Upper Division Required Major Courses ......29 General Education......28 General Education......28 American Institutions Requirement ......6 American Institutions Requirement ......6 TOTAL .....123 units TOTAL ......123 units Note: General Education Included in Major Requirements 14 Note: General Education Included in Major Requirements 14 Lower Division Requirements - 42 units Lower Division Requirements - 42 units COMP 150 Object-Oriented Programming ...... 4 COMP 150 Object-Oriented Programming......4 GE-B4 COMP 151 Data Structures and Program Design ..... 4 COMP 151 Data Structures and Program Design.....4 COMP 162 Computer Architecture and COMP 162 Computer Architecture and

Assembly Language......3 Assembly Language......3 Programming Languages ......3 COMP 232 Programming Languages ......3 COMP 232 COMP 262 Computer Organization and Architecture 3 COMP 262 Computer Organization and Architecture 3 MATH 150 Calculus I.....4 MATH 150 Calculus I.....4 GF-B3 GF-B3 MATH 151 Calculus II ...... 4 MATH 151 Calculus II......4 MATH 230 Logic and Mathematical Reasoning...... 3 MATH 230 Logic and Mathematical Reasoning ......3 GE-A3, B3 GE-A3, B3 Linear Algebra ......3 Linear Algebra.....3 MATH 240 MATH 240

Science: Choose either a. Physics 200 General Physics I (4), Physics 201 General	Science: Choose either a. Physics 200 General Physics I (4), Physics 201 General		
Physics II (4) and a course from GE section B2 (3)	Physics II (4) and a course from GE section B2 (3).		
or	or		
b. Physics 200 General Physics I (4), Biology 200 Principles	b. Physics 200 General Physics I (4), Biology 200 Principles		
of Organismal and Population Biology (4), Biology 212	of Organismal and Population Biology (4), Biology 212		
Neurobiology and Cognitive Science (3) GE B1 and B2	Neurobiology and Cognitive Science (3) GE B1 and B2		
Neurobiology and cognitive science (3) GE B1 and B2	Nediobiology and Cognitive Science (3) GE by and bz		
Upper Division Requirements - 41 units	Upper Division Requirements - 41 units		
Major Requirements - 29 units	Major Requirements - 29 units		
COMP 350 Introduction to Software Engineering3	COMP 350 Introduction to Software Engineering3		
COMP 362 Operating Systems4	COMP 362 Operating Systems4		
COMP 447 Societal Issues in Computing3	COMP 447 Societal Issues in Computing3		
GE-B4, D, INTD	GE-B4, D, INTD		
COMP 454 Automata, Languages and Computation3	COMP 454 Automata, Languages and Computation3		
COMP 491 Capstone Preparation1	COMP 491 Capstone Preparation1		
COMP 499 Capstone Project3	COMP 499 Capstone Project3		
MATH 300 Discrete Mathematics3	MATH 300 Discrete Mathematics3		
MATH 352 Probability and Statistics3	MATH 352 Probability and Statistics3		
MATH 354 Analysis of Algorithms3	MATH 354 Analysis of Algorithms3		
Choose three units from the following:	Choose three units from the following:		
COMP 420 Database Theory and Design3	COMP 420 Database Theory and Design3		
COMP 464 Computer Graphic Systems	COMP 464 Computer Graphic Systems		
and Design I3	and Design I3		
Electives - 12 units	Electives - 12 units		
Choose 12 Elective units from:	Choose 12 Elective units from:		
COMP 345 Digital Image Processing3	COMP 345 Digital Image Processing3		
(MATH/PHYS) GE-B1, B4, INTD	(MATH/PHYS) GE-B1, B4, INTD		
COMP 351 Distributed Computing3	COMP 351 Distributed Computing3		
COMP 420 Database Theory and Design3	COMP 420 Database Theory and Design3		
COMP 421 Unix for Programmers3	COMP 421 Unix for Programmers3		
COMP 424 Computer System Security3	COMP 424 Computer System Security3		
COMP 425 Computer Game Programming3	COMP 425 Computer Game Programming3		
COMP 429 Computer Networks3	COMP 429 Computer Networks3		
COMP 445 Image Analysis & Pattern Recognition	COMP 445 Image Analysis & Pattern Recognition		
(MATH/PHYS)3	(MATH/PHÝS)3		
GE-B1, B4, INTD	GE-B1, B4, INTD		

COMP 451	Advanced Object Oriented Programming3	COMP	451	Advanced Object Oriented Programming3	
COMP 452 Computational Bioinformatics (MATH)4		COMP	452	Computational Bioinformatics (MATH)4	
COMP 462 Embedded Systems3		COMP	462	Embedded Systems3	
COMP 464	Computer Graphic Systems and Design I 3	COMP	464	Computer Graphic Systems and Design I 3	
COMP 469	Artificial Intelligence/Neural Nets3	COMP	469	Artificial Intelligence/Neural Nets3	
COMP 490	Topics in Computer Science3	COMP	490	Topics in Computer Science3	
COMP 492	Internship1-3	COMP	492	Internship1-3	
COMP 494	Independent Research1-3	COMP	494	Independent Research1-3	
COMP 497	Directed Studies3	COMP	497	Directed Studies3	
ENGL 482	Technical Writing3	ENGL	482	Technical Writing3	
MATH 429	Operations Research3	MATH	429	Operations Research3	
MATH 448	Scientific Computing3	MATH	448	Scientific Computing3	
	GE B3, B4, INTD			GE B3, B4, INTD	
Proposed Cou	rse of Study	Propose	d Cou	irse of Study	
Freshman Year - 3		Freshman			
COMP 150	Object-Oriented Programming GE-B44	COMP		Object-Oriented Programming GE-B44	
COMP 151	Data Structures and Program Design4	COMP		Data Structures and Program Design 4	
COMP 162	Computer Architecture and	COMP		Computer Architecture and	
	Assembly Language3			Assembly Language3	
ENGL 105	Composition and Rhetoric3*	ENGL	105	Composition and Rhetoric	
	GE-A2			GE-A2	
MATH 150	Calculus I4	MATH	150	Calculus I4	
	GE-B3			GE-B3	
MATH 151	Calculus II4	MATH	151	Calculus II4	
MATH 230	Logic and Mathematical Reasoning3	MATH	230	Logic and Mathematical Reasoning3	
	GE-A3, B3			GE-A3, B3	
	GE Section A or C3			GE Section A or C3	
* <b>or</b> ENGL 102 ar	nd 1036	* or ENGL	. 102 ar	nd 1036	
Sophomore Year -	23 - 24 units	Sophomore	e Year -	23 - 24 units	
COMP 232	Programming Languages3	COMP	232	Programming Languages3	
COMP 262	Computer Organization & Architecture3	COMP	262	Computer Organization & Architecture .3	
MATH 240	Linear Algebra3	MATH	240	Linear Algebra3	
MATH 300 Discrete Mathematics3		MATH	300	Discrete Mathematics3	
Science: Choose either		Science: Choose either			
a. Physics 200 General Physics I (4), Physics 201 General			a. Physics 200 General Physics I (4), Physics 201 General		
Physics II (4) and a course from GE section B2.			Physics II (4) and a course from GE section B2.		
or			or		
b. Physics 200 General Physics I (4), Biology 200			b. Physics 200 General Physics I (4), Biology 200		

Principles of Organismal and Population Biology (4), Biology 212 Neurobiology and Cognitive Science (3)		Principles of Organismal and Population Biology (4), Biology 212 Neurobiology and Cognitive Science (3)				
GE B1 and B2			GE B1 and B2			
Junior Year - 19 un	its + GE	Junior Yea	r - 19 ur	nits + GE		
COMP 350	Introduction to Software Engineering3	COMP	350	Introduction to Software Engineering 3		
COMP 362	Operating Systems4	COMP	362	Operating Systems4		
COMP 421	Unix for Programmers3	COMP	421	Unix for Programmers3		
COMP 454	Automata, Languages, & Computation .3	COMP	454	Automata, Languages, & Computation.3		
MATH 352	Probability and Statistics3	MATH	352	Probability and Statistics3		
MATH 354	Analysis of Algorithms3	MATH	354	Analysis of Algorithms3		
Senior Year - 19 un		Senior Yea	r - 19 uı	nits + GE		
COMP 420	Database Theory and Design3	COMP		Database Theory and Design3		
COMP 424	Computer System Security3	COMP		Computer System Security3		
COMP 429	Computer Networks3	COMP	429	Computer Networks3		
COMP 447	Societal Issues in Computing3	COMP	447	Societal Issues in Computing3		
	GE-B4, D, INTD			GE-B4, D, INTD		
COMP 469	Artificial Intelligence/Neural Nets3	COMP	469	Artificial Intelligence/Neural Nets3		
COMP 491	Capstone Preparation1	COMP	491	Capstone Preparation1		
COMP 499	Capstone Project3	COMP	499	Capstone Project3		
General Education Courses Included in Major		General E	ducatio	n Courses Included in Major		
Requirements - 14	units	Requireme	ents - 1	4 units		
COMP 150	Object-Oriented Programming4 GE-B4	COMP	150	Object-Oriented Programming4 GE-B4		
COMP 447	Societal Issues in Computing Sciences 3 GE-B4, D	COMP	447	Societal Issues in Computing Sciences 3 GE-B4, D		
MATH 150	Calculus I4	MATH	150	Calculus I4		
	GE-B3			GE-B3		
MATH 230	Logic and Mathematical Reasoning3 GE-A3, B3	MATH	230	Logic and Mathematical Reasoning3 GE-A3, B3		
	Minor in Commuter Coinne			Min an in Commutan Opinson		
Minor in Computer Science				Minor in Computer Science		
(20-23 units)				(20-23 units)		
The Computer Sc	ience minor teaches the fundamentals of computer systems and	The Comr	outer So	cience minor teaches the fundamentals of computer systems and		

programming. This minor includes the fundamentals of computer programming, including design, implementation, and testing of object-oriented programs. It also teaches the basic architecture of the computer hardware, including the fundamental components of a computer system and the logical reasoning that it is based upon. Since these computer skills are extremely useful in most other disciplines, enhancing the students knowledge of technology no matter which major they have chosen.

#### Careers

Computer Programmer; Computer Systems Analyst; Any career that requires a basic knowledge of computer systems and programming

#### Requirements - 20-23 units

# Lower Division Requirements - 11-14 units

COMP 105 Computer Programming Introduction ... 3\*

\* This course is waived for students with equivalent programming experience

# Upper Division Requirements - 9 units

<u>Three</u> upper-division courses from the CS program approved by the advisor.

# Master of Science in Computer Science

(Offered through CI Extended University Program)

The MS in Computer Science prepares students for advanced careers in high-tech, computer-driven industries, including applications to business, aerospace, education, military, and government where interdisciplinary, dynamic and innovative professionals trained in latest technologies are increasingly sought. Students develop a strong background in computer theory, software and hardware, as well as skills to conduct applied research. The program stresses interdisciplinary applications while preparing students for a wide range of industry, academic, and research positions.

http://www.cs.csuci.edu/MSCS/

programming. This minor includes the fundamentals of computer programming, including design, implementation, and testing of object-oriented programs. It also teaches the basic architecture of the computer hardware, including the fundamental components of a computer system and the logical reasoning that it is based upon. Since these computer skills are extremely useful in most other disciplines, enhancing the students knowledge of technology no matter which major they have chosen.

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http://www.cs.csuci.edu/MSCS/

#### Admission

Students seeking admission are expected to have an undergraduate degree in computer science, mathematics, engineering, or science. Other majors will be considered on a case by case basis. The applicant is expected to have a 2.7 or higher cumulative undergraduate grade point average (GPA). A GRE report is also required for applicant whose GPA is less than 3.0.

#### Graduation

Required Courses - 32 units

To obtain the degree, the student must complete each course with a minimum grade of B, and successfully defend a thesis before an examination committee.

Required Courses - 32 utilis			
COMP	599	Graduate Seminar2	
COMP	597	Thesis6	
Elective	es (minir	mum of <u>18</u> units must be COMP)24	
Electives -	24 units	S	
A minimu	m of <u>18</u>	units must be COMP	
COMP	510	Algorithms3	
COMP	520	Advanced Database Systems3	
COMP	524	Security3	
COMP	529	Network Computing3	
COMP	549	Human-Computer Interaction3	
COMP	550	Advanced Software Engineering3	
COMP	566	Geometry and Computer Graphics3	
COMP	569	Artificial Intelligence3	
COMP	571	Biologically Inspired Computing3	
COMP	572	Neural Networks3	
COMP	575	Multi-agent Systems3	
COMP	578	Data Mining3	
COMP	590	Special Topics in Computer Science3	

#### Admission

Students seeking admission are expected to have an undergraduate degree in Computer Science. Graduates of other majors will be considered on a case-by-case basis and may be provisionally accepted with potential additional remedial requirements (e.g., a selection of Computer Science and Math undergraduate courses). Applicants will be evaluated according to the program guidelines which will consider the applicants in the context of the total applicant pool using our general admission standards, including all academic work, GPA, standardized test scores (such as GRE), personal statement of purpose, reference letters, relevant work experience, and other factors that may have a bearing on the individual's potential for success. The current guidelines and admission procedures are described on the program Web pages at <a href="http://compsci.csuci.edu">http://compsci.csuci.edu</a>.

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Special Topics in Computer Science .... 3

COMP	599	Graduate Seminar2
COMP	597	Thesis6
Elective	s (minin	num of <u>18</u> units must be COMP)24
Electives -	24 units	3
A minimur	n of <u>18</u>	units must be COMP
COMP	510	Algorithms3
COMP	520	Advanced Database Systems3
COMP	524	Security3
COMP	529	Network Computing3
COMP	549	Human-Computer Interaction3
COMP	550	Advanced Software Engineering3
COMP	566	Geometry and Computer Graphics3
COMP	569	Artificial Intelligence3
COMP	571	Biologically Inspired Computing3
COMP	572	Neural Networks3
COMP	575	Multi-agent Systems3
COMP	578	Data Mining3

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COMP 590

		Intelligence
MATH	510	Probabilistic Methods &
		Measure Theory3
MATH	511	Functional Analysis3
MATH	555	Actuarial Sciences3
MATH	565	Research In Mathematics Education3
MATH	582	Number Theory And Cryptography3
MATH	584	Algebraic Geometry & Coding Theory3
MATH	587	Markov Chains & Markov Processes3
MATH	588	Stochastic Analysis3
PHYS	510	Advanced Image Analysis Techniques .3
PHYS	546	Pattern Recognition3

Mathematical Methods in Artificial

# **Graduate Writing**

**COMP 581** 

#### Assessment Requirement

Writing proficiency prior to the awarding of the degree is demonstrated by successful completion of COMP 597 Masters Thesis with a grade of B or higher.

# Continuous Registration Requirement

A student, who is not on an Academic Leave of Absence, must register every semester until graduating. If all other course requirements have been satisfied, a student should register in one unit of COMP597 to satisfy the requirement

# Bachelor of Science in Information Technology

### **Programs Offered**

• Bachelor of Science in Information Technology

This BSIT program prepares students for careers in Information Technology such as Computer Systems Integrator, Computer Systems Manager, Information

COMP	581	Mathematical Methods in Artificial
		Intelligence3
<del></del>	<b>5</b> 40	D 1 17 0 14 1 1 0 14
MATH	510	Probabilistic Methods & Measure
		Theory3
MATH	511	Functional Analysis3
MATH	555	Actuarial Sciences3
MATH	565	Research In Mathematics Education3
MATH	582	Number Theory And Cryptography3
MATH	584	Algebraic Geometry & Coding Theory 3
MATH	587	Markov Chains & Markov Processes 3
MATH	588	Stochastic Analysis3
PHYS	510	Advanced Image Analysis Techniques.3
PHYS	546	Pattern Recognition

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Bachelor of Science in Information Technology

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This BSIT program prepares students for careers in Information Technology such as Computer Systems Integrator, Computer Systems Manager, Information

Technology Designer, Information Technology Support, Database Systems Manager, Database Systems Designer, Data Communications Analyst, Network Manager, Network Designer, Web Technology Manager and Web Technology Support.

In addition to serving CSUCI freshmen, the program provides an avenue of advancement for students with associate's degrees in a technology discipline such as networking gained at a two-year institution (e.g.: Moorpark College's Associate in Science Degree in Computer Network Systems Engineering).

The coursework will provide a foundation in mathematics, programming, networking, databases, web systems, computer architecture and information systems. The BSIT covers the interdisciplinary ground between a BS in Computer Science and a BS in Management Information Systems, emphasizing the fastest growing segments of both: web systems, databases, and networks. This interdisciplinary program draws from both Computer Science and Management Information Systems: mathematics, science, and computer programming from Computer Science, and business organization and project management from Management Information Systems. From there it adds depth in Web Programming and Technology, Database Theory and Design, and Data Communications and Networking, while allowing for further depth in these or related areas such as e-Commerce, Computer Security, and Multimedia

Program Learning Outcomes and Contact Information <a href="http://www.cs.csuci.edu/">http://www.cs.csuci.edu/</a>

Bachelor of Science in Information Technology - (121 units)

**Special Grade Requirement** 

A grade of C- or better is required in all prerequisites courses in the major

Technology Designer, Information Technology Support, Database Systems Manager, Database Systems Designer, Data Communications Analyst, Network Manager, Network Designer, Web Technology Manager and Web Technology Support.

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Com Communication	20	C C	20
Core Courses	29	Core Courses	29
Upper Division Electives		Upper Division Electives	
Technology Electives		Technology Electives	
Capstone		Capstone	4
General Education and Title V		General Education and Title V	
University Electives		University Electives	
Total	121 units	Total	121 units
Lower Division Requirements (18 units)		Lower Division Requirements	s (18 units)
1. Statistics (3 units)		1. Statistics (3 units)	
MATH 201 Elementary Statistics (3), OR		MATH 201 Elementary Stat	tistics (3), OR
MATH 329 Statistics for Business and Economics	(3), OR	MATH 329 Statistics for Bus	siness and Economics (3), OR
MATH 202 Biostatistics (3)		MATH 202 Biostatistics (3)	
2. Two semesters of a Laboratory science: Physic	es, Chemistry, or Biology (8	3. Two semesters of a Labor	ratory science: Physics, Chemistry, or Biology (8
units)		units)	
BIOL 200 Principles of Organismal and Popula BIOL 201 Principles of Molecular and Cellular			ganismal and Population Biology (4) AND blecular and Cellular Biology, OR
1			237
CHEM 121 General Chemistry I (4) AND		CHEM 121 General Chemi	
CHEM 122 General Chemistry II (4), OR		CHEM 122 General Chemi	stry II (4), OR
PHYS 100 Introduction to Physics (4) AND		PHYS 100 Introduction to l	Physics (4) A ND
PHYS 101 Introduction to Physics II (4)		PHYS 101 Introduction to 1	
11113 101 introduction to 1 hysics if (4)		11115 for introduction to i	Thysics II (4)
3. First course in Java programming language (4 u	inits)	3. First course in Java progra	amming language (4 units)
COMP 150 Object-Oriented Programming (4)		COMP 150 Object-Oriented	
5 ( )		J. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	
4. First course in Computer Architecture and Asse	embly Language (3 units)	4. First course in Computer	Architecture and Assembly Language (3 units)
COMP 162 Computer Architecture and Assembly	Language (3)	COMP 162 Computer Archi	tecture and Assembly Language (3)
Note: appropriate community college courses may me	et these requirements.	Note: appropriate community col	llege courses may meet these requirements.
Core Courses (29 units)		Core Courses (29 units)	
MATH 300 Discrete Mathematics	3	MATH 300 Discrete Math	nematics3

Or MATH 301	Discrete Mathematics for IT 3	Or MATH 301	Discrete Mathematics for IT 3
COMP 151	Data Structures and Program Design 4	COMP 151	Data Structures and Program Design4
COMP 262	Computer Organization and Architecture3	COMP 262	Computer Organization and Architecture3
COMP 362	Operating Systems4	COMP 362	Operating Systems4
COMP 420	Database Theory and Design3	COMP 420	Database Theory and Design3
IT 280	Web Programming3	IT 280	Web Programming3
IT 429	Computer Networks for IT3	IT 429	Computer Networks for IT3
MIS 310	Management Information Systems 3	MIS 310	Management Information Systems3
MGT 307	Management of Organizations3	MGT 307	Management of Organizations3
Upper Division E	lectives (15 units)	Upper Division E	Electives (15 units)
Choose 15 units fr	om the following:	Choose 15 units f	rom the following:
	e15 units must be taken in IT or COMP courses		e15 units must be taken in IT or COMP courses
ART 324	Communication Design Technology:	ART 324	Communication Design Technology:
	Web Design 3		Web Design3
ART 326	Digital Media Art:	ART 326	Digital Media Art:
	3D Computer Animation3		3D Computer Animation3
COMP 232	Programming Languages3	COMP 232	Programming Languages3
COMP 337	Survey of Computer Gaming3	COMP 337	Survey of Computer Gaming3
COMP 345	Digital Image Processing	COMP 345	Digital Image Processing
	(MATH/PHYS)3		(MATH/PHYS)3
COMP 350	Introduction to Software Engineering 3	COMP 350	Introduction to Software Engineering3
COMP 425	Computer Game Programming3	COMP 425	Computer Game Programming3
COMP 447	Societal Issues in Computing3	COMP 447	Societal Issues in Computing3
COMP 449	Human Computer Interaction (PSY) 3	COMP 449	Human Computer Interaction (PSY)3
COMP 452	Computational Bioinformatics (MATH). 4	COMP 452	Computational Bioinformatics (MATH)4
IT 400	e-Commerce3	IT 400	e-Commerce3
IT 401	Web Intelligence	IT 401	Web Intelligence3
IT 402	Advanced IT Programming 3	IT 402	Advanced IT Programming3
IT 424	Computer System Security for IT3	IT 424	Computer System Security for IT3
IT 464	Computer Graphics for IT3	IT 464	Computer Graphics for IT3
IT 469	Artificial Intelligence/Neural Networks	IT 469	Artificial Intelligence/Neural Networks
	for IT 3		for IT3
IT 490	Special Topics for IT3	IT 490	Special Topics for IT3
MATH 137	Strategies and Game Design3	MATH 137	Strategies and Game Design3
MATH 330	Mathematics and Fine Arts3	MATH 330	Mathematics and Fine Arts3
MATH 437	Mathematics for Game Programming 3	MATH 437	Mathematics for Game Programming3
(Additional electives to be added based on faculty availability).		(Additional elective	ves to be added based on faculty availability).

Technology Electives (9 – 10 units)	Technology Electives (9 – 10 units)		
For a listing of suitable CI courses, see the BSIT program advisor	For a listing of suitable CI courses, see the BSIT program advisor		
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Capstone (4 units)	Capstone (4 units)		
MGT 471 Project Management3	MGT 471 Project Management3		
IT 499 BSIT Capstone 1	IT 499 BSIT Capstone1		
General Education and Title V (42 units)	General Education and Title V (42 units)		
GE (36 units)	GE (36 units)		
Title V (6 units)	Title V (6 units)		
University Electives (5 – 6 units)	University Electives (5 – 6 units)		
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Dranged Course of Study	Dranged Course of Study		
Proposed Course of Study	Proposed Course of Study		
Freshman Year	Freshman Year		
Fall - 15 units	Fall - 15 units		
ENGL 105 Composition and Rhetoric	ENGL 105 Composition and Rhetoric		
MATH 201 Elementary Statistics	MATH 201 Elementary Statistics		
MATH 230 Logic and Mathematical Reasoning (GE A3) 3	MATH 230 Logic and Mathematical Reasoning (GE A3) 3		
General Education	General Education		
* or ENGL 102 and 103 6	* or ENGL 102 and 103 6		
Onethors 40 contra	0		
Spring - 13 units	Spring - 13 units		
COMP 150 Object-oriented programming 4	COMP 150 Object-oriented programming 4		
Title V 3	Title V 3		
General Education	General Education		
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Sophomore Year	Sophomore Year		
Fall - 16 units	Fall - 16 units		
COMP 162 Computer Architecture and Assembly 3	COMP 162 Computer Architecture and Assembly 3		
Title V 3	Title V		

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General Education	General Education		
University elective	University elective		
Spring - 16 units	Spring - 16 units		
Lab Science (Bio 200 or Chem 121 or Phys 100)	Lab Science (Bio 200 or Chem 121 or Phys 100)		
University elective	University elective		
General Education	General Education		
Junior Year	Junior Year		
Fall - <u>17</u> units	Fall - <u>17</u> units		
Lab Science II (Second semester Bio, Chem, or Phys)4	Lab Science II (Second semester Bio, Chem, or Phys)4		
ENGL 330 Interdisciplinary Writing3	ENGL 330 Interdisciplinary Writing3		
COMP 151 Data Structures4	COMP 151 Data Structures4		
COMP 262 Computer Organization and Architecture .3	COMP 262 Computer Organization and Architecture.3		
MATH 301 Discrete Mathematics for IT3	MATH 301 Discrete Mathematics for IT3		
Spring - <u>16</u> units	Spring - <u>16</u> units		
COMP 447 Societal Issues in Computing3	COMP 447 Societal Issues in Computing3		
COMP 362 Operating Systems4	COMP 362 Operating Systems4		
COMP 420 Database Theory and Design3	COMP 420 Database Theory and Design		
IT 280 Web Programming3	IT 280 Web Programming3		
MGT 307 Management of Organizations3	MGT 307 Management of Organizations3		
Senior Year	Senior Year		
Fall - <u>15</u> units	Fall - <u>15</u> units		
IT 400 eCommerce3	IT 400 eCommerce3		
IT 402 Advanced IT Programming3	IT 402 Advanced IT Programming3		
IT 429 Computer Networks for IT3	IT 429 Computer Networks for IT		
MGT 471 Project Management3	MGT 471 Project Management3		
MIS 310 Management Information Systems3	MIS 310 Management Information Systems3		
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Spring - <u>13</u> units	Spring - <u>13</u> units		
COMP 449 Human Computer Interaction (PSY)3	COMP 449 Human Computer Interaction (PSY)3		
IT 424 Computer System Security for IT3	IT 424 Computer System Security for IT3		
IT 401 Web Intelligence3	IT 401 Web Intelligence3		
IT 490 Special Topics for IT3	IT 490 Special Topics for IT3		
IT 499 BSIT Capstone1	IT 499 BSIT Capstone1		

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#### **SUMMARY OF CHANGES**

MS Program: greater detail in the Admissions section.

# **JUSTIFICATION**

Clarifies requirements for prospective students

A. J. Bieszczad, Peter Smith 1/26/11 Proposers of Program Modifications Date

Program: COMPUTER SCIENCE

Program Chair		
	Signature	Date
Curriculum Chair		
	Signature	Date
Dean of Faculty		
	Signature	Date