



University of Maryland University College

**Baccalaureate Degree Program in Computer and Information Science  
Department of Computer Information Systems and Technology**

**PROGRAM ASSESSMENT PLAN**  
**Program Outcomes and Learning Assessment Criteria**

Summer 2007

**Baccalaureate Degree Program in Computer and Information Science**

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**PROGRAM OVERVIEW**

The computer and information science major provides a coherent, sequential, and integrated academic program of in-depth study that furnishes a body of knowledge and methods, as well as practice in the area of computer and information science. The curriculum focuses on the problem-solving skills and techniques needed to provide computer-based solutions to practical problems, including fundamental practical knowledge in the fields of software engineering, relational databases, programming languages, operating systems, computer networks, and distributed systems.

**Baccalaureate Degree Program in Computer and Information Science**

**PROGRAM OF STUDY**

The program of study for the Baccalaureate Degree Program in Computer and Information Science is as follows:

**GENERAL EDUCATION REQUIREMENTS**

Communications	12 credit hours
Arts and Humanities	6 credit hours
Behavioral and Social Sciences	6 credit hours
Biological and Physical Sciences	7 credit hours
Mathematics	3 credit hours
Interdisciplinary or Emerging Issues	7 credit hours

**CROSS-CURRICULAR PERSPECTIVE REQUIREMENTS**

Historical Perspective	3 credit hours
International Perspective	3 credit hours
Civic Responsibility Perspective	3 credit hours

**REQUIRED COURSES**

CMIS 102	Introduction to Problem Solving and Algorithm Design	3 credit hours
CMIS 141	Introductory Programming	3 credit hours
CMIS 160 or CMIS 170	Discrete Mathematics for Computing Introduction to XML	3 credit hours
CMIS 241 or CMIS 242	Data Structures and Abstraction Intermediate Programming	3 credit hours
CMIS 310	Computer Systems and Architecture	3 credit hours
COMM 393/393X	Technical Writing	3 credit hours
CMIS 325	UNIX and Shell Programming	3 credit hours

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**PROGRAM OF STUDY (continued)**

CMIS 330	Software Engineering Principles and Techniques or other upper-level CMIS course	3 credit hours
CMIS 320 or CMIS 370	Relational Databases Data Communication	3 credit hours
CMIS 415 or CMIS 460	Advanced UNIX and C Software Design and Development	3 credit hours
CMIS 420 or CMIS 435	Advanced Relational Databases Computer Networking or other 400 level course	3 credit hours

**MINOR AND ELECTIVE COURSES**

49 credit hours

Minor and/or elective courses are to be taken in the last 60 hours along with required major courses. Refer to the current UMUC School of Undergraduate Studies Catalog for the minor and/or elective course requirements.

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**DEVELOPMENT OF PROGRAM OUTCOMES**

The table below identifies the curricular influences that support the program outcomes specific to the Baccalaureate Program in Computer and Information Science.

<b>SOURCES/RESOURCES PROVIDING CURRICULAR FOUNDATION FOR PROGRAM OUTCOMES</b> <b>Baccalaureate Degree Program in Computer and Information Science</b>		
<b>SOURCE</b>	<b>DESCRIPTION</b>	<b>WEB ADDRESS OR DOCUMENT NAME</b> <b>(if applicable)</b>
Core Learning Areas of the UMUC School of Undergraduate Studies	<p>All UMUC degree programs are required to imbed identified Core Learning Areas into the program of study. The Core Learning Areas are:</p> <ul style="list-style-type: none"> <li>• Written Communication (COMM)</li> <li>• Technology Fluency (TECH)</li> <li>• Information Literacy (INFO)</li> <li>• Quantitative Literacy (QUAN)</li> <li>• Critical Thinking (THIN)</li> <li>• Scientific Literacy (SCIE)</li> </ul> <p>The expanded definition for each Core Learning Area was considered in creating the respective program outcome.</p>	UMUC <a href="#"><u>Institutional Plan for the Assessment of Student Learning</u></a>
External Reviewer	An external reviewer was charged to provide consultation in the review of degree coursework.	CINS Academic Program Review (2005)
Working Groups	Faculty members from UMUC-Adelphi and UMUC-Asia and UMUC-Euro administrators provide input on changes in the major.	
Computing Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET)	ABET is used as an external standard to guide the program and the direct and indirect measures used to assess program outcomes.	<a href="http://www.abet.org/"><u>http://www.abet.org/</u></a>

**Baccalaureate Degree Program in Computer and Information Science**

**PROGRAM OUTCOMES**

The program outcomes specific to the Baccalaureate Degree Program in Computer and Information Science are delineated below. The program outcomes describe the expectations for all graduates of the Baccalaureate Degree Program in Computer and Information Science.

<b>CORE LEARNING AREA</b>	<b>PROGRAM OUTCOMES</b> <b>Baccalaureate Degree Program in Computer and Information Science</b>
	Upon completion of the Baccalaureate Degree Program in Computer and Information Science, graduates will be able to:
COMM	Create written communication appropriate for the purpose and which meets standards of style and grammatical correctness.+
	Write clear documentation supporting computer programs and systems.*
TECH	Evaluate technological concepts related to computers and components of information systems.+
	Incorporate knowledge of programming languages and computer systems in developing computer-based solutions to practical problems in the field of information systems and technology.*
INFO	Address recognized research needs by retrieving, evaluating, and using information appropriately.+
	Apply the tools and techniques in research and analysis required to evaluate computer and information science products.*
QUAN	Apply mathematical and numerical reasoning skills.+
	Recognize valid and invalid logical reasoning in the field of information systems and technology.*
THIN	Apply knowledge of the concepts and principles of computer and information science to the management of changes and developments in information systems and technology.*
SCIE	Identify key concepts and principles of natural sciences.+
	Apply efficient and appropriate test processes to ensure programs are functioning properly and within specification.*

+ Denotes a program outcome specific to core skills, knowledge, and values gained from completion of the general education requirements. This program outcome is common across all UMUC baccalaureate degree programs.

\* Denotes a program outcome specific to core skills, knowledge, and values gained from completion of requirements in the baccalaureate degree program. This program outcome is unique to each UMUC baccalaureate degree program.

**Baccalaureate Degree Program in Computer and Information Science**

**ALIGNMENT OF PROGRAM OUTCOMES WITH LEARNING OBJECTIVES AND ASSESSMENT METHODS**

The following grid aligns the program outcomes of the Baccalaureate Degree Program in Computer and Information Science with: 1) learning objectives from the designated program coursework and 2) specific methods used to assess student learning within the degree program.

<b>CURRICULAR ALIGNMENT</b>			
<b>Baccalaureate Degree Program in Computer and Information Science</b>			
<b>CORE LEARNING AREA</b>	<b>PROGRAM OUTCOMES</b>	<b>LEARNING OBJECTIVE(S) AND CORRELATING COURSEWORK</b>	<b>METHOD(S) OF ASSESSMENT</b>
COMM	Create written communication appropriate for the purpose and which meets standards of style and grammatical correctness.+	Plan and write a research-based essay that makes effective use of resources found in databases available from UMUC's Office of Information and Library Services as well as resources located through Web search engines. (WRTG 101)	Research Paper
		Research, compile, and document relevant, credible information and use it to support ideas presented in your writing. (WRTG 393)	Research Paper
Collect, select, analyze, interpret, and organize data, and use it appropriately in business communications, including a long formal report. (WRTG 394)		Research Paper	
Conduct a systematic audience analysis and apply it to a report, essay, or research paper. (WRTG 391)		Research Paper	
	Write clear documentation supporting computer programs and systems.*	Write clear program documentation. (CMIS 141)	Other: Programming Project

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<b>CURRICULAR ALIGNMENT</b>			
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<b>CORE LEARNING AREA</b>	<b>PROGRAM OUTCOMES</b>	<b>LEARNING OBJECTIVE(S) AND CORRELATING COURSEWORK</b>	<b>METHOD(S) OF ASSESSMENT</b>
TECH	Evaluate technological concepts related to computers and components of information systems.+	Analyze issues faced by information system professionals, including security, ethical, and privacy problems. (IFSM 201)	Exam (Course/Chapter)
	Incorporate knowledge of programming languages and computer systems in developing computer-based solutions to practical problems in the field of information systems and technology.*	Build reusable software objects using Java classes. (CMIS 241)	Other: Programming Project
INFO	Address recognized research needs by retrieving, evaluating, and using information appropriately.+	Select relevant print and electronic sources to answer research questions. (LIBS 150)	Exam (Course/Chapter)
	Apply the tools and techniques in research and analysis required to evaluate computer and information science products.*	Describe how concepts such as RISC, pipelining, cache memory, and virtual memory have evolved over the past twenty-five years to improve system performance. (CMIS 310)	Research Paper
QUAN	Apply mathematical and numerical reasoning skills.+	Solve linear, quadratic, higher-order polynomial, fractional, radical, exponential, logarithmic, and absolute value equations and inequalities. (MATH 107)	Exam (Course/Chapter)
		Develop problem solving skills. (MATH 105 or MATH 106)	Exam (Course/Chapter)
	Recognize valid and invalid logical reasoning in the field of information systems and technology.*	Construct proofs of simple mathematical statements. (CMIS 160)	Exam (Course/Chapter)
THIN	Apply knowledge of the concepts and principles of computer and information science to the management of changes and developments in information systems and technology.*	Use the process of stepwise refinement to construct programs. (CMIS 102)	Other: Programming Project

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<b>CURRICULAR ALIGNMENT</b>			
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<b>CORE LEARNING AREA</b>	<b>PROGRAM OUTCOMES</b>	<b>LEARNING OBJECTIVE(S) AND CORRELATING COURSEWORK</b>	<b>METHOD(S) OF ASSESSMENT</b>
SCIE	Identify key concepts and principles of natural sciences.+	Recognize the differences and the interrelationships among physics, chemistry, the earth sciences, and astronomy. (NSCI 100)	Exam (Course/Chapter)
		Explain the significance of DNA in determining the composition, characteristics, reproduction, and behavior of an organism. (BIOL 101)	Exam (Course/Chapter)
	Apply efficient and appropriate test processes to ensure programs are functioning properly and within specification.*	Prepare concise technical written documentation associated with the software engineering process. (CMIS 330)	Other: Software Test Specification

+ Denotes a program outcome specific to core skills, knowledge, and values gained from completion of the general education requirements. This program outcome is common across all UMUC baccalaureate degree programs.

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