

# MATHEMATICS - COMPUTER SCIENCE, Associate in Science Degree - 4030

Mathematics & Computer Science Department

The Mathematics-Computer Science AS program focuses on computer design, algorithm design, programming techniques, data structures, and a variety of programming languages. Since mathematical background is essential to success in this program, students must complete College Algebra or its equivalent to begin the program. Requirements of senior institutions vary widely, so it is essential to choose an intended transfer institution as soon as possible and carefully follow the program described in that college's catalog. Students completing this degree are admitted at the Junior-level to any institution participating in Pennsylvania's statewide college credit transfer system. The complete program is available at the Harrisburg Campus. Students may also complete the program at the Lancaster Campus by taking some courses through Virtual Learning.

## Transfer Opportunities

This transfer curriculum is provided as a guide for students planning to transfer to a baccalaureate degree granting institution.

## Competency Profile

The curriculum is designed to prepare students to:

- Analyze problem situations and create algorithms to solve those problems
- Use mathematical concepts and models to analyze data
- Select appropriate control structures, data structures, and abstract data types for implementing computer solutions
- Code computer programs that are effective, efficient, and accurate
- Work as part of a professional team to design, code, test, and debug mathematically based object-oriented computer software

## PROGRAM REQUIREMENTS (TOTAL CREDITS = 62)

General Education		Major Requirements		Other Required Courses	
ENGL 101 English Composition I	3	CIS 110 Introduction to Computer Systems (or)	3	BIOL 102 General Biology II (or)	4
ENGL 102 English Composition II (or)	3	CNT 120 Network Communications Technology	(3)	CHEM 102 General Inorganic Chem & Qualitative Analysis (or)	(4)
ENGL 104 Technical Writing	(3)	CPS 121 Computer Science I: Intro to Computer Programming JAVA	3	PHYS 202 General Physics II (or)	(4)
COMM 101 Effective Speaking	3	CPS 161 Computer Science II: Algorithmic Design JAVA & C++	3	PHYS 212 Physics for Engineers & Scientists II	(4)
Humanities & Arts Elective*	3	CPS 162 Computer Science III: Data Structures C++	3	Transfer Elective**	<u>3</u>
Mathematics Elective - MATH 121	4	CPS 230 Object Oriented Programming JAVA	3		7
Mathematics or Science Elective - MATH 122	4	MATH 125 Discrete Mathematics	3		
Science w/ a Laboratory Elective - BIOL 101, CHEM 101, PHYS 201 or 211	4	MATH 202 Introduction to Statistics	4		
Social & Behavioral Sciences Elective	3	MATH 220 Linear Algebra	<u>4</u>		
First-Year Seminar Elective	1		26		
Wellness	<u>1</u>				
	29				

\*Students select courses from the following: ART 181, 182; ENGL 206; HUM 101, 115, 201; MUS 104; PHIL 200; THTR 101; or a foreign language course.

\*\*Students are to select their Transfer Elective that are appropriate for their intended institution.

## RECOMMENDED SEQUENCE FOR FULL-TIME STUDENTS

Part-time students can complete this program by taking one or more courses each semester.

Fall Semester I		Spring Semester I		Fall Semester II		Spring Semester II	
CIS 110 or CNT 120	3	COMM 101	3	BIOL 101, CHEM 101, PHYS 201 or 211	4	BIOL 102 or CHEM 102 or PHYS 202 or PHYS 212	4
CPS 121	3	CPS 161	3	CPS 162	3	CPS 230	3
ENGL 101	3	ENGL 102 or 104	3	MATH 202	4	Humanities/Arts Elective*	3
FYS Elective	1	MATH 122	4	MATH 220	4	Social/Behavioral Science Elective	3
MATH 121	4	MATH 125	3	Wellness	1	Transfer Elective**	3