MATHEMATICS - COMPUTER SCIENCE, Associate in Science Degree - 4030

Mathematics & Computer Science Department
CIP Code: 11.0701

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. Students may complete this program at the Harrisburg, Lancaster and York campuses through various modalities (e.g., on-campus/in-person instruction, hybrid, synchronous remote instruction and/or asynchronous instruction).

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 = 61)

General Education

Course	Credits
ENGL 101 English Composition I	3
ENGL 102 English Composition II **(or)**	3
ENGL 104 Technical Writing	(3)
COMM 101 Effective Speaking	3
Humanities & Arts Core Elective*	3
Mathematics Core Elective - *MATH 121*	4
Mathematics **or** Science Core Elective – *MATH 202*	4
Science w/ a Laboratory Core Elective - *BIOL 101, CHEM 101, PHYS 201 or 211*	4
Social & Behavioral Sciences Core Elective	3
First-Year Seminar Elective	1
Wellness Elective	1
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Major Requirements

Course	Credits
CIS 110 Introduction to Computer Systems **(or)**	3
CNT 120 Network Communications Technology	(3)
CPS 121 Computer Science I: Intro to Computer Programming JAVA	3
CPS 161 Computer Science II: Algorithmic Design JAVA & C++	3
CPS 162 Computer Science III: Data Structures C++	3
CPS 230 Object Oriented Programming JAVA	3
MATH 125 Discrete Mathematics	4
MATH 220 Linear Algebra	4
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Other Required Courses

Course	Credits
BIOL 102 General Biology II **(or)**	4
CHEM 102 General Inorganic Chem & Qualitative Analysis **(or)**	(4)
PHYS 202 General Physics II **(or)**	(4)
PHYS 212 Physics for Engineers & Scientists II	(4)
Transfer Electives**	5
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Students select courses from the following: ART 181, 182; ENGL 206; FMTH 101; HUM 101, 115, 201; MUS 104; PHIL 200; 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	
COMM 101	3	CPS 161	3	BIOL 101, CHEM 101, PHYS 201 **or** 211	4	BIOL 102, CHEM 102, PHYS 202 **or** 212	4
CPS 121	3	ENGL 102 **or** 104	3	CPS 162	3	CIS 110 **or** CNT 120	3
ENGL 101	3	Humanities/Arts Core Elective*	3	MATH 220	4	CPS 230	3
FYS Elective	1	MATH 125	4	Social/Behavioral Science Core Elective	3	MATH 202	4
MATH 121	4	Transfer Elective**	3			Transfer Elective**	2
Wellness Elective	1						