INFORMATION TECHNOLOGY (BS)

Exploration and Discovery

This program focuses on the functioning and working of hardware and software systems in an organizational setting. The emphasis in the program is on the application and utilization of computing technology in a wide variety of Information Technology environments. A solid core of fundamental computing courses is followed by applications in several areas of Information Technology such as networks, security, data science, and systems.

Degree Requirements

Course	Title	Credits
Major Requirements		
CS 2010	Computing Fundamentals (TECO)	3
CS 2220	Computer Hardware	3
CS 2370	Introduction to Programming	4
CS 3240	Data Communication and Computer Networks	3
CS 3420	Introduction to Cybersecurity	3
CS 3600	Database Management Systems & Security	4
CS 3650	Big Data Administration and Analysis	3
CS 3720	Systems Analysis and Design	3
CS 3820	Human-Computer Interaction	3
CS 4230	System Administration	4
CS 4400	Computer Networks and Protocols	4
CS 4420	Computer Security	3
CS 4520	CyberEthics (DICO,WRCO)	3
CS 4760	Senior Project	3
CM 3095	Technical Communication (TECO,WRCO)	4
MA	Math elective (not MADI) [1,2]	3-4
MA 2130	Precalculus (QRCO)	4
Major Electives		
Complete two courses from the following:		5-8
CS 2381	Data Structures and Intermediate Programming	
CS 2470	Systems Programming in C/C++	
CS 2900	Digital and Analog Circuits	
CS 2901	Materials, Design and Fabrication	
CS 2905	PLC Programming	
CS 3015	Mobile Application Development	
CS 3020	Web Programming	
CS 3030		
CS 4140	Software Engineering	
CS 4500	Topics in Computer Science and Technology	
CS 4920	Computer Science Internship	
Mathematics Foundations		**3-4**
MA 2200		
MA 2210	Finite Math with Business Statistics (QRCO)	
MA 2450	Mathematical Reasoning	
MA 2300	Statistics I (QRCO)	3
General Education (https://coursecatalog.plymouth.edu/general-education/)		
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
CTDI (https://coursecatalog.plymouth.edu/general-education/#CTDI)	Creative Thought Direction	3-4
PPDI (https://coursecatalog.plymouth.edu/general-education/#PPDI)	Past and Present Direction	3-4
SIDI (https://coursecatalog.plymouth.edu/general-education/#SIDI)	Scientific Inquiry Direction	3-4
SSDI (https://coursecatalog.plymouth.edu/general-education/#SSDI)	Self and Society Direction	3-4
Directions (choose from CTDI, PPDI, SIDI, SSDI) (https://coursecatalog.plymouth.edu/general-education/) [3]		4-8
GACO (https://coursecatalog.plymouth.edu/general-education/#GACO)	Global Awareness Connection	3-4
WECO (https://coursecatalog.plymouth.edu/general-education/#WECO)	Wellness Connection	3-4
Electives		14-20
Total Credits		**120**

1. College Algebra (MA 1800), Precalculus (MA 2130) or above.
2. Cannot double count Precalculus (MA 2130) or calculus.
3. Directions should total 20 credits (unless the major has a waiver for a specific Direction).

Recommended Course Sequence

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

To complete the bachelor's degree in 4 years, you must successfully complete a minimum of 15 credits each semester or have a plan to make up credits over the course of the 4 years. For example, if you take 14 credits one semester, you need to take 16 credits in another semester. Credits completed must count toward your program requirements (major, option, minor, certificate, general education or free electives).

Course	Title	Credits
Year One		
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
CS 2010	Computing Fundamentals (TECO)	3
CS 2370	Introduction to Programming	4
MA	Math elective (not MADI) [1]	3-4

Mathematics Foundations Course:		3-4
MA 2210	Finite Math with Business Statistics (QRCO)	
MA 2210	Finite Math with Business Statistics (QRCO)	
MA 2450	Mathematical Reasoning	
CTDI (https://coursecatalog.plymou general-education/#CTDI)	Creative Thought Direction	3-4
SIDI (https://coursecatalog.plymouth.edu/general-education/#SIDI)	Scientific Inquiry Direction	3-4
SSDI (https://coursecatalog.plymou general-education/#SSDI)	Self and Society Direction	3-4
	Credits	**30-35**
Year Two		
CS 2220	Computer Hardware	3
CS 3600	Database Management Systems & Security	4
CS 3820	Human-Computer Interaction	3
CM 3095	Technical Communication (TECO,WRCO)	4
MA 2130	Precalculus (QRCO)	4
MA 2300	Statistics I (QRCO)	3
PPDI (https://coursecatalog.plymou general-education/#PPDI)	Past and Present Direction	3-4
Directions (choose from CTDI, PPDI, SIDI, SSDI) (https://coursecatalog.plymouth.edu/general-education/) [2]		4-8
Elective		3-4
	Credits	**31-37**
Year Three		
CS 3240	Data Communication and Computer Networks	3
CS 3420	Introduction to Cybersecurity	3
CS 3650	Big Data Administration and Analysis	3
CS 3720	Systems Analysis and Design	3
CS 4400	Computer Networks and Protocols	4
CS 4420	Computer Security	3
Complete one Major Elective from the following:		2-4
CS 2381	Data Structures and Intermediate Programming	
CS 2470	Systems Programming in C/C++	
CS 2900	Digital and Analog Circuits	
CS 2901	Materials, Design and Fabrication	
CS 2905	PLC Programming	
CS 3015	Mobile Application Development	
CS 3020	Web Programming	
CS 4140	Software Engineering	
CS 4500	Topics in Computer Science and Technology	
CS 4920	Computer Science Internship	
GACO (https://coursecatalog.plymouth.edu/general-education/#GACO)	Global Awareness Connection	3-4
WECO (https://coursecatalog.plymou general-education/#WECO)	Wellness Connection	3-4
Elective		0-4
	Credits	**27-35**
Year Four		
CS 4520	CyberEthics (DICO,WRCO)	3
CS 4230	System Administration	4
CS 4760	Senior Project	3
Complete one Major Elective from the following:		3-4
CS 2381	Data Structures and Intermediate Programming	
CS 2470	Systems Programming in C/C++	
CS 2900	Digital and Analog Circuits	
CS 2901	Materials, Design and Fabrication	
CS 2905	PLC Programming	
CS 3015	Mobile Application Development	
CS 3020	Web Programming	
CS 4140	Software Engineering	
CS 4500	Topics in Computer Science and Technology	
CS 4920	Computer Science Internship	
Electives		9-12
	Credits	**22-26**
	Total Credits	**120**

[1] College Algebra (MA 1800), Precalculus (MA 2130) or above.

[2] Directions should total 20 credits (unless the major has a waiver for a specific Direction).

Learning Outcomes

- The ability to automate system processes to solve problems, both independently and as part of a team.
- The ability to create, organize, and administer secure computer systems.
- The competency to design, implement, and administer computer networks, from low-level details to high-level protocols.
- The competency to communicate technical information to a wide range of audiences.
- An understanding of professional, ethical, and security issues and responsibilities that arise with modern socio-technical systems.

Career Pathways

Computers are used in virtually every industry which requires employees who specialize in computer science. Computer science is not simply a study of how to use computers and various software. Although all computer scientists are proficient in using computers with various operating systems and a variety of software, they have a larger goal: they design and construct or configure computer hardware and software to be used by others. With the need for computers in virtually every industry,

the need for employees who specialize in computer science and can incorporate new technologies is ever increasing.

For more information, visit the Career Services site.

Here is a link to A guide for women in STEM created by DDS (Discover Data Science), including STEM scholarship opportunities for women.

Sample Job Titles:

- Computer Programmer
- Computer Systems Manager
- Control Engineer
- Database Administrator
- Manager, Management Information Systems
- Network Administrator
- Quality Assurance Specialist
- Robot Software Engineer
- Robot System Engineer
- Software Designer
- Software Developer
- Software Engineer
- System Analyst
- Web Application Developer
- Technical Writer
- Web Designer

Useful Skills for Jobs in Computing Disciplines:

- Ability to analyze cause and effects
- Ability to think logically and critically
- Strong communication skills
- Mathematical background