

COMPUTER SCIENCE MAJOR (B.S.) (COMBINED B.S./M.S. COMPUTER SCIENCE)

A Combined Degree program enables undergraduate students to enroll in graduate courses in their senior year, which can be counted towards the completion of both their Bachelor's and Master's degree requirements.

The ability to take these "swing courses" allows students to earn both their Bachelor's and Master's degrees in a shortened period of time, typically within five years of intensive study. Undergraduate students interested in this option can find more information regarding program requirements on the University's Combined Programs website (<https://www.montclair.edu/combined-programs/programs-of-study/>).

3.00 overall GPA required.

Students in the Computer Science or Information Technology majors must also successfully complete the following courses with a C- or higher by the end of their second semester in the major: CSIT 104, CSIT 111, and MATH 111 or MATH 122 or AMAT 120.

Please note: The above majors have a retention policy. Students must maintain a minimum 2.60 cumulative GPA during their first three semesters.

120 credits of coursework is required for the baccalaureate degree.

Program Requirements Overview

Code	Title	Credits
	General Education Requirements	32
	World Languages and Cultures Requirements	3-9
	Major Requirements	68
	Graduate Swing Courses	6
	Free Electives	11-5
	Total Credits	120

Major Requirements

Requirements for the graduate portion of this combined program can be found here (<http://catalog.montclair.edu/programs/computer-science-ms/>).

Code	Title	Credits
Collateral Courses		
	Select one of the following sequences:	8
PHYS 191 & PHYS 192	University Physics I and University Physics II	
CHEM 120 & CHEM 121	General Chemistry I and General Chemistry II	
BIOL 112 & BIOL 113	Principles of Biology I and Principles of Biology II	
Required Mathematics Courses		
AMAT 120 or MATH 122	Applied Calculus A Calculus I	4
AMAT 220 or MATH 221	Applied Calculus B Calculus II	4
AMAT 240	Introduction to Linear Algebra	4
CSIT 270		3

STAT 230	Data Science and Statistics	3
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Required Computer Science Courses - Core

CSIT 104	Python Programming I	3
CSIT 111	Fundamentals of Programming I	3
CSIT 112	Fundamentals of Programming II	3
CSIT 212	Data Structures and Algorithms	3
CSIT 230	Computer Systems	3
CSIT 231	Systems Programming	3
CSIT 379	Computer Science Theory	3
CSIT 315	Software Engineering I	3
CSIT 415	Software Engineering II	3
CSIT 460	Computer Security	3

Required Computer Science Advanced Courses

CSIT 313	Fundamentals of Programming Languages	3
CSIT 340	Computer Networks	3
CSIT 345	Operating Systems	3
CSIT 355	Database Systems	3

Total Credits **68**

Major Electives

Code	Title	Credits
CSIT 317	System Analysis and Design	3
CSIT 321	Introduction to Numerical Computing	3
CSIT 335	Introduction to Human-Computer Interaction (HCI)	3
CSIT 337	Internet Computing	3
CSIT 356	Introduction to Data Science	3
CSIT 357	Artificial Intelligence	3
CSIT 359	Data Visualization	3
CSIT 365	Information Assurance and Security	3
CSIT 429	Parallel and Distributed Computing	3
CSIT 431	Introduction to Robotics	3
CSIT 437	Web Services	3
CSIT 440	Principles of Data Mining	3
CSIT 451	Mobile Computing	3
CSIT 456	Advanced Techniques in Data Science	3
CSIT 491	Cooperative Education in Computer Science and Information Technology	3-8
CSIT 495	Special Topics in Undergraduate Computer Science	1-3
CSIT 497	Undergraduate Research I	1-3
CSIT 498	Undergraduate Research II	3

Graduate Swing Courses

A combined degree program allows students to complete 6-12 graduate credits ("graduate swing courses") while enrolled as an undergraduate. These courses count for both their bachelor and master's degrees. Graduate swing courses will count toward undergraduate free electives, unless noted otherwise.

The Graduate Swing Courses for this program:

Code	Title	Credits
CSIT 545	Computer Architecture	3
CSIT 571	Computer Algorithms and Analysis	3
Total Credits		6

General Education Requirements

Click here for a list of courses that fulfill General Education categories. (<http://catalog.montclair.edu/undergraduate-graduate-degree-requirements/general-ed-ba-bs/>)

Code	Title	Credits
A. New Student Seminar		
Complete one course from the list.		1
C. Communication		
1. <i>Writing</i>		3
2. <i>Literature</i>		3
3. <i>Communication</i>		3
D. Fine and Performing Arts		
Complete one course from the list.		3
F. Humanities		
1. <i>Great Works and Their Influences</i>		3
2. <i>Philosophical and Religious Perspectives</i>		3
G. Computer Science		
CSIT 111	Fundamentals of Programming I (Fulfilled in the major.)	
H. Mathematics		
MATH 122	Calculus I (Fulfilled in the major.)	
I. Natural Science Laboratory		
Fulfilled by a collateral course in the major.		
J. Physical Education		1
K. Social Science		
1. <i>American and European History</i>		3
2. <i>Global Cultural Perspectives</i>		3
3. <i>Social Science Perspectives</i>		3
L. Interdisciplinary Studies		
Complete one course from the list.		3
Total Credits		32

World Languages and Cultures Requirements

Click here for a list of courses that fulfill World Languages and Cultures categories. (<http://catalog.montclair.edu/undergraduate-graduate-degree-requirements/world-languages-cultures-requirement/>)

Code	Title	Credits
World Languages		
Based on language placement exam, complete one or two sequential courses in the same language.		3-6
World Cultures		
Requirement may be fulfilled by course selected in General Education 0-3 - Social Science: Global Cultural Perspectives.		0-3
Total Credits		3-9

Recommended Roadmap to Degree(s)

This recommended five-year plan is provided as an outline for students to follow in order to complete their degree requirements within five years. This plan is a recommendation and students should only use it in consultation with their academic advisor.

Fifth year courses are taken at the graduate level, after matriculation into the graduate portion of this combined degree program.

Course	Title	Credits
First Year		
Fall		
GENERAL EDUCATION: (A) New Student Seminar		1
GENERAL EDUCATION: (C1) Writing		3
World Language 1		3
CSIT 104	Python Programmin I	3
MATH 122 or AMAT 120	Calculus I or Applied Calculus A	4
		Credits 14
Spring		
GENERAL EDUCATION: (C2) Literature		3
GENERAL EDUCATION: (F1) Humanities – Great Works and Their Influences		3
World Language 2		3
CSIT 111	Fundamenta of Programmin I	3
MATH 221 or AMAT 220	Calculus II or Applied Calculus B	4
		Credits 16
Second Year		
Fall		
GENERAL EDUCATION: (C3) Communication		3
GENERAL EDUCATION: (K3) Social Science – Social Science Perspectives		3
CSIT 112	Fundamentals of Programming II	3
CSIT 270		3
Collateral Sequence course		4
		Credits 16
Spring		
GENERAL EDUCATION: (K2) Social Science – Global Cultural Perspectives		3
CSIT 212	Data Structures and Algorithms	3
CSIT 230	Computer Systems	3
CSIT 231	Systems Programmin	3
Collateral Sequence course		4
		Credits 16
Third Year		
Fall		
GENERAL EDUCATION: (F2) Humanities – Philosophical and Religious Perspectives		3
GENERAL EDUCATION: (L) Interdisciplinary Studies		3

AMAT 240	Introduction to Linear Algebra	4
CSIT 313	Fundamentals of Programming Languages	3
CSIT 355	Database Systems	3
Credits		16
Spring		
GENERAL EDUCATION: (D) Fine and Performing Arts		3
GENERAL EDUCATION: (K1) Social Science – American and European History		3
World Cultures		3
CSIT 340	Computer Networks	3
CSIT 345	Operating Systems	3
Credits		15
Fourth Year		
Fall		
CSIT 315	Software Engineering I	3
CSIT 379	Computer Science Theory	3
CSIT 460	Computer Security	3
STAT 230	Data Science and Statistics	3
Free Elective		2
Credits		14
Spring		
GENERAL EDUCATION: (J) Physical Education		1
CSIT 415	Software Engineering II	3
Major Elective		3
Major Elective		3
Free Elective		3
Credits		13
Total Credits		120