COMPUTER SCIENCE (BS)

NYSED: 08772 **HEGIS:** 0701.00 **CIP:** 11.0101

Program Description

Computer science focuses on how to design, build, and effectively use the computers and systems that we interact with every day from the smart phones in our hands to the complex databases in our banks and hospitals. Because computer technology powers the most essential functions of business, industry, government and entertainment, computer scientists have tremendous opportunities for growth and exploration.

In addition to the BS degree in Computer Science, the Computer Science and Engineering department offers minors in Computer Science, Cybersecurity, and Game Engineering. The NYU Tandon School of Engineering also offers a BS/MS Program that enables students to earn both a BS and an MS degree at the same time. For instance, a student can receive a BS in Computer Science and MS in Computer Science, a BS in Computer Engineering and MS in Computer Science, or a BS in Electrical Engineering and MS in Computer Science. Depending on the student's preparation and objectives, they can complete both degrees within 5 years. More information on the BS/MS program can be found on the "Undergraduate Academic Requirements and Policies" section of the catalog.

The program provides research labs for specialized study in areas such as cybersecurity, game engineering, and big data, areas in which our department has a distinctive strength. In addition, the program's close ties to our graduate division immerse students in a vibrant, intellectual atmosphere.

Admissions

New York University's Office of Undergraduate Admissions supports the application process for all undergraduate programs at NYU. For additional information about undergraduate admissions, including application requirements, see How to Apply (https://www.nyu.edu/admissions/undergraduate-admissions/how-to-apply.html).

Program Requirements

The program requires the completion of 128 credits, comprised of the following:

Course	Title	Credits
Major Requirements		
Computer Science		
CS-UY 1114	INTRO TO PROGRAMMING & PROBLEM SOLVING	4
CS-UY 1134	Data Structures and Algorithms	4
CS-UY 2124	Object Oriented Programming	4
CS-UY 1122	Introduction to Computer Science	2
CS-UY 2214	COMPUTER ARCHITECTURE AND ORGANIZATION	4
CS-UY 3224	INTRO TO OPERATING SYSTM	4
CS-UY 2413	DESIGN & ANALYSIS OF ALGORITHMS	3
CS-UY 4513	Software Engineering	3
CS-UY 4523	Design Project	3
Mathematics [1]		
MA-UY 1024	Calculus I for Engineers	4
MA-UY 1124	Calculus II for Engineers	4
MA-UY 2314	Discrete Mathematics	4
MA-UY 2224	Data Analysis	4
Engineering		
EG-UY 1004	Introduction to Engineering and Design	4
Science Requirement		
Select three of the following: [2]		9-12
CM-UY 1003	General Chemistry for Engineers	
CM-UY 1013	GENERAL CHEMISTRY I	
BMS-UY 1003	Introduction to Cell and Molecular Biology	
PH-UY 1013	MECHANICS	
PH-UY 2023	ELECTRICITY, MAGNETISM, & FLUIDS	
PH-UY 2033	WAVES, OPTICS, & THERMODYNAMICS	
Humanities and Social Sciences		
EXPOS-UA 1	Writing The Essay:	4
EXPOS-UA 2	THE ADVANCED COLLEGE ESSAY	4
Select one Ethics course		4
Select three humanities and social sciences courses [3]		12
Electives		
Select 18 additional credits in computer science electives [4]		18
Select 26 credits of free electives [4,5]		26
Total Credits		**128**

1

Note: MA-UY 914 Precalculus for Engineers does not count toward the Math requirement.
Note: MA-UY 2034 Linear Algebra and Differential Equationsor another linear algebra course is recommended, but not required. Some CS electives have knowledge of linear algebra as a prerequisite. Students planning to take such electives should plan accordingly.

2

Students may choose any three natural science courses (each at least 3 credits) offered by the NYU Tandon School of Engineering, provided that they meet pre-requisites and co-requisites.

3

One must be an Advanced Seminar course.

4

With approval of the CSE department, certain closely related courses in EE, Math or other related disciplines may be substituted for CS electives. A list of approved substitutions is available in the CSE department.

5

Note: NYU SPS courses are not accepted as free electives.

Sample Plan of Study

Course	Title	Credits
1st Semester/Term		
CS-UY 1114	INTRO TO PROGRAMMING & PROBLEM SOLVING [1]	4
EG-UY 1004	Introduction to Engineering and Design	4
EXPOS-UA 1	Writing The Essay: [2]	4
MA-UY 1024	Calculus I for Engineers [3]	4
	Credits	**16**
2nd Semester/Term		
CS-UY 1134	Data Structures and Algorithms [1]	4
CS-UY 1122	Introduction to Computer Science	2
MA-UY 1124	Calculus II for Engineers	4
EXPOS-UA 2	THE ADVANCED COLLEGE ESSAY	4

Science Elective [3]		3
	Credits	**17**
3rd Semester/Term		
CS-UY 2124	Object Oriented Programming [1]	4
MA-UY 2314	Discrete Mathematics	4
Science Elective [4]		3
Humanities and Social Sciences Elective [5]		4
	Credits	**15**
4th Semester/Term		
CS-UY 2214	COMPUTER ARCHITECTURE AND ORGANIZATION	4
CS-UY 2413	DESIGN & ANALYSIS OF ALGORITHMS	3
MA-UY 2224	Data Analysis	4
Humanities and Social Sciences Elective [5]		4
	Credits	**15**
5th Semester/Term		
CS-UY 3224	INTRO TO OPERATING SYSTM	4
CS Elective		3
Humanities and Social Sciences Elective [5]		4
Science Elective [4]		3
Free Elective		3
	Credits	**17**
6th Semester/Term		
CS Elective		3
CS Elective		3
Humanities and Social Sciences Elective [5]		4
Free Elective		3
Free Elective		3
	Credits	**16**
7th Semester/Term		
CS-UY 4513	Software Engineering	3
CS Elective		3
CS Elective		3
Free Elective		3
Free Elective		4
	Credits	**16**
8th Semester/Term		
CS-UY 4523	Design Project	3
Free Elective		4
CS Elective		3
Free Elective		3
Free Elective		3
	Credits	**16**
	Total Credits	**128**

1

Grade of C- or better is required in CS-UY 1114 INTRO TO PROGRAMMING & PROBLEM SOLVING, CS-UY 1134 Data Structures and Algorithms, and CS-UY 2124 Object Oriented Programming. Students who take CS-UY 1113 PROBLEM SOLVING AND PROGRAMMING I and CS-UY 1123 PROBLEM SOLVING AND PROGRAMMING II may count four credits toward the CS requirements of the major, in lieu of CS-UY 1114 INTRO TO PROGRAMMING & PROBLEM SOLVING. The other two credits will be counted as free electives.

2

Students who are placed by examination or by an adviser into MA-UY 914 Precalculus for Engineers must defer registration for MA-UY 1024 Calculus I for Engineers.

3

The Science electives may be chosen from any of the following natural sciences (Physics, Biology, and Chemistry). Many science courses are 4 credits or require co-requisite lab.

4

With approval of the CSE department, certain closely related courses in EE, Math or other related disciplines may be substituted for CS electives. A list of approved substitutions is available in the CSE department.

5

At least one Humanities and Social Sciences elective must be a Writing-intensive course. Writing-intensive Humanities and Social Sciences courses are designated by "W." In addition, one Humanities and Social Sciences elective must be a 3XXX or 4XXX level. Approved Humanities and Social Sciences electives span three clusters: CAM, STS and SEG. Students are encouraged to take Humanities and Social Sciences electives across clusters and/or disciplines within a cluster.

Learning Outcomes

Upon successful completion of the program, graduates will:

1. Learn fundamentals of computer science theory and practice in order to contribute to industry, academic, and government activities.
2. Learn modern design and development techniques.
3. Enhance their base of knowledge with appropriate electives.
4. Develop laboratory and software skills for advanced project development and research activity.

Policies

NYU Policies

University-wide policies can be found on the New York University Policy pages (https://bulletins.nyu.edu/nyu/policies/).

Tandon Policies

Additional academic policies can be found on the Tandon academic policy page (https://bulletins.nyu.edu/undergraduate/engineering/academic-policies/).