COMPUTER SCIENCE (BS)

CIP: 11.0701

Program Description

Computer Science is a practical art that has led to revolutionary innovations in entertainment, the humanities, health, business, the news media, communications, education, scientific research, and the arts. It is also a science rooted in mathematics and engineering. Although it is a relatively young field, computer science has produced many of the advances in modern life that we now take for granted. It has given medical researchers tools to understand and cure diseases, enabled physicists to reshape our understanding of the universe, allowed neuroscientists to uncover the secrets of our brains, and helped biologists decipher the human genome. Computer Science has rewritten the rules of the entertainment industry and has transformed the way humans communicate with each other.

The goal of the Computer Science major is to train students both in the fundamental principles of computer science and in related aspects of technology, to broaden the knowledge base of computer science majors, and to demonstrate the relevance of computer technology to other disciplines. Computer Science majors must complete a minor or a major in one of the following areas: Applied Mathematics, Economics, Engineering, Interactive Media, Natural Sciences, or Sound and Music Computing. The Program in Computer Science embraces a rich variety of subjects and provides great flexibility, allowing students to tailor courses of study to their particular interests. Advanced undergraduate students can work on research projects with faculty members engaged in projects of mutual interest.

The study away pathway for the Computer Science major can be found on the NYUAD Student Portal at students.nyuad.nyu.edu/pathways (http://students.nyuad.nyu.edu/pathways/). Students with questions should contact the Office of Global Education.

The program strongly recommends that at least one elective Computer Science course be taken in Abu Dhabi.

Global Studies Track: Computer Science

In addition to providing its students with a rigorous theoretical foundation and methodological training in Computer Science and related aspects of technology, the NYUAD Computer Science program believes in the importance of pre-professional training as a preparation both for advanced study and global careers.

The Global Studies Track in Computer Science is designed to combine the study away opportunities for NYUAD students at the NYU campuses in the United States in New York or Washington, DC and at the NYU campus in Abu Dhabi with the experiential educational and pre-professional opportunity for a paid internship in the United States over the summer.

Students apply and are admitted to this track through a competitive process, which requires:

- GPA of no less than 3.5 in required major courses.
- Cumulative unofficial GPA of no less than 3.5.
- Completion of the following prerequisites before starting the US component of the program: *Introduction to Computer Science, Calculus with Applications, Discrete Mathematics, Data Structures, Algorithms, and Computer Systems Organization*.
- Official declaration of the major at the time of the application.
- Presentation of a four-year academic plan for the timely completion of the major and all other degree requirements.
- Statement of purpose, including an academic rationale for participating in the program, a plan for developing a capstone research proposal, and a plan for career development and securing a summer internship.
- Approval of the Program Head for Computer Science, the Dean of Science, and the Office of Global Education.

The program requires the following academic sequence:

- Fall semester junior year at NYU New York or NYU Washington, DC
- Spring semester junior year at NYU Abu Dhabi
- Summer internship in a field related to Computer Science and/or similar aspects of technology in the United States. Note: Students must secure their own summer internships. The typical duration of the internship is 8 to 10 weeks. If needed, students can apply for funding through the existing summer funding process.
- Students must apply in December of their sophomore year for the full program and commit to it if approved.

For additional information contact the Office of Global Education.

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

Course	Title	Credits
General Education Requirements		
Colloquia		8
First-Year Seminar		4
Arts, Design, and Technology		4
Cultural Exploration Analysis		4
Data and Discovery		4
Structures of Thought and Society		4
January Term Courses (3 courses)		12
Required Courses		
CS-UH 1001	Introduction to Computer Science	4
CS-UH 1002	Discrete Mathematics	4
CS-UH 1050	Data Structures	4
CS-UH 1052	Algorithms	4
CS-UH 2010	Computer Systems Organization	4
CS-UH 2012	Software Engineering	4
CS-UH 3010	Operating Systems	4
CS-UH 3012	Computer Networks	4
MATH-UH 1012Q	Calculus with Applications to Science and Engineering	4
Electives		

Select two Computer Science electives from within the Computer Science major		8
Research Seminar		
CS-UH 3090	Research Seminar in Computer Science (half course)	2
Capstone		
CS-UH 4001	Capstone Project in Computer Science 1	4
CS-UH 4002	Capstone Project in Computer Science 2	4
Minor		
Select one of the following: [1]		16
Applied Mathematics		
Economics		
Engineering		
Interactive Media [2]		
Natural Sciences		
Sound and Music Computing		
Other Elective Credits		18
Total Credits		**128**

1

Note that completing a major in Biology, Chemistry, Economics, Engineering, Mathematics, or Physics precludes the need to complete one of the listed minors.

2

The elective courses within this minor must be selected from the Computational Media cluster.

Sample Plan of Study

Course	Title	Credits
1st Semester		
MATH-UH 1012	Calculus with Applications to Science and Engineering	4
CS-UH 1002	Discrete Mathematics	4
CS-UH 1001	Introduction to Computer Science	4
First-Year Writing Seminar		4
	Credits	**16**
2nd Semester		
General Elective		4
	Credits	**4**
3rd Semester		
CS-UH 1052	Algorithms	4
Colloquium		4
Core		4
CS-UH 1050	Data Structures	4
	Credits	**16**
4th Semester		
Computer Science Elective		4
CS-UH 2010	Computer Systems Organization	4
Core		4
Minor 1		4
	Credits	**16**
5th Semester		
General Elective		4
	Credits	**4**
6th Semester		
CS-UH 3010	Operating Systems	4
Colloquium		4
General Elective		4
CS-UH 3012	Networks and Distributed Systems	4
	Credits	**16**
7th Semester		
NEW YORK		NA
NEW YORK		NA
NEW YORK		NA
NEW YORK		NA
	Credits	**0**
8th Semester		
General Elective		4
	Credits	**4**
9th Semester		
CS-UH 2012	Software Engineering	4
Core		4
Minor 3		4
Minor 2		4
CS-UH 3090	Research Seminar in Computer Science	4
	Credits	**20**
10th Semester		
CS-UH 4001	Capstone Project in Computer Science 1	4
Core		4
General Elective		4
Minor 4		4
	Credits	**16**
11th Semester		
CS-UH 4002	Capstone Project in Computer Science 2	4
General Elective		4
General Elective		4
General Elective		4
	Credits	**16**
	Total Credits	**128**

Learning Outcomes

Upon successful completion of the program, graduates will:

1. Be able to analyze a problem, and identify, define, and verify the appropriate computational tools required to solve it.
2. Be able to apply up-to-date computational tools necessary in a variety of computing practices.
3. Be able to implement algorithms as programs using modern computer languages.
4. Be able to apply their mathematical knowledge to solve computational problems.
5. Be able to communicate computer science knowledge both orally and in writing.
6. Be able to collaborate in teams.

Policies

NYU Policies

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

NYU Abu Dhabi Policies

A full list of relevant policies can be found on NYU Abu Dhabi's undergraduate academic policies page (https://bulletins.nyu.edu/undergraduate/abu-dhabi/academic-policies/).