COMPUTER AND INFORMATION SCIENCES

Computer Science
The curriculum in computer science is oriented toward computing methods and systems. It emphasizes systems analysis, software design and programming, analytic reasoning, computer architecture, and the theory of computation. Students will learn the process and algorithms to analyze and solve complex problems and also use the computer and the Internet as a problem-solving tool. Students graduating from the program will be prepared for careers in computer science, information technology, system design, telecommunications, and network applications, both in the public and private sectors. Students will also be prepared for further graduate study in computer science or other related areas.

Application for admission to the Graduate Program in Computer Science must be made online through the Graduate School of Arts and Sciences Bulletin page (http://bulletin.columbia.edu). Applications are made online through the Graduate School of Arts and Sciences Bulletin page. All applications will be reviewed by the Department of Computer and Information Sciences.

Students considering a major in computer science should take CISC 1400 Discrete Structures in the first semester of their first year and CISC 1600 Computer Science I in the second semester of their first year.

Information Science
The curriculum in information science emphasizes information acquisition, information analysis, and information systems, as well as information and network technology.

It is concerned with the design of and methodologies for storing, retrieving, processing, and transmitting data and information. Students graduating from the program will be prepared for a variety of careers, including those in information systems, computer applications, web-based system design, and Internet and communication technology as found in government, business, and society. Students will also be prepared for further graduate study in information science, information systems, information networking, and other related areas.

Students wishing to major in information science should take CISC 1100 Structures of Computer Science and CISC 1600 Computer Science I in the first semester of their first year or as soon as possible. Students wishing to major in computer science should take CISC 1400 Discrete Structures in the first semester of their first year and CISC 1600 Computer Science I in the second semester of their first year.

Program Activities

Courses For Nonmajors
1. Students wishing a general familiarity with computers, or computer and information science and technology, but who do not wish to major in computer or information science, are advised to take any of the following courses, which do not require any CIS prerequisites, as soon as possible:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CISC 1100</td>
<td>Structures of Computer Science</td>
<td>3 to 4</td>
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<tr>
<td>or CISC 1400</td>
<td>Discrete Structures</td>
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<tr>
<td>CISC 1600</td>
<td>Computer Science I</td>
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<tr>
<td>&amp; CISC 1610</td>
<td>and Computer Science I Lab</td>
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<tr>
<td>CISC 2350</td>
<td>Information and Web Programming</td>
<td>4</td>
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<td>CISC 2500</td>
<td>Information and Data Management</td>
<td>4</td>
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<tr>
<td>CISC 2530</td>
<td>Digital Video and Multimedia</td>
<td>4</td>
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<tr>
<td>CISC 2540</td>
<td>Introduction to Video Game Design</td>
<td>4</td>
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<tr>
<td>CISC 2850</td>
<td>Computer and Data Analysis</td>
<td>4</td>
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<tr>
<td>CISC 4001</td>
<td>Computers and Robots in Film</td>
<td>4</td>
</tr>
<tr>
<td>CISC 4006</td>
<td>Brains and Behavior in Beasts and Bots</td>
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2. Students who specifically wish to gain familiarity with web page construction and digital media and graphics should take CISC 2350 Information and Web Programming, CISC 2530 Digital Video and Multimedia, or CISC 2540 Introduction to Video Game Design.

3. Students wishing to have some knowledge on the applications of computer and information science and their interface with biomedicine and health can take CISC 4020 Bioinformatics.

4. Students majoring in science, mathematics, and social science, who wish to pursue their further graduate studies in a field or subject closely related to (or utilizing) quantitative, qualitative, and algorithmic reasoning should take CISC 2850 Computer and Data Analysis or CISC 4631 Data Mining in addition to those courses listed in (1) above.

5. Students can take a combination of courses (listed in (1), (2), (3) and (4) above) to fulfill a minor in computer science, information science, or information technology and systems (see the required minor courses in Minor section) or to prepare intellectual skills necessary in their major study.

3-2 Cooperative Program in Engineering
This joint five-year program with Columbia University leads to a B.A. degree from Fordham University and a B.S. degree in engineering from Columbia University. A description of the program is given under the Cooperative Program in Engineering section of this bulletin. The department provides a specialized set of CS major requirements for 3-2 engineering students. Interested students should consult the computer and information science department as early as possible.

For more information
Visit the Computer and Information Sciences department web page.

Contribution to the Core
The Department of Computer and Information Sciences offers CISC 1100 Structures of Computer Science, CISC 1400 Discrete Structures, and CISC 1600 Computer Science I (CS1), each fulfilling the mathematical and computational reasoning core requirement. We encourage science and social science majors, and those interested in receiving a more
in depth understanding of algorithmic and quantitative reasoning, to take CISC 1400 Discrete Structures instead of CISC 1100 Structures of Computer Science.

The department also offers CISC 2540 Introduction to Video Game Design, which satisfies the EP3 core requirement, and CISC 4001 Computers and Robots in Film and CISC 4006 Brains and Behavior in Beasts and Bots, which satisfy the ICC core requirement.

The department also offers CISC 4650 Cyberspace: Issues and Ethics and CISC 4660 Minds, Machines, and Society, which fulfill the Values Seminar/EP4 core requirement.

**Programs**

**Majors**
- Computer Science Major
- Information Science Major
- Mathematics and Computer & Information Sciences Major

**Minors**
- Bioinformatics Minor
- Computer Science Minor
- Cybersecurity Minor
- Information Science Minor