MATHEMATICS AND COMPUTER & INFORMATION SCIENCES MAJOR

The major, offered jointly by the Department of Computer and Information Sciences and the Department of Mathematics, is designed to give students an excellent background in computer science and a solid foundation in those mathematical disciplines necessary for a full understanding of computer and information sciences. The program fosters both careful reasoning and a deep understanding of technology, enhancing graduates' marketability. The high degree of difficulty makes this joint major attractive to recruiters from the technology industry; it also prepares students who wish to pursue graduate study in computer science and other applied quantitative fields. Please note: There is no minor in this area; students are instead encouraged to minor in either mathematics or computer and information sciences.

Internships
Some majors in this program have completed internships, but such internships are not required and do not count toward the two electives in the major.

For more information
Visit the Mathematics and Computer & Information Sciences program page.

Requirements
A minimum grade of C- is required for each course counting toward this joint major. An overall average of 2.0 must be separately maintained in mathematics and computer and information sciences courses.

Required courses and sufficient electives to fulfill the major are available on both campuses. Course descriptions are available from each department.

Majors in this program are eligible for honors at graduation in mathematics and computer & information sciences.

The major requires 14 total courses: 10 common required courses, two courses in one concentration, and two electives. Students must declare a concentration in mathematics or computer and information sciences. The 10 common required courses are identified below.

### Course | Title | Credits
--- | --- | ---
CISC 1600 & CISC 1610 | Computer Science I and Computer Science I Lab | 4
CISC 2000 & CISC 2010 | Computer Science II and Computer Science II Lab | 4
CISC 2200 | Data Structures | 4
CISC 4080 | Computer Algorithms | 4
CISC 4090 | Theory of Computation | 4
MATH 1207 | Calculus II | 4
MATH 2004 | Multivariable Calculus I | 4
MATH 2001 | Discrete Mathematics | 4
MATH 2006 | Linear Algebra I | 4
MATH 4006 | Numerical Analysis | 4

**Electives**
Select two electives in mathematics (numbered above 2000) or computer and information sciences (possibly including 5000 level graduate courses)²

### Concentration
Select one of the following:
- Mathematics Concentration
- Computer and Information Sciences Concentration

1. Students who take CISC 1600 during Fordham's Summer Session do not take CISC 1610, as the summer lecture and lab are offered in a combined format.

2. At least one elective must be from mathematics if the computer and information sciences concentration is chosen and at least one elective must be in computer and information sciences if the mathematics concentration is chosen.

Concentrations
Each student must also take two courses from one of the following two concentrations. Courses from the concentration not chosen may be used as electives.

**Mathematics Concentration**

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MATH 3006</td>
<td>Probability</td>
<td>8</td>
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<tr>
<td>MATH 3007</td>
<td>Statistics</td>
<td></td>
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<tr>
<td>MATH 3002</td>
<td>Differential Equations</td>
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<tr>
<td>MATH 4022</td>
<td>Partial Differential Equations</td>
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**Computer and Information Sciences Concentration**

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CISC 3500</td>
<td>Database Systems</td>
<td>8</td>
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<tr>
<td>CISC 3593</td>
<td>Computer Organization</td>
<td></td>
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<tr>
<td>CISC 3595</td>
<td>Operating Systems</td>
<td></td>
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<tr>
<td>CISC 4597</td>
<td>Artificial Intelligence</td>
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<td>CISC 4615</td>
<td>Data Communications and Networks</td>
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<td>CISC 4631</td>
<td>Data Mining</td>
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Availability
The major in mathematics and computer & information sciences is available at Fordham College at Rose Hill and Fordham College at Lincoln Center. Students in the School of Professional and Continuing Studies may major in mathematics and computer & information sciences only if their schedules are sufficiently flexible to permit them to take day courses at the Rose Hill or Lincoln Center campuses.

**Fordham College at Rose Hill students:** The requirements above are in addition to those of the Core Curriculum.

**Fordham College at Lincoln Center students:** The requirements above are in addition to those of the Core Curriculum.

**Professional and Continuing Studies students:** The requirements above are in addition to those of the PCS Core Curriculum.

Updated: 09-23-2020