**BACHELOR OF ARTS IN MATHEMATICS**

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The power of mathematics lies in its focus on precise and logical reasoning to draw conclusions and make discoveries in many domains, both abstract and concrete.

The idea of mathematics as a process of carrying out procedures and following rules to produce a single right answer is a misconception. At the college level, the discipline is fully realized as a way of thinking, which can be applied in almost any context, wherever the basis for what is true or false can be understood while minimizing fuzziness or ambiguity.

The starting point in mathematics is not a large body of facts, but is instead a small number of ideas that are made precise and thoroughly understood. Mathematical knowledge is built from these in a way that gives us access to the steps that form the logical basis for why something makes sense.

Times have changed. We live in a world where decisions need to be justified with data and conclusions need to be quantified. To be effective, we must critically evaluate judgments based on data and quantifiable observations, and present arguments in a logical fashion. Presenting conclusions alone is not enough; they must be explained in a way that convinces others, supported by sound logical reasoning. This kind of argument is the focus of mathematics.

Ultimately, mathematics builds our ability to create new knowledge, justify new conclusions and make new discoveries in any realm where logical thought yields power—which is to say, just about everywhere.

Consequently, the study of mathematics will better enable you to succeed in other disciplines, from chemistry to political science to sociology, at a more advanced level. This is also why mathematics majors find careers doing advanced work in consulting, government, analytics, engineering, education and other important fields.

Students majoring in mathematics must meet the following requirements for graduation. Note: A C- or better is required for all departmental requirements.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MA 301</td>
<td>Foundations of Advanced Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>MA 321</td>
<td>Abstract Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MA 341</td>
<td>Advanced Calculus</td>
<td>3</td>
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<tr>
<td>MA 490</td>
<td>Mathematics Senior Seminar</td>
<td>3</td>
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**Mathematics Electives (take three of the following)**

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MA 285</td>
<td>Applied Statistics</td>
<td>3</td>
</tr>
<tr>
<td>MA 300</td>
<td>Special Topics</td>
<td>3</td>
</tr>
<tr>
<td>MA 305</td>
<td>Discrete Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>MA 315</td>
<td>Theory of Computation</td>
<td>3</td>
</tr>
<tr>
<td>MA 318</td>
<td>Cryptography</td>
<td>3</td>
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<tr>
<td>MA 351</td>
<td>Real Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MA 365</td>
<td>Ordinary Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>MA 370</td>
<td>Number Theory</td>
<td>3</td>
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<tr>
<td>MA 371</td>
<td>Mathematical Statistics and Probability I</td>
<td>3</td>
</tr>
<tr>
<td>MA 372</td>
<td>Mathematical Statistics and Probability II</td>
<td>3</td>
</tr>
<tr>
<td>MA 378</td>
<td>Mathematical Modeling</td>
<td>3</td>
</tr>
<tr>
<td>MA 421</td>
<td>Advanced Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MA 451</td>
<td>Elements of Point-Set Topology</td>
<td>3</td>
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**Open Electives** 35

Total Credits 120-123

All students must complete the University Curriculum (http://catalog.qu.edu/academics/university-curriculum/) requirements.

While students must consult with their major adviser in planning a course of study, the department provides the following recommendations:

- Students interested in teaching must take a course in statistics, usually MA 285 or MA 371.
- Students interested in statistics should take MA 285, MA 371 and MA 372.
- Students interested in actuarial studies should take MA 371, MA 372 and MA 378. We also recommend CSC 110 and a Minor in Finance (http://catalog.qu.edu/business/finance/finance-minor/) or Business (http://catalog.qu.edu/business/business-minor/).

Students graduating with a major in mathematics will demonstrate the following competencies:

1. **Application**: Apply the fundamental concepts of calculus and linear algebra to solve both abstract and applied problems.
2. **Communication**: Communicate mathematics effectively, both orally and in writing.
3. **Collaboration**: Collaborate effectively to understand and solve mathematical problems.
4. **Abstraction**: Recognize and describe abstractions that unify mathematical structures and problems.
5. **Appreciation**: Articulate an understanding of the nature and value of mathematics and the unique epistemology of the subject.
6. **Technology**: Apply appropriate technology in exploring mathematical concepts and solving mathematical problems.
7. **Independence**: Independently investigate and acquire mathematical knowledge and formulate strategies to solve mathematical problems.
Bachelor of Arts in Mathematics

8. **Analysis**: Read and judge the validity of mathematical proofs and write proofs that are clear and valid.

## Admission Requirements: College of Arts and Sciences

The requirements for admission into the undergraduate College of Arts and Sciences programs are the same as those for admission to Quinnipiac University.

Admission to the university is competitive, and applicants are expected to present a strong college prep program in high school. Prospective first-year students are strongly encouraged to file an application as early in the senior year as possible, and arrange to have first quarter grades sent from their high school counselor as soon as they are available.

For detailed admission requirements, including required documents, please visit the Admissions (http://catalog.qu.edu/general-information/admissions/) page of this catalog.

Shown below is one of many possible paths through the curriculum. Each student's individual academic plan is crafted in consultation with their academic adviser.

### Code | Title | Credits
--- | --- | ---
**First Year**
Milestones: Earn 30 credits, meet with your adviser at least once a semester and have a GPA of 2.00 or higher.

**Fall Semester**
- MA 151 | Calculus I | 4
- EN 101 | Introduction to Academic Reading and Writing | 3
- FYS 101 | First-Year Seminar | 3
- University Curriculum course | 3
- University Curriculum course | 3

**Spring Semester**
- MA 152 | Linear Algebra | 4
- MA 229 | Linear Algebra | 3
- EN 102 | Academic Writing and Research | 3
- University Curriculum course | 3
- University Curriculum course | 3

**Second Year**
Milestones: Earn 60 credits and a GPA of 2.00 or higher. Meet with your adviser at least once per semester to discuss academic, experiential learning, career and co-curricular opportunities.

**Fall Semester**
- MA 251 | Calculus III | 4
- MA 301 | Foundations of Advanced Mathematics | 3
- Language at the 101 level | 3
- University Curriculum course | 3
- University Curriculum course | 3

**Spring Semester**
- MA 321 | Abstract Algebra | 3
- Language at the 102 level (Satisfies CAS Language Requirement) | 3

**Third Year**
Milestones: Earn 90 credits and a GPA of 2.00 or higher. Meet with your adviser at least once per semester. Participate in study abroad, complete internship or research opportunities.

**Fall Semester**
- Mathematics Elective | 3
- University Curriculum course | 4
- Open Elective | 4
- Open Elective | 3
- Open Elective | 3

**Spring Semester**
- Mathematics Elective | 3
- Open Elective | 3
- Open Elective | 3
- Open Elective | 3

**Fourth Year**
Milestones: Earn 120 credits and a GPA of 2.00 or higher. Complete possible minor or double major and prepare for graduation.

**Fall Semester**
- Mathematics Elective | 3
- Open Elective | 3
- Open Elective | 3
- Open Elective | 3
- Open Elective | 3

**Spring Semester**
- MA 490 | Mathematics Senior Seminar | 3
- Open Elective | 3
- Open Elective | 3
- Open Elective | 3
- Open Elective | 3

**Total Credits** | **120**