**Undergraduate Programs**

This webpage contains general information about our undergraduate programs. Current students of Binghamton University should visit the Undergraduate Advising page for more information.

We offer the following undergraduate degree programs:

- **Bachelor of Arts** in Mathematical Sciences, with
  - a Mathematics Track,
  - a Statistics Track, and
  - an Actuarial Science Track.

- **Bachelor of Science** in Mathematical Sciences, with
  - a Mathematics Track, and
  - an Actuarial Science Track.

- Minor in Mathematics

We offer various accelerated degree programs, allowing students to obtain a bachelor's degree and a master's degree in five years. Specially, we offer a 4+1 degree program combining a BA/BS in Mathematical Sciences degree (any track) with MA in Statistics degree.

To declare or drop a major or minor in the Department of Mathematical Sciences, fill in this Google Form. You need to log in to your Bmail account to see the form. **Please do not declare your major for multiple times in a short time period to avoid human errors.** To change from one major to another, simply drop the old major, then declare the new one.

Any student wishing to declare a major in the Department of Mathematical Sciences needs to be admitted to Harpur College of Arts and Sciences first; otherwise the declaration can not be processed.

**Mathematics Tracks**

Mathematics belongs both to liberal arts and to sciences. Not only is it the language of science (including social science), but it is also studied for its own beauty. It is therefore one of the most vital and lively subjects in the university curriculum. In the technology-oriented climate of today, the department’s graduates have excellent employment opportunities.

Mathematicians and statisticians are in demand, not only in mathematics teaching and research, and in the traditional fields of physics, chemistry, computer science and engineering, but also, and increasingly, in business, economics, environmental sciences, geology, biology and the health sciences among others. Knowledge of computer science is useful for many applications of mathematics.

The Department of Mathematical Sciences has programs leading to a BA or BS degree in Mathematical Sciences.

The preliminary lower-level courses required for all students are calculus I–III, linear algebra and number systems.

The BA program in Mathematical Sciences is highly flexible and allows each student to fashion a course of study to
meet his or her individual needs and interests. The BA track in Mathematics emphasizes both the breadth and depth. The student is encouraged to experience different areas in mathematical sciences. Core areas of Mathematics include Analysis, Algebra and Geometry/Topology. Other areas include Actuarial Science, Statistics, Combinatorics, Computer Science and others. A student is required to finish one upper-level course from each of the three core areas, and two additional upper-level courses. The five upper-level courses must include a pairing of two courses in the same area to be selected from a list, according to the student's interests.

The challenging BS degree program provides excellent preparation for graduate work at any university. Students considering a BS degree should seek advice as early as possible and plan their schedules carefully to meet the demanding requirements. In addition to the five lower-level courses, the BS degree requires 11 upper-level courses, include six courses from the core areas, and five upper-level elective courses.

Statistics Track

Statistics is the discipline that concerns the collection, organization, analysis, interpretation and presentation of data. It is concerned with data in the context of uncertainty and decision making in the face of uncertainty. Statistics is primarily mathematical in nature, but has grown through applications in the social sciences (such as economics), Natural Sciences (such as physics and biology), as well as business and engineering, to become its own separate, though closely allied, field. Inferences in mathematical statistics are made under the framework of probability theory. Modern statistics in the 21st century focuses more and more on computing and algorithms.

The BA track in Statistics is designed to provide a solid mathematical and statistical foundation for a successful career in statistics, data analysis and data science. It offers students the possibility of expanding the interdisciplinary aspect of the program by completing a second major. For example, students may combine statistics with computer science, biology, psychology, economics, accounting, finance, management science, or a social science.

The BA track in Statistics requires 12.5 courses in Mathematical Sciences (that is 12 full-semester course and one half-semester course).

Actuarial Tracks

Actuaries are the leading professionals in finding ways to manage risk. It takes a combination of strong analytical skills, business knowledge, and understanding of human behavior to manage today's complex risks facing our society. Actuaries analyze and solve complex business and social problems related to financial risks, such as in insurance and pension plans.

The BA/BS tracks in Actuarial Science are designed to prepare students for an actuarial career. Professional advancement results from passing a series of examinations administered by the actuarial societies and by completion of specific courses approved by the actuarial societies.

The BA track in Actuarial Science requires 10.5 courses in Mathematical Sciences (that is 10 full-semester course and one half-semester course) and 2 courses in Economics.

The more challenging BS track is designed for students who may wish to pursue a graduate degree in Actuarial Science or related fields, and it entails 14.5 courses in Mathematical Sciences and 4 courses in Economics.

The preliminary lower-level courses required for all students are calculus I–III, linear algebra and number systems.

Other required courses for all actuarial students are Probability Theory (Math 447), Mathematical Statistics (Math
448), Intro. to Financial Math (Math 346) and Intro. to Scientific Computing (Math 329).

Prospective Students

If you are a prospective student or a parent of a prospective student, and are interested in visiting the department and talking with our faculty members, you can make an appointment with the department secretary.

The websites below provide some resources on the career perspective for math graduates.

- What Do Mathematicians Do?
- What Do Statisticians Do?
- What Do Actuaries Do?

Mathematics Minor

A minor in Mathematical Sciences requires the student to complete, with a grade of C or higher, at least 24 credits from courses numbered above MATH 300 of which at least 12 credits are from courses numbered MATH 330 or above. Some of these courses can be transfer courses, independent studies, or computer science courses. See the University Bulletin for details. Students interested in pursuing a Mathematics minor should consult with the Director of Undergraduate Studies.

Mathematical Education

For students interested in becoming math teachers, Binghamton offers:

- BA/BS degrees in mathematics. Either the BA (Mathematics Track) or BS (Mathematics Track) is suitable preparation for a Masters in Teaching program,
- An undergraduate minor in Education
- A Master of Arts in Teaching (MAT) in Mathematics Adolescent Education
- Accelerated program in BA in Mathematics and MAT in Mathematics Adolescence Education (also known as the combined 3+2 program.)

The accelerated program allows well-prepared students to complete the Mathematics BA and Master of Arts in Teaching (Mathematics Adolescent Education) in 5 years. Transfer students are not eligible for the accelerated program. Students can also complete the Bachelors and Masters program independently.

Here is a list of recommended courses for future math teachers.

Accelerated Programs

An accelerated program allows a student to obtain a bachelor's degree and a master's degree in five years. You complete most of the coursework for your bachelor's degree in your first three years. In your fourth year, you take both bachelor's- and master's-level courses, graduate with your bachelor's degree and formally apply to the Graduate School. In your fifth year, you are admitted to the Graduate School and focus solely on graduate
coursework.

The department participates in Accelerated Programs which lead to master's degrees in Business Administration (MBA), Electrical and Computer Engineering (MS) and Mathematics Adolescence Education (MAT).

Check the Graduate School's website for the Accelerated Programs for details.

Honors, Awards and Scholarships

Department of Mathematical Sciences has departmental graduation honors. Binghamton University has university-wide graduation honors. We also host an honor society.

Departmental Graduation Honors

Learn about departmental graduation honors from this page.

University-wide Graduation Honors

Harpur College students must have at least 48 graded credits from Binghamton University and have no missing grades or Incompletes. In addition, cumulative Grade Point Average requirements:

- Students with cumulative GPA of 3.85 or greater (on a 4.0 scale) receive the designation summa cum laude;
- Students with cumulative GPA of between 3.70 and 3.84 receive the designation magna cum laude;
- Students with cumulative GPA of between 3.50 and 3.69 receive the designation cum laude.

The department also hosts a local chapter of Pi Mu Epsilon, the National Mathematics Honor Society.

In addition to departmental graduation honors, the department grants several awards and scholarships each year to students who have made outstanding achievement in mathematical sciences. These awards include the following.

- **Award for Excellence in Mathematical Sciences** - presented to outstanding graduating seniors majoring in mathematical sciences.
- **Guardian Life Insurance Company of America Award** - recognize and reward outstanding undergraduate students who have interests in the field of actuarial science.
- **Helen P. Beard Award for Excellence in Undergraduate Mathematics** - established by Gerald Miller ’67 in honor of Professor Emeritus Helen Pearl Beard, who retired in 1982 and passed away in January of 2004 at the age of 88. Presented to a junior or senior major who demonstrates qualities exemplified by Professor Beard.
- **Lawrence I. Wilkins Scholarship** - awarded to a Harpur student majoring in math with academic excellence. Recipients are selected in the Spring for the following academic year.
- **Miguel Arcones Memorial Award** - established in 2013 to honor the memory of Professor Miguel Arcones. Awarded to a graduating senior who has demonstrated academic excellence. Preference will be given to a student in the actuarial program.

Many awards are made possible because of donations from our alumni and friends. Read the actuarial program page for more information on the actuarial awards.
Student Activities

- The Undergraduate Math Club and MAA student chapter.
  - Problem of the Week from the Math Club.
- The Data Science and Analytics Club
- The Undergraduate Actuarial Association
- Undergraduate Research Center: current research opportunities.
- Binghamton has a local chapter of Pi Mu Epsilon, the National Mathematics Honor Society.
- The department is a participant in the Seaway Section of the MAA.

From:
https://www2.math.binghamton.edu/ - Binghamton University Department of Mathematical Sciences

Permanent link:
https://www2.math.binghamton.edu/p/ug

Last update: 2021/01/22 18:05