Undergraduate Program

1. Degree Options

The Department of Mathematics and Statistics has the following **six degree options**: three BA major tracks, two BS major tracks, and one minor, covering a wide range of topics in mathematics and statistics.

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

In terms of the difference between a BA and a BS in Mathematics, a summary is that the BA program provides undergraduate students with a broad knowledge of mathematics and statistics emphasizing their practical applications. The BS degree, on the other hand, offers a rigorous program tailored to undergraduates who intend to continue graduate school. BS is a more demanding degree (with more math courses and some very challenging proof-oriented courses required). Both degrees require the same number of total credits, although the BS degree does require more math courses. Some students seem to think that the BA in Mathematics is an inferior degree. However, that is not true. The BS degree includes a selection of courses that will best prepare students for graduate school in Mathematics, Statistics, or other related fields. The BS curriculum narrows the selection of courses to focus on that target. In addition to those who want to go to graduate school, the actuarial track in our BS degree also serves students who would like to take more classes that potentially help them pass more actuarial

exams. The BA degree requires fewer math courses and hence students have the flexibility to take courses from other fields, including, for example, arts, languages, linguistics, natural science, philosophy, and social sciences. The BA is the most efficient way (though it is not the only way) for a student to get a dual degree or a double major in mathematics and another discipline.

To know more details about the three different tracks and their future career paths, here is the overview information.

2. Degree Requirements

Read the University Bulletin for a very comprehensive and detailed official description of the program requirements for each of the six degree options. In addition to the major/minor requirements, the Harpur College requirements can be found on this webpage. Please be careful about the Grade Requirements for the degree and prerequisite of registering courses.

3. Declare, Drop, and Change Major/Minor

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

To **declare** or **drop** a major or minor, fill in this Google Form. We now require each student declaring the BS major to meet with a faculty member before making the major declaration. Please write down the name of the faculty member whom you have talked with. The math office will not process BS major declarations until this step is completed. If you have not met with a faculty member yet but need to declare a major now, please consider declaring a BA major first (and switching to BS later if desired). Enter the faculty's name in the blank next to “Other” below.

To **change** from one major to another, simply drop the old major, then declare the new one.

Note that a student can only earn one major at maximum from the same department. Hence, no one can double major in mathematics and actuarial science, or obtain a BA degree in Statistics and a BS degree in Mathematics, etc. However, students are encouraged to explore double major options from a different department.

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4. Forms for Undergraduates

- Major/Minor Declaration, Drop and Change form
- Math 225, Math 227, second half-semester signup form: Use this form if you want to register 225 or 227 in the second half-semester without the 224 or 226 co-requisite, while the stand-alone section of 225 or 227 does not work for your schedule.
- Undergraduate Independent Study (Math 497) Form
- Prerequisite Exception Request Form
- Request form for an Undergraduate Taking a Graduate Course
- Basics about Course Transfer: Information about Transferring Math credits (including link to required Harpur College Transfer Credit Petition form)
- Proctor request form for summer/winter courses: Some summer/winter math courses have in-person final exams. If you will not be in Binghamton at the time of your final exam, you may request permission to take the exam near your home with an approved proctor.

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5. Course Selection and Registration

To plan coursework effectively, students should consider both **prerequisite** dependencies between courses and the **semester** in which a course is offered. Prerequisites are particularly important in our department, and some courses are only available in certain semesters. Failing to account for these details could result in a student being unable to take required courses and potentially delaying graduation. In exceptional cases when prerequisite courses are in progress in the current semester without knowing grades, students may request a temporary waiver of prerequisites during the advance registration period using the Prerequisite Exception Request Form. However, proof of passing the prerequisite course is required at the start of the semester to remain enrolled in the class.

- Infographics demonstrating the prerequisite dependencies between courses and semester.
- Unofficial course schedules of the Department of Mathematics and Statistics.
- Official course descriptions in the catalog of the university: select the term and then choose MATH as the subject. A Binghamton user ID and password is required.
- Past course syllabi by semesters

6. Information Regarding Calculus

- The Calculus Overview
- Calculus placement test
- Math 227 place-out exam
- How to register for calculus classes
- Help room schedules

More details about some important Calculus courses

- Introduction to Calculus (Math 223)
- Calculus I (Math 224/225)
- Calculus II (Math 226/227)
- Calculus III (Math 323)
- Calculus for Business and Management (Math 220)

7. Credits Transfer

Students may earn credit for coursework completed in high school through AP, IB, CLEP and other exams. Please view the policies and criteria below:

- Harpur College Transfer Credit Policies
- Advanced Placement (AP)
- International Baccalaureate (IB)
- College Level Examination Program (CLEP) Exam

Students may also earn credit from courses taken in previous institutions or have the flexibility to take summer/winter courses at other institutions and then transfer credits back.

- The Pre-approved Transfer Table helps to determine equivalent courses: first select institutions and then select courses. If the courses are already in this pre-approved table, students do not need to request the credit transfer petition.

To transfer a math/stats course from outside Binghamton University for credit, you must receive pre-approval from the Director of Undergraduate Studies at the Department of Mathematics & Statistics. Not all courses can be transferred, hence it is important to have the course coverage reviewed before you register them. To this end,

- Fill out the Harpur College Transfer Credit Petition form. Save the completed form as an **editable PDF file**; images/snapshots are discouraged.
- Send an email with the completed form to the Director of Undergraduate Studies, Prof. Guifang Fu (gfu@math.binghamton.edu) for review and approval. Include in the email the current syllabus of the

course; the website of the department/university that offers the transfer course; and Information on when you plan to take the transfer course.

Online courses (especially asynchronous ones) are generally **not** approved for transfer (in some cases, transfer credits may be granted after passing our final exam with a grade of C or better.)

Courses from non-US institutions are typically *not* accepted, although there are exceptions for certain programs such as study abroad (excluding winter or summer sessions). More information on the rationale can be found here.

8. 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 Graduate School and focus solely on graduate coursework. Check the Combined Degree Programs (4+1) for more details.

We offer the following three accelerated 4+1 Master programs, allowing students to obtain a *Bachelor's degree* and a *Master's degree* in five years.

- BA/BS in Mathematical Sciences/ MA in Statistics
- Harpur/MBA 4+1 program
- BA in Mathematical Sciences/ MAT Math Adolescent Education

9. Faculty Advisors

Students can seek advices from the following faculty members:

- Every major is assigned a **faculty advisor** at the time of the major declaration. Students should meet regularly with the faculty advisor to discuss course selection and career goals. Students are free to choose another advisor after they get to know the faculty better.
- Students can also seek help from **Advising Liaison**, David Biddle (biddle@math.binghamton.edu). The Advising Liaison is the *de facto* advisor for students who are interested in math but have not declared the math major as well as those math majors who are still taking lower-level courses.
- Additionally, any issue related to the major/minor can be discussed with the **Director of Undergraduate Studies** (the current Director of Undergraduate Studies is Prof. Guifang Fu, gfu@binghamton.edu). Among other responsibilities, the Director of Undergraduate Studies is in charge

of transfer course approvals, prerequisite exceptions, DegreeWork exceptions, and so on.

10. Honors, Awards and Scholarships

Every semester, we grant our best graduating majors a distinction called “honors”. Learn about graduation with honors. The department 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 achievements in mathematical sciences. Many awards are made possible because of donations from our alumni and friends. These awards include the following.

- **Award for Excellence in Mathematical Sciences** – presented to outstanding graduating seniors majoring in mathematical sciences.
- **Actuarial Science Award** – presented to actuarial science students with academic excellence.
- **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.
- **Award for Putnam Competition and Problem-Solving** – presented to undergraduate majors in the Department of Mathematics and Statistics who participated in and received good results in the Putnam Mathematics Competition and/or the Problem of the Week problem-solving series.

11. Student Organizations and Activities

The students in the Department of Mathematics and Statistics frequently participate in the following organizations and in a wide range of activities.

- The Undergraduate Math Club and MAA student chapter
- The Association for Women in Mathematics Student Chapter
- The Data Science and Analytics Club
- The Actuarial Association
- The Binghamton chapter of Pi Mu Epsilon, the National Mathematics Honor Society.
- The department is a participant in the Seaway Section of the MAA.

12. Additional Resources

- Harpur College Student Advising Office
- Student Records and Registrar Services
- External Scholarships and Undergraduate Research Center for scholarship opportunities.

13. For Prospective Students

If you are new to the Math major/minor, please spend a few minutes to read answers to some Frequently Asked Questions.

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