

Undergraduate Programs

We offer the following undergraduate degree programs:

- **Bachelor of Arts** in **Mathematical Sciences**, with
 - a **Mathematics** 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.

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.

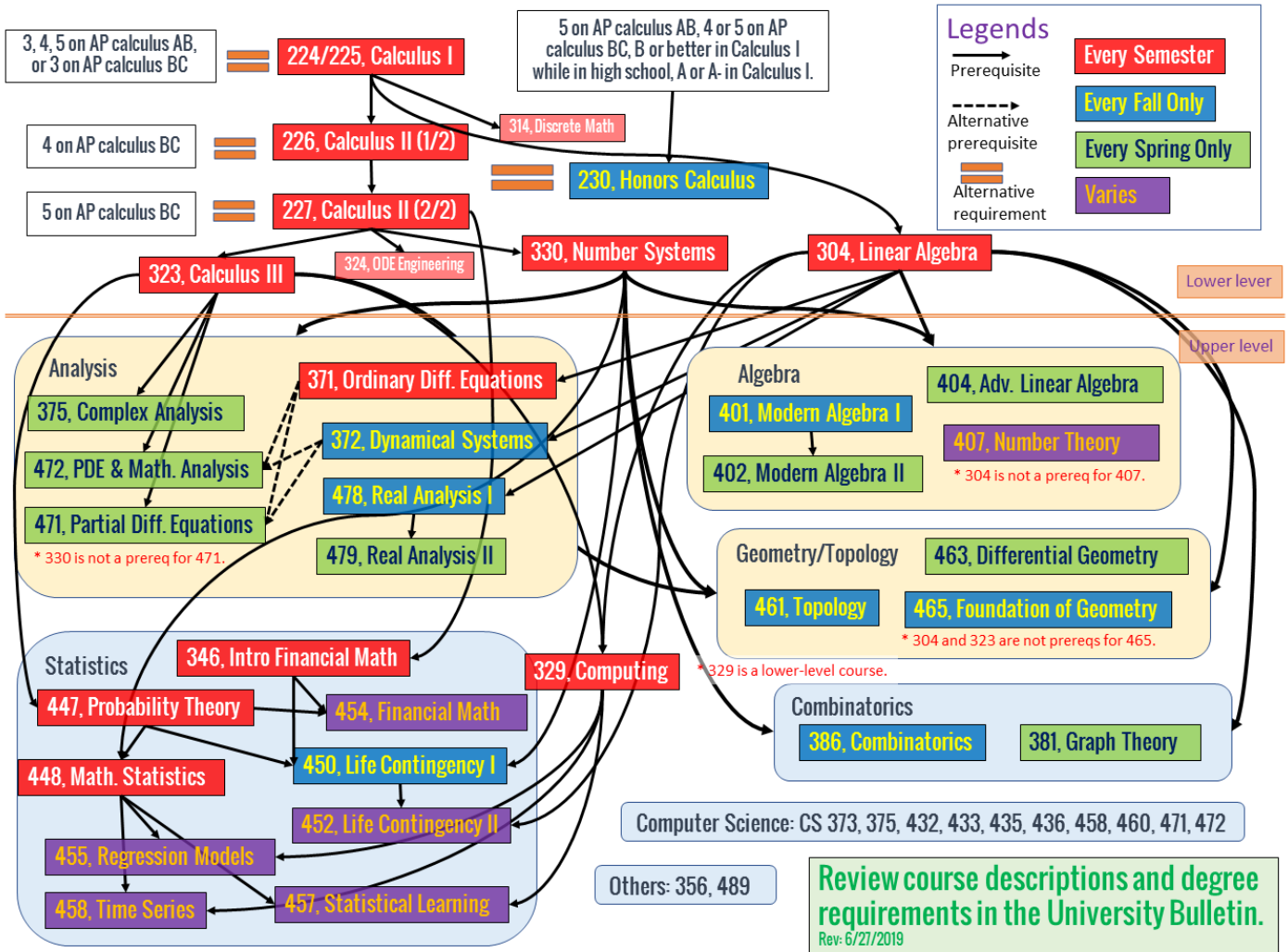
The preliminary lower-level courses required for all students are calculus I-III, linear algebra and number systems.

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).

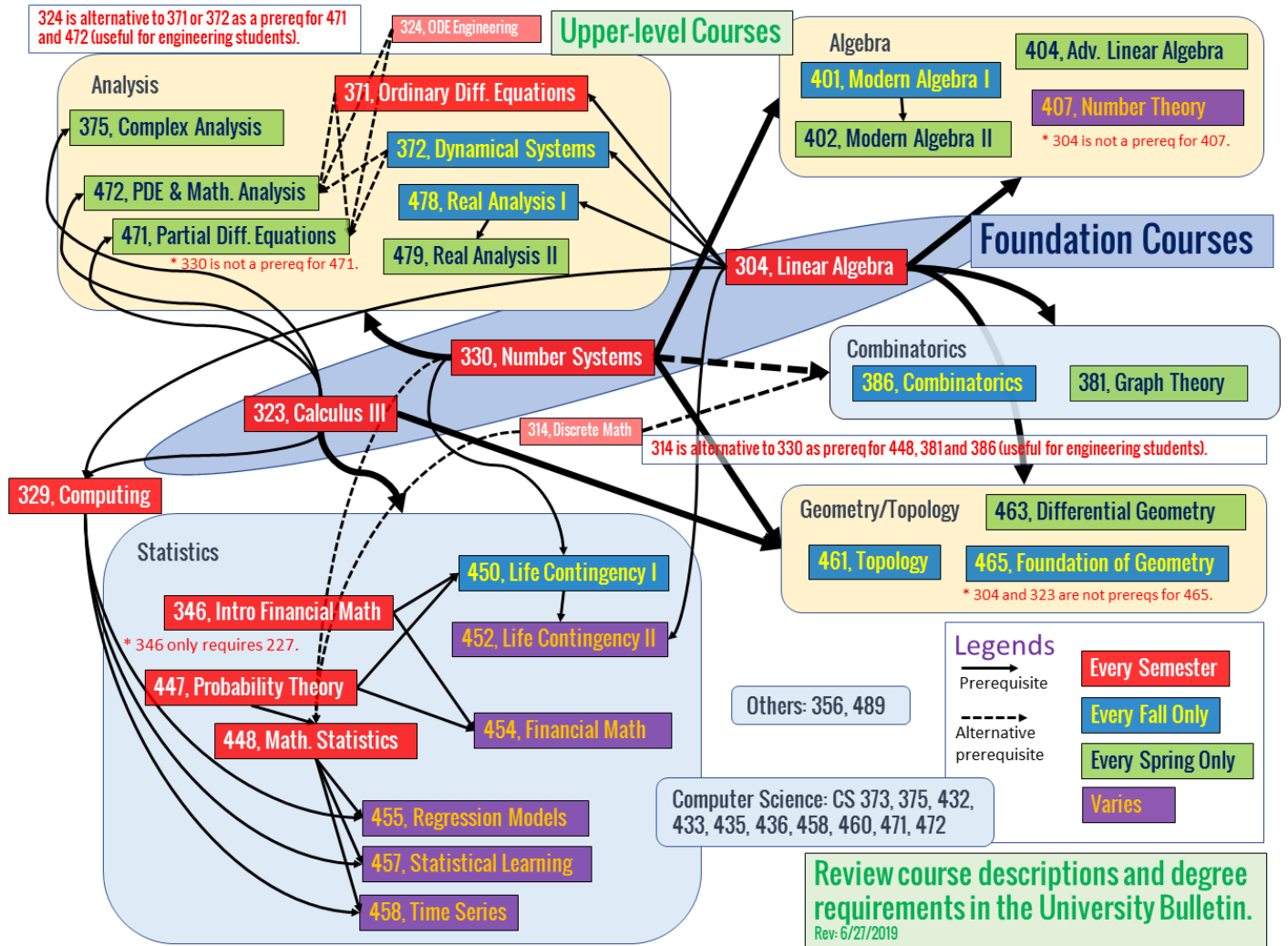
Degree Requirements and Courses

Read the University Bulletin for the official descriptions of the undergraduate programs, degree requirements **(including major and minor requirements)**, courses, and links to pages about admissions. The requirements depend on the year in which the student first matriculated at Binghamton University. Go to DegreeWorks and find out the year next to "Academic Year" (at the top right corner.)

In addition to the departmental requirements, the current Harpur College Requirements can be found on this webpage.



An overview of undergraduate courses in the math department, excluding some non-major courses, shows the prerequisite dependency between courses. Please refer to the University Bulletin for the exact requirements for the degree.



A zoom-in view focuses on the upper-level courses for math majors. This will be helpful for math majors beyond the first year's course work.

For all majors:

- Finish 330 as soon as possible, no later than by the end of the fourth semester, preferably the third semester.
- Finish 304, 323 and 330 before advancing to an upper level course, even if they may not be the official prerequisite.
- Upper level courses are defined as MATH course above 330, excluding 449.
- For all courses, grade of C or better is required to count towards the major and as a prerequisite.
- Prerequisite requirements are strictly enforced. You will be automatically dropped from a course if you did not get C or better in the prerequisite course.
- Meet with your assigned faculty advisor.
- Plan to take 2 math courses per semester on average.
- Make a contingency plan – what if you flunk a class?

For BA Math Track majors.

1. Finish the five lower-level courses.
2. Take one course from each of the light yellow boxes (analysis, algebra and geometry/topology).
3. Take two more upper-level courses, as long as the two are NOT BOTH from the SAME light yellow box.
4. Within the five upper-level courses above, make sure that there exist a pair of courses from a pre-defined list shown in the University Bulletin.

For Actuarial majors:

- Take 346, 447 and 448 as soon as possible since they are prerequisites for many electives.
- It is too late to take 448 in the senior year.
- Take the School of Management VEE courses if you could, but they are not required.

Transfer Courses

- Seek pre-approval from the Director of Undergraduate Studies before registering courses outside of Binghamton, even if they appear on the transfer equivalency table.
- Online courses cannot be transferred.
- Foreign courses, especially summer/winter ones, are generally not transferred.
- Upper-level courses are rarely transferred.

Some tips for math majors.

Download

the original PDF file for the above images.

Please note that those tools cannot serve as an alternative to the University Bulletin and a faculty advisor.

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.

FAQ for New & Transfer Students

- Course credits by AP exams. These depend on the semester of admission to the university
- Course credits by IB exams.

- [Course credits by transfer from various colleges](#)
- [Questions about the Calculus Placement Test](#)
- [Questions about registering for calculus classes](#)

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?](#)

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.

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.

For current students



- [Department course schedules](#)
- [Help room schedules](#)
- [Office Hours](#)
- [The Calculus Homepage](#)
 - [Calculus Placement Test](#)
 - [Introduction to Calculus \(Math 223\)](#)
 - [Calculus I \(Math 224/225\)](#)
 - [Calculus II \(Math 226/227\)](#)
 - [Calculus III \(Math 323\)](#)
 - [Calculus for Business and Management \(Math 220\)](#)
 - [Algebra and Trigonometry \(Math 108\)](#)
- [Linear Algebra Homepage](#)
- [Graduation with Honors](#)

Taking courses outside of Binghamton

If you are currently a Binghamton student and wish to take a math course outside of Binghamton University, with the intention to transfer the course for credits, you are advised to consult with the Director of Undergraduate Studies first before enrolling in that course for pre-approval. Note that not every outside course is allowed to be transferred, because the contents and requirements of some courses may be different from what we have at Binghamton University, even with identical course names. Before transfer credits are allowed, the content of the outside course needs to be carefully reviewed. Please contact the Director of Undergraduate Studies and submit the syllabus and schedule of that course for review. In particular, we normally do not approve online courses for transfer. In certain cases we may approve transfer credits only after you pass our final exam in the course with a grade of C or better.

Double major and major-minor

Many students have broader and diversified academic interests. Sometimes, these could be pursued through double-major or major-minor combinations. For example,

- double major in BA Actuarial Science and BS Economics;
- major in BA Mathematics and minor in Computer Science (You need to consult the CS department for their minor program);
- major in Computer Science and minor in Mathematics (Read the section on minor in the degree requirements listed above to find out more about the math minor).

Double degree / double major from two schools

Many of our Binghamton students challenge themselves by enrolling in the double degree / double major program which results in two degrees or two majors from two schools in the university. For example, a student can obtain a BS degree in Business Administration from the School of Management and a BA degree in Mathematics (Actuarial Science track); or he/she can obtain a degree in computer science from the Watson School of Engineering and Applied Science and a degree in mathematics. More information about the double degree / double major program can be found in this website.

Advising

Every student declaring a math major is assigned a faculty advisor, and should meet regularly with the advisor to discuss course selection and career goals. Students are free to choose another adviser from among the mathematics faculty once they get to know the faculty better. In addition, any issue related to the major/minor can be discussed with the Director of Undergraduate Studies.

In addition to the faculty advisor and the undergraduate director, 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 has not declared the math major as well as those math majors who are still taking lower-level courses.

- Harpur College Student Advising Office
- FAQ from the Director of Undergraduate Studies
- External Scholarships and Undergraduate Research Center for scholarship opportunity.

From:

<https://www2.math.binghamton.edu/> - **Binghamton University Department of Mathematical Sciences**

Permanent link:

<https://www2.math.binghamton.edu/p/ug>

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