Mathematics Department Undergraduate Handbook 2025-2026

DEPARTMENT of MATHEMATICS, OREGON STATE UNIVERSITY
CORVALLIS OR 97331-4605

1 OVERVIEW

General information about Oregon State University
Information about the Mathematics Department
Mathematics undergraduate program information
Information about undergraduate advising in Mathematics
Mathematics Department office, Kidder 368, open Monday through Friday from 9am to 5pm

2 INTRODUCTION

The Department of Mathematics at OSU offers a Bachelor of Science degree in Mathematics, a minor in Mathematics, and a minor in Actuarial Science. The department also offers MA, MS, and PhD degrees at the graduate level.

The Bachelor of Science in Mathematics trains students to think logically and precisely, and exposes students to many areas of pure and applied Mathematics. In addition to the standard degree in Mathematics, students can also select from four transcript-visible options: Applied and Computational Mathematics, Mathematical Biology, Secondary Teaching Emphasis, or Statistics.

3 RESOURCES FOR STUDENTS

3.1: Mathematics Advising:

Your Mathematics advisor will be assigned at the beginning of Fall term. In your first year at OSU, you will be required to meet with your advisor each term to release your advising registration hold and to plan courses for the next term. To make an appointment, visit BeaverHub, and locate your Success Team.

After your first year, regular meetings with your advisor are strongly encouraged and are required each Spring term. It is department policy that advising registration holds are be released only during advising meetings. All students are strongly encouraged to schedule appointments prior to their priority registration date for the next term.

Drop-in advising hours are posted on the Mathematics advising page.

3.2: Mathematics & Statistics Learning Center:

The Mathematics & Statistics Learning Center (MSLC) is located on the first floor of Kidder Hall, room 108. The MSLC provides free drop-in tutoring, an open study area for students and study groups, reference books, make-up testing, and other services and resources. There is also a Virtual MSLC available for evening tutoring hours.

Junior and senior math majors sometimes work as tutors in the MSLC. Math majors are encouraged to use the MSLC as a place to meet and study with each other. Information about the MSLC, including hours of operation.

4 DEGREE PROGRAMS

The Department of Mathematics offers a Bachelor of Science in Mathematics. Within the BS degree, students can also select options in Applied and Computational Mathematics, Mathematical Biology, a Secondary Teaching Emphasis, or Statistics. Also available are minors in Mathematics and in Actuarial Science.

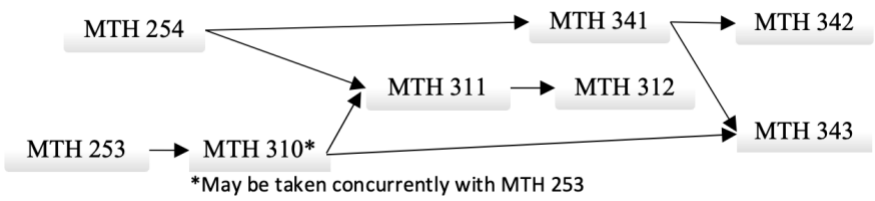
In addition to requirements in the major, OSU undergraduates are required to complete college and university level requirements as well as the Core Education requirements, which is OSU's general education program. Students should track degree progress using the on-line MyDegrees program audit system. University degree requirements include at least 180 credits, including at least 60 upper division credits, and a residency requirement. The OSU General Catalog is the official source of all degree requirements. **Important: Your academic advisors are there to help you navigate degree requirements, but it is the student's sole responsibility to ensure that all requirements are met**.

4.1: The Major Degree Program in Mathematics

A student who does not place directly into the calculus sequence in their first term can usually still complete the lower division courses during the first two years, as some courses in the calculus sequence can be taken simultaneously. Here is a prerequisite flow chart for the calculus sequence:

The required lower division Mathematics courses (those numbered less than 300), as well as MTH 310 and MTH 341, are prerequisite to almost all 300-level courses. Some of the courses required for the math major will simultaneously satisfy Baccalaureate Core requirements. Regardless of option, all math majors complete the junior level core courses in Mathematics.

The **Junior Core** consists of seven courses, totaling 25 credits, that all math majors must complete. These MTH courses are: 341, 342, 343, 310, 311, 312, plus one of the Writing Intensive Courses (WICs): MTH 323, 333, or 338. For their WIC, students in the Applied and Computational Mathematics Option must take MTH 323 and those with the Secondary Teaching Emphasis must take MTH 338. Additionally, MTH 323 is the preferred (but not required) WIC for the Mathematical Biology Option and the Statistics Option. All Junior Core courses are listed on the checklists in this pamphlet. A prerequisite flow chart for the junior core courses is shown below:



A term-by-term scheduling overview of the availability of upper division courses for the current academic year can be found on the Math Department webpage at Upper Division Scheduling. The annual schedule is updated each year and students should stay in touch with advisors for long-term course planning.

4.2: Bachelor of Science in Mathematics and Options

Math majors can pursue the standard degree or choose one of four specialized, transcript-visible options within the degree program. All Math majors must complete the same lower-division Mathematics and Junior Core coursework. *A grade of at least C– and a GPA of 2.25 are required in all upper-division Mathematics courses used to fulfill degree requirements. An OSU GPA of 2.00 is required by the College of Science. No course used to fulfill requirements for your major may be taken "S/U."*

4.2.1: The Standard Degree path

The BS degree in Mathematics requires a common core of courses at the lower-division level and junior-level followed by senior-level depth and breadth requirements. The depth and breadth requirements are designed to ensure that Math majors gain breadth of knowledge across diverse areas in Mathematics together with depth in some chosen area. The upper-division requirements in the major total 45–50 credits. Thus, Mathematics majors have ample opportunity to take further Mathematics courses or complementary programs of study focused toward specific interests and career goals. Programs supporting interdisciplinary interests are strongly encouraged. The detailed checklist of the requirements for the BS in Mathematics is on pages 6 and 7 of this handbook.

4.2.2: The Applied and Computational Mathematics Option

The Applied and Computational Mathematics Option offers a curriculum focusing on the mathematical tools and computational skills used in applying mathematics across the sciences. It is designed to allow students to concentrate much of their upper-division coursework on applied mathematics, modeling, and computation. Coursework for this option prepares students for careers in industry or at government labs, or, alternatively, for graduate school in mathematics, applied mathematics, and engineering. The detailed checklist of the requirements for the Applied and Computational Mathematics Option is on pages 8 and 9 of this handbook.

4.2.3: The Mathematical Biology Option

The Mathematical Biology option offers a curriculum focusing on how Mathematics are applied to solve problems in the biological sciences. This specialization will equip students for jobs in the biotech, pharmaceutical, and related industries as well as research institutes. In addition to the usual required lower-division Mathematics courses and the junior core courses, Mathematics majors in the Mathematical Biology option have an opportunity to concentrate much of their further course work on applied Mathematics, Mathematical biology, modeling and computation. The detailed checklist of the requirements for the Mathematical Biology option is on pages 10 and 11 of this handbook.

4.2.4: The Secondary Teaching Emphasis Option

Majors who plan to teach Mathematics in middle or high school may earn a transcript-visible option in education. The Secondary Teaching Emphasis option provides necessary Mathematics background and prerequisites for subsequent certification to teach math at the secondary level. Future teachers are also required to take two courses in math education that will help prepare them for a graduate program in education and teacher licensure. Students in this option who would like a stronger background in Mathematics are encouraged to take some of the senior level core math courses as electives. A detailed checklist for this option is included on page 12 of this handbook.

4.2.5: The Statistics Option

The Statistics Option offers Mathematics majors an opportunity to concentrate their senior level course work on statistics and probability. It is designed to allow a focus on the study of the mathematical theory underlying statistics while simultaneously developing expertise in statistical applications. The Statistics Option provides excellent preparation for a career in data analysis or for graduate study in statistics and probability. A detailed checklist of the requirements for the Statistics Option is included on pages 13 and 14 of this handbook.

4.3: Accelerated Master's Platform

The Accelerated Master's Platform (AMP) in Mathematics allows current OSU Mathematics majors to take graduate classes in Mathematics, apply those credits to their current undergraduate degree, and transfer them to the OSU Mathematics graduate program. Up to twenty-two graduate credits will both count towards a bachelor's degree and transfer to the Mathematics Master's degree program. With careful planning, students could complete a master's degree within one year of finishing their bachelor's degree. Students apply for admission to the AMP during the Spring term of the junior year of study and admission is competitive. Link: For more detailed information about the AMP in Mathematics.

4.4: Minor Degree Programs in Mathematics

The Department of Mathematics at Oregon State offers a minor in Mathematics and a minor in Actuarial Science. The minor in Actuarial Science allows students to take courses of interest to the financial and actuarial industries and helps students prepare for the first examination administered by the Society of Actuaries. For more information about this program is available under Actuarial Science on the departmental website. You may also send a message to ActuarialInfo@math.oregonstate.edu. More information about the actuarial profession.

Requirements for both minor programs are described on page 15 of this pamphlet where a checklist for the Actuarial Science is included. Further information about both minor programs can be found under Undergraduate Programs on the Department of Mathematics website and by writing to undergradinfo@math.oregonstate.edu.

5 OPPORTUNITIES IN MATHEMATICS

See the Undergraduate Resources web page for additional information about these and other opportunities for Math majors.

Study Abroad: OSU GO provides over 200 international opportunities for education, internships, and research in more than 70 different countries around the world. To develop a strategy for your program search and better navigate the options available to you, check out their Get Started page. Read on to explore various study abroad program models available to you or follow the link below to search through our wide range of OSU-supported study abroad programs.

Other programs focus on a specific academic discipline and restrict participation to students in the associated department. These include the Budapest Semesters in Mathematics and the Budapest Semesters in Mathematics Education. Classes are taught in English by eminent Hungarian professors, most of whom have had teaching experience in North American universities. Course offerings combine standard upper-level courses with courses in areas of traditional strength of Hungarian Mathematics, such as combinatorics, number theory, and probability theory. Please talk to a math advisor if you are considering participating in an external study program. We want to make sure you have the prerequisites for math courses there and to determine, in advance, which courses will transfer to OSU on your return.

Undergraduate Research: Students should investigate research opportunities with individual faculty members at OSU. Another option for on campus research is the URSA Engage program. URSA Engage is a program that facilitates undergraduate engagement with a faculty mentor to engage in scholarly projects.

Also, the federal government funds many programs where undergraduates can study Mathematics and other sciences. Among these are the REU programs (Research Experiences for Undergraduates), usually offered for 8 to 10 weeks in the summer. The listing of current REUs in Mathematics. Oregon State has had an REU in Mathematics for over thirty-five years. A successful applicant has usually completed several courses that are similar to our 300-level courses in

analysis or algebra, but that is not always the case. (Additional opportunities are available through the College of Science and the OSU Research Office.)

Jobs in Mathematics: A degree in Mathematics can lead to a variety of careers, and the more Mathematics you learn the more doors are open to you. U.S. News and World Report has a ranking of the "100 Best Jobs" each year. In the 2025, Data Science is ranked eighth and Actuary eleventh. Also, the U.S. Department of Labor statistics show that Data Scientists, and Actuaries are among fastest growing occupations. Recent Oregon State Mathematics graduates work as insurance managers, actuaries, research biomathematicians, computer scientists, electrical engineers, and robotics experts, just to name a few. More information about job opportunities in Mathematics.

6 MATHEMATICS STUDENT ORGANIZATIONS

There are a wide variety of student clubs and organizations, and all interested students are welcome. Visit the Math department website for more information on the Mathematics Student Organizations.

Math Club: The purpose of the Math Club is to provide opportunities for math enthusiasts to meet and explore their common interests. The Math Club is a primarily student run club, and it facilitates both fun and helpful math-related activities throughout the year, including social events, game nights, and study sessions. We'd love to have you join the club and share in our excitement about all things math-related! For more information about being a part of the Math Club, email the faculty advisor at mathclub@science.oregonstate.edu.

The Association for Women in Mathematics: AWM, is a collection of students who share a common interest in the advancement of women in Mathematics. AWM hosts movie nights and pizza parties. They recently organized Sonia Kovalevsky Day at OSU, an event for local high-school and middle-school students which features math competitions, workshops, and lectures. If you are interested in learning more about AWM, please e-mail the current AWM officers at awm@math.oregonstate.edu.

The Society for Industrial and Applied Mathematics: SIAM is a club, advised by a faculty member, for students interested in applied Mathematics and its applications to industry. The group often hosts speakers from industry, holds tutorials, and organizes social events. If you are interested in learning more about SIAM, please e-mail the current SIAM officers at siam@math.oregonstate.edu.

Actuarial Science Club: The ASC tries to promote awareness of the actuarial profession, disseminate information about the actuarial preparatory track and share information regarding actuarial coursework and exams, and internship and job opportunities. We invite speakers from the actuarial community to talk to students about various types of work they do, how they became an actuary, and what future trends they see in the profession. We meet two to three times per term. One of them tends to be a social gathering. Interested students can email actuarialscience.clubs@oregonstate.edu.

Pi Mu Epsilon (National Mathematics Honor Society), Oregon Beta Chapter: PME is a non-secret honor society whose purpose is the promotion and recognition of scholarly activity in the mathematical sciences among students as the academic institutions that have been chartered as Chapters of the Society. If you would like to learn more about Pi Mu Epsilon please email pme@math.oregonstate.edu.

7 CHECKLISTS FOR MATHEMATICS DEGREES

7.1 Checklist for the Bachelor of Science in Mathematics Standard Degree

The requirements for the math major portion of the Bachelor of Science in Mathematics are summarized below. The OSU General Catalog Mathematics listing.

Lower Division Requirements:

❑	MTH 251Z – 256	The Calculus Sequence (MTH 251Z, 252Z, 253Z, 254, 255, 256)
❑	Physics 211	General Physics with Calculus

Career Development Requirements:

❑	MTH 201	Career Explorations in Mathematics
❑	MTH 008	Beyond OSU II: Engage (0 credit requirement)

Upper Division Requirements:

Part A: Junior Core - *All the following courses are required.*

❑	MTH 301	Integral Histories and Social Issues in Mathematics (DPO-A Core Ed Requirement)
❑	MTH 310	Foundations of Mathematics
❑	MTH 311	Advanced Calculus I
❑	MTH 312	Advanced Calculus II
❑	MTH 341	Linear Algebra I
❑	MTH 342	Linear Algebra II
❑	MTH 343	Introduction to Modern Algebra
❑	WIC[1]	MTH 323 Mathematical Modeling **or** MTH 333 Fundamental Concepts of Topology **or** MTH 338 Non-Euclidean Geometry

Part B: Computational Requirement:

One course from the following list is required (NOTE: this course may also be used for Part C or Part D)

_____	MTH 321	Introductory Applications of Math Software
	MTH 351	Introduction to Numerical Analysis
	MTH 440	Computational Number Theory
	MTH 441	Applied and Computational Algebra
	MTH 451	Numerical Linear Algebra
	MTH 452	Numerical Solution of ODE

Part C: Area Coursework

Upper division Mathematics coursework is offered in 6 distinct areas, all listed on the next page. The standard Math degree includes a Depth requirement (2 courses from one of the six areas) and a Breadth requirement (1 additional course from each of 3 of the remaining 5 areas). Some exceptions are noted.

Breadth courses:
- ☐ 1_____
- ☐ 2_____
- ☐ 3_____

Area of Depth: _____

Depth courses in area:
- ☐ 1_____
- ☐ 2_____

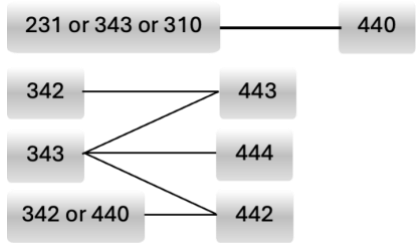
Note: Area Coursework and Part D Electives are listed on page 7

[1] Writing Intensive Course, a component of Core Education.

Areas and Courses: Most of these courses are offered just once per year. Link for upper-division scheduling information.

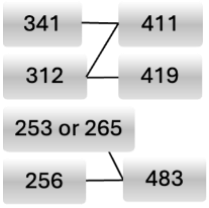
Algebra and Number Theory

MTH 440	Computational Number Theory (3)
MTH 441	Applied and Computational Algebra (3)
MTH 442	Applied and Computational Algebra (3)
MTH 443	Abstract Linear Algebra (3)
MTH 444	Abstract Algebra (3)



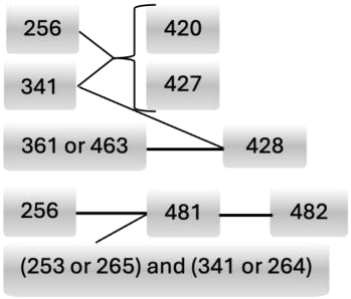
Analysis

MTH 411	Real Analysis (3)
MTH 419	Multivariable Advanced Calculus (3)
MTH 483	Complex Variables (3)



Applied Mathematics

MTH 420	Models and Methods of Applied Mathematics (3)
MTH 427	Introduction to Mathematical Biology (3)
MTH 428	Stochastic Elements in Mathematical Biology (3)
MTH 481	Applied Ordinary Differential Equations (3)
MTH 482	Applied Partial Differential Equations (3)

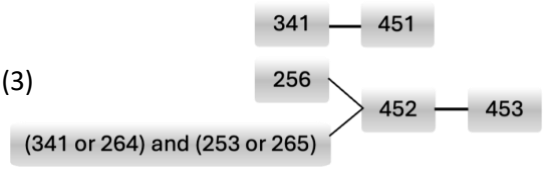


Geometry and Topology

MTH 430	Metric Spaces and Topology (3)
MTH 434	Introduction to Differential Geometry (3)
MTH 435 (Alternate Yrs.)	Differential Geometry (3)
MTH 437 (Alternate Yrs.)	General Relativity (3)

Numerical Analysis

MTH 451	Numerical Linear Algebra (3)
MTH 452	Numerical Solution of Ordinary Differential Equations (3)
MTH 453 (3)	Numerical Solution of Partial Differential Equations



Probability

MTH 463	Probability I (3)
MTH 464	Probability II (3)
MTH 465	Probability III (3)
MTH 467	Actuarial Mathematics (3)

Part D: Electives

Two additional upper division elective courses of a mathematical nature are required. These can be upper division courses in Mathematics and Statistics (except for MTH 390 or blanket courses) or other courses of a mathematical nature approved by the departmental head advisor.

- ❑ 1 _____
- ❑ 2 _____

*May be taken concurrently

7.2 Checklist for the Bachelor of Science in Mathematics with the Applied and Computational Mathematics Option

The requirements for the Applied and Computational option of the math major are summarized below. The OSU General Catalog has the official listing for the Applied and Computational option.

Lower Division:

- ❑ MTH 251Z – 256 The Calculus Sequence (MTH 251Z, 252Z, 253Z, 254, 255, 256)
- ❑ Physics 211 General Physics with Calculus

Career Development Requirements:

- ❑ MTH 201 Career Explorations in Mathematics
- ❑ MTH 008 Beyond OSU II: Engage (0 credit requirement)

Upper Division

Upper division requirements for the A&CM Option are grouped into Parts A, B, C, and D. Part A is the junior core, Part B is the Applied and Computational Math core, Part C is the probability or statistics requirement, and Part D is mathematical sciences electives.

Part A: Junior Core

All the following courses are required.

- ❑ MTH 301 Integral Histories and Social Issues in Mathematics (DPO-A Core Ed Requirement)
- ❑ MTH 310 Foundations of Mathematics
- ❑ MTH 311 Advanced Calculus I
- ❑ MTH 312 Advanced Calculus II
- ❑ MTH 341 Linear Algebra I
- ❑ MTH 342 Linear Algebra II
- ❑ MTH 343 Introduction to Modern Algebra
- ❑ WIC[2] MTH 323: Mathematical Modeling
- ❑ MTH 483 Complex Variables

Recommended (not required): An introduction to programming, computer algebra etc. such as MTH 351 Introduction to Numerical Analysis. (This course can be used to satisfy Part D requirements.)

Part B: Applied and Computational Core

5 of the following 8 courses are required. Either MTH 453 or MTH 482 must be included.
Also note that only one of MTH 480 and MTH 481 can be used to satisfy requirements for a degree in Mathematics.

- ❑ 1_____ MTH 420 Models and Methods of Applied Mathematics
- ❑ 2_____ MTH 440 Computational Number Theory
- ❑ 3_____ MTH 441 Applied and Computational Algebra
- ❑ 4_____ MTH 451 Numerical Linear Algebra
- ❑ 5_____ MTH 452 Numerical Solution of Ordinary Differential Equations
- MTH 453 Numerical Solution of Partial Differential Equations
- MTH 481 Applied Ordinary Differential Equations
- MTH 482 Applied Partial Differential Equations

Parts C and D are on the following page.

[2] Writing Intensive Course, a component of Core Education.

Part C: Probability or Statistics requirement

One of the following four courses is required:

❑ 1_____	MTH 361	Introduction to Probability
	MTH 463	Probability I
	ST 351	Introduction to Statistical Methods
	ST 421	Introduction to Mathematical Statistics

Note: ST 411 is an approved substitution for ST 351.

Part D: Electives

Two additional upper division elective courses of a mathematical nature are required. These can be upper division courses in Mathematics and Statistics (except for MTH 390 or blanket courses) or other courses of a mathematical nature approved by the departmental head advisor. Students may also satisfy this requirement by completing a two-term thesis project with a graduate faculty member. (The thesis project must be approved in advance by the supervising faculty member and the departmental head advisor.)

❑ 1_____

❑ 2_____

Note: A term-by-term scheduling overview of the availability of these courses for the academic year can be found on the Link for upper-division scheduling information.

7.3 Checklist for the Bachelor of Science in Mathematics with the Mathematical Biology Option

The requirements for the Mathematical Biology option of the math major are summarized below. The OSU General Catalog has the Mathematical Biology option.

Lower Division:

❑	MTH 251Z – 256	The Calculus Sequence (MTH 251Z, 252Z, 253Z, 254, 255, 256)
❑	BI 221Z – 223Z	Principles of Biology (BI 221Z, 222Z, 223Z)
❑	CH 221Z **and** CH 227Z	General Chemistry **and** Laboratory for Chemistry 221Z

Career Development Requirements:

❑	MTH 201	Career Explorations in Mathematics
❑	MTH 008	Beyond OSU II: Engage (0 credit requirement)

Upper Division

Part A: Junior Core

All the following courses are required.

❑	MTH 301	Integral Histories and Social Issues in Mathematics (DPO-A Core Ed Requirement)
❑	MTH 310	Foundations of Mathematics
❑	MTH 311	Advanced Calculus I
❑	MTH 312	Advanced Calculus II
❑	MTH 341	Linear Algebra I
❑	MTH 342	Linear Algebra II
❑	MTH 343	Introduction to Modern Algebra
❑	WIC[3]	MTH 323: Mathematical Modeling **or** MTH 333: Fundamental Concepts of Topology **or** MTH 338: Non-Euclidean Geometry

Part B: Required Area Course Work in Mathematics and Statistics

All the following courses are required.

❑	MTH 427	Introduction to Mathematical Biology
❑	MTH 428	Stochastic Elements in Mathematical Biology
❑	MTH 463	Probability I
❑	MTH 481	Applied Ordinary Differential Equations
❑	One of the following courses is required:	
	ST 351	Introduction to Statistical Methods or
	ST 411	Methods of Data Analysis

Part C: Directed Electives are listed on the following page

[3] Writing Intensive Course, a component of Core Education.

Part C: Directed Electives

- ❑ One of the following three courses is required:

MTH 419	Multivariable Advanced Calculus
MTH 430	Metric Spaces and Topology
MTH 483	Complex Variables

- ❑ One of the following five courses is required:

MTH 420	Models and Methods of Applied Mathematics
MTH 440	Computational Number Theory
MTH 441	Applied and Computational Algebra
MTH 464	Probability II
MTH 482	Applied Partial Differential Equations

- ❑ One of the following three courses is required:

MTH 351	Introduction to Numerical Analysis
MTH 451	Numerical Linear Algebra
MTH 452	Numerical Solution of Ordinary Differential Equations

- ❑ One of the following nine courses, or another upper-division life science course approved by a Mathematics advisor, is required:

BI 311	Genetics
BI 351	Marine Ecology
BI 370	Ecology
BI 445	Evolution
BOT 341	Plant Ecology
BOT 442	Plant Population Ecology
BOT 476	Introduction to Computing in the Life Sciences
CS 446	Biological Networks
FW 320	Introductory Population Dynamics

Note: A term-by-term scheduling overview of the availability of these courses for the academic year can be found on the Link for upper-division scheduling information.

7.4 Checklist for the Bachelor of Science in Mathematics with Secondary Teaching Emphasis Option

The requirements for the Secondary Teaching option of the math major are summarized below. The OSU General Catalog has the official listing for the Secondary Teaching option.

Lower Division:

❑	MTH 251Z – 256	The Calculus Sequence (MTH 251Z, 252Z, 253Z, 254, 255, 256)
❑	Physics 211	General Physics with Calculus

Career Development Requirements:

❑	MTH 201	Career Explorations in Mathematics
❑	MTH 008	Beyond OSU II: Engage (0 credit requirement)

Upper Division[4]

❑	MTH 301	Integral Histories and Social Issues in Mathematics (DPO-A Core Ed Requirement)
❑	MTH 310	Foundations of Mathematics
❑	MTH 311	Advanced Calculus I
❑	MTH 312	Advanced Calculus II
❑	MTH 341	Linear Algebra I
❑	MTH 342	Linear Algebra II
❑	MTH 343	Introduction to Modern Algebra
❑	MTH 338	Non-Euclidean Geometry, a WIC[5]
❑	SED 414	Inquiry in Mathematics and Mathematics Education
❑	MTH 361	Introduction to Probability (MTH 463 can be substituted)
❑	ST 351	Introduction to Statistical Methods (ST 421 can be substituted)
❑	MTH 491	Algebraic and Geometric Transformations
❑	MTH 492	Algebraic and Geometric Transformations
❑	MTH 493	Algebraic and Geometric Transformations

Note: Students wanting a stronger background in statistics may substitute ST 421 for ST 351. Students wanting a stronger background in probability may substitute MTH 463, Probability I, (usually taken in the senior year) for MTH 361.

Note: A term-by-term scheduling overview of the availability of these courses for the academic year can be found on the Link for upper-division scheduling information.

[4] Students who want a stronger background in Mathematics should choose some courses from the seven senior directed electives listed in the Mathematics major.
[5] Writing Intensive Course, a component of Core Education.

7.5 Checklist for the Bachelor of Science in Mathematics with the Statistics Option

The requirements for the Statistics option of the math major are summarized below. The OSU General Catalog has the official listing for the Statistics option.

Lower Division:

❑	MTH 251Z – 256	The Calculus Sequence (MTH 251Z, 252Z, 253Z, 254, 255, 256)
❑	Physics 211	General Physics with Calculus
❑	Recommended:	ST 351 Intro to Statistical Methods

Career Development Requirements:

❑	MTH 201	Career Explorations in Mathematics
❑	MTH 008	Beyond OSU II: Engage (0 credit requirement)

Upper Division: Upper division requirements for the Statistics Option are grouped into Parts A, B, C, and D. Part A is the junior core, Part B is composed of the probability and statistics core classes, Part C is an option specific depth requirement, and Part D is a breadth requirement in mathematics.

Part A: Junior core. All the following courses are required.

❑	MTH 301	Integral Histories and Social Issues in Mathematics (DPO-A Core Ed Requirement)
❑	MTH 310	Foundations of Mathematics
❑	MTH 311	Advanced Calculus I
❑	MTH 312	Advanced Calculus II
❑	MTH 341	Linear Algebra I
❑	MTH 342	Linear Algebra II
❑	MTH 343	Introduction to Modern Algebra
❑	WIC[6]	MTH 323: Mathematical Modeling (preferred) **or** MTH 333: Fundamental Concepts of Topology **or** MTH 338: Non-Euclidean Geometry

Part B: Mathematics and Statistics advanced core. All the following courses are required.

❑	MTH 463	Probability I
❑	MTH 464	Probability II
❑	ST 411	Methods of Data Analysis
❑	ST 412	Methods of Data Analysis
❑	ST 421	Introduction to Mathematical Statistics
❑	ST 422	Introduction to Mathematical Statistics

Part C: Depth in Option.

One of the following courses is required.

❑	1_____	MTH 465	Probability III
		MTH 467	Actuarial Mathematics
		ST 413	Methods of Data Analysis
		ST 415	Design and Analysis of Planned Experiments
		ST 431	Sampling Methods
		ST 439	Survey Methods
		ST 441	Probability, Computing, and Simulation in Statistics
		ST 443	Applied Stochastic Models

Part D is on the following page

[6] Writing Intensive Course, a component of Core Education.

Part D: Breadth in Mathematics

One course from each of 2 of the following 5 areas is required.

- ❑ 1_____
- ❑ 2_____

MTH 321, Introductory Applications of Mathematical Software, can be substituted for one of the breadth courses.

Algebra and Number Theory:

MTH 440	Computational Number Theory
MTH 441	Applied and Computational Algebra

Analysis:

MTH 411	Real Analysis
MTH 419	Multivariable Advanced Calculus
MTH 483	Complex Variables

Applied Mathematics:

MTH 420	Models and Methods of Applied Mathematics
MTH 427	Introduction to Mathematical Biology
MTH 481	Applied Ordinary Differential Equations

Geometry and Topology

MTH 430	Metric Spaces and Topology
MTH 434	Introduction to Differential Geometry

Numerical Analysis

MTH 351	Introduction to Numerical Analysis
MTH 451	Numerical Linear Algebra
MTH 452	Numerical Solution of Ordinary Differential Equations

Note: A term-by-term scheduling overview of the availability of these courses for the academic year can be found on the Link for upper-division scheduling information.

An overview of the availability of statistics coursework can be found on the Statistics Department webpage.

8 CHECKLISTS FOR MINOR PROGRAMS IN MATHEMATICS

8.1 Minor in Mathematics

The requirements for a minor in Mathematics are 30 credits of MTH courses numbered 231 or higher, including 15 credits numbered 310 or higher. Either MTH 311 or MTH 341 must be included. MTH 390 may not be used for credit in the Mathematics minor. MTH 251, MTH 252 and MTH 254 are strongly recommended for students pursuing a minor in Mathematics. No course used to fulfill requirements for the minor in Mathematics may be taken "S/U." A minimum GPA of 2.0 is required in this minor. The official listing of requirements for the Mathematics minor is in the OSU General Catalog.

8.2 Minor in Actuarial Science

28 credits are required for the minor in actuarial science. These credits are fulfilled by the courses in the checklist below. A minimum GPA of 2.0 is required in this minor. No course used to fulfill requirements for the minor in actuarial science may be taken "S/U". The official listing of requirements for the Actuarial Science minor is in the OSU General Catalog.

Important: The following "no double-dipping" restriction applies to courses used for the minor in Actuarial Science: No upper-division courses other than MTH 306 and MTH 341 used to satisfy requirements in a student's major or additional minor program may also be used to satisfy the requirements of the actuarial science minor.

- ❑ MTH 251 Differential Calculus
- ❑ MTH 252 Integral Calculus
- ❑ MTH 253 Infinite Series and Sequences[7]
- ❑ MTH 254 Vector Calculus I
- ❑ MTH 341 Linear Algebra
- ❑ MTH 361 Introduction to Probability

2 (or more) courses from the following list

❑ 1_____	MTH 351	Introduction to Numerical Analysis
❑ 2_____	MTH 463	Probability I
	MTH 464	Probability II
	MTH 465	Probability III
	MTH 467	Actuarial Mathematics
	ST 411	Methods of Data Analysis
	ST 412	Methods of Data Analysis
	ST 413	Methods of Data Analysis
	ST 421	Introduction to Mathematical Statistics
	ST 422	Introduction to Mathematical Statistics
	ST 441	Probability, Computing, and Simulation in Statistics
	ST 443	Applied Stochastic Models

[7] (MTH 264 and MTH 265) or MTH 306 may be substituted for MTH 253.