DEPARTMENT OF MATHEMATICS

Location: 200 Lucas Building

Phone: (409) 880-8792

Chair: Jacqueline Jensen-Vallin

Email: math@lamar.edu

Administrative Coordinator: Dorothy Beckett Rideaux

Program Educational Objectives

Except for one's native language, mathematics is central to more fields than any other. Whether one studies computer science, economics, engineering, science, social sciences, or the liberal arts, mathematics is the language of any educated person. The Department of Mathematics offers a full range of courses in applied and pure mathematics, mathematics education for elementary and secondary school certification, and statistics. All departmental courses are taught with the goal of transforming students' thinking and imagination. Foundational courses are designed to empower mathematics majors to handle situations in industry, graduate school, education, or other areas they may choose to pursue. Our professors are passionate about both teaching and research. As a result, mathematics majors not only find teachers who are thoughtful and caring, but they also find professors who are active researchers and seek to engage majors in research opportunities and research seminars.

All mathematics degree programs allow mathematics majors and minors the flexibility to select courses suited to a variety of interests and career goals. Advising plays an integral role in achieving these objectives. Consequently, each mathematics major is assigned an advisor to assist with scheduling and career planning.

The department offers the following B.A., B.S., M.S., and ancillary programs:

- Bachelor of Arts in Mathematics: General, Teacher Certification
- Bachelor of Science in Mathematics Concentrations: General, Theoretical Mathematics, Applied Mathematics, Statistics, Mathematics Education
- Post-Baccalaureate Specialization in Mathematics
- Minor in Mathematics, Statistics
- Double Major in Mathematics
- Dual Degree in Mathematics
- Fast Track B.S./M.S. in Mathematics
- Master of Science in Mathematics

All degrees emphasize traditional mathematics, both as basic science and as a major tool in solving problems, and include a range of electives tailored to meet the needs of the individual student. Careers such as cryptology, actuarial science, biomathematics, mathematical finance, and university research are open to our graduates because of a proper selection of courses and research opportunities.

In the twenty-first century, mathematics finds itself in an enviable position. Our culture is discovering the power and the beauty of mathematics. Many exciting areas of mathematics are interdisciplinary.

The study of knot theory has found applications in the study of DNA. Number theory, an esoteric study until recent times, finds application in cryptology, a field essential to national security. The department's established faculty are able to offer possibilities in these new, exciting areas of mathematics.

A minor or double major in mathematics can considerably enhance the undergraduate experience for a variety of students, strengthen their resumes, and lead to more satisfying careers. Students are encouraged to seek advice from mathematics faculty early in their decision-making stages. For students who wish to pursue baccalaureate degrees in mathematics, the department offers seven degree plans. Among these plans, the Bachelor of Arts in Mathematics (General) allows flexibility for both general electives and mathematics electives, while the language and minor requirements of this degree ensure a well-rounded education. The Bachelor of Arts with Teaching Certification is specifically designed for those planning to teach mathematics at the secondary (high school) level. The Bachelor of Science in Mathematics offers five areas of concentration. The General Concentration allows maximum flexibility within the mathematics electives. The Theoretical Mathematics Concentration is intended for those considering the possibility of attending graduate school in a foundational area of mathematics. The Applied Mathematics Concentration leads to applications of computation to design, simulation, planning, control, and analysis of scientific, engineering, and medical phenomena. The Statistics Concentration leads to careers in data analysis and quality control related to engineering, economics, marketing, pharmaceuticals, and ecology. The Mathematics Education Concentration is for those students who plan to teach mathematics at a secondary level but without the language requirements of the B.A. Students with any of the B.S. or B.A. degrees may choose from specialized graduate programs or careers in government, teaching, or industrial job markets

Minimum Degree Requirements

General Education Core Curriculum Requirement. See the **Undergraduate Academic Policies and Procedures** for the requirements related to courses in communication, mathematics, life and physical sciences, language, philosophy and culture, creative arts, American history, government and political science, and social and behavioral sciences. The total number of hours required is 42, of which 4 hours are in mathematics and 8 hours are in lab science as listed below. For the Bachelor of Arts in Mathematics (General or Teacher Certification), the communication requirement is to be filled by SPAN 1311 Beginning Spanish I, FREN 1311 Beginning French I, or DSDE 1371 ASL I. Certain elementary mathematics courses that satisfy the General Education Core Curriculum Requirement do not count toward a degree in mathematics.

Minimum Grade Requirement

A student must earn a grade of "C" or better in each mathematics course for it to be counted toward any degree or credential offered by the department. The same requirement is applied to any transfer credit. The prerequisites of any course or external exam must also be satisfied with a grade of "C" or better. The terms "completion", "satisfactory completion", "to have credit for", and similar expressions refer to a minimum grade of "C." A student must earn grades of "C" or better for courses in each component of a degree plan (major, minor, secondary, concentration, dual major, or specialization).

Lab Science Requirement

A student graduating with a baccalaureate degree in Mathematics is required to take 8 hours of sequential lab science courses chosen from

BIOL 1406 General Biology I (Majors) and BIOL 1407 General Biology II (Majors), GEOL 1403 Geology I: Physical Geology and GEOL 1404 Geology II: Historical Geology, or PHYS 2425 University Physics I and PHYS 2426 University Physics II. This requirement is listed as life and physical sciences in the General Education Core Curriculum for B.S. and B.A. Degree Programs below.

Computer (COSC) Science Requirement

A student graduating with a baccalaureate degree in mathematics is required to take at least one programming course chosen from COSC 1336 Programming Fundamentals I or COSC 3306 UNIX/C++. This requirement is listed as COSC in the B.S. and B.A. degree programs. COSC 3306 UNIX/C++ is recommended for majors who have considerable programming experience. COSC 1336 Programming Fundamentals I requires COSC 1173 Programming Lab as a co-requisite. Students who pursue the Applied Mathematics Concentration are encouraged to consider more advanced computer programming courses. Students who are considering mathematics courses with programming components (such as MATH 3321 Discrete Structures or MATH 4315 Numerical Analysis) are encouraged to contact the instructor of the course in advance. A student seeking a double major in mathematics, whose original department has a computer science requirement different from the courses listed above, may submit a request for a waiver to the Chair.

Minor or Secondary Area Requirement

A student who pursues a B.A. or B.S. in mathematics must choose a minor in consultation with his or her advisor. Those who pursue teacher certification will have pedagogy as their minor. A student who pursues a B.S. degree may choose a coherent group of courses from several departments as his or her secondary or professional area in consultation with his or her advisor. A minor or secondary area requires a minimum of 21 hours, of which at least 12 hours must be at the junior or senior level.

General Electives Requirement

Each degree plan includes general electives; students will select these courses in consultation with their advisors.

Mathematics Core Requirement

All B.S. and B.A. degrees in mathematics require the satisfactory completion of the following courses (27 hours). Of these, 4 hours are counted toward the General Education Core Curriculum Requirement, while the other 23 hours are noted as Mathematics Core Requirements in each degree plan.

- MATH 2413 Calculus and Analytical Geometry I
- MATH 2414 Calculus and Analytical Geometry II
- MATH 3322 Introduction to Advanced Mathematics
- MATH 3350 Modern Algebra - Groups
- MATH 3370 Introduction to the Theory of Statistical Inference
- MATH 4325 Analysis I

Mathematics Electives Requirement

Students who pursue a degree in mathematics have a certain number of hours of mathematics electives from specified areas depending on their chosen concentration. The approved electives are listed below.

- B.A. (General): Take any four mathematics electives from any area below.
- B.A. (Teacher Certification): No math electives.

- B.S. (General Concentration): Take any six mathematics electives from any area below.
- B.S. (Applied Math Concentration): Take MATH 3301 Ordinary Differential Equations, MATH 3321 Discrete Structures, MATH 4302 Introduction to Partial Differential Equations, MATH 4315 Numerical Analysis and two from, MATH 4313 Introduction to Linear Regression Analysis, MATH 4318 Applied Linear Algebra and Matrix Theory, MATH 4319 Introduction to Design and Analysis of Experiments, MATH 4380 Theory Statistical Inference.
- B.S. (Statistics Concentration): Take MATH 4313 Introduction to Linear Regression Analysis, MATH 4319 Introduction to Design and Analysis of Experiments, MATH 4380 Theory Statistical Inference and one from MATH 3301 Ordinary Differential Equations, MATH 3321 Discrete Structures, MATH 4302 Introduction to Partial Differential Equations, MATH 4310 Complex Variables, MATH 4315 Numerical Analysis, MATH 4318 Applied Linear Algebra and Matrix Theory, MATH 4330 Advanced Linear Algebra.
- B.S. (Theoretical Math Concentration): Take MATH 4310 Complex Variables, MATH 4330 Advanced Linear Algebra, MATH 4340 Introduction to Topology, MATH 4326 Analysis II and two from MATH 3301 Ordinary Differential Equations, MATH 3351 Modern Algebra - Rings, MATH 4302 Introduction to Partial Differential Equations, MATH 4315 Numerical Analysis, MATH 4380 Theory Statistical Inference.
- B.S. (Math Education Concentration): Take any one elective from any area below.

The following is the list of approved electives for B.S., B.A. (general), and double major in mathematics

General Area
- MATH 3311 Foundations of Mathematics I
- MATH 4307 Problem Solving
- MATH 4131 Special Problems
- MATH 4331 Special Problems

Theoretical Math Area
- MATH 3351 Modern Algebra - Rings
- MATH 4310 Complex Variables
- MATH 4326 Analysis II
- MATH 4330 Advanced Linear Algebra
- MATH 4340 Introduction to Topology

Applied Math Area
- MATH 3301 Ordinary Differential Equations
- MATH 3321 Discrete Structures
- MATH 4302 Introduction to Partial Differential Equations
- MATH 4315 Numerical Analysis
- MATH 4318 Applied Linear Algebra and Matrix Theory

Statistics Area
- MATH 4313 Introduction to Linear Regression Analysis
- MATH 4319 Introduction to Design and Analysis of Experiments
- MATH 4380 Theory Statistical Inference

Programs

- Computational and Quantitative Methods (M.S.) (https://catalog.lamar.edu/college-arts-sciences/mathematics/ms-comp-qual-methods/)
- Mathematics (B.A.) (https://catalog.lamar.edu/college-arts-sciences/mathematics/mathematics-ba/)
- Mathematics (B.A.) with Teacher Certification (https://catalog.lamar.edu/college-arts-sciences/mathematics/mathematics-ba-teacher-certification/)
- Mathematics (B.S.) (https://catalog.lamar.edu/college-arts-sciences/mathematics/mathematics-bs/)
- Mathematics (B.S.) with Teacher Certification (https://catalog.lamar.edu/college-arts-sciences/mathematics/mathematics-bs-teacher-certification/)
- Mathematics (M.S.) (https://catalog.lamar.edu/college-arts-sciences/mathematics/mathematics-ms/)
- Mathematics Double Major (https://catalog.lamar.edu/college-arts-sciences/mathematics/mathematics-double-major/)
- Mathematics Dual Degree (https://catalog.lamar.edu/college-arts-sciences/mathematics/mathematics-dual-degree/)
- Mathematics Minor (https://catalog.lamar.edu/college-arts-sciences/mathematics/mathematics-minor/)
- Post-Baccalaureate Specializations in Mathematics (https://catalog.lamar.edu/college-arts-sciences/mathematics/post-baccalaureate-specializations-mathematics/)
- Statistics Minor (https://catalog.lamar.edu/college-arts-sciences/mathematics/statistics-minor/)

Professors

Jeremy Alm, jalm@lamar.edu, CP 204B, (409) 880-2283

Dale Daniel, dale.daniel@lamar.edu, Lucas 210, (409) 880-2214

Jacqueline Jensen-Vallin, jacqueline.jensen@lamar.edu, Lucas 200B, (409) 880-7859

Judy Kennedy, Jakennedy1@lamar.edu, Lucas 205, (409) 880-7605

Robert Vallin, robert.vallin@lamar.edu, Lucas 204, (409) 880-7979

Associate Professors

PJ Couch, pj.couch@lamar.edu, Lucas 200K, (409) 880-7946

Paul Dawkins, dawkinspt@lamar.edu, Lucas 200A, (409) 880-2258

Jennifer Fowler, Jennifer.daniel@lamar.edu, Lucas 200H, (409) 880-8399

Mohsen Maesumi, maesumi@lamar.edu, Lucas 206, (409) 880-8766

Wen Liu, wliu@lamar.edu, Lucas 203, (409) 880-7546

Jose Vega-Guzma, Jose.vegaguzman@lamar.edu, Lucas 207, (409) 880-8540

Assistant Professors

Wael Al-Sawai, walsawai@lamar.edu (https://catalog.lamar.edu/college-arts-sciences/mathematics/walsawai@lamar.edu), Lucas 202, (409) 880-2290

Instructors

Gary Brice, gbrice@lamar.edu, Lucas 200D, (409) 880-8799

Katherine Brubaker, kbrubaker@lamar.edu, Lucas 200G, (409) 880-8798

Jonathan Hodges, jhodges@lamar.edu, Lucas 111A, (409) 880-2210

Alys Marken, amrodriguez1@lamar.edu, Lucas 200F, (409) 880-8693

Jason Montgomery, montgomery@lamar.edu, Lucas 111B, (409) 880-7847

Brandy Palmer, blpalmer@lamar.edu, Lucas 211, (409) 880-8919

Aaron Phillips, aphillips8@lamar.edu, Lucas 200J, (409) 880-8800

Melissa Riley, melissa.riley@lamar.edu, Maes 27, (409) 880-8897

Nataliya Svyeshnikova, nataliya.svyeshnikova@lamar.edu, Lucas 200E, (409) 880-8797

Adjunct Instructors

Doug Gray, dgray14@lamar.edu, Lucas 211

Jake Meadows, jmeadows@lamar.edu, Lucas 211