COLLEGE OF LETTERS AND SCIENCES

BACHELOR OF SCIENCE IN MATHEMATICS

Learn to Speak the Language of Mathematics

Build a solid foundation in math and its many applications with a Bachelor of Science in Mathematics. The program emphasizes reflective and conceptual understanding and technique by giving you the fundamental mathematical knowledge to formulate and solve problems. If you’re interested in a basic mathematics degree, this program will fulfill all requirements and can also be shaped to train mathematics teachers who want to work in primary or secondary schools. Where practical, all mathematics and science courses are writing-intensive, incorporate diversity, and encourage critical thinking. Courses also require that you use a scientific calculator and in some cases a more advanced graphing calculator along with computer software.

Program highlights:
- Entire program can be completed online
- Employ reasoning skills and strategies to solve mathematics problems
- Use language and symbols to communicate ideas, connections, and interplay in mathematics
- Explore technology such as computers, calculators, graphing tools, video, and interactive programs relevant to the study of mathematics
- Employ algebra and number theory as a base for a language of mathematics in research and communication
- Model real-world problems with algebraic and transcendental functions
- Use advanced statistics and probability concepts and methods

Online and On-campus Programs
Monthly Starts and Accelerated Classes
WSCUC Accredited
MAJOR IN MATHEMATICS

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The Bachelor of Science in Mathematics provides a strong foundation in mathematics and its applications. Designed to help address our nation’s increasing need for mathematical scientists, technicians and especially teachers, the program emphasizes reflective and conceptual understanding and techniques.

First, it provides the fundamental mathematical knowledge to formulate and solve problems. Computer science courses are encouraged, since the use of computers has been instrumental in the expansion of these opportunities. Students who want a basic mathematics degree can culminate their program with the project courses. Second, the program trains mathematics teachers who want to provide quality mathematical instruction to students in primary or secondary schools. The single subject teaching concentration was created for this purpose.

The Department of Mathematics and Natural Sciences is committed to the complete academic development of its students. Consequently, where practical, all mathematics and science courses are writing-intensive and incorporate a diversity component. Students are advised that all mathematics courses encourage critical thinking by their very nature. Moreover, all mathematics courses require that the student purchase and use a scientific calculator for the operations of the subject matter. Some courses require a more advanced graphing calculator and computer software.

Single Subject Mathematics Preparation Program

The Single Subject Mathematics Preparation Program is approved by the Commission on Teacher Credentialing. Students who complete the program will not be required to take the California Subject Examination for Teachers (CSET) in mathematics in order to receive their teaching credential. The program emphasizes a strong foundation in mathematical content together with activities designed to help future teachers assume leadership roles in an increasingly complex educational world.

Interested students should complete the following application process:

- Send a letter to the Department Chair requesting admission to the program and copies of transcripts to the Lead Mathematics Faculty for evaluation.
- Upon enrollment, submit two essays for the Mathematics Portfolio (Instructions for the development and completion of a Mathematics Portfolio are sent upon receipt of the request letter. The portfolio is completed for review by the Department Chair or Lead Faculty two months before the last class.)
- In addition to the major program requirements, students must complete two classes MTH 304 and MTH 410.

The study of mathematics must encompass the discipline in its broadest sense. The future mathematician should develop in an academic environment that stresses scholarship, diversity, and growth through a rigorous and focused curriculum of advanced mathematics that incorporates: problem solving, mathematics as communication, reasoning, and mathematical connections. The Bachelor of Science in Mathematics program is dedicated to providing such sound preparation and training to a diverse population of nontraditional learners whose goal is to work professionally in mathematics or teach Mathematics in California public schools.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Employ a variety of reasoning skills and effective strategies for solving problems both within the discipline of mathematics and in applied settings that include non-routine situations.
- Use language and mathematical symbols to communicate mathematical ideas in the connections and interplay among various mathematical topics and their applications that cover range of phenomena across appropriate disciplines.
- Use current technology tools, such as computers, calculators, graphing utilities, video, and interactive programs that are appropriate for the research and study in mathematics.
- Employ algebra and number theory ideas and tools as a base of a fundamental language of mathematics research and communication.
- Develop fundamental knowledge in geometry.
- Model real-world problems with a variety of algebraic and transcendental functions.
- Use advanced statistics and probability concepts and methods.

Degree Requirements

To receive a Bachelor of Science in mathematics degree, students must complete at least 180 quarter units as articulated below, 45 of which must be completed in residence at National University, 76.5 of which must be completed at the upper-division level, and a minimum 70.5 units of the University General Education requirements. In the absence of transfer credit, additional general electives may be necessary to satisfy total units for the degree. The following courses are specific degree requirements. Refer to the section on undergraduate admission procedures for specific information regarding admission and evaluation. All students receiving an undergraduate degree in Nevada are required by state law to complete a course in Nevada Constitution.

Preparation for the Major

(6 courses; 27 quarter units)

- MTH 210* Probability and Statistics
  Prerequisite: Accuplacer test placement evaluation or MTH 12A and MTH 12B
- MTH 215* College Algebra & Trigonometry
  Prerequisite: Accuplacer test placement evaluation or MTH 12A and MTH 12B
- MTH 220* Calculus I
  Prerequisite: Accuplacer test placement or MTH 216B or MTH 215
- MTH 221 Calculus II
  Prerequisite: MTH 220
- MTH 222 Calculus III
  Prerequisite: MTH 221
- MTH 223 Calculus IV
  Prerequisite: MTH 222

* May be used to satisfy a General Education requirement.

Requirements for the Major

(17 courses; 76.5 quarter units)

- MTH 311 Topics from Geometry
  Prerequisite: Accuplacer test placement or MTH 216B or MTH 215
- MTH 325 Discrete Mathematics
  Prerequisite: MTH 215 or MTH 216A and MTH 216B
- MTH 435 Linear Algebra
  Prerequisite: MTH 220 and MTH 325
- MTH 433 Differential Equations
  Prerequisite: MTH 223 and MTH 435 or CSC 209 and CSC 310
- MTH 411 Number Theory
  Prerequisite: MTH 216B or MTH 215 or MTH 301
- MTH 416 Algebraic Structures
  Prerequisite: MTH 435 and MTH 325
- MTH 417 Foundations of Geometry
  Prerequisite: MTH 216A and MTH 216B or MTH 215 and MTH 311
- MTH 418 Statistical Analysis
  Prerequisite: MTH 210 and MTH 220
- MTH 432 Advanced Calculus
  Prerequisite: MTH 223
- MTH 412 History of Mathematics
  Prerequisite: MTH 215 or MTH 301 or MTH 216A and MTH 216B
- MTH 441 Abstract Algebra
  Prerequisite: MTH 416
- MTH 442 Functions of Complex Variables
  Prerequisite: MTH 223
- MTH 438 Applied Mathematical Modeling
  Prerequisite: MTH 433, MTH 416 and MTH 432
- MTH 460 Problem Solving Strategies
  Prerequisite: MTH 416 and MTH 417
- MTH 461 Methods of Teaching Math
  Prerequisite: MTH 311 and MTH 412 and MTH 210 and MTH 460
- MTH 450A Mathematics Project Course I
  Prerequisite: Completion of Mathematics Core for BS and interview with Department Chair.

Additional Requirement for Single-Subject Preparation Students Only

(2 courses; 9 quarter units)

- MTH 304 Math Practicum and Portfolio
  Prerequisite: MTH 215 or MTH 216A and MTH 216B or placement evaluation
- MTH 410 Technology in Math Education
  Prerequisite: MTH 215 or MTH 216A and MTH 216B or MTH 301

For complete program information, see the National University Catalog 82, effective 10/2018.