Florida International University
Academic Learning Compact

Name of the Undergraduate Degree Program
Bachelor of Science in Mathematical Sciences

Mission Statement

The mission of the Department of Mathematics is to provide excellent teaching, perform high quality research in several different subfields of mathematics and serve the university, discipline, community, state and beyond. We aim to provide our students with a sound education in mathematics providing a unique opportunity to make a significant contribution to the welfare of our contemporary society.

Purpose of the major: The Bachelor of Science in Mathematical Sciences is a very broadly defined major that provides a core of Applied Mathematics, together with additional utilitarian knowledge from the fields of Statistics and Computer Science, to provide tools to enable the graduate to implement practical solutions to mathematical problems typically encountered by educators, government officials, scientists, engineers, and other professionals. A graduate is expected to be able to pursue a career in science, industry, or business.

Student Learning Outcomes

FIU Bachelor of Science in Mathematical Sciences graduates should be able to achieve the following:

Content/Discipline Knowledge

1. Demonstrate an understanding of the basic theoretical knowledge, the essential structures and computational techniques of Linear Algebra.
2. Demonstrate a core knowledge of Elementary Ordinary Differential Equations and Classical Partial Differential Equations, their applications, and their solutions by several well-understood techniques.
3. Apply a basic theoretical knowledge and computation techniques from the core areas of Discrete Mathematics, Numerical Analysis, Theory of Algorithms, and Applied Statistics.
4. Apply a knowledge of a high level programming language and the related computer systems in constructing computer programs to solve applied mathematical or statistical problems.
5. Use statistical software appropriately in performing statistical analyses.

Critical Thinking

1. Use effectively a knowledge of logic that formally includes the Propositional Calculus and the Predicate Calculus to construct correct and persuasive solutions to mathematical problems and/or rigorous mathematical proofs.
2. Apply general mathematical models and theories and abstract reasoning to find solutions to concrete problems or to formulate mathematical proofs.
3. Analyze and critique proofs and solutions to problems for correctness.
4. Apply technology to solve concrete problems or aid in doing research when it is appropriate to do so.

Oral and Written Communication

1. Write mathematical ideas precisely using complete sentences and appropriate, well-accepted notation correctly.
2. Explain mathematics orally while using visual aids appropriate to the subject and audience.