Learning Objectives

The Bachelor degree programs in Mathematics offered at USC are constructed to provide basic knowledge of modern mathematical techniques in the areas most relevant for each specific degree, and to allow each student to augment that knowledge by the study of additional mathematical topics that address his or her own particular interests and goals.

The learning objectives for all majors in Mathematics are the following:

- Develop intellectual approaches and habits that characterize the development of mathematical structures and the application of mathematics
- Learn and be able to demonstrate how the precision of thought is essential in mathematical reasoning
- Attain an understanding of the role of Mathematics in the logical development of an argument
- Recognize the need, numerical or otherwise, for the justification of statements
- Evaluate diverse mathematical situations and areas, and be able to recognize patterns within and between different mathematical structures
- Gain the ability to abstract from specific situations to general principles
• Earn training for technologically oriented careers in which mathematics plays an essential role, such as aerospace, information technology, data analytics, finance, healthcare, accounting and management.

The following learning objectives are specific to Mathematics BA and BS degrees:

• Integrate the more focused study of theoretical materials into the objectives above, and be able to understand and negotiate mathematical theory.
• Earn a deep understanding of the core principles of algebra and analysis
• Demonstrate robust awareness and establish broad training in the wide range of material available for mathematical study
• The BS program, more so than the BA, develops the student’s familiarity with the use of mathematics in other fields with particular significance placed on the pivotal application of Mathematics in Physics
• The BA program imparts the foundational importance of Algebra and Geometry through mastery of basic mathematical theories

The following learning objectives specifically apply to the Applied and Computational Mathematics BA and BS degree:

• Basic competence in probability and numerical analysis
• An understanding of how mathematical structures like algebra, statistics, number theory, combinatorics, vector analysis, modeling and optimization are used in real-world analysis
• Learning and practice on how to use computing in applied mathematics
The Applied BS degree gives students more intensive training and practice in Statistics and Analysis.