This major incorporates many mathematical theoreticians as well as specialists in applications of engineering, computer science, finance, economics, physics, and computational genomics. This combination of theoretical and practical education gives the department a unique energy. Students use electives to prepare themselves for a specific field, whether in industry, teaching, or advanced graduate research.

Opportunities for Students

- **Honors Program:** Math majors wishing to graduate with honors can apply to the department for admission to this special program. A minimum grade point average of 3.5 is required in the first two years of university work as well as in a number of lower division mathematics courses.

- **USC Women in Math:** This group of current and former USC students and faculty seeks to enhance mentorship and networking possibilities.

- **Pi Mu Epsilon:** This undergraduate math honors society focuses on contest problem solving, as well as mathematical games and puzzles. Students have participated in the William Lowell Putnam competition and the National Science Foundation-funded Research Experience for Undergraduates.

- **Study Abroad:** Spend a year at the prestigious London School of Economics, where you can choose from more than 350 undergraduate courses.

Notable Courses

- **MATH 408: Mathematical Statistics** — Principles for testing hypotheses and estimation; small sample distributions; correlation and regression; nonparametric methods; elements of statistical decision theory.

- **MATH 425a: Fundamental Concepts of Analysis** — The real number system; metric spaces; limits; continuity; derivatives and integrals; infinite series.

- **MATH 430: Theory of Numbers** — Introduction to the theory of numbers, including prime factorization, congruences, primitive roots, N-th power residues, number theoretic functions, and certain diophantine equations.

- **MATH 432: Applied Combinatorics** — Mathematical induction; counting principles; arrangements; selections; binomial coefficients; generating functions; recurrence relations; inclusion-exclusion; symmetric groups; graphs; Euler and Hamiltonian circuits; trees; graph algorithms; applications.
Bachelor of Arts (BA) Requirements

Prerequisite Course Requirements*
- MATH 125: Calculus I
- MATH 126: Calculus II
  or MATH 127: Enhanced Calculus II
- MATH 225: Linear Algebra and Linear Differential Equations
- MATH 226: Calculus III
  or MATH 227: Enhanced Calculus II

Upper Division Course Requirements*
- MATH 410: Fundamental Concepts of Modern Algebra
- MATH 425a: Fundamental Concepts of Analysis
- MATH 434: Geometry and Transformations
  or MATH 435: Vector Analysis and Introduction to Differential Geometry

Elective Course Requirements (select three)**
- MATH 400: Foundations of Discrete Mathematics
- MATH 407: Probability Theory
- MATH 440: Topology
- MATH 458: Numerical Methods
- MATH 465: Ordinary Differential Equations
- MATH 475: Introduction to Theory of Complex Variables

Additional Bachelor of Science (BS) Requirements*
- Neither MATH 434 nor MATH 435 is required
- MATH 410: Fundamental Concepts of Modern Algebra
- MATH 425b: Fundamental Concepts of Analysis
- MATH 471: Topics in Linear Algebra
- Two (2) additional 400-level math courses — all five (5) electives must be at 400-level
- PHYS 151: Fundamentals of Physics I — Mechanics and Thermodynamics
- Four (4) courses in natural sciences /computer science (non-mathematics), one (1) of which must be 300/400-level

*This information is offered as a partial overview only. For additional information, including all major requirements, please consult the USC Catalogue or http://dornsife.usc.edu/mathematics/. Updated as of August 2015.

**This does not represent all options in this category. For a complete list, please consult the USC Catalogue.