

## Mathematics

### The Major

Mathematicians today are engaged in a wide variety of activities. Research mathematicians create new theories and techniques. Applied mathematicians use that theory and mathematical modeling to solve problems in economics, science, medicine, engineering, and management. Teachers of mathematics develop new ways to teach mathematical concepts to children and adults.

University-level mathematics involves more than algorithms and computational techniques. Mathematics majors also learn to construct proofs and how to approach a real life problem from a mathematical point of view.

### Careers

Math majors tend to be highly satisfied with the jobs they get after college. The pay is generally good and the work is usually strongly related to mathematics. The best five jobs listed in a recent Jobs Rated Almanac – software engineer, actuary, computer systems analyst, computer programmer, and mathematician - all require a very strong background in mathematics. In fact, almost every one of the top fifty jobs involves a significant amount of mathematical reasoning and knowledge.

For more information on the program, see the 2008-2010 University Catalog.

### Requirements for the Bachelor Degree

It is assumed that the student has a facility in mathematics normally gained by recent completion of four years of high school mathematics through trigonometry and "Mathematical Analysis." Because of the variation in curriculum at the high school level it is necessary to obtain a satisfactory score on the Mathematics Diagnostics Test (MDTP) and Entry Level Mathematics Exam (ELM) to enter the first course in the program. Without a satisfactory score a student may have to complete additional courses.

For BS:It may be possible for a student wishing to emphasize Mathematical applications in a field outside the natural Sciences to replace the physics requirement in the Lower Division Core by course work involving significant Mathematical applications in that field. This may only be Done with the approval of an applied mathematics advisor And the department chair.

#### Lower Division Required Courses (23-24 Units)

|  |               |
|--|---------------|
| MATH 150A Calculus I                                       | 5             |
| MATH 150 B Calculus II                                     | 5             |
| MATH 250 Calculus III                                      | 3             |
| MATH 262 Linear Algebra                                    | 3             |
| COMP 106/L Computing In Engineering & Science/Lab          | 2/1 <b>OR</b> |
| COMP 110/L Introductions to Algorithms And Programming/Lab | 3/1           |
| PHYS 220 A Mechanics                                       | 3             |
| PHYS 220 AL Mechanics Lab                                  | 1             |

The student must complete the Lower-Division Core and one of the following Options, and must have a 2.0 grade point average for **all upper-division units required in the major.**

#### Upper Division Required Courses (24 Units)

|  |     |
|--|-----|
| MATH 320 Foundations of Higher Mathematics     | 3   |
| MATH 340 Introductory Probability              | 3   |
| MATH 350 Advanced Calculus I                   | 3   |
| MATH 351 Differential Equations                | 3   |
| MATH 360 Abstract Algebra I                    | 3   |
| MATH 382/L Intro. Scientific Computing and Lab | 2/1 |
| MATH 462 Advanced Linear Algebra               | 3   |
| MATH 493 Seminar in Mathematics                | 3   |

#### BS Upper Division Electives (15 Units)

Students must take 5 elective courses chosen with an advisor from the following list, **including at least one from MATH 450 and MATH 460:** MATH 440A, MATH 440B, MATH 450, MATH 455, MATH 460, MAHT 480, MATH 481ABCD, MATH 483, MATH 366, MATH 463, and all 500 level Math courses except those numbered 510-514.

TOTAL UNITS IN THE BS MAJOR, Option I: 62-63

GENERAL EDUCATION: 37 UNITS

Basic Skills Mathematics and Lifelong Learning are satisfied by required courses in the major.

PHYS 220A/L partially satisfies the Natural Science section. Students are encouraged to take PHIL 230 to satisfy the Basic Skills Critical Thinking requirement.

ADDITIONAL UNITS: 20-21

TOTAL UNITS REQUIRED FOR THE B.S. DEGREE, OPTION I: 120

**FOR INFORMATION CALL (818) 677-2721**

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