

# APPLIED MATHEMATICS - MINOR

A minor is offered in applied mathematics. Declaration of a minor is open to any student enrolled at CU Boulder, regardless of college or school.

The minor in applied mathematics was developed to provide in-depth training in mathematical techniques and computational methods well beyond the training usually received by science and engineering majors. The minor currently offers three tracks: general emphasis, scientific computing and mathematical software, or probability and statistics. The goals of each track are to introduce students to more advanced mathematical techniques and problem-solving strategies. Such skills are becoming increasingly important for students who expect to participate in areas requiring analysis or modeling of real world situations.

The department also offers a minor in statistics ([catalog.colorado.edu/undergraduate/colleges-schools/arts-sciences/programs-study/applied-mathematics/statistics-minor/](http://catalog.colorado.edu/undergraduate/colleges-schools/arts-sciences/programs-study/applied-mathematics/statistics-minor/)) which was developed to provide in-depth training in statistical methods and techniques well beyond the training usually received by science and engineering majors. The ability to understand, visualize and analyze data is becoming an increasingly important skill in many disparate fields. This minor offers undergraduate students from any major the opportunity to develop their statistical knowledge.

## Requirements

### Prerequisites

Prerequisites for the applied math minor are two semesters of calculus and computing experience, as provided by APPM 1650, CSCI 1300, CSCI 1320 or CHEN 1310.

### Residency

A minimum of 20 credits at the 2000 level and above is required. At least three APPM or STAT courses, two of which must be at the 3000 level or above, need to be taken on the Boulder campus. No more than 9 credits may be applied from transfer work; of those, no more than 6 credits may be 3000 level or above.

### Minimum Grades

A cumulative GPA of 2.00 or better is required in the courses that are used to satisfy the requirements for this minor. Each individual course that is counted towards these degree requirements must be passed with a grade of C- or better.

## Required Courses and Credits

Code	Title	Credit Hours
<b>Course Requirements</b>		<b>20</b>
APPM 2350 or MATH 2400	Calculus 3 for Engineers Calculus 3	4
APPM 2360	Introduction to Differential Equations with Linear Algebra	4
APPM 3310	Matrix Methods and Applications	3

### Choose one area of emphasis:

#### General Emphasis:

Choose two of the following three courses:

APPM 4650	Intermediate Numerical Analysis 1	
APPM 4350	Methods in Applied Mathematics: Fourier Series and Boundary Value Problems	
APPM 4360	Methods in Applied Mathematics: Complex Variables and Applications	
One 3-credit upper division APPM or STAT course at the 3000 or 4000 level		
<i>Scientific Computation Emphasis:</i>		
APPM 3050	Scientific Computing in Matlab <sup>1</sup>	
APPM 4650 & APPM 4660	Intermediate Numerical Analysis 1 and Intermediate Numerical Analysis 2	
<i>Probability and Statistics Emphasis:</i> <sup>2</sup>		
APPM 3570	Applied Probability	3
One of the following sequences:		
STAT 4000 & STAT 4010	Statistical Methods and Application I and Statistical Methods and Applications II	
APPM 4560 & STAT 4520	Markov Processes, Queues, and Monte Carlo Simulations and Introduction to Mathematical Statistics	

<sup>1</sup> APPM 3050 is not appropriate for junior or senior aerospace engineering sciences majors. These students should substitute another upper division applied math course.

<sup>2</sup> A student cannot earn a minor in statistics ([catalog.colorado.edu/undergraduate/colleges-schools/arts-sciences/programs-study/applied-mathematics/statistics-minor/](http://catalog.colorado.edu/undergraduate/colleges-schools/arts-sciences/programs-study/applied-mathematics/statistics-minor/)) and a minor in applied mathematics with probability and statistics emphasis.