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) 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 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

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>APPM 2350</td>
<td>Calculus 3 for Engineers</td>
<td>4</td>
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<tr>
<td>or MATH 2400</td>
<td>Calculus 3</td>
<td></td>
</tr>
<tr>
<td>APPM 2360</td>
<td>Introduction to Differential Equations with Linear Algebra</td>
<td>4</td>
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<tr>
<td>APPM 3310</td>
<td>Matrix Methods and Applications</td>
<td>3</td>
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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

Scientific Computation Emphasis:

- APPM 3050 Scientific Computing in Matlab
- APPM 4650 Intermediate Numerical Analysis 1
- APPM 4660 and Intermediate Numerical Analysis 2

Probability and Statistics Emphasis:

- APPM 3570 Applied Probability

One of the following sequences:

- STAT 4000 Statistical Methods and Application I
- & STAT 4010 and Statistical Methods and Applications II
- APPM 4560 Markov Processes, Queues, and Monte Carlo Simulations
- & STAT 4520 and Introduction to Mathematical Statistics

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

2 A student cannot earn a minor in statistics (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.