MATHEMATICS, BACHELOR OF ARTS

College of Letters & Science

Mathematics is the study of abstract structures, space, change, and the interrelations of these concepts. It also is the language of the exact sciences.

The Program

Students majoring in mathematics may follow a program leading to either the Bachelor of Arts or the Bachelor of Science degree. After completing basic introductory courses such as calculus and linear algebra, students plan an upper division program in consultation with a faculty advisor. Upper division courses include real analysis, probability, modern algebra, as well as a variety of other courses that allow students to further mathematical knowledge and skills that feature their research or career interests. This individualized program can lead to graduate study in pure or applied mathematics, elementary or secondary level teaching, or to other professional goals. It can also reflect a special interest such as computational and applied mathematics, computer science, or statistics, or may be combined with a major in some other field.

Career Alternatives

A degree in mathematics provides entry to many careers in industry in addition to teaching. For instance, operations research, data analysis, systems analysis, computing, actuarial work, insurance, and financial services are only a few such careers. Mathematics is also a sound basis for graduate work in a variety of fields, such as law, engineering, and economics.

Major Advisors

For a current list of faculty and staff advisors; see Math Department Advising (https://www.math.ucdavis.edu/undergrad/advising/advisers/) or contact Student Services (studentservices@math.ucdavis.edu).

Mathematics Placement Requirement

Students who wish to enroll in MAT 012, MAT 017A, MAT 019A, MAT 021A, MAT 021AH, and MAT 021M must satisfy the mathematics placement requirement by taking an online exam. Students who do not satisfy the requirement will be administratively dropped from these courses. For more information, including preparation tips and how to access the online exam, please see the Department of Mathematics website, at Math Placement Requirement (MPR) (http://www.math.ucdavis.edu/undergrad/math_placement/), well in advance of enrolling.

Department Honors

Students who meet the minimum GPA requirement for honors at graduation for the College of Letters & Science and who complete a senior project as part of MAT 194 or MAT 199 units in consultation with their faculty advisor may also be recommended by the department for graduation with High Honors or Highest Honors. Recommendations will be based on evaluations of students' academic achievements in their major and the quality of their senior project. For complete details, see Mathematics (http://www.math.ucdavis.edu).

Teaching Credential Subject Representative

Dr. Ali Dad-del

Graduate Study

The Department offers programs of study and research leading to M.A. and Ph.D. degrees in Mathematics. Information regarding graduate study may be obtained by consulting our website, and by sending an email to Student Services (studentservices@math.ucdavis.edu).

The major requirements below are in addition to meeting University Degree Requirements (https://catalog.ucdavis.edu/undergraduate-education/university-degree-requirements/) & College Degree Requirements (https://catalog.ucdavis.edu/undergraduate-education/college-degree-requirements/); unless otherwise noted. The minimum number of units required for the Mathematics Bachelor of Arts is 78.

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>Preparatory Subject Matter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAT 021A</td>
<td>Calculus</td>
<td>4</td>
</tr>
<tr>
<td>MAT 021B</td>
<td>Calculus</td>
<td>4</td>
</tr>
<tr>
<td>MAT 021C</td>
<td>Calculus</td>
<td>4</td>
</tr>
<tr>
<td>MAT 021D</td>
<td>Vector Analysis</td>
<td>4</td>
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Choose one option: 4-8

(a) MAT 022A  Linear Algebra
(b) MAT 108  Introduction to Abstract Mathematics
(c) MAT/027A  Linear Algebra with Applications to Biology

-MATLAB 0-1

MAT 067  Modern Linear Algebra

Additional Non-Mathematics Courses


Preparatory Subject Matter Subtotal 39-45

Depth Subject Matter

Plans

Choose one:

Plan 1: General Mathematics (p. 2) 39-40
Plan 2: Secondary Teaching (p. 2)
**Plan 1: General Mathematics**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>MAT 127A</td>
<td>Real Analysis</td>
<td>4</td>
</tr>
<tr>
<td>MAT 127B</td>
<td>Real Analysis</td>
<td>4</td>
</tr>
<tr>
<td>MAT 127C</td>
<td>Real Analysis</td>
<td>4</td>
</tr>
<tr>
<td>MAT 135A</td>
<td>Probability</td>
<td>4</td>
</tr>
<tr>
<td>MAT 150A</td>
<td>Modern Algebra</td>
<td>4</td>
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**A. Core Courses**

**B. Enrichment Courses**

Choose one:

- MAT 111-MAT 185B: 16

**C. Captstone Course**

Choose one:

- MAT 115B: Number Theory
- MAT 118B: Partial Differential Equations: Eigenfunction Expansions
- MAT 119B: Ordinary Differential Equations
- MAT 135B: Stochastic Processes
- MAT 146: Algebraic Combinatorics
- MAT 150B: Modern Algebra
- MAT 150C: Modern Algebra
- MAT 180: Special Topics
- MAT 185B: Complex Analysis
- MAT 189: Advanced Problem Solving
- MAT 192: Internship in Applied Mathematics (Must take 3 units.)
- MAT 194: Undergraduate Thesis
- EDU/GEL 183: Teaching High School Mathematics & Science
- GEL/EDU 183: Teaching High School Mathematics & Science

Excluding MAT 180, core courses, and courses being used as a capstone.

**Plan 2: Secondary Teaching**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>MAT 111</td>
<td>History of Mathematics</td>
<td>4</td>
</tr>
<tr>
<td>MAT 115A</td>
<td>Number Theory</td>
<td>4</td>
</tr>
<tr>
<td>MAT 127A</td>
<td>Real Analysis</td>
<td>4</td>
</tr>
<tr>
<td>MAT 127B</td>
<td>Real Analysis</td>
<td>4</td>
</tr>
<tr>
<td>MAT 127C</td>
<td>Real Analysis</td>
<td>4</td>
</tr>
<tr>
<td>MAT 135A</td>
<td>Probability</td>
<td>4</td>
</tr>
<tr>
<td>MAT 141</td>
<td>Euclidean Geometry</td>
<td>4</td>
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</table>

**A. Core Courses**

**B. Enrichment Course**

Choose one:

- MAT 111-MAT 185B: 1

**C. Capstone Course**

Choose one:

- MAT 119B: Ordinary Differential Equations
- MAT 135B: Stochastic Processes
- MAT 146: Algebraic Combinatorics
- MAT 150B: Modern Algebra
- MAT 150C: Modern Algebra
- MAT 180: Special Topics
- MAT 185B: Complex Analysis
- MAT 189: Advanced Problem Solving
- MAT 192: Internship in Applied Mathematics (Must take 3 units.)
- MAT 194: Undergraduate Thesis
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