B.S. in Mathematical and Scientific Computation (Math Emphasis)

For use with the 2016-2018 General Catalog

PREPARATORY COURSES (36 - 42 units): Plan to complete these by the end of sophomore year.

<table>
<thead>
<tr>
<th>Class</th>
<th>21A</th>
<th>21B</th>
<th>21C</th>
<th>21D</th>
<th>[22A and 108] or [67]</th>
<th>22B</th>
<th>25</th>
<th>ECS 30</th>
<th>ECS 40</th>
</tr>
</thead>
</table>

MATLAB Requirement:

Chose one of the following classes: MAT 22AL (1 unit) ENG 6 (4 units) Other MATLAB experience

DEPTH COURSES (47 units): Plan to complete these classes during your junior and senior years.

<table>
<thead>
<tr>
<th>Category</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer I, II</th>
<th>Adviser Comments</th>
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</thead>
<tbody>
<tr>
<td>Core</td>
<td>125A</td>
<td>125A</td>
<td></td>
<td>125A</td>
<td></td>
</tr>
<tr>
<td>Core</td>
<td>125B</td>
<td>125B</td>
<td></td>
<td>125B</td>
<td></td>
</tr>
<tr>
<td>Core</td>
<td>128A</td>
<td>128B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Core</td>
<td>135A</td>
<td>135A</td>
<td></td>
<td>135A</td>
<td></td>
</tr>
<tr>
<td>Core</td>
<td>150A</td>
<td>128C</td>
<td></td>
<td>150A</td>
<td></td>
</tr>
<tr>
<td>Emphasis</td>
<td>168</td>
<td></td>
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<tr>
<td>Enrichment</td>
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<td>Enrichment</td>
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<tr>
<td>Comp Class</td>
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</tr>
</tbody>
</table>

1 Enrichment: Choose any 2 upper-division MAT classes from MAT 111 to MAT 185B (excluding MAT 180).

2 Computation Class: Choose any 1 of the classes below. Keep in mind these classes may have prerequisites, so be sure to check the General Catalog/Schedule Builder and plan accordingly.

- ATM 120; ECS 60, 120, 122A, 122B, 124, 129, 130, 170, 175; NPB 163/198; STA 141A

3 Capstone: Choose one of the following: MAT 189 (Advanced Problem Solving); MAT 180 (Special Topics); MAT 192 (Internship); or MAT 194 (Undergrad Thesis). Consult an adviser if you would like to satisfy this requirement by completing an internship or an undergraduate thesis. You should plan to complete the capstone during your final year.

When are classes offered?

- Academic Year: https://www.math.ucdavis.edu/courses/academic-schedule
- Summer Session: https://www.math.ucdavis.edu/courses/summer
# B.S. in Mathematical and Scientific Computation (Math Emphasis)

## Courses

*For use with the 2016-2018 General Catalog*

For additional classes not listed below (such as enrichment options), as well as for more detailed information (including course descriptions), please consult the General Catalog at [http://catalog.ucdavis.edu](http://catalog.ucdavis.edu).

Please note that the quarters that classes are offered are subject to change.

### MAT classes:

<table>
<thead>
<tr>
<th>Title</th>
<th>Units</th>
<th>Prerequisite</th>
<th>Quarter Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>21A   Calculus</td>
<td>4</td>
<td>Qualifying math placement exam score</td>
<td>F, W, S, SSI, SSII</td>
</tr>
<tr>
<td>21B   Calculus</td>
<td>4</td>
<td>21A or 21AH with C- or above; or 17A with B or above</td>
<td>F, W, S, SSI, SSII</td>
</tr>
<tr>
<td>21C   Calculus</td>
<td>4</td>
<td>21B, 21BH, 16C, or 17C with a C- or above; or 17B with a B or above</td>
<td>F, W, S, SSI, SSII</td>
</tr>
<tr>
<td>21D   Vector Analysis</td>
<td>4</td>
<td>21C or 21CH with C- or above (or 17C with B or above)</td>
<td>F, W, S, SSI, SSII</td>
</tr>
<tr>
<td>22A   Linear Algebra</td>
<td>4</td>
<td>21C or 21CH with C- or above; and ENG 6 or EME 5 or concurrent enrollment in MAT 22AL</td>
<td>F, W, S, SSI, SSII</td>
</tr>
<tr>
<td>22AL  MATLAB/Linear Algebra Computer Theory</td>
<td>1</td>
<td>16C, 17C, 21C, or 21CH</td>
<td>F, W, S, SSI, SSII</td>
</tr>
<tr>
<td>22B   Differential Equations</td>
<td>3</td>
<td>22A or 67 with C- or above</td>
<td>F, W, S, SSI, SSII</td>
</tr>
<tr>
<td>25    Advanced Calculus</td>
<td>4</td>
<td>21C or 21CH</td>
<td>F, W, S, SSII</td>
</tr>
<tr>
<td>67    Modern Linear Algebra</td>
<td>4</td>
<td>21C or 21CH with C- or above</td>
<td>F, W, S, SSI, SSII</td>
</tr>
<tr>
<td>108   Intro to Abstract Math</td>
<td>4</td>
<td>21B</td>
<td>F, W, S, SSI</td>
</tr>
<tr>
<td>125A  Real Analysis</td>
<td>4</td>
<td>25</td>
<td>F, W, S, SSI</td>
</tr>
<tr>
<td>125B  Real Analysis</td>
<td>4</td>
<td>125A; 67 or both 22A and 108</td>
<td>W, S, SSII</td>
</tr>
<tr>
<td>128A  Numerical Analysis</td>
<td>4</td>
<td>21C; ECS 30</td>
<td>F</td>
</tr>
<tr>
<td>128B  Numerical Analysis in Solution of Equations</td>
<td>4</td>
<td>21C; 22A or 67; ECS 30</td>
<td>W</td>
</tr>
<tr>
<td>128C  Numerical Analysis in Differential Equations</td>
<td>4</td>
<td>22A or 67; 22B; ECS 30</td>
<td>S</td>
</tr>
<tr>
<td>135A  Probability</td>
<td>4</td>
<td>25 or 67 or 108</td>
<td>F, W, S</td>
</tr>
<tr>
<td>150A  Modern Algebra</td>
<td>4</td>
<td>67 or both 22A and 108</td>
<td>F, SSII</td>
</tr>
<tr>
<td>168   Optimization</td>
<td>4</td>
<td>67 or both 22A and 108; 21C</td>
<td>S</td>
</tr>
</tbody>
</table>

### Outside MAT classes:

<table>
<thead>
<tr>
<th>Title</th>
<th>Units</th>
<th>Prerequisite</th>
<th>Quarter Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECS 30 Programming and Problem Solving</td>
<td>4</td>
<td>MAT 16A or 21A (may be taken concurrently); prior experience with basic programming concepts recommended</td>
<td>F, W, S</td>
</tr>
<tr>
<td>ECS 40 Software Development and Object-Oriented Programming</td>
<td>4</td>
<td>ECS 30 or the equivalent with a grade of C- or better</td>
<td>F, W, S</td>
</tr>
<tr>
<td>ENG 6 Engineering Problem Solving</td>
<td>4</td>
<td>MAT 16A, 17A or 21A, C- or above; MAT 16B, 17B or 21B, C- or above (may be taken concurrently)</td>
<td>F, W, S</td>
</tr>
</tbody>
</table>