BS MATHEMATICS

Program Learning Objectives
1. Understand the nature of mathematical proof and be able to write clear and concise proofs.
2. Develop the ability to read, understand, and use basic definitions in linear and abstract algebra and real analysis, and be able to prove simple consequences of these definitions.
3. Be able to use standard mathematical techniques to solve elementary problems.
4. Be able to communicate effectively in oral and written form.
5. Be able to write simple computer programs to perform mathematical computations.
6. Gain experience exploring open-ended problems, learn to make conjectures, and gather evidence to support or refute these conjectures.
7. Develop the ability to read and to learn mathematics independently.
8. Learn about applications of mathematics in other fields and gain experience in mathematical modeling.

Degree Requirements and Curriculum
In addition to the program requirements listed on this page, students must also satisfy requirements outlined in more detail in the Minimum Requirements for Graduation (http://catalog.calpoly.edu/generalrequirementsbachelorsdegree/#generaleducationtext) section of this catalog, including:

• 60 units of upper division courses
• Graduation Writing Requirement (GWR)
• 2.0 GPA
• U.S. Cultural Pluralism (USCP)

Note: No major, support or concentration courses may be selected as credit/no credit.

MAJOR COURSES
MATH 141  Calculus I (B1)  4
MATH 142  Calculus II (B1)  4
MATH 143  Calculus III  4
MATH 202  Orientation to Mathematics Major  1
MATH 206  Linear Algebra I  4
MATH 241  Calculus IV  4
MATH 242  Differential Equations I  4
MATH 248  Methods of Proof in Mathematics  4
MATH 306  Linear Algebra II  4
MATH 336  Combinatorial Math  4
MATH 412  Introduction to Analysis I  4
Select from the following:  4
MATH 459  Senior Project Seminar
MATH 460  Senior Project Applied Seminar
MATH 461  Senior Project I
& MATH 462 and Senior Project II
MATH 481  Abstract Algebra I  4
CSC/CPE 101  Fundamentals of Computer Science  4
PHYS 141  General Physics IA  4

Select from the following:  4
PHYS 132  General Physics II (B3 & B4)
PHYS 133  General Physics III (B3 & B4)

General Curriculum in BS Mathematics or Concentration  44/56/48/48

GENERAL EDUCATION (GE)
(See GE program requirements below.)  60

FREE ELECTIVES
Free Electives  15/3/11/11

Total units  180

1 Required in Major; also satisfies GE.
2 General Curriculum/Applied Concentration/Pure Concentration/Mathematics Teaching Concentration.
3 MATH 460 is recommended for students in the Applied Concentration.

General Curriculum in BS Mathematics or Concentrations (select one)

• General Curriculum (http://catalog.calpoly.edu/collegesandprograms/collegeofsciencemathematics/mathematics/bsmathematics/generalcurriculum)
• Applied Mathematics (http://catalog.calpoly.edu/collegesandprograms/collegeofsciencemathematics/mathematics/bsmathematics/appliedmathematicsconcentration)
• Mathematics Teaching (http://catalog.calpoly.edu/collegesandprograms/collegeofsciencemathematics/mathematics/bsmathematics/mathematicsteachingconcentration)
• Pure Mathematics (http://catalog.calpoly.edu/collegesandprograms/collegeofsciencemathematics/mathematics/bsmathematics/puremathematicsconcentration)

General Education (GE) Requirements

• 72 units required, 12 of which are specified in Major and/or Support.
• See the complete GE course listing (http://catalog.calpoly.edu/generalrequirementsbachelorsdegree/#generaleducationtext).
• Minimum of 12 units required at the 300 level.

Area A  Communication
A1  Expository Writing  4
A2  Oral Communication  4
A3  Reasoning, Argumentation and Writing  4

Area B  Math, Science, and Quantitative Reasoning
B1  Mathematics/Statistics (8 units in Major/Support)  0
B2  Life Science  4
B3  Physical Science (4 units in Support)  0

B4  One lab taken with either a B2 or B3 course
B7  Upper-division elective  4

Area C  Arts and Humanities
C1  Literature  4
C2  Philosophy  4
<table>
<thead>
<tr>
<th>Area</th>
<th>Course Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>C3</td>
<td>Fine/Performing Arts</td>
<td>4</td>
</tr>
<tr>
<td>C4</td>
<td>Upper-division elective</td>
<td>4</td>
</tr>
<tr>
<td>Area C elective</td>
<td>(Choose one course from C1-C5)</td>
<td>4</td>
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<tr>
<td>Area D</td>
<td>Society and the Individual</td>
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<tr>
<td>D1</td>
<td>The American Experience (Title 5, Section 40404 requirement)</td>
<td>4</td>
</tr>
<tr>
<td>D2</td>
<td>Political Economy</td>
<td>4</td>
</tr>
<tr>
<td>D3</td>
<td>Comparative Social Institutions</td>
<td>4</td>
</tr>
<tr>
<td>D5</td>
<td>Upper-division elective</td>
<td>4</td>
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<tr>
<td>Area E</td>
<td>Lifelong Learning and Self-Development</td>
<td></td>
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<tr>
<td>E</td>
<td>Lower-division elective</td>
<td>4</td>
</tr>
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</table>

Total units 60

1 Required in Major; also satisfies GE.