B.S. APPLIED and COMPUTATIONAL MATHEMATICS

EMPHASIS in APPLIED MATHEMATICS

Program Requirements

Support Courses (25 units)
Phys 50, 51, or 70, 71*.................................General Physics
Math 100W...........................................Technical Writing Workshop
CS 46A ..............................................Intro to Programming
CS 46B ..............................................Intro to Data Structures

*Appropriate courses from other Science or Engineering
Departments may be substituted with Mathematics
Department approval.

6 additional upper division support units from Math, CS,
Science, or Engineering. All of these units can be in Math
203 or similar applied mathematics projects. The choices
must be approved by the Mathematics Department.

Required Lower Division Courses (13-15 units)
Math 30 or 30P, 31, 32.................................Calculus I, II, III
Math 42................................................Discrete Mathematics

Required Upper Division Courses (30 units)
Math 112 .............................................Vector Calculus
Math 132 .............................................Advanced Calculus
   or 131A**........................................Intro to Analysis
Math 129A...........................................Linear Algebra I
Math 133A...........................................Ordinary Differential Equations
Math 133B...........................................Partial Differential Equations
Math 138.............................................Complex Variables
Math 143C...........................................Numerical Analysis & Scientific Computing
Math 129B **..............................Linear Algebra II
   or 134............................................Dynamical Systems
   or 143M...........................................Numerical Analysis & Scientific Computing
Math 161A...........................................Applied Statistics I
   or 163............................................Probability Theory
Math 178.............................................Mathematical Modeling

** Math 108 is a prerequisite to Math 129B and Math 131A.

Total units required for degree ......................120

This degree program is recommended for students who wish to work in
the research and development area of industry. This program also
prepares a student for graduate study in applied mathematics,
umerical analysis, or operations research.

The emphasis in applied mathematics provides a solid foundation in
classical applied mathematics as well as computational mathematics,
which could be informally described as “how to employ mathematics
on computers wisely.” A graduate could seek direct employment
assisting a group of scientists with the formulation and solution of
problems. There is a great need in local and national technical
industries for people with sufficiently strong mathematical knowledge
to participate on such teams. For example, modern techniques for
solving partial differential equations are very sophisticated; the best
method in a given situation depends on the properties of the model.
Once a numerical approximation has been formulated, the techniques
to solve that, and the commercial software available to do it, again
require informed decisions.

For information concerning career in applied mathematics, see
http://www.siam.org/careers/

Notes
1. To enroll in mathematics course, a student must have obtained a
   C- or better in each of its prerequisite courses. A grade of C- or better
   is required in all courses counted toward the major.
2. All upper division math courses, except 100W, 101, 105, 106,
   107A 107B, and 123 will be included in the major GPA, whether they
   are used to satisfy the requirements of the major or not.
3. Transfer students should see an advisor to file a course
   equivalency form for courses being transferred.
4. Math majors can use Physics 50 to satisfy GE Areas B1 and B3.
5. Students are expected to consult the SJSU Catalog for course
   descriptions, prerequisites, restrictions on enrollments for credit, and
   other university policies.
6. If a student wishes to pursue this degree but is not enrolled in this
   major, the student must submit a Change of Major Form with the
   Department Office (MH 308). The approved form must then be filed
   with the Student Services Center.

Computing Facilities
The department maintains a computer laboratory for student use to
support course work in the department. Students may use the
computer lab either by registering for one unit of lab or by paying a
semester fee. There is also a Macintosh lab serving classes for future
K-12 teachers of mathematics. It is equipped with 20 iMacs. All
computers in the department are networked.

SJSU does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, marital
status, pregnancy, age, disability, disabled veteran's or Vietnam veteran's status. This policy applies to all SJSU
student, faculty and staff programs and activities. Questions regarding this policy should be directed to the Office
der Equal Opportunity, Administration Room 112, (408) 924-1115.
# Sample Program for BSACM – Emphasis in Applied Mathematics

## Freshman Year

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<thead>
<tr>
<th>Fall</th>
<th>Units</th>
<th>Spring</th>
<th>Units</th>
</tr>
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<tbody>
<tr>
<td>GE A1 Oral Communication</td>
<td>3</td>
<td>Math 31</td>
<td>4</td>
</tr>
<tr>
<td>GE A2 English 1A *</td>
<td>3</td>
<td>Math 42</td>
<td>3</td>
</tr>
<tr>
<td>GE A3 Philosophy 57 o</td>
<td>3</td>
<td>GE C3 English 1B</td>
<td>3</td>
</tr>
<tr>
<td>GE B4 Math 30 or 30p +</td>
<td>3 – 5</td>
<td>GE B2 Life Science</td>
<td>3</td>
</tr>
<tr>
<td>Physical Education</td>
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<tr>
<td></td>
<td>13-15</td>
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## Sophomore Year

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<th>Fall</th>
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<tbody>
<tr>
<td>Math 32</td>
<td>3</td>
<td>Math 112</td>
<td>3</td>
</tr>
<tr>
<td>CS 46A</td>
<td>4</td>
<td>Math 129A</td>
<td>3</td>
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<tr>
<td>GE B1 &amp; B3 Physics 50</td>
<td>4</td>
<td>CS 46B</td>
<td>4</td>
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<tr>
<td>GE Areas D2 &amp; F</td>
<td>3</td>
<td>Physics 51</td>
<td>4</td>
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<td></td>
<td>14</td>
<td>GE Areas D3 &amp; F</td>
<td>3</td>
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## Junior Year

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<th>Fall</th>
<th>Units</th>
<th>Spring</th>
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<tbody>
<tr>
<td>Math 133A</td>
<td>3</td>
<td>Math 133B</td>
<td>3</td>
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<tr>
<td>Math 129B or 134 or 143M</td>
<td>3</td>
<td>Math 143C</td>
<td>3</td>
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<tr>
<td>Math 178</td>
<td>3</td>
<td>GE Area Z Math 100W *</td>
<td>3</td>
</tr>
<tr>
<td>GE Area C1</td>
<td>3</td>
<td>GE Area C2</td>
<td>3</td>
</tr>
<tr>
<td>GE Area D1</td>
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## Senior Year

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<th>Fall</th>
<th>Units</th>
<th>Spring</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>Math 161A or 163</td>
<td>3</td>
<td>Math 131A‡ or 132</td>
<td>3</td>
</tr>
<tr>
<td>Math 138</td>
<td>3</td>
<td>Upper division support course</td>
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<tr>
<td>Upper division support course</td>
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<td>GE Area V</td>
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<td>GE Areas R &amp; S</td>
<td>6</td>
<td>Free electives</td>
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* Requires a placement exam. See the Schedule of Classes for test dates and further explanation.
+ Requires satisfaction of the ELM requirement.
‡ Math 131A has Math 108 as a prerequisite.
º Recommended course for GE A3.