



## B.S. APPLIED MATHEMATICS

### CONCENTRATION in APPLIED AND COMPUTATIONAL 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.

For a list of approved lower division and upper division support courses, go to <http://www.sjsu.edu/math/programs/undergraduate/>

##### 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**

##### For More Information

Department of Mathematics  
San Jose State University  
One Washington Square  
San Jose, CA 95192-0103  
[www.sjsu.edu/math/](http://www.sjsu.edu/math/)

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, numerical analysis, or operations research.

The concentration in applied and computational 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. Transfer students should see an advisor to file a course equivalency form for courses being used to satisfy the math major. This major requires 30 units of upper division math. All courses taken at a community college transfer to SJSU as lower division units. If linear algebra and/or differential equations were taken at a community college, then additional approved upper division math courses will be needed to obtain the required 30 units of upper division math. Math 101, 105, 106, 107A, 107B, 110L, and certain Math 196 courses cannot be used.
3. Math majors can use Physics 50 to satisfy GE Areas B1 and B3.
4. Students are expected to consult the SJSU Catalog for course descriptions, prerequisites, restrictions on enrollments for credit, and other university policies.
5. 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.

## Sample Program for BSACM – Emphasis in Applied Mathematics

### Freshman Year

Fall	Units	Spring	Units
GE Area E or MUSE	3	Math 31	4
GE A2 English 1A *	3	Math 42	3
GE A3 Philosophy 57 (rec.)	3	GE C3 English 1B	3
GE B4 Math 30 or 30P *+	3 – 6	GE B2 Life Science	3
Physical Education	1	GE A1 Oral Communication	3
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	13-16		16

### Sophomore Year

Fall	Units	Spring	Units
Math 32	3	Math 112	3
Math 129A	3	Math 133A	3
CS 46A	4	CS 46B	4
GE B1 & B3 Physics 50	4	Physics 51	4
GE Areas D2 & F	3	GE Areas D3 & F	3
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	17		17

### Junior Year

Fall	Units	Spring	Units
Math 133B	3	Math 161A or 163**	3
Math 131A <sup>‡</sup> or 132	3	Math 143C	3
GE Area C1	3	Math 138	3
GE Area C2	3	GE Area Z Math 100W *	3
GE Area D1	3	Physical Education	1
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	15		13

### Senior Year

Fall	Units	Spring	Units
Math 129B** or 134** or 143M	3	Math 178	3
Upper division support course	3	Upper division support course	3
GE Areas R & S	6	GE Area V	3
Free elective	3	Free electives	2 - 5
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	15		11-14

\* 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.

\*\*Math 163 is only offered in the Fall semester.

Math 129B is offered every semester except even Fall semesters.

Math 134 is offered on an irregular schedule.