BACHELOR OF ARTS IN MATHEMATICS: CONCENTRATION IN MATHEMATICS FOR LIBERAL ARTS

Website: math.sfsu.edu (http://math.sfsu.edu)

The Liberal Arts concentration is for students who desire a broad liberal arts education with an emphasis in mathematics. CR/NC grades are not acceptable in courses to be counted for a mathematics major or minor program.

Mathematics (B.A.): Concentration in Mathematics for Liberal Arts — 42 units

Concentration Courses (18 units)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSC 210</td>
<td>Introduction to Computer Programming</td>
<td>3</td>
</tr>
<tr>
<td>or CSC 309</td>
<td>Computer Programming for Scientists and Engineers</td>
<td></td>
</tr>
<tr>
<td>MATH 300GW</td>
<td>History of Mathematics - GWAR</td>
<td>3</td>
</tr>
</tbody>
</table>

Four elective courses numbered 300 or above except MATH 375, 475, 12 565, 575, 576, 577, 578.

Note: A minimum of 40 upper division units must be completed for the degree (including upper division units required for the major, general education, electives, etc.). A student can complete this major yet not attain the necessary number of upper division units required for graduation. In this case, additional upper division courses will be needed to reach the required total.

General Education Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Course Level</th>
<th>Units</th>
<th>Area Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral Communication</td>
<td>LD</td>
<td>3</td>
<td>A1</td>
</tr>
<tr>
<td>Written English Communication I</td>
<td>LD</td>
<td>3</td>
<td>A2</td>
</tr>
<tr>
<td>Critical Thinking</td>
<td>LD</td>
<td>3</td>
<td>A3</td>
</tr>
<tr>
<td>Written English Communication II</td>
<td>LD</td>
<td>3</td>
<td>A4</td>
</tr>
<tr>
<td>Physical Science</td>
<td>LD</td>
<td>3</td>
<td>B1</td>
</tr>
<tr>
<td>Life Science</td>
<td>LD</td>
<td>3</td>
<td>B2</td>
</tr>
<tr>
<td>Lab Science</td>
<td>LD</td>
<td>1</td>
<td>B3</td>
</tr>
<tr>
<td>Mathematics/Quantitative Reasoning</td>
<td>LD</td>
<td>3</td>
<td>B4</td>
</tr>
<tr>
<td>Arts</td>
<td>LD</td>
<td>3</td>
<td>C1</td>
</tr>
<tr>
<td>Arts or Humanities</td>
<td>LD</td>
<td>3</td>
<td>C1 or C2</td>
</tr>
<tr>
<td>Humanities: Literature</td>
<td>LD</td>
<td>3</td>
<td>C3</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>LD</td>
<td>3</td>
<td>D1</td>
</tr>
</tbody>
</table>

Social Sciences:                     |               |       |
US History                           | LD           | 3     | D2               |
Social Sciences:                     |               |       |
US & CA Government                   | LD           | 3     | D3               |
Lifelong Learning and Self-Development (LLD) | LD or UD | 3 | E

Physical and/or Life Science         | UD           | 3     | UD-B             |
Arts and/or Humanities               | UD           | 3     | UD-C             |
Social Sciences                      | UD           | 3     | UD-D             |

SF State Studies
Courses certified as meeting the SF State Studies requirements may be upper or lower division in General Education (GE), in a major or minor, or an elective.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Course Level</th>
<th>Units</th>
<th>Area Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Ethnic and Racial Minorities (AERM)</td>
<td>LD or UD</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Environmental Sustainability (ES)</td>
<td>LD or UD</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Global Perspectives (GP)</td>
<td>LD or UD</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Social Justice (SJ)</td>
<td>LD or UD</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Note: LD = Lower-Division; UD = Upper-Division.

First-Time Student Roadmap (4 Year)
This roadmap opens in a new tab (bulletin.sfsu.edu/colleges/science-engineering/mathematics/ba-mathematics-concentration-liberal-arts/roadmap).

Transfer Student Roadmap (2 Year)
For students with an AS-T in Mathematics. This roadmap opens in a new tab (bulletin.sfsu.edu/colleges/science-engineering/mathematics/ba-mathematics-concentration-liberal-arts/adt-roadmap).

This degree program is an approved pathway (“similar” major) for students earning the ADT in Mathematics

California legislation SB 1440 (2009) mandated the creation of the Associate Degree for Transfer (ADT) to be awarded by the California Community Colleges. Two types of ADTs are awarded: Associate in Arts for Transfer (AA-T) and Associate in Science for Transfer (AS-T). Note: no specific degree is required for admission as an upper-division student. However, the ADT includes specific guarantees related to admission and graduation and is designed to clarify the transfer process and strengthen lower-division preparation for the major.

An ADT totals 60 units and includes completion of all lower-division General Education requirements and at least 18 units in a specific major. Students pursuing an ADT are guaranteed admission to the CSU if...
minimum eligibility requirements are met, though not necessarily to the
CSU campus of primary choice.

Upon verification that the ADT has been awarded prior to matriculation
at SF State, students are guaranteed B.A. or B.S. completion in 60 units
if pursuing a "similar" major after transfer. Determinations about “similar”
majors at SF State are made by faculty in the discipline.

Degree completion in 60 units cannot be guaranteed when a student
simultaneously pursues an additional major, a minor, certificate, or
credential.

A sample advising roadmap for students who have earned an ADT and
continue in a “similar” major at SF State is available on the Roadmaps tab
on the degree requirements page for the major. The roadmap displays:

- How many lower-division units required for the major have been
  completed upon entry based on award of a specific ADT;
- Which lower-division requirements are considered complete upon
  entry based on award of a specific ADT;
- How to complete the remaining 60 units for the degree in four
  semesters.

Students who have earned an ADT should seek advising in the major
department during the first semester of attendance.

General Advising Information for Transfer
Students

1. Before transfer, complete as many lower-division requirements or
electives for this major as possible.
2. The following courses are not required for admission but are required
   for graduation. Students are strongly encouraged to complete these
   units before transfer, doing so will provide more flexibility in course
   selection after transfer.
   - a course in U.S. History
   - a course in U.S. & California Government
   - a 2nd-semester course in written English composition

For information about satisfying the requirements described in (1) and
(2) above at a California Community College (CCC), please visit http://
www.assist.org. Check any geographically accessible CCCs; sometimes
options include more than one college. Use ASSIST to determine:

- Which courses at a CCC satisfy any lower division major requirements
  for this major, including 2nd-semester composition;
- Which courses at a CCC satisfy CSU GE, US History, and US & CA
  Government.

Remedial courses are not transferable and do not apply to the minimum
60 units/90 quarters required for admission.

Additional units for courses that are repeated do not apply to the
minimum 60 units required for upper division transfer (for example, if
course was not passed on the first attempt, or was taken to earn a better
grade).

Before leaving the last California Community College of attendance,
obtain a summary of completion of lower division General Education
units (IGETC or CSU GE Breadth). This is often referred to as a GE
certification worksheet. SF State does not require delivery of this
certification to Admissions, but students should retain this document for
verifying degree progress after transfer.

Credit for Advanced Placement, International Baccalaureate, or
College-Level Examination Program courses: AP/IB/CLEP credit is
not automatically transferred from the previous institution. Units are
transferred only when an official score report is delivered to SF State.
Credit is based on the academic year during which exams were taken.
Refer to the University Bulletin in effect during the year of AP/IB/CLEP
examination(s) for details regarding the award of credit for AP/IB/CLEP.

Students pursuing majors in science, technology, engineering and
mathematics (STEM) disciplines often defer 6-9 units of lower-division
general education in areas C and D until after transfer to focus on
preparation courses for the major. (This advice does not apply to
students pursuing associate degree completion before transfer.)

Transferring from institutions other than CCCs
or CSUs

Review SF State’s lower division General Education requirements.
Note that, as described below, the four basic skills courses required for
admission meet A1, A2, A3, and B4 in the SF State GE pattern. Courses
that fulfill the remaining areas of SF State’s lower division GE pattern are
available at most two-year and four-year colleges and universities.

Of the four required basic skills courses, a course in critical thinking
(GE A3) may not be widely offered outside the CCC and CSU systems.
Students should attempt to identify and take an appropriate course no
later than the term of application to the CSU. To review more information
about the A3 requirement, please visit http://bulletin.sfsu.edu/
undergraduate-education/general-education/lower-division/#AAEL.

Identify and complete a 2nd-semester written English composition
course before transfer. This is usually the next course after the typical
“freshman comp” course, with a focus on writing, reading and critical
analytical skills for academic purposes, and developing skills in
composing, revising, and the use of rhetorical strategies.

Waiting until after transfer to take a single course at SF State that meets
both US and CA/local government requirements may be an appropriate
option, particularly if transferring from outside of California.

All students must meet the transfer eligibility
requirements outlined below for admission.
For more information, visit the Undergraduate
Admissions section.

- Complete 60 or more transferable semester units or 90 or more
  quarter units
- Earn a college grade point average of 2.00 or better in all transferable
courses. Non-local area residents may be held to a higher GPA
  standard.
- Be in good standing at the last college or university attended
- Complete 30-semester units (45-quarter units) of general education,
  including four basic skills courses:
  a. One course in oral communication (same as CSU GE Area A1)
  b. One course in written composition (same as CSU GE Area A2)
  c. One course in critical thinking (same as CSU GE Area A3)
  d. One course in mathematics or quantitative reasoning (same as
     CSU GE Area B4)
- The four basic skills courses and a minimum of 60 transferable
  semester units (90-quarter units) must be completed by the spring
semester prior to fall admission, or by the fall semester prior to spring admission. Earn a "C-" or better grade in each basic skills course.