Minor Change to an Undergraduate Program

Program Name: B.A. in Chemistry

Complete only if applicable
Program named above is:

☐ Option within _______________________
(degree program name)

☐ Advising Pattern within _______________________
(option name)

within _______________________
(degree program name)

☐ Minor

☐ Certificate

☐ Changes being made affect a subject matter preparation or credential program.

Brief rationale for change:
Removal of CHEM 400 from the program; Addition of new WP course in Chemical Communications (CHEM 401). Reduction of CHEM 381 from 3 units to two. This allows us to better meet our SLO's of proficiency in written and oral communication.

Does the proposed change enhance or support the Diversity Action Plan (see definition & Task 3.1)? n/a
If yes, please explain.

Required Signatures

The Department of Chemistry and Biochemistry has reviewed and approves this program change

Chair, Department Curriculum Committee

Date

The College of Natural Sciences has reviewed and approves this program change

Chair, College Curriculum Committee

Date

Send signature page with proposal attached to Curriculum Services at Academic Affairs, zip 110
AA Technical Review Completed

Date
Rationale for Minor Changes to BA in Chemistry:

The Department of Chemistry and Biochemistry had decided to make the following changes to our BA in Chemistry program:

- Reduction of CHEM 381 from 3.0 units to 2.0 units and removal of its WP status — this is a lab course and its focus will become primarily on the lab experiments and lab reports; mastery in written communication will now be provided by a new course (CHEM 401)
- Removal of CHEM 400 (Senior Seminar) from the program — mastery in oral communication will now be provided by a new course (CHEM 401)
- Addition of a new course: CHEM 401, Communicating Chemistry (3.0 units, WP) — this course will integrate chemistry content, written communication, and oral communication for seniors in this program. The written communication objective should be better met by this course compared to CHEM 381, where it wasn’t well integrated into the lab course. The oral communication objective should also be better met by this course compared to CHEM 400, which didn’t have any specific chemistry content. An application for WP status for this course has been submitted.
- Replacement of the CHEM 411/440 elective with “2.0 units selected from: Any upper-division courses (300- and 400-level courses) in Chemistry and Biochemistry (CHEM)”.

This is necessitated by the deletion of CHEM 411 and CHEM 440 from our course offerings. Since CHEM 362 (2.0 units) is being removed from the list of acceptable elective courses, this keeps the elective unit minimum at 5.0.

The unit load is increasing by 1.0:

<table>
<thead>
<tr>
<th>Units removed</th>
<th>Units added</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 381 (reduced)</td>
<td>-1.0</td>
</tr>
<tr>
<td>CHEM 400 (out)</td>
<td>-1.0</td>
</tr>
<tr>
<td></td>
<td>CHEM 401 (new)</td>
</tr>
</tbody>
</table>
The Bachelor of Arts in Chemistry

Total Course Requirements for the Bachelor's Degree: 120 units

See Bachelor's Degree Requirements in the University Catalog for complete details on general degree requirements. A minimum of 40 units, including those required for the major, must be upper division.

A suggested Major Academic Plan (MAP) has been prepared to help students meet all graduation requirements within four years. You can view MAPs on the Degree MAPs page in the University Catalog or you can request a plan from your major advisor.

This degree is appropriate for students pursuing single subject matter preparation in science with a concentration in chemistry. This degree is also an excellent preparation for students considering chemistry-related interdisciplinary fields. Students who choose this program should consult with their major advisor.

General Education Pathway Requirements: 48 units

See General Education in the University Catalog and the Class Schedule for the most current information on General Education Pathway Requirements and course offerings.

This major has approved GE modifications. See below for information on how to apply these modifications.

- CHEM 381 is an approved major course substitution for Upper-Division Natural Sciences

Diversity Course Requirements: 6 units

See Diversity Requirements in the University Catalog. Most courses taken to satisfy these requirements may also apply to General Education.

Literacy Requirement:

See Mathematics and Writing Requirements in the University Catalog. Writing proficiency in the major is a graduation requirement and may be demonstrated through satisfactory completion of a course in your major which has been designated as the Writing Proficiency (WP) course for the semester in which you take the course. Students who earn below a C- are required to repeat the course and earn a C- or higher to receive WP credit. See the Class Schedule for the designated WP courses for each semester. You must pass ENGL 1301 or JOUR 1301 (or equivalent) with a C- or higher before you may register for a WP course.

Course Requirements for the Major: 59 60-64 units

Completion of the following courses, or their approved transfer equivalents, is required of all candidates for this degree.

Lower-Division Requirements: 32-36 units

6 courses required:
CHEM 111  General Chemistry  4.0  FS  GE
Prerequisites: Completion of ELM requirement; second-year high school algebra; one year high school chemistry. (One year of high school physics and one year of high school mathematics past Algebra II are recommended.)

CHEM 112  General Chemistry  4.0  FS
Prerequisites: CHEM 111 with a grade of C- or better.

CHEM 270  Organic Chemistry  4.0  FS
Prerequisites: CHEM 112.

MATH 120  Analytic Geometry and Calculus  4.0  FS  GE
Prerequisites: Completion of ELM requirement; both MATH 118 and MATH 119 (or high school equivalent); a score that meets department guidelines on a department administered calculus readiness exam.

MATH 121  Analytic Geometry and Calculus  4.0  FS
Prerequisites: MATH 120.

MATH 220  Analytic Geometry and Calculus  4.0  FS
Prerequisites: MATH 121.

*2-3 courses selected from:*

PHYS 202A  General Physics  4.0  FS  GE
Prerequisites: High school physics or faculty permission. High school trigonometry and second-year high school algebra or equivalent (MATH 051 and MATH 118 at CSU, Chico).

PHYS 202B  General Physics  4.0  FS
Prerequisites: PHYS 202A with a grade of C- or higher.

*Or the following group of courses may be selected:*

PHYS 204A  Physics for Students of Science and Engineering: Mechanics  4.0  FS  GE
Prerequisites: High school physics or faculty permission. Concurrent enrollment in or prior completion of MATH 121 (second semester of calculus) or equivalent.

PHYS 204B  Physics for Students of Science and Engineering: Electricity and Magnetism  4.0  FS
Prerequisites: MATH 121, PHYS 204A with a grade of C- or higher.

PHYS 204C  Physics for Students of Science and Engineering: Heat, Wave Motion, Sound, Light, and Modern Topics  4.0  FS
Prerequisites: MATH 121, PHYS 204A with a grade of C- or higher.

*Note:* One full sequence (PHYS 202AB or PHYS 204ABC) must be completed.

**Upper-Division Requirements: 27-28 units**

8 courses required:

CHEM 320  Quantitative Analysis  4.0  FS
Prerequisites: CHEM 112 with a grade of C- or higher.

CHEM 331  Physical Chemistry  3.0  FA
Prerequisites: CHEM 320, 370, MATH 220; PHYS 202A & PHYS 202B or PHYS 204A, PHYS 204B, & PHYS
204C.

**CHEM 361**  
Inorganic Chemistry  
Prerequisites: CHEM 320, MATH 220; PHYS 202A & PHYS 202B or PHYS 204A, PHYS 204B, & PHYS 204C.  
3.0 FA

**CHEM 370**  
Organic Chemistry  
3.0 FS  
Prerequisites: CHEM 270 with a grade of C- or higher.

**CHEM 370M**  
Organic Chemistry Laboratory  
2.0 FS  
Prerequisites: Concurrent enrollment in or prior completion of CHEM 370.

**CHEM 381**  
Integrated Chemistry Laboratory I  
3.0 2.0 FA FS WP  
Prerequisites: ENGL 130 or JOUR 130 (or equivalent) with a grade of C- or higher, CHEM 270, 370M, CHEM 331 (may be taken concurrently), CHEM 361 (may be taken concurrently).

**CHEM 400**  
Senior Seminar in Chemistry  
- 1.0 SP -  
Prerequisites: CHEM 320, CHEM 370; One of CHEM 331, CHEM 361, CHEM 451.

**CHEM 451**  
Biochemistry  
3.0 FS  
Prerequisites: CHEM 370 with a grade of C- or higher.

1 course selected from:

**CHEM 332**  
Physical Chemistry  
3.0 SP  
Prerequisites: CHEM 331.

**CHEM 362**  
Intermediate Inorganic Chemistry  
- 2.0 SP -  
Prerequisites: CHEM 361.

**CHEM 452**  
Biochemistry  
3.0 SP  
Prerequisites: CHEM 451.

**CHEM 453M**  
Biochemistry Laboratory  
3.0 SP FS  
Prerequisite: CHEM 320, CHEM 370M, CHEM 451 (may be taken concurrently).

2 units selected from:

Any upper-division courses (300- and 400-level courses) in Chemistry and Biochemistry (CHEM)

1 course selected from:

**CHEM 411**  
Chemistry Teaching Methods  
3.0 SP -  
Prerequisites: CHEM 112, CHEM 270. CHEM 320 is recommended.

**CHEM 440**  
Environmental Chemistry  
3.0 SP -  
Prerequisites: CHEM 112.

**Note:** With permission of the Department of Chemistry and Biochemistry, other courses may be substituted.

**Electives Requirement:**
To complete the total units required for the bachelor's degree, select additional elective courses from the total University offerings. You should consult with an advisor regarding the selection of courses which will provide breadth to your University experience and possibly apply to a supportive second major or minor.

**Grading Requirement:**

All courses taken to fulfill major course requirements must be taken for a letter grade except those courses specified by the department as Credit/No Credit grading only.
California State University, Chico
MAJOR ACADEMIC PLAN (MAP)

Bachelor of Arts in Chemistry

Major: Chemistry (B.A.)

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 111 (GE Area B1) [*C-]</td>
<td>4</td>
<td>[*MOD] This plan includes Modifications to General Education.</td>
</tr>
<tr>
<td>MATH 120 (GE Area A4) [*C-]</td>
<td>4</td>
<td>[*UD units] At least 6 units of Electives must be upper-division in order to meet the University's 40-unit upper division requirement for graduation.</td>
</tr>
<tr>
<td>GE Area A [*C-]</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>GE Area A [*C-]</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Total Units</strong></td>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Third Semester</th>
<th>Fourth Semester</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 270 [*C-]</td>
<td>4</td>
<td>Transfer Students: It is recommended that you review your Degree Progress Report (DPR) in your Student Center, meet with your Major Department Advisor, and meet with an Academic Advisor in SSC 220 to review General Education, Major, and Graduation requirements.</td>
</tr>
<tr>
<td>MATH 220</td>
<td>4</td>
<td>It is recommended that you meet with your major advisor early in your academic career.</td>
</tr>
<tr>
<td>PHYS 202B or 204B</td>
<td>4</td>
<td>Complete a minimum of 4 Writing Intensive (WI) courses-one will be met by your Written Communication Course and one by your Capstone Course; select 2 additional WI courses.</td>
</tr>
<tr>
<td>GE Area D</td>
<td>3</td>
<td>Select a GE Capstone Course in your Upper-Division Pathway, or substitute an approved Major Capstone course from the GE Capstone Requirement.</td>
</tr>
<tr>
<td>GE Area C</td>
<td>3</td>
<td>Consider meeting the United States Diversity and Global Cultures requirements within GE courses.</td>
</tr>
<tr>
<td><strong>Total Units</strong></td>
<td>15</td>
<td>Apply to graduate one year before anticipated graduation date.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fifth Semester</th>
<th>Sixth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 320</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 331 (FA)</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 361 (FA)</td>
<td>3</td>
</tr>
<tr>
<td>GE Area C</td>
<td>3</td>
</tr>
<tr>
<td>HIST 130 or POLS 155</td>
<td>3</td>
</tr>
<tr>
<td>Elective [*UD units]</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Units</strong></td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Seventh Semester</th>
<th>Eighth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 401 (FA) (WP) [*C-] [*MOD]</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 451</td>
<td>3</td>
</tr>
<tr>
<td>HIST 130 or POLS 155</td>
<td>3</td>
</tr>
<tr>
<td>Elective [*UD units]</td>
<td>3</td>
</tr>
<tr>
<td>GE UD Pathway or Optional UD Elective [*UD units]</td>
<td>3</td>
</tr>
<tr>
<td>Elective (2-3 units as needed)</td>
<td>2-3</td>
</tr>
<tr>
<td><strong>Total Units</strong></td>
<td>15</td>
</tr>
</tbody>
</table>