CHEMISTRY, BS

Natural Sciences, Mathematics, and Engineering (nsme) (https://catalog.csub.edu/general-information/credit-catalog/academic-programs/school-natural-sciences-mathematics-engineering/)

Department of Chemistry and Biochemistry (https://catalog.csub.edu/general-information/credit-catalog/academic-programs/school-natural-sciences-mathematics-engineering/department-chemistry-biochemistry/)

Department Chair: Sarah Forester
Office: Science Building II, 273
Phone: (661) 654-2030
Email: chemistry@csub.edu
www.csub.edu/Chemistry (http://www.csub.edu/Chemistry/)

Program Maps for Natural Sciences, Mathematics, and Engineering (https://programmap.csub.edu/academics/interest-clusters/4e942a6e-b8e4-4b60-a1ae-334235acc581/)

Program Requirements

Academic Regulations

A grade of "C" in chemistry, cognate, and all other major/minor courses is the minimal grade acceptable for progression into subsequent chemistry courses and for graduation. Students who fail to achieve at least a "C" may repeat the course. If a course is satisfactorily completed, the prior unsatisfactory grade will no longer bar a student from continuing in the Chemistry program. Credit, no-credit courses are not acceptable for the major or minor.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td></td>
<td><strong>General Education Requirements</strong></td>
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<tr>
<td></td>
<td>First-Year Seminar (FYS)</td>
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<tr>
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<td>Lower Division Area A: Foundational Skills</td>
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<tr>
<td></td>
<td>Lower Division Area B: Natural Sciences</td>
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<td>Lower Division Area C: Arts and Humanities</td>
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<td>Lower Division Area D: Social and Behavioral Sciences</td>
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<td>Lower Division Area E: Student Enrichment and Lifelong Learning (SELF)</td>
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<td>Lower Division Area F: Ethnic Studies</td>
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<td>American Institutions: Government and History</td>
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<td>Junior Year Diversity &amp; Reflection (JYDR)</td>
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<td>Graduation Writing Assessment Requirement (GWAR)</td>
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<td>Upper Division Thematic Area C and D</td>
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<td>General Education Capstone</td>
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<td><strong>Major Requirements</strong></td>
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<tr>
<td></td>
<td>CHEM 1000 Foundations of Chemistry</td>
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<td>CHEM 1001 Foundations of Chemistry Laboratory</td>
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<td>CHEM 1100 Foundations of Analytical Chemistry</td>
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<td>CHEM 1600 Foundations of Physical Chemistry</td>
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<td>CHEM 2110 Foundations of Quantitative Chemical Analysis</td>
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<td>CHEM 2200 Foundations of Inorganic Chemistry</td>
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</table>

or CHEM 2240 Foundations of Bioinorganic Chemistry
CHEM 2300 Foundations of Organic Chemistry 3
CHEM 2400 Foundations of Biochemistry 2
CHEM 2900 Research Methods in Chemistry 3

**Upper Division**
CHEM 3110 Advanced Quantitative Chemical Analysis 3
CHEM 3300 Intermediate Organic Chemistry 3
CHEM 3301 Organic Chemistry Laboratory I 2
CHEM 3600 Physical Chemistry: Thermodynamics and Kinetics 3
CHEM 3610 Physical Chemistry: Quantum and Statistical Mechanics 3

CHEM 3908 Seminar in Chemical Literature 3
CHEM 4100 Chemical Separations 1
CHEM 4101 Chemical Separations Laboratory 1
CHEM 4200 Inorganic Chemistry 3
CHEM 4908 Senior Seminar in Chemistry 3

Cognates

Mathematics

Select one of the following:
MATH 2010 & MATH 2020 I Calculus for the Biological and Chemical Sciences and Calculus for Biological & Chemical Sciences II
MATH 2310 & MATH 2320 I Single Variable Calculus I for Engineers and Single Variable Calculus II for Engineers
MATH 2510 & MATH 2520 I Single Variable Calculus I and Single Variable Calculus II

Physics

Select one of the following:
PHYS 2110 & PHYS 2120 College Physics I and College Physics II
PHYS 2210 & PHYS 2220 Physics for Scientists and Engineers I and Physics for Scientists and Engineers II

**Major Subtotal** 62

**Additional Requirements for the B.S. in Chemistry**

Upper Division

CHEM 3310 Advanced Organic Chemistry 2
CHEM 3311 Organic Chemistry Laboratory II 2
CHEM 4110 Spectroscopy 1

Select four additional units of the following:
CHEM 3400 Biochemistry of Metabolic Pathways
CHEM 3401 Biochemistry Laboratory I
CHEM 3500 Concepts of Food Analysis
CHEM 3510 Food Science
CHEM 4010 Symmetry and Group Theory
CHEM 4020 Computational Chemistry
CHEM 4120 Nuclear Magnetic Resonance
CHEM 4121 Spectroscopy Laboratory
CHEM 4400 Biochemistry of Nucleic Acids
CHEM 4401 Biochemistry Laboratory II
CHEM 4410 Protein Chemistry
CHEM 4420 Plant Biochemistry
CHEM 4500 Food Chemistry
CHEM 4510 Advanced Nutrition and Metabolism
<table>
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<th>Course</th>
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<tbody>
<tr>
<td>CHEM 4700</td>
<td>Special Topics in Chemistry</td>
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<tr>
<td>CHEM 4800</td>
<td>Honors Research</td>
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<tr>
<td>CHEM 4830</td>
<td>Instruction in Chemistry</td>
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**Total Units** 121

1. The minimum GPA for these 71-72 units is 2.0
2. Satisfied in major or cognate
3. Satisfies Area B1
4. Satisfies Area B4
5. Satisfies Area B1/B3
6. The SELF requirement is met by completing a LD Area C, or D course with a SELF component.
7. Can be satisfied by exam.