

BIOCHEMISTRY, BS, CONCENTRATION IN FOOD SCIENCE

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

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

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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

| Code | Title | Units |
|---------------------------------------|---|-----------|
| General Education Requirements | | |
| | First-Year Seminar (FYS) | 2 |
| | Lower Division Area A: Foundational Skills | 9 |
| | Lower Division Area B: Natural Sciences ² | 0 |
| | Lower Division Area C: Arts and Humanities | 6 |
| | Lower Division Area D: Social and Behavioral Sciences | 6 |
| | Lower Division Area E: Student Enrichment and Lifelong Learning (SELF) ⁷ | 0 |
| | American Institutions: Government and History | 6 |
| | Junior Year Diversity & Reflection (JYDR) | 3 |
| | Graduation Writing Assessment Requirement (GWAR) ⁸ | 0 |
| | Upper Division Thematic Area C and D | 6 |
| | General Education Capstone ² | 0 |
| | <i>General Education Subtotal</i> | 38 |
| Major Requirements¹ | | |
| <i>Lower Division²</i> | | |
| CHEM 1000 | Foundations of Chemistry | 3 |
| CHEM 1001 | Foundations of Chemistry Laboratory | 2 |
| CHEM 1100 | Foundations of Analytical Chemistry | 2 |
| CHEM 1600 | Foundations of Physical Chemistry | 2 |
| CHEM 2200 | Foundations of Inorganic Chemistry | 2 |
| or CHEM 2240 | Foundations of Bioinorganic Chemistry | |
| CHEM 2300 | Foundations of Organic Chemistry | 3 |
| CHEM 2400 | Foundations of Biochemistry | 2 |
| CHEM 2940 | Research Methods in Biochemistry ³ | 2 |
| <i>Upper Division²</i> | | |
| CHEM 3110 | Advanced Quantitative Chemical Analysis | 3 |

| | | |
|---|---|----------------|
| | or CHEM 3500 Concepts of Food Analysis | |
| CHEM 3300 | Intermediate Organic Chemistry | 3 |
| CHEM 3301 | Organic Chemistry Laboratory I | 2 |
| CHEM 3400 | Biochemistry of Metabolic Pathways | 2 |
| CHEM 3401 | Biochemistry Laboratory I | 2 |
| CHEM 3510 | Food Science | 1 |
| CHEM 3600 | Physical Chemistry: Thermodynamics and Kinetics | 3 |
| CHEM 3948 | Seminar in Biochemical Literature | 3 |
| CHEM 4400 | Biochemistry of Nucleic Acids | 2 |
| CHEM 4500 | Food Chemistry | 3 |
| CHEM 4510 | Advanced Nutrition and Metabolism | 2 |
| CHEM 4850 | Food Industrial Practicum | 1-3 |
| CHEM 4948 | Senior Seminar in Biochemistry | 3 |
| <i>Cognates²</i> | | |
| <i>Biology⁴</i> | | |
| BIOL 2010 | Introductory Biology - Cells | 4 |
| BIOL 2110 | Introductory Biology - Animals | 4 |
| or BIOL 2120 | Introductory Biology - Plants | |
| BIOL 2230 | Microbiology | 4 |
| or BIOL 3410 | General Microbiology | |
| or BIOL 3420 | Food Microbiology | |
| <i>Mathematics⁵</i> | | |
| Select one of the following: | | 8 |
| MATH 2010 | Calculus for the Biological and Chemical Sciences & MATH 2020 I | |
| | and Calculus for Biological & Chemical Sciences II | |
| MATH 2310 | Single Variable Calculus I for Engineers & MATH 2320 | |
| | and Single Variable Calculus II for Engineers | |
| MATH 2510 | Single Variable Calculus I & MATH 2520 | |
| | and Single Variable Calculus II | |
| <i>Physics⁶</i> | | |
| Select one of the following: | | 8 |
| PHYS 2110 | College Physics I & PHYS 2120 | |
| | and College Physics II | |
| PHYS 2210 | Physics for Scientists and Engineers I & PHYS 2220 | |
| | and Physics for Scientists and Engineers II | |
| <i>Major Subtotal</i> | | 76-78 |
| Additional Units Needed Towards Graduation | | 4-6 |
| Total Units | | 118-122 |

¹ The minimum GPA for these 76-78 units is 2.0

² Satisfied in major or cognate

³ Satisfies Area B1

⁴ Satisfies Area B2/B3

⁵ Satisfies Area B4

⁶ Satisfies Area B1/B3

⁷ The SELF requirement is met by completing a LD Area C, or D course with a SELF component.

⁸ Can be satisfied by exam.