

# NATURAL SCIENCES, BS, CHEMISTRY CONCENTRATION

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

Natural Sciences Program (<https://catalog.csusb.edu/general-information/csub-information/school-natural-sciences-mathematics-engineering/natural-sciences-program/>)

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[http://www.csusb.edu/natural\\_sciences/index.html](http://www.csusb.edu/natural_sciences/index.html) ([http://www.csusb.edu/natural\\_sciences/](http://www.csusb.edu/natural_sciences/))

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

## Program Requirements

Code	Title	Units
<b>General Education Requirements</b> <sup>5</sup>		
	First-Year Seminar (FYS)	2
	Lower Division Area A: Foundational Skills	9
	Lower Division Area B: Natural Sciences <sup>5</sup>	0
	Lower Division Area C: Arts and Humanities	6
	Lower Division Area D: Social and Behavioral Sciences	3
	Lower Division Area E: Student Enrichment and Lifelong Learning (SELF) <sup>5</sup>	0
	Lower Division Area F: Ethnic Studies	3
	American Institutions: Government and History	6
	Junior Year Diversity & Reflection (JYDR) <sup>6</sup>	3
	Graduation Writing Assessment Requirement (GWAR) <sup>5</sup>	0
	Upper Division Thematic Area C and D	6
	General Education Capstone <sup>5</sup>	0
	<i>General Education Subtotal</i>	<b>38</b>
<b>Core Coursework</b>		
<i>Life Science</i>		
BIOL 2010	Introductory Biology - Cells	4
BIOL 2110	Introductory Biology - Animals	4
BIOL 2120	Introductory Biology - Plants	4
<i>Chemistry</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 2300	Foundations of Organic Chemistry	3
<i>Earth and Planetary Science</i>		
GEOL 2010	Physical Geology	4

GEOL 2040	Historical Geology	4
PHYS 1609	Introduction to Astronomy	3
or GEOL 3080	Geomorphology	
<i>Engineering</i>		
SCI 3210	Fab Lab Teaching Internship	4
<i>Mathematics</i>		
Select one of the following:		4
MATH 1050	Precalculus I <sup>1</sup>	
MATH 1040	Precalculus I and II Combined <sup>2</sup>	
MATH 1060	Precalculus II <sup>2</sup>	
Select one of the following:		4
MATH 2010	Calculus for the Biological and Chemical Sciences I <sup>3</sup>	
MATH 2510	Single Variable Calculus I	
<i>Physics</i>		
Select one of the following:		8-12
PHYS 2110 & PHYS 2120	College Physics I and College Physics II <sup>4</sup>	
PHYS 2210 & PHYS 2220 & PHYS 2230	Physics for Scientists and Engineers I and Physics for Scientists and Engineers II and Physics for Scientists and Engineers III	
<b>Chemistry Concentration</b>		
MATH 2020	Calculus for Biological & Chemical Sciences II	4
CHEM 2110	Foundations of Quantitative Chemical Analysis	3
CHEM 2200	Foundations of Inorganic Chemistry	2
CHEM 2400	Foundations of Biochemistry	2
CHEM 2900	Research Methods in Chemistry	2
CHEM 3300	Intermediate Organic Chemistry	3
CHEM 3301	Organic Chemistry Laboratory I	2
CHEM 3600	Physical Chemistry: Thermodynamics and Kinetics	3
CHEM 3908	Seminar in Chemical Literature	3
CHEM 4830	Instruction in Chemistry	1
CHEM 4840	Service Learning in Chemistry: Leadership	1
CHEM 4908	Senior Seminar in Chemistry	3
<i>Major Subtotal</i>		<b>84-88</b>
<b>Additional Units Needed Towards Graduation</b>		<b>0-1</b>
<b>Total Units</b>		<b>122-127</b>

<sup>1</sup> Or Satisfaction of the entry-level Mathematics requirement **and** a score of at least 70 on the Math Placement Exam

<sup>2</sup> Or Satisfaction of the entry-level Mathematics requirement **and** a score of at least 80 on the Math Placement Exam

<sup>3</sup> Recommended Chemistry Concentration

<sup>4</sup> Recommended

<sup>5</sup> Some major requirements may be used to satisfy GE: GEOL 2010 Physical Geology satisfies Area B1; BIOL 2010 Introductory Biology - Cells satisfies Area B2; CHEM 1001 Foundations of Chemistry Laboratory satisfies Area B3; MATH 2010 Calculus for the Biological and Chemical Sciences I satisfies the Quantitative Reasoning Foundational Skill (Area B4), CHEM 3908 Seminar in Chemical Literature satisfies SELF and GWAR, CHEM 4908 Senior Seminar in Chemistry satisfies the GE Capstone.

<sup>6</sup> It is recommended that JYDR be satisfied by EDTE 3308 Socio-Cultural Foundations of Education

See appropriate links at [https://www.csub.edu/ge/Students1/General\\_Education\\_Requirements/index.html](https://www.csub.edu/ge/Students1/General_Education_Requirements/index.html) ([https://www.csub.edu/ge/Students1/General\\_Education\\_Requirements/](https://www.csub.edu/ge/Students1/General_Education_Requirements/)) or current lists of courses satisfying university-wide General Education requirements.