

# BIOCHEMISTRY (CH38)

## Major Requirements for the CHEMISTRY B.S. Degree Starting Fall 2022 and After - Transfer Students

The Biochemistry B.S. focuses on the chemical processes in living organisms, including the structure and function of proteins, nucleic acids, lipids, and carbohydrates. It is suitable for those planning to go to graduate school as well as medical, dental, veterinary, and other professional schools. It is also suitable at the bachelor's level for jobs in the biotechnology or pharmaceutical field.

### All courses must be taken for a letter grade:

#### Lower Division Requirements:

- |  |   |
|--|---|
| <input type="checkbox"/> <b>General Chemistry</b> (CHEM 6A, 6B & 6C or 6AH, 6BH & 6CH) | <input type="checkbox"/> <b>Calculus</b> (MATH 20A, 20B, 20C & 20D)     |
| <input type="checkbox"/> <b>General Chemistry Lab</b> (CHEM 7L or 7LM)                 | <input type="checkbox"/> <b>Organic Chemistry</b> (CHEM 41A, 41B & 41C) |
| <input type="checkbox"/> <b>Physics</b> (PHYS 2A, 2B & 2C or 2D)                       | <input type="checkbox"/> <b>Organic Chemistry Lab</b> (CHEM 43A)        |
| <input type="checkbox"/> <b>Physics Lab</b> (PHYS 2BL or 2CL or 2DL)                   | <input type="checkbox"/> <b>General Biology</b> (BILD 1 and BILD 2)     |

#### Upper Division Requirements:

- |  |   |
|--|---|
| <input type="checkbox"/> <b>1. Physical Chemistry</b> (CHEM 126A & 126B recommended; CHEM 130, 131 & 132 acceptable)               |   |
| <input type="checkbox"/> <b>2. Biochemistry</b> (CHEM 114A, 114B, & 114C)  |   |
| <input type="checkbox"/> <b>3. Protein Biochemistry Lab</b> (CHEM 108)   |   |
| <input type="checkbox"/> <b>4. Recombinant DNA Lab</b> (CHEM 109)  |   |
| <input type="checkbox"/> <b>5. Analytical Chemistry Lab</b> (CHEM 100A)  |   |
| <input type="checkbox"/> <b>6. Three Restricted Biochemistry Electives:</b>  |   |
| a. Physical Chemistry of Biological Macromolecules (CHEM 113)  | g. Bioinorganic Chemistry (CHEM 125)                    |
| b. Molecular and Cellular Biochemistry (CHEM 114D)   | h. Introduction to Glycosciences (CHEM 142)             |
| c. Genome, Epigenome, and Transcriptome Editing (CHEM 115)   | i. Bioorganic and Natural Products Chemistry (CHEM 157) |
| d. Chemistry of Enzyme Catalyzed Reactions (CHEM 116)  | j. Structural Biology of Viruses (CHEM 164)             |
| e. Pharmacology and Toxicology (CHEM 118)  | k. 3D Electron Microscopy of Macromolecules (CHEM 165)  |
| f. RNA Biochemistry (CHEM 119)   | l. Medicinal Chemistry (CHEM 167)                       |
| <input type="checkbox"/> <b>7. One Additional Elective:</b>  | m. Drug Synthesis and Design (CHEM 168)                 |
| a. Any 4-unit upper division course (numbered 100-191) offered by the Dept of Chemistry & Biochemistry and taken for letter grade. |   |
| b. CHEM 199 may be petitioned to fulfill this elective.  |   |
| c. Genetics (BICD 100)   |   |
| d. Cell Biology (BICD 110)   |   |
| e. Immunology (BICD 140)   |   |
| f. Virology (BIMM 114)   |   |
| g. Microbiology (BIMM 120)   |   |
| h. Human Physiology I (BIPN 100)   |   |
| i. Human Physiology II (BIPN 102)  |   |
| j. Cellular Neurobiology (BIPN 140)  |   |

#### ASC Certification (optional):

- Complete CHEM 120A, CHEM 105A, and **ONE** of the following: CHEM 100B, 123, 143B, 143C, 143D, or 105B

## Suggested 2-year Academic Plan for Biochemistry B.S.

	FALL	WINTER	SPRING
This plan assumes completion of <b>Preparatory</b> course requirements prior to transferring to UCSD.	<b>THIRD YEAR – 1<sup>ST</sup> YEAR TRANSFER</b>		
	CHEM 114A	CHEM 114B	CHEM 114C
	MATH 20C	CHEM 100A	CHEM 108
	PHYS 2C or 2D	MATH 11 or 20D	BIOCHEM Elective
	PHYS 2BL or 2CL or 2DL	GE	GE
	<b>FOURTH YEAR – 2<sup>ND</sup> YEAR TRANSFER</b>		
	CHEM 126A	CHEM 126B	CHEM Elective
	BIOCHEM Elective	CHEM 109	BIOCHEM Elective
	BILD 1	BILD 2	GE
	GE	GE	GE

	FALL	WINTER	SPRING
This plan assumes completion of <b>ALL</b> lower division requirements prior to transferring to UCSD.	<b>THIRD YEAR – 1<sup>ST</sup> YEAR TRANSFER</b>		
	CHEM 130	CHEM 131	CHEM 132
	CHEM 120A	CHEM 120B	CHEM 143B
	GE	CHEM 100A	CHEM Elective
	GE	GE	GE
	<b>FOURTH YEAR – 2<sup>ND</sup> YEAR TRANSFER</b>		
	CHEM 105A	CHEM Elective	CHEM Elective
	CHEM 114A	CHEM Elective Lab	CHEM Elective Lab
	GE	GE	GE
	GE	GE	GE

### IMPORTANT NOTES:

- We do not recommend taking a chemistry lab your first quarter at UCSD and taking more than one lab per quarter starting your second quarter.
- The plans above do not include GE/University requirements. Check in with your college advisor.
- A minimum 2.0 major GPA is required for graduation.
- **No more than one (1) "D" grade** is allowed in **upper-division** coursework.
- Many courses have enforced prerequisites or are offered once per year. It is your responsibility to know which prerequisites are needed for each course (course catalog).
- The quarter in which a course is offered is subject to change. Please check the department website (course offerings) each Spring quarter to see a projection of classes offered next AY.
- The best time to study abroad is Fall quarter of 2<sup>nd</sup> and/or 3<sup>rd</sup> year. Study Abroad program deadlines vary by country. Visit the Study Abroad office for assistance in planning to study abroad.