

## MOLECULAR SYNTHESIS (CH36)

### Major Requirements for the **MOLECULAR SYNTHESIS** B.S. Degree Starting Fall 2022 and After – Transfer Students

The Molecular Synthesis major offers a thorough training in all aspects of the molecular synthesis of organic, inorganic, and biological substances, along with a fundamental understanding of their structure and reactivity.

This major provides an excellent preparation for employment in biotechnology, diagnostic, electronic, and pharmaceutical enterprises as well as for graduate programs in organic, bioorganic, and inorganic chemistry.

#### The following courses must be taken for a letter grade:

##### Lower Division Requirements:

- General Chemistry** (CHEM 6A, 6B & 6C or 6AH, 6BH & 6CH)
- General Chemistry Lab** (CHEM 7L or 7LM)
- Physics** (PHYS 2A, 2B & 2C or 2D)
- Physics Lab** (PHYS 2BL or 2CL or 2DL)
- Calculus** (MATH 20A, 20B, 20C & 20D)
- Organic Chemistry** (CHEM 41A, 41B & 41C)
- Organic Chemistry Lab** (CHEM 43A)
- General Biology** (BILD 1 and BILD 2)

##### Upper Division Requirements:

- 1. Physical Chemistry** (CHEM 126A & 126B recommended; CHEM 130, 131 & 132 acceptable)
- 2. Inorganic Chemistry** (CHEM 120A & 120B)
- 3. Biochemistry** (CHEM 114A)
- 4. Required Laboratory Courses:**
  - a. Analytical Chemistry Laboratory (CHEM 100A)
  - b. Organic Chemistry Laboratory II (CHEM 143B)
  - c. Physical Chemistry Laboratory (CHEM 105A)
  - d. Select 2 additional labs from the following:
    - i. Advanced Inorganic Chemistry Laboratory (CHEM 123)
    - ii. Advanced Organic Chemistry Laboratory (CHEM 143C)
    - iii. Molecular Design and Synthesis Laboratory (CHEM 143D)
- 5. Synthetic Methods** (CHEM 152)
- 6. Structural or Mechanistic Organic Chemistry** (CHEM 154 or CHEM 156)
- 7. Bioorganic or Bioinorganic Chemistry** (CHEM 125 or CHEM 157)
- 8. One Additional Elective:**
  - a. Biochemical Energetics and Metabolism (CHEM 114B)
  - b. Biosynthesis of Macromolecules (CHEM 114C)
  - c. Synthesis of Complex Molecules (CHEM 155)
  - d. Introduction to Computational Chemistry (CHEM 185)
  - e. 4-units of CHEM 199 may be petitioned.

## Sample 2-year Academic Plan for Molecular Synthesis B.S. Major

This plan assumes completion of <b>Preparatory</b> course requirements prior to transferring to UCSD.	FALL	WINTER	SPRING
	THIRD YEAR – 1 <sup>ST</sup> YEAR TRANSFER		
	CHEM 120A	CHEM 120B	CHEM 100A
	MATH 20C	MATH 20D	Additional Elective
	PHYS 2C or 2D	CHEM 143B	
	PHYS 2BL or 2CL or 2DL		
	FOURTH YEAR – 2 <sup>ND</sup> YEAR TRANSFER		
	CHEM 126A	CHEM 126B	Lab Elective
	CHEM 114A	CHEM 105A	CHEM 125 or 157
	CHEM 152	CHEM 154 or 156	
Lab Elective			

FALL	WINTER	SPRING
THIRD YEAR – 1 <sup>ST</sup> YEAR TRANSFER		
CHEM 120A	CHEM 120B	CHEM 143B
CHEM 114A	CHEM 100A	CHEM 125 or 157
FOURTH YEAR – 2 <sup>ND</sup> YEAR TRANSFER		
CHEM 126A	CHEM 126B	Lab Elective
CHEM 152	CHEM 105A	
Lab Elective	CHEM 154 or 156	

This plan assumes completion of **ALL** lower division requirements prior to transferring to UCSD.

### Important Notes:

- The plans above do not include GE/University requirements or courses required for ASC Certification.
- We do not recommend taking a lab your first quarter at UCSD and taking more than one lab per quarter.
- No more than one "D" grade is allowed in upper-division coursework. A "C-" grade is considered passing.