

# 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

FALL	WINTER	SPRING
<b>FIRST YEAR</b>		
CHEM 6A	CHEM 6B	CHEM 6C
MATH 20A	MATH 20B	MATH 20C
		CHEM 7LM or 7L
<b>SECOND YEAR</b>		
CHEM 41A	CHEM 41B	CHEM 41C
MATH 20D	CHEM 43A	PHYS 2C or 2D
PHYS 2A	PHYS 2B	PHYS 2BL or 2CL or 2DL
<b>THIRD YEAR</b>		
CHEM 120A	CHEM 120B	CHEM 105A
CHEM 126A	CHEM 126B	Chemistry Elective
CHEM 100A	CHEM 143B	
<b>FOURTH YEAR</b>		
CHEM 152	CHEM 154 or 156	CHEM 123 or 143C or 143D
CHEM 123 or 143C or 143D	CHEM 114A*	CHEM 125 or 157

\*CHEM 114A can be taken in either Fall or Winter quarter of senior year.

### Important Notes:

- Courses listed above only include **major requirements**. Speak with your college advisor for planning completion of general education and university requirements.
- No more than one (1) "D" grade is allowed in upper-division major coursework.
- A minimum 2.0 major GPA is required for graduation.