MOLECULAR SYNTHESIS (CH36)

Major Requirements for the MOLECULAR SYNTHESIS B.S. Degree Starting Fall 2017 and After

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**

1. General Chemistry (CHEM 6A, 6B & 6C or 6AH, 6BH & 6CH)
2. General Chemistry Laboratory (CHEM 7L or CHEM 7LM)
3. Physics (PHYS 2A, 2B & 2C or 2D)
4. Physics Laboratory (PHYS 2BL or 2CL or 2DL)
5. Calculus (MATH 20A, 20B, 20C & 20D)
6. Organic Chemistry (CHEM 40A, 40B & 40C or 40AH, 40BH & 40CH)
7. Organic Chemistry Laboratory (CHEM 43A or 43AM)

**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 (Must take all 5):
   - Analytical Chemistry Laboratory (CHEM 100A)
   - Organic Chemistry Laboratory II (CHEM 143B)
   - Physical Chemistry Laboratory (CHEM 105A)
   - Select 2 of the following:
     - Advanced Inorganic Chemistry Laboratory (CHEM 123)
     - Advanced Organic Chemistry Laboratory (CHEM 143C)
     - 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 course from the following:
   - Biochemical Energetics and Metabolism (CHEM 114B)
   - Biosynthesis of Macromolecules (CHEM 114C)
   - Synthesis of Complex Molecules (CHEM 155)
   - Introduction to Computational Chemistry (CHEM 185)
   - 4 units of CHEM 199 may be petitioned
## Suggested Program for Molecular Synthesis B.S. Major

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<td><strong>FRESHMAN YEAR</strong></td>
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<td>CHEM 152</td>
<td>CHEM 154 or 156</td>
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<td>CHEM 123 or 143C or 143D</td>
<td>CHEM 114A*</td>
<td>CHEM 125 or 157</td>
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*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.
- Many courses have enforced prerequisites or are offered once per year. It is your responsibility to know which prerequisites are needed for each course. [https://www.ucsd.edu/catalog/courses/CHEM.html](https://www.ucsd.edu/catalog/courses/CHEM.html)
- The quarter in which a course is offered is subject to change based on space and instructor availability. Please check the department website ([https://chemistry.ucsd.edu/ext/ugcourses.html?year=2019-2020](https://chemistry.ucsd.edu/ext/ugcourses.html?year=2019-2020)) each academic year to see a projection of classes offered by quarter.
- It is your responsibility to ensure that you meet the 48 upper-division unit requirement for your major. Check your degree audit to ensure you will meet this requirement. Transfer students should be especially careful with checking for completion of this requirement.
- Two chemistry lab electives are required among the following: CHEM 123, 143C or 143D. Lab spaces are limited, especially in CHEM 123. Make sure to enroll as soon as your first pass opens.
- Best time to study abroad is Fall quarter of Sophomore or Junior year. Education Abroad Program deadlines for upcoming year vary by country. See [EAP website](https://www.ucsd.edu/prospective students/programs/education_abroad/). See the Chemistry & Biochemistry Undergraduate Advisor for assistance in planning to study abroad.