

AIISO YUFENG LI FAMILY DEPARTMENT OF CHEMICAL AND NANOENGINEERING

Welcome!

JUNE 2024

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About the Department

Welcome to the Department of Chemical and Nano Engineering at UC San Diego (UCSD)!

In the Department of Chemical and Nano Engineering , we aim to:

- Educate tomorrow's technology leaders
- Conduct leading edge research and drive innovation
- Transfer discoveries for the benefit of society

Our educational objectives are to:

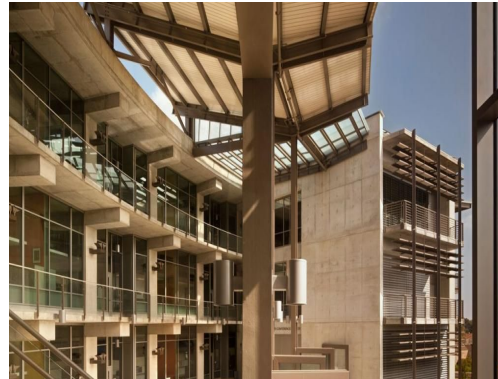
- Equip our graduates with strong technical backgrounds, enabling them to be successful in careers that cross traditional areas of applied science and engineering
- Prepare our graduates to be fluent in a multidisciplinary body of knowledge for participating in and seeding new technologies
- Train graduates into the high-technology workplace with professional, scientific, and technical skills; who conduct themselves ethically and knowledgeably in a wide range of professional environments.



Department of Chemical and Nano Engineering

The Department of Chemical and Nano Engineering was the first in the world to offer both undergraduate and graduate degrees in NanoEngineering in 2007. The department currently has over 30 faculty. Undergraduate and graduate degrees are also offered for the Chemical Engineering program.

Our renowned [faculty](#) are engaged in various research topics. We recommend reviewing their lab websites to learn more about their backgrounds and impacts in their perspective fields.



How do you meet people in CENG?

- 1 Take CENG classes
- 2 Attend events, seminars, & workshops
- 3 Participate in student organization, American Institute of Chemical Engineers (AIChE)
- 4 Form study groups in your classes
- 5 Meet with faculty, advisors, and other students



What is Chemical Engineering?

What is Chemical Engineering?

Chemical engineering involves the production and manufacturing of products through chemical processes.

The intention of the Chemical Engineering program (B.S.) is to graduate chemical engineers who are multidisciplinary and can work in a broad spectrum of industries rather than solely traditional chemical and petrochemical industries.

Areas of specialization:

- Nanotechnology
- Environmental technology
- Microelectronic device fabrication
- Materials and polymer processing
- Pharmaceutical and biotechnology
- Biomedical engineering
- Energy and thermal systems
- Control and system engineering



Chemical Engineering at UC San Diego



Major and Curriculum

Basic Curriculum

| Requirement | Units | Notes |
|--------------------------------|--------|---|
| General Education | Varied | This requirement is intended to fulfill the general education requirements (G.E.) from respective colleges. |
| Basic Sciences and Mathematics | 54 | <ul style="list-style-type: none"> • 24 units of mathematics (MATH 18 (formerly MATH 20F) and 20A-E) • 14 units of physics (PHYS 2A-C, 2CL) • 16 units of chemistry (CHEM 6A-C, 7L). |
| Chemistry Core | 12 | Three advanced chemistry electives must be selected from among the pre-approved list: CHEM 41A, 41B, 41C, 43A, 114A (or BIBC 100), 114B (or BIBC 102), 120A, 120B, 130, 131, or 132. |
| Chemical Engineering Core | 33 | This requirement covers chemical process modeling, solution thermodynamics, transport phenomena, chemical reaction engineering, process control, and unit operations (CENG 100, 101A-C, 102, 113, 120, 122). Also includes a one-unit introductory seminar (CENG 4) which is required of all incoming freshmen and transfer students. |
| Process Laboratory and Design | 20 | This requirement provides hands-on and experiential instruction in the areas of project design, unit operations, hazards analysis, ethics, and economic analysis. |
| General Engineering | 12 | This requirement covers basics in computer programming, probability and statistics, and instrumentation. |
| Technical Electives | 12 | All electives must be upper-division courses in engineering. Courses are selected from a pre-approved list. |

How to Complete a Chemical Engineering Major

- Take all major required courses for a letter grade, earning a C- or above.
- Follow the first-year or transfer plan provided by the Department of Chemical and Nano Engineering. Keep in mind that most courses are only offered once a year. Pay close attention to the required prerequisites and the order in which courses should be undertaken.
- Any deviations from the academic plans provided will require meeting with an academic advisor to develop an alternative plan.

Applying to Chemical Engineering Major

- Chemical Engineering is considered a ***selective major***, with limited number of acceptances during the application period. Currently enrolled students who want to switch into the major will be able to apply once per year (between Summer and Fall quarters)
- First-year students can apply during the summer after spring grades have posted and the completion of their 3rd or 6th quarter at UC San Diego.
- Transfer students can apply during the summer after spring grades have posted and the completion of their 3rd quarter at UC San Diego.
- The selection criteria for entry into the major will consider academic achievement in the specified screening courses and will also be aligned with UC San Diego's priorities of serving California residents, first-generation college students, and students from low-income families.

Applying to Chemical Engineering Major

- Effective Summer 2025, interested students must have complete the required screening courses and be in good academic standing. Students will be considered for the major using a point system that awards one point each for having a 3.0 GPA or higher in the major screening courses; California residency; Pell Grant eligibility; and first-generation college status.
- Students with the highest number of points will be admitted until all available spaces within the major have been filled. Ties will be broken using random selection. Being a double-major does not disqualify a student from consideration.

Screening Course Requirements

All screening courses must be taken for a letter grade and have a C- or above as a passing grade.

- First-year applicants applying after their 3rd quarter: Math 20A-C; Physics 2A-B; Chemistry 6A-C, 7L
- First-year applicants applying after their 6th quarter and Transfer Applicants: Math 18 (formerly MATH 20F), MATH 20A-D; Physics 2A-C, 2CL; Chemistry 6A-C, 7L

We recommend students interested in applying to the Chemical Engineering major meet with a department advisor to review the application requirements and to address any questions/concerns.

What Can You Do Along the Way?



Research!

- Discover what interests you!
- Develop knowledge, skills, and abilities and/or support groundbreaking research initiatives.
- Take advantage of opportunities to network and build relationships with faculty who can later write you letters of recommendation.
- Earn units toward graduation through enrollment in CENG 199 courses.

For more information on how to get involved in research, refer to our department website and the UC Undergraduate Research Hub

Research Resources

REAL Portal

- Offers research, internship, international, service learning, entrepreneurial, leadership, and other co-curricular opportunities that help students build real-world skills and apply knowledge gained in the classroom.

Undergraduate Research Hub

- Offerings for Academic Year and Summer research programs and opportunities, including the Faculty Mentorship Program

Academic Internship Program

- Resource for Academic Internships and postings, as well as options for credit-based learning opportunities through their programs.

Where Will You Go?

Pursue a Graduate Education

- Complete a Bachelor of Science degree
- Get research experience
- Network & seek advising
- Attend seminars & workshops
- Submit applications with strong letters of recommendation and be intentional in your statement of purpose
- For questions about our graduate programs (B.S./M.S., M.S., & PhD), please email ne-gradinfo@ucsd.edu

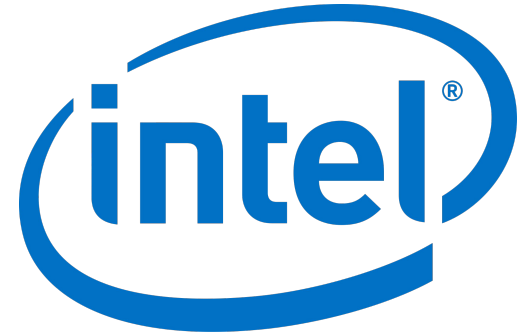


Employers

- Intel Corporation
- 3M
- Illumina
- General Dynamics
- Tesla Motors
- Johnson & Johnson
- U.S. Air Force
- Cisco Systems
- etc...



TESLA



illumina

Johnson & Johnson

Have questions?

Questions to ask Advising & Faculty

Ask Advisors questions on:

- course planning and enrollment
- petitions and EASy requests
- major requirements and exceptions
- course prerequisites
- how to enroll in special studies courses
- transfer courses and course equivalency

Ask Faculty questions on:

- classes (how you're doing, how to improve)
- course selection toward a particular career/grad program
- post-grad planning (careers, grad programs)
- research and how you can get involved
- the subject of nanoengineering, and how to develop as a scholar in the field

How to contact advisors?

- 1 Contact via the VAC (vac.ucsd.edu). Be sure to select 'Chemical Engineering' as the recipient of your message!
- 2 Come to drop-in hours!
- 3 Schedule an appointment!



Visit our advising page here!

Thank you!