

LMU FRANK R. SEAVER COLLEGE OF SCIENCE AND ENGINEERING

Administration

- Dean: S. W. Tina Choe
- Associate Dean: Suzanne Larson
- Associate Dean: David Moffet
- Associate Dean: Nazmul Ula

College Mission Statement

The LMU Frank R. Seaver College of Science and Engineering is dedicated to providing outstanding educational opportunities in science, engineering, and mathematics in a mentoring environment to an increasingly diverse student body. The College emphasizes the development of the whole person through its focus on ethical behavior and service to society.

The Graduate Programs in the Frank R. Seaver College of Science and Engineering provide opportunities for working professionals to enhance their skills and knowledge through modern, professionally rigorous and conveniently administered curricula which balance theory and practice in the areas of engineering, engineering management and leadership, computer and environmental science and the teaching of mathematics to advance their careers, serve the needs of society and meet the challenges of an ever-changing, complex world.

College Goals

Particularly applicable to the College are these goals:

1. to develop in the student the understanding that education is a self-discipline, and to place a greater responsibility for learning on the individual,
2. to integrate ethics into the curriculum in order to develop personal and professional integrity,
3. to help the student to become cognizant of the changing needs of humankind while interpreting and implementing the ever-increasing body of knowledge,
4. to encourage the student to recognize the wide applicability of scientific, engineering, and mathematical methods and to become skillful in their use,
5. to prepare the student for a world of accelerating scientific and technological change,
6. to impress upon the student that education must be a continuous process throughout one's professional career, and
7. to enable the Loyola Marymount graduate, through theological and philosophical studies, to make absolute and genuinely intellectual decisions and commitments about truth as it exists in the world and about one's own nature as a human being.

Programs

The College offers degree programs in Applied Mathematics, Applied Physics, Biochemistry, Biology, Chemistry, Civil Engineering, Computer Engineering, Computer Science, Electrical Engineering, Environmental Science, Health and Human Sciences, Individualized Studies,

Mathematics, Mechanical Engineering, Physics, Statistics and Data Science, and Systems Engineering. Frank R. Seaver College of Science and Engineering faculty also teach the science, technology, and mathematics component of the University Core curriculum. Courses numbered from 260-279 are designed specifically to meet the University Core requirements in Explorations: Nature of Science, Technology, and Mathematics (ESTM) for students not majoring within the College. With the exception of MATH 101 Algebra, other lower-division courses in the College may also satisfy University Core requirements, especially Foundations: Quantitative Reasoning (FQTR). Check with your Dean's office.

Application of General University Requirements

The University requirements for admission and graduation and all general rules and regulations of the University as set forth in this Bulletin are applicable to and binding upon all students enrolled in the Frank R. Seaver College of Science and Engineering.

Degrees Offered

Bachelor of Arts in:

- Biology
- Biology (Secondary Science Education Emphasis)
- Mathematics
- Mathematics (Mathematics Education Emphasis)

Bachelor of Science in Engineering in:

- Civil Engineering
- Computer Engineering
- Electrical Engineering
- Mechanical Engineering

Bachelor of Science in:

- Applied Mathematics
- Applied Physics
- Biochemistry
- Biology
- Chemistry
- Computer Science
- Environmental Science
- Health and Human Sciences
- Individualized Studies
- Mathematics
- Physics
- Statistics and Data Science

Master of Arts in Teaching in:

- Mathematics

Master of Science in Engineering in:

- Civil Engineering
- Computer Engineering

- Electrical Engineering
- Mechanical Engineering

Master of Science in:

- Computer Science
- Environmental Science
- Healthcare Systems Engineering
- Systems Engineering

Dual degrees of Master of Science (offered by the Frank R. Seaver College of Science and Engineering) and MBA (offered by the Hilton College of Business) in:

- Civil Engineering
- Computer Science
- Electrical Engineering
- Healthcare Systems Engineering
- Mechanical Engineering
- Systems Engineering

In addition, the Frank R. Seaver College of Science and Engineering offers graduate Certificate Programs in Aeronautics and Space Systems, Additive Manufacturing, Climate Change Solutions, Computer Science/ Software Architecture, Cybersecurity, Groundwater Management, Internet of Things, Lean Healthcare Systems, Machine Learning, Project Management, Solutions for Sustainable Development, Health, and Equity, Sustainability, Systems Engineering, Systems Engineering/Aeronautics and Space Systems, Water and Wastewater Treatment, and Water Quality Management and Post-Baccalaureate Programs in Pre-Medical, Pre-Dental and Pre-Allied Health.

Teacher Preparation Programs in Biology, Chemistry, and Mathematics

Program Directors: Blake Mellor (Mathematics) and Carolyn Viviano (Biology and Chemistry)

The Frank R. Seaver College of Science and Engineering offers state accredited subject matter preparation programs in mathematics, biology, and chemistry. These programs meet the State of California subject matter requirements for a secondary teaching credential; a student who has successfully completed one of our subject matter programs (refer to the Mathematics, Biology, or Chemistry section of the University Bulletin) will receive a waiver for the California Subject Examinations for Teachers (CSET).

All three programs were designed in collaboration with the School of Education to enable students to complete their subject matter requirements and their preliminary credential in four years; however, this does require summer coursework. Alternatively, students can choose to complete the subject matter program in four years and obtain their credential as a masters level graduate student (refer to the School of Education section of the University Bulletin). It is recommended that students entering one of the subject matter programs meet with the program director to discuss their options before making a decision. The College also offers courses in mathematics and science to support the multiple subject credential program for teaching elementary school (see the Liberal Studies section in the Liberal Arts part of the University Bulletin).

All students interested in teaching mathematics or science at the secondary level should inform their departmental advisors as soon as

possible and should also contact the Center for Undergraduate Teacher Preparation (CUTP).

The Center for Student Success in Science and Engineering

The Center for Student Success (CSS) in the Frank R. Seaver College of Science and Engineering coordinates and provides opportunities aimed at enhancing undergraduate students' academic performance and career prospects. The CSS offers students information that is integral to a successful educational experience. The CSS collaborates with other divisions on campus to provide students with information regarding career development, study abroad, and service opportunities to enhance the student's academic, professional, and personal development. In addition, the CSS offers support to prepare for admission into health professional schools, including a Pre-Medical, Pre-Dental and Pre-Allied Health Post-Baccalaureate programs. These elements reinforce the shared mission of the University of encouragement of learning and the education of the whole person. For more information about the Center for Student Success, please contact the office at 310.338.2833 or CSS@lmu.edu.

Current Students Interested in Transferring to the Frank R. Seaver College of Science and Engineering (CSE)

Students who are currently enrolled in a major at LMU outside of CSE but are interested in transferring to the CSE are encouraged to apply as early as possible. Students must have completed a semester of calculus (MATH 122 Calculus for the Life Sciences I/MATH 131 Calculus I) and a semester of general chemistry (CHEM 110 General Chemistry I/CHEM 114 General Chemistry for Engineers) with a minimum grade of C (2.0) in each class. Students interested in the Computer Science, Mathematics or Statistics and Data Science major do not need the chemistry requirement. Individual programs may have additional requirements; refer to the specific department's section of the University Bulletin for details. A minimum cumulative GPA of 3.0 is preferred for admission to the college. The Associate Dean of CSE and the Department Chair will evaluate the application when the student has met the minimum requirements.

Attainment of minimum requirements may not always be sufficient to secure approval of transfer request.

Core Curriculum for Students in the Frank R. Seaver College of Science and Engineering

CSE students enrolled in B.A. or B.S. degrees within the Frank R. Seaver College of Science and Engineering will follow the core curriculum as described below.

Science and Mathematics majors are required to complete **32 semester hours** of core courses to satisfy the University Core requirements. Engineering majors are required to complete **30 semester hours of Core**.

1. CSE students must complete **one course from each** of the following **core areas**:

Code	Title	Semester Hours
Core Area		
<i>Foundations</i>		
	First Year Seminar	
<i>Rhetorical Arts</i>		
	Theological Inquiry	
	Philosophical Inquiry	
	Studies in American Diversity	
<i>Integrations</i>		
	Faith and Reason	
	Ethics and Justice	

2. To fulfill the rest of the core semester hour requirements, students take a combination of courses in the categories listed below taking at least one course under Explorations.

Code	Title	Semester Hours
Core Area		
<i>Explorations</i>		
	Historical Analysis and Perspective	
	Understanding Human Behavior	
	Creative Experience	
<i>Integrations</i>		
	Interdisciplinary Connections	

3. Flagged Course requirements (200 level or higher): One Engaged Learning#flag is required. Flagged courses will typically be courses that satisfy other Core, major, or elective requirements, so a flagged course will be incorporated in the student's four years of study. Foundations courses carry no flags.

Quantitative Reasoning and Nature of Science, Technology, and Mathematics Core categories are met by the curriculum of the major in CSE.

Science, Engineering, and Mathematics

Science, Engineering, and Mathematics (SECM) courses are offered by the Frank R. Seaver College of Science and Engineering.

- Civil and Environmental Engineering (<https://bulletin.lmu.edu/schools-colleges/science-engineering/civil-environmental-engineering/>)
 - Civil Engineering, B.S.E. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/civil-environmental-engineering/civil-engineering-bse/>)
 - Dual M.S. Environmental Science/Master of Business Administration (<https://bulletin.lmu.edu/schools-colleges/science-engineering/civil-environmental-engineering/dual-ms-environmental-science-mba/>)
 - Dual M.S.E. Civil Engineering/Master of Business Administration (<https://bulletin.lmu.edu/schools-colleges/science-engineering/civil-environmental-engineering/dual-mse-civil-engineering-mba/>)
 - Civil Engineering, M.S.E. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/civil-environmental-engineering/civil-engineering-mse/>)
 - Environmental Science, M.S. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/civil-environmental-engineering/environmental-science-ms/>)
 - Climate Change Solutions Certificate (<https://bulletin.lmu.edu/schools-colleges/science-engineering/civil-environmental-engineering/climate-change-solutions-certificate/>)
 - Groundwater Management Certificate (<https://bulletin.lmu.edu/schools-colleges/science-engineering/civil-environmental-engineering/groundwater-management-certificate/>)
 - Solutions for Sustainable Development, Health, and Equity Certificate (<https://bulletin.lmu.edu/schools-colleges/science-engineering/civil-environmental-engineering/solutions-sustainable-development-health-equity-certificate/>)
 - Sustainability Certificate (<https://bulletin.lmu.edu/schools-colleges/science-engineering/civil-environmental-engineering/sustainability-certificate/>)
 - Water and Wastewater Treatment Certificate (<https://bulletin.lmu.edu/schools-colleges/science-engineering/civil-environmental-engineering/water-wastewater-treatment-certificate/>)
 - Water Quality Management Certificate (<https://bulletin.lmu.edu/schools-colleges/science-engineering/civil-environmental-engineering/water-quality-management-certificate/>)
- Computer Science (<https://bulletin.lmu.edu/schools-colleges/science-engineering/computer-science/>)
 - Computer Science, B.S. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/computer-science/computer-science-bs/>)
 - Dual M.S. Computer Science/Master of Business Administration (<https://bulletin.lmu.edu/schools-colleges/science-engineering/computer-science/dual-ms-computer-science-mba/>)
 - Computer Science Minor (<https://bulletin.lmu.edu/schools-colleges/science-engineering/computer-science/computer-science-minor/>)
 - Interactive, Gaming, and Immersive Media Minor (<https://bulletin.lmu.edu/schools-colleges/science-engineering/computer-science/interactive-gaming-immersive-media-minor/>)
 - Computer Science, M.S. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/computer-science/computer-science-ms/>)
- Electrical and Computer Engineering (<https://bulletin.lmu.edu/schools-colleges/science-engineering/electrical-computer-engineering/>)

- Biology (<https://bulletin.lmu.edu/schools-colleges/science-engineering/biology/>)
 - Biology, B.A. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/biology/biology-ba/>)
 - Biology, B.S. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/biology/biology-bs/>)
 - Biology Minor (<https://bulletin.lmu.edu/schools-colleges/science-engineering/biology/biology-minor/>)
- Chemistry and Biochemistry (<https://bulletin.lmu.edu/schools-colleges/science-engineering/chemistry-biochemistry/>)
 - Biochemistry, B.S. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/chemistry-biochemistry/biochemistry-bs/>)
 - Chemistry, B.S. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/chemistry-biochemistry/chemistry-bs/>)
 - Biochemistry Minor (<https://bulletin.lmu.edu/schools-colleges/science-engineering/chemistry-biochemistry/biochemistry-minor/>)
 - Chemistry Minor (<https://bulletin.lmu.edu/schools-colleges/science-engineering/chemistry-biochemistry/chemistry-minor/>)

- Computer Engineering, B.S.E. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/electrical-computer-engineering/computer-engineering-bse/>)
- Electrical Engineering, B.S.E. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/electrical-computer-engineering/electrical-engineering-bse/>)
- Dual M.S.E. Electrical Engineering/Master of Business Administration (<https://bulletin.lmu.edu/schools-colleges/science-engineering/electrical-computer-engineering/dual-mse-electrical-engineering-mba/>)
- Computer Engineering, M.S.E. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/electrical-computer-engineering/computer-engineering-mse/>)
- Electrical Engineering Minor (<https://bulletin.lmu.edu/schools-colleges/science-engineering/electrical-computer-engineering/electrical-engineering-minor/>)
- Electrical Engineering, M.S.E. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/electrical-computer-engineering/electrical-engineering-mse/>)
- Environmental Science (<https://bulletin.lmu.edu/schools-colleges/science-engineering/environmental-science/>)
 - Environmental Science, B.S. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/environmental-science/environmental-science-bs/>)
 - Environmental Science Minor (<https://bulletin.lmu.edu/schools-colleges/science-engineering/environmental-science/environmental-science-minor/>)
- General Engineering (<https://bulletin.lmu.edu/schools-colleges/science-engineering/general-engineering/>)
- Health and Human Sciences (<https://bulletin.lmu.edu/schools-colleges/science-engineering/health-human-sciences/>)
 - Health and Human Sciences, B.S. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/health-human-sciences/health-human-sciences-bs/>)
 - Health and Human Sciences Minor (<https://bulletin.lmu.edu/schools-colleges/science-engineering/health-human-sciences/health-human-sciences-minor/>)
- Healthcare Systems Engineering (<https://bulletin.lmu.edu/schools-colleges/science-engineering/healthcare-systems-engineering/>)
 - Dual M.S. Healthcare Systems Engineering/Master of Business Administration (<https://bulletin.lmu.edu/schools-colleges/science-engineering/healthcare-systems-engineering/dual-ms-healthcare-systems-engineering-mba/>)
 - Healthcare Systems Engineering, M.S. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/healthcare-systems-engineering/healthcare-systems-engineering-ms/>)
 - Lean Healthcare Systems Certificate (<https://bulletin.lmu.edu/schools-colleges/science-engineering/healthcare-systems-engineering/lean-healthcare-systems-certificate/>)
- Mathematics, Statistics and Data Science (<https://bulletin.lmu.edu/schools-colleges/science-engineering/mathematics/>)
 - Mathematics, B.A. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/mathematics/mathematics-ba/>)
 - Mathematics, B.A. (Mathematics Education Emphasis) (<https://bulletin.lmu.edu/schools-colleges/science-engineering/mathematics/mathematics-ba-education-emphasis/>)
 - Applied Mathematics, B.S. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/mathematics/applied-mathematics-bs/>)
 - Mathematics, B.S. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/mathematics/mathematics-bs/>)
 - Statistics and Data Science, B.S. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/mathematics/statistics-data-science-bs/>)
 - Mathematics Minor (<https://bulletin.lmu.edu/schools-colleges/science-engineering/mathematics/mathematics-minor/>)
 - Statistics and Data Science Minor (<https://bulletin.lmu.edu/schools-colleges/science-engineering/mathematics/statistics-data-science-minor/>)
 - Mathematics for Teaching, M.A.T. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/mathematics/mathematics-teaching-mat/>)
- Mechanical Engineering (<https://bulletin.lmu.edu/schools-colleges/science-engineering/mechanical-engineering/>)
 - Mechanical Engineering, B.S.E. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/mechanical-engineering/mechanical-engineering-bse/>)
 - Dual M.S.E. Mechanical Engineering/Master of Business Administration (<https://bulletin.lmu.edu/schools-colleges/science-engineering/mechanical-engineering/dual-mse-mechanical-engineering-mba/>)
 - Mechanical Engineering, M.S.E. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/mechanical-engineering/mechanical-engineering-mse/>)
 - Additive Manufacturing Certificate (<https://bulletin.lmu.edu/schools-colleges/science-engineering/mechanical-engineering/additive-manufacturing-certificate/>)
- Physics (<https://bulletin.lmu.edu/schools-colleges/science-engineering/physics/>)
 - Applied Physics, B.S. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/physics/applied-physics-bs/>)
 - Physics, B.S. (<https://bulletin.lmu.edu/schools-colleges/science-engineering/physics/physics-bs/>)
 - Physics Minor (<https://bulletin.lmu.edu/schools-colleges/science-engineering/physics/physics-minor/>)
- Pre-Medical, Pre-Dental and Pre-Allied Health Post-Baccalaureate Programs (<https://bulletin.lmu.edu/schools-colleges/science-engineering/premedical-predental-preallied-health-post-baccalaureate-programs/>)
- Systems Engineering and Engineering Management (<https://bulletin.lmu.edu/schools-colleges/science-engineering/systems-engineering-management/>)
 - Dual M.S. Systems Engineering/Master of Business Administration (<https://bulletin.lmu.edu/schools-colleges/science-engineering/systems-engineering-management/dual-ms-systems-engineering-mba/>)
 - Systems Engineering, M.S., with an Option for a Technical Focus (<https://bulletin.lmu.edu/schools-colleges/science-engineering/systems-engineering-management/systems-engineering-ms-option-technical-focus/>)
- Aeronautics and Space Systems Certificate (<https://bulletin.lmu.edu/schools-colleges/science-engineering/systems-engineering-management/aeronautics-space-systems-certificate/>)
- Computer Science/Software Architecture Certificate (<https://bulletin.lmu.edu/schools-colleges/science-engineering/systems-engineering-management/computer-science-software-architecture-certificate/>)

- Cybersecurity Certificate (<https://bulletin.lmu.edu/schools-colleges/science-engineering/systems-engineering-management/cybersecurity-certificate/>)
- Engineering Project Management Certificate (<https://bulletin.lmu.edu/schools-colleges/science-engineering/systems-engineering-management/engineering-project-management-certificate/>)
- Systems Engineering Certificate (<https://bulletin.lmu.edu/schools-colleges/science-engineering/systems-engineering-management/systems-engineering-certificate/>)