

ENGINEERING WITH AN ENVIRONMENTAL ENGINEERING SPECIALIZATION (BS)

Environmental engineers identify, analyze and design solutions to environmental problems, which disproportionately impact historically disadvantaged communities. Addressing environmental issues, such as water, wastewater, air quality, and solids, requires taking into account the underlying impacts of climate change that threaten the global community. Our students learn environmental analysis and management for the water and wastewater treatment industries.

Related Programs

Major

- Engineering with a Biomedical Engineering Specialization (BS) (<https://catalog.luc.edu/undergraduate/arts-sciences/engineering/biomedical-engineering-bs/>)
- Engineering with a Computer Engineering Specialization (BS) (<https://catalog.luc.edu/undergraduate/arts-sciences/engineering/computer-engineering-bs/>)

Curriculum

| Code | Title | Hours |
|--------------------------------------|---|-------|
| Engineering Design | | |
| ENGR 101 | Introduction to Engineering Design | 4 |
| ENGR 201 | Experiential Engineering | 3 |
| Engineering Core | | |
| ENGR 102 | Engineering Freshman Seminar | 1 |
| ENGR 321 | Electronic Circuits & Devices | 2 |
| ENGR 322 | Chemical & Thermal Processes | 3 |
| ENGR 323 | Digital Electronic & Computer Engineering | 3 |
| ENGR 324 | Mechanics | 3 |
| ENGR 324L | Core Engineering Lab | 1 |
| ENGR 325 | Materials Engineering | 3 |
| Engineering Systems | | |
| ENGR 311 | Engineering Systems I | 3 |
| ENGR 312 | Engineering Systems II | 3 |
| ENGR 313 | Engineering Systems III | 3 |
| Specialty Engineering Courses | | |
| ENGR 361 | Fundamentals of Environmental Engineering | 3 |
| ENGR 361L | Fundamentals of Environmental Engineering Lab | 1 |
| ENGR 362 | Water & Wastewater Engineering | 3 |
| ENGR 363 | Contemporary Environmental Engineering Challenges | 3 |
| ENGR 383 | Environmental Engineering Capstone Design I | 4 |
| ENGR 393 | Environmental Engineering Capstone Design II | 4 |
| Math & Science Courses | | |
| BIOL 101 & BIOL 111 | General Biology I and General Biology I Lab | 4 |
| CHEM 171 | General Chemistry for Engineering Science Majors | 3 |

| | | |
|----------------------|--|-----------|
| CHEM 173 | General Chemistry Lab for Engineering Science Majors | 1 |
| COMP 170 | Introduction to Object-Oriented Programming | 3 |
| MATH 161 | Calculus I | 4 |
| MATH 162 | Calculus II | 4 |
| MATH 263 | Multivariable Calculus | 4 |
| MATH 266 | Differential Equations and Linear Algebra | 3 |
| PHYS 121 | College Physics I with Calculus Lecture/Discussion | 3 |
| PHYS 122 & PHYS 112L | College Physics II with Calculus Lecture/Discussion and College Physics Lab II | 4 |
| STAT 203 | Introduction to Probability & Statistics | 3 |
| Total Hours | | 86 |

Suggested Sequence of Courses

| Course | Title | Hours |
|-----------------------------------|---|-----------|
| Freshman | | |
| Fall | | |
| ENGR 101 | Introduction to Engineering Design ¹ | 4 |
| MATH 161 | Calculus I ² | 4 |
| BIOL 101 | General Biology I ² | 3 |
| BIOL 111 | General Biology I Lab ² | 1 |
| PHYS 121 | College Physics I with Calculus Lecture/Discussion ² | 3 |
| UNIV 101 | First Year Seminar ³ | 1 |
| Hours | | 16 |
| Spring | | |
| COMP 170 | Introduction to Object-Oriented Programming ² | 3 |
| MATH 162 | Calculus II ² | 4 |
| PHYS 122 | College Physics II with Calculus Lecture/Discussion ² | 3 |
| PHYS 112L | College Physics Lab II ² | 1 |
| UCWR 110 | Writing Responsibly ³ | 3 |
| LUC Core ³ | | 3 |
| ENGR 102 | Engineering Freshman Seminar ⁴ | 1 |
| Hours | | 18 |
| Sophomore | | |
| Fall | | |
| ENGR 201 | Experiential Engineering ¹ | 3 |
| MATH 263 | Multivariable Calculus ² | 4 |
| CHEM 171 | General Chemistry for Engineering Science Majors ² | 3 |
| CHEM 173 | General Chemistry Lab for Engineering Science Majors ² | 1 |
| LUC Core ³ | | 3 |
| Foreign Language 101 ³ | | 3 |
| Hours | | 17 |
| Spring | | |
| ENGR 311 | Engineering Systems I ⁵ | 3 |
| ENGR 321 | Electronic Circuits & Devices ⁴ | 2 |
| MATH 266 | Differential Equations and Linear Algebra ² | 3 |

| | | |
|-----------------------------------|--|------------|
| LUC Core ³ | | 3 |
| LUC Core ³ | | 3 |
| Foreign Language 102 ³ | | 3 |
| Hours | | 17 |
| Junior | | |
| Fall | | |
| ENGR 312 | Engineering Systems II ⁵ | 3 |
| ENGR 322 | Chemical & Thermal Processes ⁴ | 3 |
| ENGR 323 | Digital Electronic & Computer Engineering ⁴ | 3 |
| ENGR 324 | Mechanics ⁴ | 3 |
| ENGR 324L | Core Engineering Lab ⁴ | 1 |
| LUC Core ³ | | 3 |
| Hours | | 16 |
| Spring | | |
| ENGR 313 | Engineering Systems III ⁵ | 3 |
| ENGR 325 | Materials Engineering ⁴ | 3 |
| ENGR 361 | Fundamentals of Environmental Engineering ⁶ | 3 |
| ENGR 361L | Fundamentals of Environmental Engineering Lab ⁶ | 1 |
| STAT 203 | Introduction to Probability & Statistics ² | 3 |
| LUC Core ³ | | 3 |
| Hours | | 16 |
| Senior | | |
| Fall | | |
| ENGR 362 | Water & Wastewater Engineering ⁶ | 3 |
| ENGR 383 | Environmental Engineering Capstone Design I ⁶ | 4 |
| LUC Core ³ | | 3 |
| LUC Core ³ | | 3 |
| LUC Core ³ | | 3 |
| Hours | | 16 |
| Spring | | |
| ENGR 363 | Contemporary Environmental Engineering Challenges ⁶ | 3 |
| ENGR 393 | Environmental Engineering Capstone Design II ⁶ | 4 |
| LUC Core ³ | | 3 |
| LUC Core ³ | | 3 |
| Hours | | 13 |
| Total Hours | | 129 |

¹ Engineering Design² Math & Science Courses³ LUC Core/Foreign Language⁴ Engineering Core⁵ Engineering Systems⁶ Specialty Engineering Courses

Learn more at [LUC.edu/engineering](https://www.luc.edu/engineering/) (<https://www.luc.edu/engineering/>)

College of Arts and Sciences Graduation Requirements

All Undergraduate students in the College of Arts and Sciences are required to take two Writing Intensive courses (6 credit hours) as well as complete a foreign language requirement at 102-level or higher (3 credit hours) or a language competency test. More information can be found here (<https://www.luc.edu/cas/college-requirements/>).

Additional Undergraduate Graduation Requirements

All Undergraduate students are required to complete the University Core, at least one Engaged Learning course, and UNIV 101. SCPS students are not required to take UNIV 101. Nursing students in the Accelerated BSN program are not required to take core or UNIV 101. You can find more information in the University Requirements (<https://catalog.luc.edu/undergraduate/university-requirements/>) area.

Learning Outcomes

Engineering - ABET Student Outcomes

Student outcomes describe what students are expected to know and be able to do by the time of graduation. Our students will possess:

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering and mathematics.
- An ability to apply engineering process to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.