ENGINEERING WITH A COMPUTER ENGINEERING SPECIALIZATION (BS)

Computer Engineers conceive and develop the next wave of computing advances, innovations, and devices that are used in modern computers and computer-controlled systems. Our students learn how to design and integrate hardware and software components that are used in computer equipment such as microelectronic chips, circuit boards and controllers. In addition, our students learn the fundamentals utilized in computer- controlled systems such as computer networks, cyber-physical systems, sensors and actuators, smart grids, machine learning and artificial intelligence.

Related Programs

Major

- Engineering with a Biomedical Engineering Specialization (BS) (https://catalog.luc.edu/undergraduate/arts-sciences/engineering/biomedical-engineering-bs/)
- Engineering with an Environmental Engineering Specialization (BS) (https://catalog.luc.edu/undergraduate/arts-sciences/engineering/environmental-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 351	Electronic Circuit Analysis and Design	3
ENGR 351L	Circuit Design Laboratory	1
ENGR 352	Methods and Algorithms for Computer Engineers	3
ENGR 353	Programmable Systems	3
ENGR 382	Computer Engineering Capstone Design I	4
ENGR 392	Computer 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

The below sequence of courses is meant to be used as a suggested path for completing coursework. An individual student's completion of requirements depends on course offerings in a given term as well as the start term for a major or graduate study. Students should consult their advisor for assistance with course selection.

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 351	Electronic Circuit Analysis and Design [6]	3
ENGR 351L	Circuit Design Laboratory [6]	3
STAT 203	Introduction to Probability & Statistics [2]	3
LUC Core [3]		3
	Hours	**18**
Senior		
Fall		
ENGR 352	Methods and Algorithms for Computer Engineers [6]	3
ENGR 382	Computer Engineering Capstone Design I [6]	4
LUC Core [3]		3
LUC Core [3]		3
LUC Core [3]		3
	Hours	**16**
Spring		
ENGR 353	Programmable Systems [6]	3
ENGR 392	Computer Engineering Capstone Design II [6]	4
LUC Core [3]		3
LUC Core [3]		3
	Hours	**13**
	Total Hours	**131**

1. Engineering Design
2. Math & Science Courses
3. LUC Core/Foreign Language
4. Engineering Core
5. Engineering Systems
6. Specialty Engineering Courses

Learn more at 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.