ENGINEERING WITH A BIOMEDICAL ENGINEERING SPECIALIZATION (BS)

Biomedical Engineers blend traditional engineering techniques with biological sciences and medicine to improve the quality of human health and life. We believe all patients should receive high-quality medical devices, regardless of their ability to pay. Our students learn to design and test robust medical device software, in preparation for a medical device to be cleared or approved by the Food and Drug Administration.

Curriculum

Code	Title	Hours
Engineering Design		
ENGR 101	Introduction to Engineering Design	4
ENGR 201	Experiential Engineering	3
Engineering Core		
ENGR 102	Engineering Science Freshman Seminar	1
ENGR 321	Electronic Circuits & Devices	2
ENGR 322	Chemical & Thermal Processes	3
ENGR 323	Digital Electronic & Computer Engineering	2
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 341	Medical Device Systems	3
ENGR 341L	Medical Device Systems Laboratory	1
ENGR 342	Medical Device Software Development I	3
ENGR 343	Medical Device Software Development II	3
ENGR 381	Biomedical Engineering Capstone Design I	4
ENGR 391	Biomedical Engineering Capstone Design II	3
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 Lec/Dis	3
PHYS 122 & PHYS 112L	College Physics II Lec/Dis and College Physics Lab II	4
STAT 203	Introduction to Probability & Statistics	3
Total Hours		**84**

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 Lec/Dis [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 Lec/Dis [2]	3
PHYS 112L	College Physics Lab II [2]	1
UCWR 110	Writing Responsibly [3]	3
LUC Core [3]		3
ENGR 102	Engineering Science 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]	2
ENGR 324	Mechanics [4]	3
ENGR 324L	Core Engineering Lab [4]	1
LUC Core [3]		3
	Hours	**15**
Spring		
ENGR 313	Engineering Systems III [5]	3
ENGR 325	Materials Engineering [4]	3

ENGR 341	Medical Device Systems [6]	3
ENGR 341L	Medical Device Systems Laboratory [6]	1
STAT 203	Introduction to Probability & Statistics [2]	3
LUC Core [3]		3
	Hours	**16**
Senior		
Fall		
ENGR 342	Medical Device Software Development I [6]	3
ENGR 381	Biomedical Engineering Capstone Design I [6]	4
LUC Core [3]		3
LUC Core [3]		3
LUC Core [3]		3
	Hours	**16**
Spring		
ENGR 343	Medical Device Software Development II [6]	3
ENGR 391	Biomedical Engineering Capstone Design II [6]	3
LUC Core [3]		3
LUC Core [3]		3
	Hours	**12**
	Total Hours	**127**

[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 - 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:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering and mathematics.
2. 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.
3. An ability to communicate effectively with a range of audiences.
4. 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.
5. 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.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.