ELECTRICAL ENGINEERING, BS

Program Description

The Electrical Engineering bachelor's degree program is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org. It combines topics from science, math and engineering in order to study and develop solutions to electrical and computer problems. The program contains a strong laboratory emphasis with plenty of opportunities to work on real electrical systems. Some of the program highlights are:

- The teaching emphasis is on preparing you to solve real-world problems.
- You have three choices for fulfillment of your senior year experience. You may pursue opportunities in cooperative education, industry-based projects or research projects.
- You will study assembly language, circuit design, microcontroller hardware and software, digital electronics, and networks.
- Engineering courses begin in your freshman year.
- The program provides an excellent mix of theory and practical laboratory experiences.

Your Degree Options — You may choose to follow one of the following degree concentrations while studying electrical engineering at LSSU. They are: Robotics and Automation Concentration and Digital Systems Concentration. The Robotics and Automation Concentration provides you with a strong background in robotics, machine vision, sensors, communications and automation. The Digital Systems Concentration will give you additional knowledge in digital design, digital signal processing and microcontroller systems.

Cooperative Education: Opportunities are available as part of this program for students who are qualified. A certificate that documents this practical training is available.

Program Learning Outcomes

- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- Apply engineering design 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
- Communicate effectively with a range of audiences
- 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
- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- Acquire and apply new knowledge as needed, using appropriate learning strategies

Degree Requirements

Code	Title	Hours
Departmental Requirements		
Mathematics		
MATH 151	Calculus I (a grade of C or better required)	4
MATH 152	Calculus II (a grade of C or better required)	4
MATH 251	Calculus III	4
MATH 308	Probability and Math Stats	3
MATH 310	Differential Equations (a grade of C or better required)	3
Sciences		
CHEM 115	General Chemistry I	5
PHYS 231	Appl Phys Engineer/Scientist I (a grade of C or better required)	4
PHYS 232	App Phy Engineer Scientist II	4
Engineering		
EGEE 125	Digital Fundamentals (a grade of C or better required)	4
EGEE 210	Circuit Analysis (a grade of C or better required)	4
EGEE 250	Microcontroller Fundamentals	4
EGEE 280	Introduction Signal Processing (a grade of C or better required)	4
EGEE 310	Network Analysis	4
EGEE 330	Electro-Mechanical Systems	4
EGEE 345	Fund of Engr Electromagnetics	3
EGEE 370	Electronic Devices	4
EGEE 475	Power Electronics	4
EGNR 101	Introduction to Engineering	2
EGNR 140	Linear Alg Num Apps Engineers	2
EGNR 265	C Programming (a grade of C or better required)	3
EGNR 340	Numerical Methods Engineers	1
EGNR 346	Probability/Stats Lab Engineer	1
EGEM 220	Statics	3
EGNR 460	Engineering Res Project I	4
Technical Electives		
Select a minimum of 13 credits from the following: [1]		13
(No more than 2 courses at the 200-Level)		
CSCI 265	Int to Artificial Intelligence	
EGEE 320	Digital Design (or higher level EGEE)	
EGEM 320	Dynamics	
EGME 225	Mechanics of Materials (or higher EGME)	
EGNR 261	Energy Systems/Sustainability	
EGRS 215	Introduction to Robotics	
EGRS 235	Industry 4.0	
EGRS 305	Robot Safe/Collabtive Robotics	
EGRS 325	Industrial Control Systems	
EGRS 365	Programmable Logic Controllers	
EGRS 372	Mobile Robotics	
EGRS 375	Cyber-Physical Sys & Security	
EGRS 461	Design of Control Systems	
MATH 215	Fund Concepts of Mathematics (or higher MATH)	

or any course from the listed concentrations	
Total Hours	**95**

[1] For students obtaining a concentration, the concentration electives must meet the requirements listed below. Otherwise, all 13 technical elective credits may be selected from the Technical Electives List.

Robotics and Automation Concentration

(C or better grade required in all courses)

Code	Title	Hours
EGRS 385	Robotics Engineering	4
EGRS 430	Sys Integration/Machine Vision	4
EGRS 435	Automated Manufacturing System	3
Total Hours		**11**

Digital Systems

(C or better grade required in all courses)

Code	Title	Hours
EGEE 320	Digital Design	4
EGEE 355	Microcontroller Systems	4
EGEE 425	Digital Signal Processing	3
Total Hours		**11**

Senior Sequence

Complete one of the following sequences:

Code	Title	Hours
Industrial Project		
EGNR 491	Engineering Design Project I	3
EGNR 495	Engineering Design Project II	3
Cooperative Project		
EGNR 250	Cooperative Education	2
EGNR 450	Cooperative Educ Project I	4
EGNR 451	Cooperative Educ Project II	3
EGNR 491	Engineering Design Project I	3
Research Project		
EGNR 260	Engineering Research Methods	2
EGNR 460	Engineering Res Project I	4
EGNR 461	Engr Research Project II	2

32 credits from Mathematics (including EGNR 340 Numerical Methods Engineers) and Natural Sciences is required.

General Education: All LSSU bachelor's degree candidates must complete the LSSU General Education Requirements.

A minimum of 124 credits (at the 100 level or higher) must be earned for graduation with a cumulative gpa of 2.00 or higher. A gpa of 2.00 or higher is also required in your Major, as well as in your General Education Requirements.