

# COMPUTER ENGINEERING, BS

## Program Description

The Computer Engineering bachelor's degree program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. LSSU's Computer Engineering program has been designed to put you in the high-demand computer market with the potential for good career growth. This program blends practical computer science courses in computer organization, databases, operating systems, and networks with traditionally hands-on electrical engineering courses in digital circuits, digital system, microcontrollers, computer programming, and digital signal processing. This combination gives you a broad-based education that ties software to hardware and theory to application. Some of the program highlights are:

- The program provides an excellent mix of theory and practical laboratory experiences, preparing you to solve real-world problems.
- For your senior year experience, choose from opportunities in cooperative education, industry-based projects or research projects.
- Engineering courses begin in your freshman year.
- Opportunities exist for you to work with faculty on current undergraduate research projects.
- You will study assembly language programming, computer architecture, microcontroller hardware and software, databases, digital signals and systems, and networking.
- A concentration is available in robotics and automation.

## Cooperative Education

Opportunities are available as part of this program for students who are academically 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
<b>Departmental Requirements</b>		
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	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
Computer Science		
CSCI 105	Intro to Computer Programming (a grade of C or better required)	3
CSCI 121	Principles of Programming (a grade of C or better required)	4
CSCI 201	Data Structures and Algorithms (a grade of C or better required)	4
CSCI 341 or EGEE 425	Discrete Structures Comp Sci Digital Signal Processing	3-4
CSCI 434	Operating Systems Concepts	3
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 320	Digital Design	4
EGEE 355	Microcontroller Systems	4
EGEE 370	Electronic Devices	4
EGNR 101	Introduction to Engineering	2
EGNR 140	Linear Alg Num Apps Engineers	2
EGNR 340	Numerical Methods Engineers	1
EGNR 346	Probability/Stats Lab Engineer	1
<b>Technical Electives</b>		
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 following list of technical electives:		
CSCI 265	Int to Artificial Intelligence	13
CSCI 281	Intro to UNIX and Networking (or higher level CSCI)	
EGEE 310	Network Analysis (or higher level EGEE)	
EGME 225	Mechanics of Materials (or higher level EGME)	
EGEM 220	Statics	
EGEM 320	Dynamics	
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 460	Control Systems (or higher level EGRS)	

MATH 215 Fund Concepts of Mathematics (or higher level MATH)

or any course from the listed concentration

**Total Hours 95-96**

### Robotics and Automation Concentration

C or better grade required for all courses

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

### Senior Sequence

Code	Title	Hours
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Complete one of the following sequences:

Industrial Project 6

EGNR 491 Engineering Design Project I

EGNR 495 Engineering Design Project II

Cooperative Project 12

EGNR 250 Cooperative Education

EGNR 450 Cooperative Educ Project I

EGNR 451 Cooperative Educ Project II

EGNR 491 Engineering Design Project I

Research Project 8

EGNR 260 Engineering Research Methods

EGNR 460 Engineering Res Project I

EGNR 461 Engr Research Project II

**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.**