

SCHOOL OF ENGINEERING

[View on YouTube](#)

Administration

Mark Horstemeyer, B.S., M.S., Ph.D.
Dean, School of Engineering

Carl Pettiford, B.S., M.S., Ph.D.
Associate Dean, School of Engineering

Kurt Bricker, B.S., M.A., M.Div., M.S.
Associate Dean, School of Engineering

Program Directors

A listing of program directors can be viewed on the Program Director webpage.

Research Intensive Courses

All research intensive courses are listed online on the Center for Research & Scholarship QEP Overview webpage.

Purpose

The School of Engineering functions with the purpose of teaching Christ-centered men and women with the values, knowledge, and skills critical for impacting engineering and the associated technologies for tomorrow's world. Established in the fall of 2007, the school has the long-term vision of creating and maintaining nationally recognized technology-related degrees, centers, institutes, and initiatives in education, research, training, and missions so that our Christ-centered graduates can have the greatest impact on tomorrow's world.

The school offers degrees that provide students with the skills, knowledge, and understanding of engineering necessary for impacting tomorrow's socio-technological culture.

Technical Electives

Certain degrees within the School of Engineering require specific technical electives to be completed as part of the degree. The intent of the technical electives is to enhance (i.e. deepen and/or broaden) the scientific, mathematical, technological, or engineering knowledge or experience of the student in his or her career potential and development.

The following stipulations must be followed when choosing allowable technical electives in any of the residential engineering degree programs.

| Code | Title | Hours |
|--|---|-------|
| Engineering Technical Electives | | |
| AVIA 230 | Unmanned Aerial Systems | 3 |
| CSCN 112 | Programming in C++ Advanced | 3 |
| CSCN 215 | Data Structures and Algorithms using C++ | 3 |
| CSCN 326 | Database Design and Management | 3 |
| CSCN 340 | Information Security Concepts and Principles | 3 |
| CSCN 342 | Computer Architecture | 3 |
| CSCN 345 | Linux Operating System | 3 |
| CSCN 355 | Network Architecture, Protocols, and Theory | 3 |
| CSCN 434 | Programming Language Design and Compiler Theory | 3 |

| Code | Title | Hours |
|----------|---|-------|
| CSCN 443 | Operating Systems Design | 3 |
| CSCN 461 | Aspects of Computer Security-Defensive | 3 |
| ENGI 307 | Data Analysis and Machine Learning | 3 |
| ENGI 428 | CNC and Programming Logic Chips | 3 |
| MATH 302 | Introduction to Experimental Design in Statistics | 3 |
| MATH 307 | Introductory Number Theory | 3 |
| MATH 311 | Probability and Statistics I | 3 |
| MATH 331 | Complex Variables | 3 |
| MATH 332 | Advanced Calculus | 3 |
| MATH 350 | Discrete Mathematics | 3 |
| MATH 352 | Numerical Analysis | 3 |
| MATH 402 | Linear Regression | 3 |

Any 200-400-level engineering (ENGC, ENGE, ENGI, ENGM, ENGR, ENGV) course offered residentially.^{1,2}

¹ The student is limited to 2 semesters of ENGR 495 at 3 credits per semester (which will give a total of 6 hours of technical electives) to count toward technical electives, as specified in the syllabus.

² Engineering technical electives transferred in must satisfy a Liberty University engineering specific 200, 300, 400 level course. Engineering transfer, XX courses do not satisfy this requirement, students must substitute for a current Liberty University engineering specific 200, 300, 400 level course barring special exceptions to the policy.

| Code | Title | Hours |
|---|--|-------|
| Major Specific Technical Electives | | |
| CHEM 121 | General Chemistry I ¹ | 4 |
| ENGE 205 | Electrical Systems ² | 3 |
| ENGI 310 | Operations and Research Logistics ² | 3 |
| ENGI 371 | Six Sigma, Lean and Kaizen ³ | 3 |
| FACS 243 | Digital Drafting I ³ | 3 |
| MATH 221 | Applied Linear Algebra ^{4,5} | 3 |
| | or MATH 321 Linear Algebra | |
| PHYS 320 | Thermodynamics ¹ | 3 |
| | or ENGR 320 Thermodynamics | |

¹ Able to apply to the B.S. in Industrial and Systems Engineering, B.S. in Electrical Engineering, or B.S. in Computer Engineering degree

² Able to apply to the B.S. in Mechanical Engineering degree or B.S. in Industrial and Systems Engineering only

³ Able to apply to the B.S. in Industrial and Systems Engineering degree only

⁴ Only one course is able to satisfy the technical elective

⁵ Able to apply to the B.S. in Mechanical Engineering degree only

The student is responsible for satisfying any prerequisites for the technical electives chosen and any requirements specified in the college catalog course description [e.g., courses such as the 497 Topics & 499 Internship courses require the permission of the instructor]. Under certain circumstances and where denoted, the course instructor, in consultation with the student's engineering advisor, has the option to approve or deny a student's technical elective choice.

Engineering Program Learning Outcomes

The student will be able to:

1. Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. 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.
3. Communicate effectively with a range of audiences.
4. 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. Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. Acquire and apply new knowledge as needed, using appropriate learning strategies.

Programs

Certain degrees within the School of Engineering require specific technical electives be completed as part of the degree. The intent of the technical electives is to enhance (i.e., deepen and/or broaden) the scientific, mathematical, technological, or engineering knowledge or experience of the student in his or her career potential and development.

- Civil Engineering Major (B.S.)
- Computer Engineering Major (B.S.)
- Electrical Engineering Major (B.S.)
- Industrial & Systems Engineering Major (B.S.)
- Industrial Engineering Technology Major (B.S.)
- Mechanical Engineering Major (B.S.)
- School of Engineering Minors