

SCHOOL OF ENGINEERING

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

Program Directors

A listing of program directors can be viewed at <http://www.liberty.edu/programdirectors>.

Research Intensive Courses

All research intensive courses are listed online at <https://www.liberty.edu/academics/qualityenhancement/index.cfm?PID=32835>.

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.

Program Accreditation

The Bachelor of Science degree programs in Computer Engineering, Electrical Engineering, Industrial and Systems Engineering, and Mechanical Engineering have received accreditation from the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

ABET is the recognized accrediting agency for college and university programs in applied science, computing, engineering, and engineering technology. ABET accreditation demonstrates a program's commitment to providing its students with a quality education.

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 technical electives in any of the four engineering degree programs.

Course Number	Course Name	Hours
	Any 200-, 300- or 400-level engineering (ENGC, ENGE, ENGI, ENGM, ENGR) course ¹⁵	
CSIS 112	Advanced Programming	3

Course Number	Course Name	Hours
CSIS 215	Algorithms and Data Structures	3
CSIS 326	Data Systems Concepts	3
CSIS 340	Studies in Information Security	3
CSIS 342	Computer Architecture and Organization	3
CSIS 344	Information Security Operation	3
CSIS 345	Introduction to Linux	3
CSIS 355	Network Architecture & Protocols	3
CSIS 434	Theory of Programming Languages	3
CSIS 443	Operating Systems	3
CSIS 461	Technical Aspects of Computer Security	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
BIOL 101	Principles of Biology	3
& BIOL 103 ²	Principles of Biology Laboratory	1
BIOL 102	Principles of Human Biology	3
& BIOL 104 ²	Principles of Human Biology Laboratory	1
BIOL 224 ²	General Biology	4
Either AVIA 230 ³	Unmanned Aerial Systems	3
Or AVIA 405 ³	Advanced Aerodynamics	3

Course Number	Course Name	Hours	Major Specific
Either MATH 221 ⁴	Applied Linear Algebra	3	ME Only
OR MATH 321 ⁴	Linear Algebra	3	ME Only
FACS 243	AutoCAD I	3	ISE Only
PHYS 320	Thermodynamics	3	ISE, EE, CE
CHEM 121 ²	General Chemistry	4	ISE, EE, CE

¹ The student is limited to 3 semesters of ENGR 495 Directed Research (1-6 c.h.) at 2 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 Although **no** additional lab sciences have to be taken as part of the program, **no more than one** of the following lab science courses can or will be counted toward a technical elective.

3 EITHER AVIA 230 Unmanned Aerial Systems (3 c.h.) OR AVIA 405 Advanced Aerodynamics (3 c.h.) to satisfy ONE technical elective.

4 EITHER MATH 221 Applied Linear Algebra (3 c.h.) OR MATH 321 Linear Algebra (3 c.h.) to satisfy ONE technical elective.

5 ENGR technical electives transferred in must satisfy an LU ENGR specific 200, 300, 400 level course. ENGR XX courses do not satisfy this requirement, students must substitute for a current LU ENGR specific 200, 300, 400 level course.

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. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to 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. 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.

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.)

Faculty

A

Atwater, Mark; B.A.S., B.A.S., B.A.S., B.A.S., M.S., M.S., Ph.D.

Title: Associate Professor of Mechanical Engineering

B.A.S. - Pennsylvania Col of Technology, B.A.S. - Pennsylvania Col of Technology, B.A.S. - Pennsylvania Col of Technology, B.A.S. - Pennsylvania Col of Technology, M.S. - University of New Mexico, M.S. - University of New Mexico, Ph.D. - North Carolina State University

B

Bae, Kyung; B.S., M.S., Ph.D.

Title: Associate Professor of Engineering

B.S. - Yonsei University, M.S. - Virginia Polytechnic Institute and State University, Ph.D. - Virginia Polytechnic Institute and State University

C

Cho, Heechen; B.S., Ph.D.

Title: Assistant Professor of Mechanical Engineering

B.S. - Handong Global University, Ph.D. - Mississippi State University

E

Eldredge, Thomas; B.S., M.S., Ph.D.

Title: Associate Professor of Mechanical Engineering

B.S. - University of Tennessee in Knoxville, M.S. - University of Tennessee in Chattanooga, Ph.D. - University of Tennessee in Knoxville

H

Horstemeyer, Mark; B.S., M.S., Ph.D.

Title: Dean, School of Engineering

B.S. - West Virginia University, M.S. - Ohio State University -Central, Ph.D. - Georgia Institute of Technology

J

Jones, John; B.S., M.Eng., M.Eng., M.Eng., M.S., Ph.D.

Title: Adjunct Faculty

B.S. - Virginia Polytechnic Institute and State University, M.Eng. - Virginia Polytechnic Institute and State University, M.Eng. - University of Virginia, M.Eng. - University of Virginia, M.S. - Virginia Polytechnic Institute and State University, Ph.D. - University of Virginia

K

Kim, Young-Man; B.A.S., M.S., Ph.D.

Title: Associate Professor of Electrical Engineering

B.A.S. - Kyung Hee University, M.S. - Kyungpook National University, Ph.D. - Wichita State University

L

Long, James; B.S., M.A., MEM

Title: Associate Professor of Engineering

B.S. - University of Louisville, M.A. - Grace University, MEM - Old Dominion University

Lugo, Marcos; B.S., M.S., Ph.D.

Title: Assistant Professor of Engineering

B.S. - Inst Tecnológico de Pachuca, M.S. - Inst Tecnológico y de Estudios, Ph.D. - Mississippi State University

M

Medina, Hector; B.S., M.S., Ph.D.

Title: Professor of Engineering

B.S. - Colorado School of Mines, M.S. - Virginia Commonwealth University,
Ph.D. - Virginia Commonwealth University

P

Pettiford, Carl; B.S., M.S., Ph.D.

Title: Associate Dean

B.S. - University of Hawaii at Manoa, M.S. - University of Dayton, Ph.D. -
Northeastern University

R

Rich, Robert; B.S., MIMSE

Title: Associate Professor of Engineering

B.S. - Liberty University, MIMSE - North Carolina State University

Ricks, Matthew; B.S., M.S., Ph.D.

Title: Assistant Professor

B.S. - Georgia Institute of Technology, M.S. - University of South Carolina,
Ph.D. - Auburn University

S

Strasser, Wayne; B.S., M.S., Ph.D.

Title: Associate Professor of Engineering

B.S. - Clemson University, M.S. - Clemson University, Ph.D. - Virginia
Polytechnic Institute and State University

T

Tuzi, Frank; B.S., M.A., M.S., Ph.D.

Title: Professor of Technical Communications

B.S. - Lancaster Bible College, M.A. - West Chester University, M.S. -
Capitol Institute of Technology, Ph.D. - Indiana University of Pennsylvania

V

Vadnal, John; B.S., M.S., M.S., Ph.D.

Title: Professor of Engineering

B.S. - University of Florida, M.S. - University of Iowa, M.S. - University of
Iowa, Ph.D. - University of Iowa

W

Wang, Feng; M.S., Ph.D.

Title: Professor of Engineering

M.S. - Yanshan University, Ph.D. - University of Massachusetts Amherst

Z

Zegeye, Ephraim; B.S., M.S., Ph.D.

Title: Associate Professor of Mechanical Engineering

B.S. - Addis Ababa University, M.S. - Addis Ababa University, Ph.D. -
Louisiana State University-Baton Rouge

Ziebart, Carolyn; B.A., M.A.

Title: Assistant Professor of Engineering

B.A. - Georgia Institute of Technology, M.A. - Georgia Institute of
Technology