Computer Engineering

Computer engineering is designed to prepare an engineer to work in both the abstract software world, where high level languages and more complexity will often provide a solution to a problem, and in the physical world where designs are often compromises between many opposing factors. The program further prepares engineers to compete in today's rapidly changing marketplace by providing the fundamental concepts and attributes that will enable them to recognize and understand future developments.

The distinction between a computer engineer and the more traditional computer science major or digital design electrical engineer may be in his/her desire to understand and participate in the entire process of using abstract algorithms and data structures to control changes in real physical devices.

There are many aspects to Computer Engineering. A computer engineer might be working on the design of a new automobile brake system where a knowledge of the electronic sensors and the dynamic nature of the brakes might be as important as the programming of the I/O handler interrupt subroutine in high level C or assembly language. Another project such as the design of a distributed control system for a factory floor might require the engineer to have background in computer networks and programming as well as an understanding of the manufacturing process

Missouri S&T's ABET-accredited program combines basic science and engineering principles with a strong emphasis in design and a solid technical knowledge. The curriculum is flexible enough for you to satisfy technical elective requirements with coursework in and/or outside the Electrical and Computer Engineering Department, allowing you to take courses in Computer Science, Mathematics, Mechanical Engineering, Physics or Bioinformatics.

Available Degree Emphasis Areas

- Computers & Architecture
- Integrated Circuits & Logic Design
- Embedded Computer Systems
- Computational Intelligence
- Networking & Software Engineering
- Security & Reliability

Departmental Contact Information:

573-341-4506   141 Emerson Electric Hall
ece.mst.edu   ece@mst.edu
Department Chair: Dr. Kelvin Erikson

Student Organizations and Undergraduate Research

Undergraduate research opportunities are available through the Opportunities for Undergraduate Research Program as well as many faculty-sponsored projects. The computer engineering, electrical engineering, interdisciplinary engineering and computer science departments collaborate on many projects and research centers. Many current research projects involve faculty members from multiple disciplines. This provides undergraduates with interdisciplinary interests an excellent opportunity to do research in these areas while working on a degree in computer engineering.

Top Hiring Employers

Intel	Micron Technology
US Air Force	Government & Military Applications
Microsoft	Motorola
Adtran	Sun
NCR	Guidant
Cerner	Tellabs

Facilities and Technology

- Applied Computational Intelligence Laboratory
- Applied Microwave Nondestructive Testing Laboratory
- Ameren Power Electronics Laboratory
- Intelligent Microsystem Laboratory
- Electromagnetic Compatibility Laboratory
- Trustworthy Systems Laboratory
- The Real Time Power and Intelligent Systems (RTPIS) Laboratory

Scholarship Information

Freshman scholarships are automatically awarded based on high school transcripts and ACT/SAT scores. No separate application is necessary. Scholarships ranging from $500 to $2,000 for sophomores, juniors and seniors typically require an application and are based on academic record, service activities and extracurricular activities.

Co-op and Internship Availability

Co-op and summer intern programs are available to students. These programs provide students with the opportunity to integrate their classroom studies with learning through productive work experiences in a field related to their academic or career goals. Work for a semester or during the summer and build your resume.

Faculty

Professors:

Daryl Beetner, D.Sc., Washington University in St. Louis
Minsu Choi, Ph.D., Oklahoma State
Badrul Chowdhury, Ph.D., Virginia Tech
Keith Corzine, Ph.D., Missouri S&T
Mariesa Crow[1], Ph.D., Illinois
James Drewniak, (Curator's), Ph.D., Illinois
Richard E. DuBroff[1], Ph.D., Illinois
Kelvin T. Erickson[1], Ph.D., Iowa State (Chair)
Randy Moss[1], Ph.D., Illinois
David Pommerenke, Ph.D., Technical University at Berlin
Jagannathan Sarangapani, Ph.D., Texas-Arlington
Steve E. Watkins, Ph.D., Texas (Assoc. Chair)
Cheng-Hsiao Wu, Ph.D., Rochester
Donald C. Wunsch II[1], Ph.D., Washington
Chengshan Xiao, Ph.D., University of Sydney, Australia
Reza Zoughi, Ph.D., Kansas

Associate Professors:

Levant Acar, Ph.D., Ohio State
Norman Cox, Ph.D., Texas-Arlington
Mehdi Ferdowsi, Ph.D., Illinois Institute of Technology
Steven Grant, Ph.D., Rutgers
Marina Koledinstseva, Ph.D., Moscow Technical University
Chang-Soo Kim, Ph.D., Kyungpook National University
Kurt Kosbar, Ph.D., Southern California
Ronald Joe Stanley, Ph.D., Missouri-Columbia
Hai Xiao, Ph.D., Virginia Tech
Sahra Sedighsarvestani, Ph.D., Purdue
Yahong Rosa Zheng, Ph.D., Carleton University, Canada

Assistant Professors:

Jun Fan, Ph.D., Missouri S&T
Jonathan Kimball, Ph.D., Illinois
Yiyu Shi, Ph.D., UCLA
Maciej Zawodniok, Ph.D., Missouri S&T

Associate Teaching Professor:

Bijaya Shrestha, Ph.D., Missouri S&T

Assistant Teaching Professors:

Rohit Dua, Ph.D., Missouri S&T
John E Seiffertt IV, Ph.D., Missouri S&T
Theresa M. Swift, Ph.D., Missouri S&T

[1]Registered Professional Engineer

Related Programs and Minors

In addition to a Bachelor of Science in Computer Engineering, Missouri S&T offers the following related degree programs. Requirements are outlined in S&T's course catalog, available online at **registrar.mst.edu**.

- Bachelor of Science, Electrical Engineering
- Bachelor of Science, Computer Science
- Minor, Computer Science
- Minor, Bioinformatics

Notes

Detailed information on course equivalencies, acceptable credits for elective coursework, grade requirements and prerequisites is available from S&T's Registrar's Office at **registrar.mst.edu**.

All Computer Engineering students must take the Fundamentals of Engineering Examination prior to graduation. A passing grade is not required; however, this is the first step to becoming a registered professional engineer.

Bachelor of Science

Computer Engineering .... 128 credit hours

Entering freshmen desiring to study Computer Engineering are admitted to the Freshman Engineering Program. They may, however, state a Computer Engineering preference, which will be used as a consideration for available freshman departmental scholarships. The focus of the Freshmen Engineering program is on enhanced advising and career counseling, with the goal of providing to the student the information necessary to make an informed decision.

FIRST YEAR — Credit

FE 1100-Careers in Engineering	1
MechE 1720-Engineering Design	3
Chemistry 1310, 1319-General Chemistry	5
English 1120-Exposition	3
Math 1214-Calculus for Engineers I	4
Math 1215-Calculus for Engineers II	4
Physics 1135-Engineering Physics I	4
Economics 1100 or 1200-Micro or Macroeconomics	3
History 1200, 1300, 1310, -or- Pol Sc 1200	3
Elective/Humanities or Social Science	3
	33

SECOND YEAR

CmpSc 1570, 1580-Computer Programming w/ Lab	4
CmpSc 1200-Discrete Math	3
CmpSc 1510-Data Structures I	3
CompE 2210-Intro to Computer Engineering	3
CompE 2211-Computer Engineering Lab I	1
Math 3304-Elem Diff Equations	3
Math 2222-Calculus III/Analytic Geometry	4
Physics 2135-Engineering Physics II	4
ElecE 2100-Circuits I w/ Lab	4
ElecE 2120-Circuits II	3
	32

THIRD YEAR

ElecE 2200, 2201-Intro to Electronic Devices w/ Lab	4
ElecE 3410, 3411-Discrete Linear Systems I w/ Lab	4
CompE 3550-Digital Systems Design	3
CompE 3551-Digital Eng Lab II	1
CompE 3510-Computer Architecture	3
CmpSci 3800-Intro to Operating Systems	3
CompE Elective	3
Elective/Advanced Math	3
Statistics 3117-Prob & Stat for Engineers	3
Sp&MS 1185-Public Speaking	3
English 3560-Technical Writing	3
	33

FOURTH YEAR

CompE 5410-Digital Network Design -or- CmpSci 4600-Computer Communication and Networks	3
CompE 4096-Senior Project I	1
CompE 4097-Senior Project II	3
CompE Elective	3
CompE Elective	3
CompE Elective	3
Elective/Engineering Science	3
Elective/Free	3
Elective/Free	2
Elective/Humanities or Social Science	3
Elective/Humanities or Social Science	3
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