

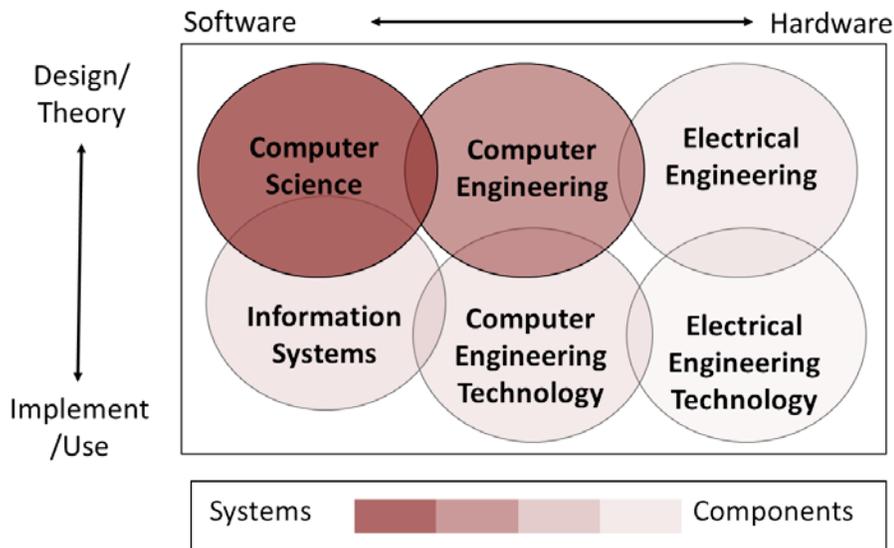
Computer Engineering



What does a Computer Engineer do?

Computer engineers design, develop and manage systems that process, store and convey information. These systems include personal computers, workstations, mainframe computers, computer networks and all of their various components. Computer engineers are particularly involved in the design and develop “embedded” computers used in aircraft, automobiles, communication switching systems, biomedical instruments, industrial robots and household appliances. Designing these systems raises both hardware and software issues, a computer engineer typically has the hardware background of an electrical engineer and the software background of a computer scientist. Computer engineers can choose to specialize in areas such as very large scale integrated (VLSI) systems design, embedded systems, electronic design automation and networks and communications.

IPFW Computer B.S. Degrees: The School of Engineering, Technology, and Computer Science (ETCS) at IPFW offers a range of computer related degrees. The diagram below shows the primary focus of the six B.S degrees currently offered.



Job Outlook: The Computer Engineering program at IPFW was started in response to the advice of local practicing engineers on the Engineering Department’s Industrial Advisory Board. The need for Computer Engineers to design the “hidden” computer systems in our cars, networks and appliances is continuing to grow.

According to the National Association of Colleges and Employers, the average starting offers nationally to computer engineering graduates has been steadily increasing and in 2012 was over \$71,000.

Computer Engineering Curriculum: In addition to the common first-year engineering curriculum, the computer engineering program includes courses in mathematics (e.g., Differential Equations, Linear Algebra, Discrete Mathematics), computer and electrical hardware (e.g., Linear Circuit Analysis, Very Large Scale Integrated Chip Design) and computer software (e.g., Software Engineering Tools, Operating Systems).

IPFW Engineering Majors: IPFW currently has four undergraduate engineering majors: Civil, Computer, Electrical and Mechanical Engineering. IPFW also has a range of engineering technology programs.

All engineering majors at IPFW culminate with a senior design project. These projects are completed by small groups under the supervision of a faculty advisor and generally require students to design, build and test a complete system. Projects are often sponsored by local industry.

Common First-Year Engineering Curriculum: All engineering majors have the following common first year curriculum for students who are ready to begin Calculus.

First Semester			Second Semester		
Course #	Course Title	Credits	Course #	Course Title	Credits
MA 165	Analytic Geometry and Calculus I	4	MA 166	Analytic Geometry and Calculus II	4
CHM 115	General Chemistry I	4	PHYS 152	Mechanics	5
ENGR 127	Engineering Fundamentals I	4	ENGR 128	Engineering Fundamentals I	4
ENG W131	Elementary Composition	3	COM 114	Fundamentals of Speech	3
Total		15	Total		16

The standard engineering program begins with MA 165: Analytic Geometry and Calculus I. Students who need to complete other mathematics courses before they will be ready for calculus can pursue an engineering major at IPFW. However, it will take them more than four years to complete an engineering degree.

High School Preparation: The ideal preparation for any of the engineering majors includes four years of high school mathematics, one year of physics, one year of chemistry and four years of english. Students should reach the level of mathematics so that they are “calculus ready” (i.e. have sufficient algebra, geometry and trigonometry that they will be ready to begin calculus their first semester.)

For additional information: see the Engineering Department’s website at www.engr.ipfw.edu. Other helpful websites on engineering careers include:

- Engineering Go For It: www.egfi-k12.org
- Engineer your Life (for girls interested in engineering): www.engineeryourlife.org
- Sloan Career Cornerstone Center: www.careercornerstone.org