

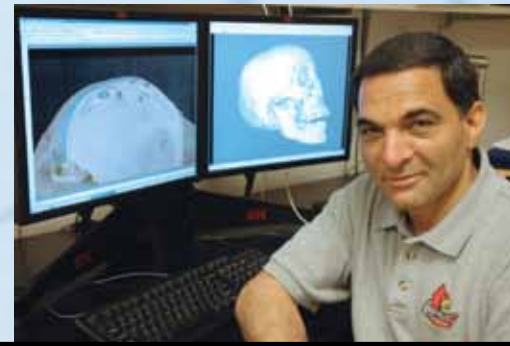
## WHAT IS ELECTRICAL ENGINEERING?

Electrical engineering is the historical name for what is now called electrical, electronics, and computer engineering. Originating in the 19th century with the development of electric power and the advent of telephone and wireless communications, electrical engineering continues to have lasting impact not only on technology and the engineering profession, but on all of society. Recent advances such as integrated computing and communications systems and the proliferation of microchips and microelectronic hardware have revolutionized the ways we live and work, as well as how we interact as a society and how we spend our leisure time.

Electrical engineering uses science, technology, and problem-solving skills to design, construct, and maintain products, services, and information systems. Electrical engineers design and develop new technologies to generate, store, transmit, control

and convert energy and information. They may work in design, research and development, production or management positions at government agencies or private corporations where they may specialize in:

- Microprocessors and microcomputers
- Computer engineering
- Analog and digital electronics, optoelectronics
- Measurements, instrumentation, remote sensing
- Microelectronic design and fabrication
- Control systems, robotics, automation
- Communications systems, signal processing
- Microwaves, radar technologies, antennas
- Power generation, transmission, and distribution



## WHY BECOME AN ELECTRICAL ENGINEER?

The Occupational Outlook Handbook indicates that electrical engineers held about 292,000 jobs in 2002, making it the largest branch of engineering. The majority of jobs were in professional, scientific, and technical services firms, government agencies, and manufacturers of computer and electronic products and machinery. Wholesale trade, communications, and utilities firms accounted for many of the remaining jobs.

Employment opportunities for the future are favorable. The number of job openings resulting from employment growth and the need to replace electrical engineers who transfer to other occupations or leave the labor force is expected to be in rough balance with the supply of graduates. Demand

for electrical and electronic goods, including advanced communications equipment, defense-related electronic equipment, and consumer electronics products should increase.



The National Association of Colleges and Employers reported that 2008-09 electrical engineering graduates with a bachelor's degree received annual starting salary offers averaging \$60,125. Offers to those with a master's degree averaged \$71,455.

In addition to a relatively stable job market and financial reward, electrical engineers have the gratification that comes from working to meet the needs of society. There is no limit to the personal satisfaction gained from helping make our world a better place to live.

## ELECTRICAL ENGINEERING AT J.B. SPEED SCHOOL

The Electrical and Computer Engineering Department offers a Bachelor of Science Degree, including a cooperative education component, in four years and with one additional year a Master of Engineering Degree. Both the undergraduate and graduate programs are recognized by the Engineering Accreditation Commission of ABET.



As freshmen and sophomores, students develop a solid foundation in engineering principles along with a background in the arts, humanities, and social sciences. Courses include mathematics, physics, network analysis, and logic design. Laboratory facilities and three semesters of on-the-job learning through the Cooperative Education Program provide hands-on experience.

At the junior/senior level, students may focus upon a sub-specialty of electrical engineering. In consultation with an academic advisor, they can choose a sequence of courses from one of the following tracks:

- Communications
- Computer Engineering
- Computer Vision and Image Processing
- Control Systems
- Lasers and Optics
- Linear Electronics

Upperclassmen may also participate in cutting edge research in neural networks, image processing, optoelectronics, microelectronics, etc.

Students have an opportunity to socialize with classmates and faculty, network with practicing electrical engineers, tour industrial sites, and participate in professional meetings through involvement in the Institute of Electrical and Electronics Engineers Student Branch. Fifteen faculty, including nationally and internationally recognized teachers and researchers.

## DEPARTMENT HIGHLIGHTS

Specialized undergraduate and graduate research laboratories including:

- Class 100 microfabrication cleanroom
- Computer vision and image processing lab
- Very large-scale integrated circuit design lab
- Microcomputer and computer interfacing lab
- Active network design lab



For Additional Information:

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