The Department of Electrical and Computer Engineering (ECE) has facilities for graduate study and research leading to the master of science (M.S.) degree and the doctor of philosophy (Ph.D.) degree in electrical engineering. The master’s program emphasizes the enhancement of professional knowledge and research techniques. The doctorate is a research degree emphasizing creativity and original approaches to problem-solving in electrical and computer engineering. The regulations of the Graduate School and the department must be followed to complete the requirements for each degree.

Graduate courses are offered in all basic areas of electrical engineering. The following eight specializations can be pursued in depth: automatic control systems; biomedical engineering; communication and signal processing; computer engineering; electromagnetic fields and waves; energy and power systems; plasmas and controlled fusion; solid state electronics and photonics.

Laboratory facilities provide opportunities for research in biomedical computing; computer-aided engineering; computer architecture; data acquisition and simulation; digital control and instrumentation; digital engineering; digital microprocessors; digital signal processing; medical instrumentation; microelectronics and integrated-circuit fabrication; microwave devices, circuits, and antennas; photonics and optics; plasmas and controlled fusion; rotating electric machines and power electronics; speech processing; thin-film devices; VLSI systems; and x-ray lithography.

Power engineering courses are offered both on campus and online. The M.S. in electrical engineering, named option: power engineering is an online degree that includes a full curriculum of courses covering both the theory and applications of power electronics, electric machines, adjustable-speed drives, power systems, and alternative energy through electrical and computer engineering. A companion online M.S. program is also offered in mechanical engineering. Please visit the Department of Engineering Professional Development’s website (https://epd.wisc.edu/online-degree/electrical-engineering-power-engineering) for information regarding the online M.S. degree.

There are opportunities for research at both M.S. and Ph.D. levels.