The Department of Energy, Environmental & Chemical Engineering (EECE) provides integrated and multidisciplinary programs of scientific education in cutting-edge areas, including the PhD in Energy, Environmental & Chemical Engineering. The research and educational activities of the department are organized into four clusters: aerosol science and engineering; engineered aquatic processes; multiscale and electrochemical engineering; and synthetic biology and bioproduct engineering. These overlapping clusters address education and research in four thematic areas: energy; environmental engineering science; advanced materials; and sustainable technology for public health and international development. In addition to the core faculty in the department, faculty in the schools of Medicine, Arts & Sciences, Business, Law, and Social Work collaborate to provide students with a holistic education and to address topical problems of interest.

Three master's programs are offered through the department: Master of Science in Energy, Environmental & Chemical Engineering (MS), Master of Engineering in Energy, Environmental & Chemical Engineering (MEng) and Master of Engineering in Energy, Environmental & Chemical Engineering/Master of Business Administration (MEng/MBA). The MS degree is a research-focused master's program for students interested in studying environmental engineering, energy systems and chemical engineering. The MEng degree provides students with critical scientific and engineering skill sets; leadership training for management, economics, and policy decision making; and the opportunity to specialize in one of five pathways. The MEng/MBA is a dual degree between the McKelvey School of Engineering and the Olin Business School that provides engineering and business approaches to issues of sustainability, energy, the environment and corporate social responsibility. Interested students must apply and be accepted to both programs before admission is provided to the MEng/MBA dual-degree program.

The department is a key participant in the university's Energy, Environment & Sustainability initiative, and it supports both the International Center for Energy, Environment and Sustainability (InCEES) and the McDonnell Academy Global Energy and Environment Partnership (MAGEEP). Major externally funded research centers in the department include the Consortium for Clean Coal Utilization, the Nano Research Facility, and the Center for Aerosol Science and Engineering.