Wadsworth Department of Civil and Environmental Engineering

Degrees Offered

- Bachelor of Science in Civil Engineering (B.S.C.E.)

Nature of the Program

Civil engineering historically encompassed all engineering endeavors needed to provide the infrastructure for society to function. Because of its origin and history, civil engineering still embraces a wide variety of technological areas. In the Wadsworth Department of Civil and Environmental Engineering, these areas include:

- Construction
- Environmental and Water Resources
- Geotechnical
- Structures
- Transportation

Civil engineers work with problems that directly impact the health and economic vitality of people and communities. These problems include waste disposal, environmental pollution, transportation systems analysis and design, water resource development, and the design, construction, and rehabilitation of constructed facilities such as dams, bridges, buildings, and highways.

Thus, the challenges and opportunities for a civil engineer lie in combining technical competence with a human concern for the applications of technology. To help students to understand their role in the community, to be effective in working with design teams involving other engineers and other professionals, and to be effective in written and spoken communications, the curriculum attempts to give a meaningful educational experience in the humanities, social studies, English, and economics.

The goal of the undergraduate curriculum in civil engineering is to prepare graduate civil engineers to meet the present and the future infrastructural and environmental needs of society. This requires an education based on scientific and engineering fundamentals as well as one that incorporates experience in engineering design using modern technology. Because the systems they design impact the public directly, civil engineers must be aware of the social and environmental consequences of their designs. Graduates must be prepared to work and communicate with other professionals in a variety of associations and organizations. Ethics and life-long learning are essential components in the education of civil engineers.

During the course of study, civil engineering students are given a solid grounding in mathematics, physics, and chemistry. Added to this is extensive development of the fundamentals of materials science, construction, water and environmental, soils, structural, and transportation systems engineering. This broad base of knowledge is provided to assure that civil engineers are educated in all branches of the profession and to permit continuous learning throughout a professional lifetime. Throughout the program, each student works with an academic advisor in the selection of electives. Specialization in one or more of the branches of civil engineering is possible by selection of a sequence of technical electives during the junior and senior years.

The Bachelor of Science in Civil Engineering program is accredited by the Engineering Accreditation Commission of ABET, https://www.abet.org.

Program Educational Objectives

- The graduates will be successful in their professional careers as civil engineers in industry, public agencies, and/or post-graduate education.
- The graduates will continue to develop professionally and serve in leadership roles.
- The graduates will be successful in demonstrating their obligations to the profession, to their employer, and to society.

FACULTY

CHAIR

- Vladislav Kecojevic - Ph.D. (University of Belgrade)
  Surface mining, Surface mine health and safety, Environmental impact of surface mining
PROFESSORS

- Hung-Liang (Roger) Chen - Ph.D. (Northwestern University)
  Structural dynamics, Structural experimentation, Dynamic soil-structure interaction, Damage in reinforced concrete structures, Nondestructive evaluation, Concrete

- Hota GangaRao - Ph.D. (North Carolina State University)
  Maurice A. and Jo Ann Wadsworth Distinguished Professor, Director, Constructed Facilities Center. Director, NSF Center for Integration of Composites into Infrastructure, Mathematical modeling of engineering systems, Bridge engineering, Composite material characterization and implementation

- Lian-Shin Lin - Ph.D. (Purdue University)
  Physicochemical and biological treatment, Innovative wastewater technologies, Emerging contaminants, sustainable development, Watershed pollution

- David R. Martinelli - Ph.D. (University of Maryland)
  Transportation engineering, Traffic operations, Systems analysis, Infrastructure management

- Radhey Sharma - Ph.D. (Oxford)
  Sustainable infrastructure, Geotechnical engineering & geoenvironmental, Energy engineering

ASSOCIATE PROFESSORS

- Omar I. Abdul-Aziz - Ph.D. (University of Minnesota, Twin Cities)
  Ecological-Water Resources Engineering; Scaling of Hydro-Ecological and Biochemical Variables; Modeling of Stream Water Quality and Ecosystem Carbon; Fluid Mechanics; Hydrology.

- Karl Barth - Ph.D. (Purdue University)
  Steel structures; Bridge design and rehabilitation; Connections; Stability analysis; Experimental mechanics

- Fei Dai - Ph.D. (Hong Kong Polytechnic University)
  Constructions Engineering, Construction Management, Construction Information Technologies

- Leslie Clark Hopkinson - Ph.D. (Virginia Polytechnic Institute and State University)
  Surface hydrology, Environmental hydraulics, Ecological engineering, River mechanics

- John D. Quaranta - Ph.D. (West Virginia University)
  Geotechnical/geoenvironmental engineering, Soil testing and characterization, Soil and mine waste dewatering, Geosynthetics, Soil and groundwater remediation

- P.V. Vijay - Ph.D. (West Virginia University)
  Concrete Structures; Composite Structures for Bridges, Buildings, and Pavements; Aging of Structures and Rehabilitation; Recycled Polymers for Infrastructure

- Yoojung Yoon - Ph.D. (Purdue University)
  Infrastructure Asset Management, Risk Management in Construction, Project Management and Control, Construction Equipment Management

ASSISTANT PROFESSORS

- Kakan Dey - Ph.D. (Clemson University)
  Intelligent Transportation Infrastructure Design and Analysis; Connected and Automated Vehicle Technology; Traffic Operations; Big Data Analytics for Transportation Data Management; Artificial Intelligence in Transportation

- Onur Avci - Ph.D. (Virginia Tech)
  Structural Engineering, Structural steel, Structural dynamics, Structural health monitoring, Structural damage detection. Machine Learning (ML) and Deep Learning (DL) applications in structural engineering. Blast protection of engineering structures, multi-functional materials.

- James Bryce - Ph.D. (Virginia Tech)
  Asphalt technology, pavement sustainability, pavement preservation, civil engineering materials, benefit-cost analysis, life cycle costing, and decision analysis.

- Emily Garner - Ph.D. (Virginia Polytechnic Institute and State University)
  Environmental Engineering and Microbiology, Wastewater reuse and sustainable water treatment, Microbial ecology, Application of molecular tools and next generation sequencing technologies, Drinking water

- Kevin Orner - Ph.D. (University of South Florida)

- Dimitra Pyrialakou - Ph.D. (Purdue University)
  Transportation Engineering, Transportation Planning and Evaluation, Public and Rail Transportation, Airport Operations, Transportation Econometrics
RESEARCH ASSISTANT PROFESSORS
• Rufieng Liang - Ph.D. (Chinese Academy of Sciences Institute of Chemistry)
  Fiber Reinforced Polymer Composites, Engineering Plastics, Green Materials, Sustainable Infrastructure

PROFESSORS EMERITUS
• Ronald W. Eck - Ph.D. (Clemson University)
• Udaya B. Halabe - Ph.D. (Massachusetts Institute of Technology)
  Nondestructive evaluation and in-situ condition assessment of structures and materials, Elastic and electromagnetic (radar) wave propagation,
  Structural analysis and design, Structural dynamics and wind/earthquake resistant design
• W. Joseph Head - Ph.D. (Purdue University)
• Larry D. Luttrell - Ph.D. (Cornell University)
• William A. Sack - Ph.D. (Michigan State University)
• Hema J. Siriwardane - Ph.D. (Virginia Polytechnic Institute and State University)
  Geomechanics/geotechnical engineering, Finite element method, Computer applications
• John P. Zanievski - Ph.D. (University of Texas)

ASSOCIATE PROFESSORS EMERITUS
• Robert N. Eli - Ph.D. (University of Iowa)
• Darrell R. Dean Jr. - Ph.D. (Purdue University)

For specific information on the following programs please see the links to the right:
• Civil Engineering, B.S.C.E.
• Dual Degree CE/MINE