

Master of Civil Engineering

Program Coordinator: Linda Ratsep

Medicine, law, architecture, accounting, pharmacy – all professions that require education in excess of four years, whether by a separate “Professional School” or by simply requiring more than four years to obtain an undergraduate degree. Much discussion has occurred lately in the engineering community concerning the “status” of the profession in the eyes of the public. Concerns over compensation, loss of respect from society in general, and the increasing trend toward viewing engineers as a commodity instead of as valued and skilled professionals has prompted some to take a hard look at the current educational system. Many engineers agree that, in light of the explosive growth of technology, the steady decrease in the number of credits required for an undergraduate engineering degree (from an average of 150 semester hours in 1950 to 133 today), and the loss of influence and control in the worlds of finance and politics (both critical to successfully solving the world’s problems through engineering), the skill set provided by a four year education is no longer adequate.

In light of these problems, the Board of Directors of the American Society of Civil Engineers unanimously adopted Policy 465 in 2001:

“The American Society of Civil Engineers (ASCE) supports the concept of the Master’s degree or Equivalent as a prerequisite for licensure and the practice of civil engineering at a professional level.”

ASCE encourages institutions of higher education, governmental units, employers, civil engineers, and other appropriate organizations to endorse, support, and promote the concept of mandatory post-baccalaureate education for the practice of civil engineering at a professional level. The implementation of this effort should occur through establishing appropriate curricula in the formal education experience, appropriate recognition and compensation in the workplace, and congruent standards for licensure.”

Norwich University saw ASCE’s Policy 465 as an opportunity to create a graduate program unlike any other. The Master of Civil Engineering program stresses the fundamental skills needed for success by tomorrow’s civil engineer. These skills include not only technical competency in your field of expertise but also the broad range of communication and management skills needed in the highly entrepreneurial business environment that comprises our profession.

Mission

- Prepare students to excel in civil engineering and related fields.
- Make clear to students that above all else, the civil engineering profession is committed to bettering the world.
- Provide modern, fundamental, practice-orientated education in the civil engineering field.
- Foster creativity and critical thinking in problem solving and motivate students to consider the societal consequences of their work.
- Enable students to be leaders in their profession, community, and the nation

Program Outcomes

- Students assess, formulate, and innovate to solve complex and multidisciplinary real-world engineering problems by applying knowledge of engineering fundamentals, mathematics, natural and social sciences, humanities, and technology.
- Students develop, build, and lead professional teams to work collaboratively in multidisciplinary work environments.

- Students implement and apply effective verbal and written communications with technical and non-technical audiences.
- Students anticipate and understand responsibilities of practicing engineers with respect to global, environmental, societal, and ethical contexts of their work.

Requirements

Curriculum Map/Plan of Study

Term 1		
GB 544	Project Management Techniques, Tools and Practices	6
Term 2		
EG 501	Engineering Mathematics	6
Term 3		
	One concentration course	6
Term 4		
	One concentration course	6
Term 5		
	One concentration course	6
Term 6		
CE 561	Capstone Design Project ¹	6
CE 595	Residency ²	0
Total Cr.		36

- 1 Grade of B or better required for the Capstone Design Project.
- 2 Students are required to attend a one-week, on campus Residency Conference the June following or concurrent with their final course.

Pre-admission Requirements

Students not meeting the admission requirements of the Master of Civil Engineering program with respect to their previous course work will be required to pass fundamentals courses with a grade of B or better in order to be admitted to the degree program. Students earning grades of less than a B in fundamentals courses will be required to petition for re-enrollment to repeat the course. Fundamentals courses do not satisfy degree requirements of the Master of Civil Engineering degree.

Fundamentals Courses

CE 501	Hydraulics for Environmental Engineers	3
CE 503	Fundamentals of Soil Mechanics and Foundation Engineering	6
CE 505	Engineering Analysis Techniques	3
CE 506	Engineering Mechanics I	3
CE 507	Fundamentals of Structural Engineering	6
CE 509	Fundamentals of Environmental/Water Resources Engineering	6
CE 571	Elementary Geotechnical Tools Laboratory	1
GB 501	Fundamentals of Business Management	6
GB 502	Quantitative Methods and Financial Analysis for Managers	6

Curriculum Requirements

The 18-month Master of Civil Engineering program is divided into six, eleven-week, six-credit courses. Three courses comprise the program “core” and are required of all Master of Civil Engineering students. For the other three courses students choose from four available concentrations: structural engineering, environmental/water resources engineering, geotechnical engineering, or construction management.

Core Courses (18 Credits)

GB 544	Project Management Techniques, Tools and Practices	6
EG 501	Engineering Mathematics	6
CE 561	Capstone Design Project	6
Culminating Academic Requirement		
CE 595	Residency	0
Total Cr.		18

Concentration Courses (18-19 Credits)**Environmental/Water Resources Concentration (18 credits)**

CE 525	Physiochemical & Biological Processes in Water & Wastewater Treatment	6
CE 535	Stormwater Management and GIS Applications for Water Resources	6
CE 555	Geoenvironmental Engineering - Groundwater Flow and Waste Containment	6
Total Cr.		18

Structural Concentration (18 credits)

CE 528	Classical, Matrix, and Dynamic Analysis of Structures	6
CE 538	Design of Steel and Timber Structures	6
CE 558	Design of Reinforced and Prestressed/Precast Concrete Structures	6
Total Cr.		18

Geotechnical Concentration (19 credits)

CE 523	Intermediate Soil Mechanics and Foundation Engineering	6
CE 533	Earthquake Engineering and Soil Stabilization	6
CE 553	Computer Modeling in Geotechnical Engineering and Geotechnical Engineering Case Histories	6
CE 572	Intermediate Geotechnical Tools Laboratory	1
Total Cr.		19

Construction Management Concentration (18 credits)

CE 529	Information Technology	6
CE 539	Contracts and Insurance	6
CE 559	Project Finance and Accounting	6
Total Cr.		18

One-Week Residency

All degree candidates of the Master of Civil Engineering are required to attend a one-week Residency Conference (<http://catalog.norwich.edu/archives/2020-2021/onlineprogramscatalog/academicpolicies/graduationrequirements/>) on the Norwich University campus, during which they may attend professional presentations, participate in roundtable discussions with faculty, and present capstone design projects. The one-week residency is a degree requirement.

Faculty

Faculty Member	Institution at which highest degree was earned
Linda Ratsep, MCE, MBA, PE (Program Coordinator)	Villanova University; Drexel University
William Barry, PhD, PE	Carnegie Mellon University
Michael S. Blount, MS, PE	Georgia Institute of Technology
Thomas J. Descoteaux, PhD, PE	University of Connecticut
Kenneth Edwards, PhD, PE	Iowa State University

Kenneth Lamb, PhD, PE	University of Nevada – Las Vegas
Will Lindquist, PhD, PE	University of Kansas
W. Nicholas Marianos, PhD, PE	Tulane University
Joseph Miller, PhD, PE	Michigan Technological University
David Nowacki, MBA, MS	Louisiana State University
Bryan Pascarella, MBA	University of Pittsburgh
Carmine Polito, PhD, PE	Virginia Polytechnic Institute and State University
Jared Reigstad, MCE, PE	Norwich University
John P. Rotter, JD, MBA, PE	Vermont Law School
Eric J. Sweich, MS, PG	Bowling Green State University
Timothy Tyler, PhD, PE	Virginia Polytechnic University
Dritan Topuzi, PhD, PEng	University of Waterloo
Loren Wehmeyer, PhD, PE	University of Iowa