University of Colorado at Boulder

Graduate Studies in Civil Systems

The Department of Civil, Environmental, and Architectural Engineering (CEAE) at the University of Colorado at Boulder offers a graduate program in Civil Systems leading to the degrees of Master of Science (MS) and Doctor of Philosophy (PhD). The Civil Systems program is an interdisciplinary effort among the traditional CEAE department graduate programs as well as individual programs from departments throughout the University of Colorado. Students apply to the Civil Systems graduate program within the CEAE department and have the opportunity to develop a customized program that fits individual academic and professional goals.

Degree Requirements

The M.S. degree may be obtained under one of three options. Plan I (thesis option) requires a total of 30 semester hours of which 24 must be course work. Plan IIa requires 27 semester hours of course work and an independent report. Plan IIb requires 30 semester hours of course work. The Ph.D. degree requires completion of 30 semester hours in addition to a doctoral dissertation (30 thesis hours). Students may transfer 9 units of post-graduate work to the MS degree and 15 units to a PhD degree. With prior approval, online courses through the University of Colorado or other approved universities can be applied to the degree course requirements.

Program Objectives

This program has as objective of the development of systems analytic approach to the development, management and monitoring of civil infrastructure systems under natural and society-induced hazards, the integration of model-based analysis and field and laboratory experiments, and the creation of tools for effective and informed life-cycle decisions for the built environment.

Areas of Emphasis

- Interdisciplinary Topic Areas
  - Engineering for Developing Communities
  - Engineering for Society
  - Sustainable Development
  - Renewable Energy
  - Mega-City Planning
- Traditional CEAE Disciplines
  - Building Systems
  - Construction Engineering and Management
  - Environmental Engineering
  - Geotechnical Engineering
  - Structural Engineering and Structural Mechanics
  - Water Resources Engineering

Course Offerings

4 Core Requirements 12 hours

2 required core courses

- CVEN 5147 Civil Engineering Systems & Planning
- CVEN 5454 Statistical Methods for Civil Systems

Plus

2 of the following 4

- CVEN 5565 Life-Cycle Engineering Of Civil Infrastructure Systems
- CVEN 5276 Engineering Risk and Decision Analysis
- CVEN 5777 Applied Micro Economics for Engineers and Planners
- An approved graduate course in sustainability

3 Courses in Area of Emphasis 9 hours

- Area of emphasis can be from a traditional CEAE area or interdisciplinary with committee approval

1 Free Elective 3 hours

Plan I	**MSc Thesis**	**6 hours**
Plan IIA	**1 Elective**	**3 hours**
	MS Report	**3 hours**
Plan IIB	**2 Electives**	**6 hours**

Applications

Students should apply to the Civil Systems graduate program within CEAE.

For additional information and application forms, please contact:

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Department Web Page: http://ceae.colorado.edu

Financial Support

Support is available for qualified students in the form of teaching assistantships (TAs) or research assistantships (RAs). TAs receive a stipend of approximately $1,700 per month, a tuition waiver and 70% of their student health insurance for the academic year; fully-funded RAs receive a stipend of approximately $1,700 per month, a tuition waiver and 70% of their student health insurance. Department and University fellowships are also available.

Computer Facilities

Students interested in computer-based research will find an excellent workstation and PC-based environment in the Department. The Engineering Computer Laboratory includes eleven high performance PCs, multi-play CD ROMS, on-line data services, digital cameras, scanners and other resources for student use.

Facilities and Location

The Boulder Campus of the University of Colorado is located 26 miles northwest of Denver. The climate is dry with generally moderate temperatures. The immediate proximity to the Rocky Mountains makes the location nearly ideal for both winter and summer sports. The University has an enrollment of 25,000 undergraduate students of which 2,800 are in the College of Engineering. The Department of Civil, Environmental and Architectural Engineering has approximately 40 faculties, 450 undergraduate and 230 graduate students.

Research Activities

The faculty has wide-ranging professional and research interests that include

- Infrastructure Monitoring Maintenance and Renewal
- Fast Hybrid Testing
- Policy and Research on Engineering and Management Decisions for Civil Infrastructure Systems
- Cost Characterization of "Green" Building Practices
- Life Cycle Cost Optimization of Civil Infrastructures
- Safety and Reliability in Civil Engineering
- Life Cycle Performance Criteria for Public Infrastructure and the Built Environment
- Development of High Performance Concrete Materials
- Optimal Asset Management for Storm and Wastewater Systems
- Optimal Performance of Civil Infrastructures
- River Basin Management
- Drought Management
- Public – Private Infrastructure Development and Management
- Urban Infrastructure in Developing Countries

Coordinating Faculty Members

Bernard Amadei, Professor, PhD, University of California, Berkeley. Engineering for Developing Communities and International Development, Geological Engineering (303-492-7734, amadei@colorado.edu)…

Paul Chinowsky, Associate Professor, Ph.D., Stanford construction systems, strategic planning, utility managment, (303-735-1063, paul.chinowsky @colorado.edu)

Ross B. Corotis, Professor, P.E., N.A.E., Ph.D., Massachusetts Institute of Technology. Probabilistic modeling, risk assessment and perception, structural reliability.
(303- 735-0539, corotis@colorado.edu)

Kenneth Strzepek, Professor, Ph.D., Massachusetts Institute of Technology. Water resource planning and management, river basin planning, modeling of agricultural, environmental, and water resource systems; advanced decision support in water resource systems.
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