

Department of Civil and Environmental Engineering – Open Rank Faculty Positions
College of Engineering
University of Illinois at Urbana-Champaign

The Department of Civil and Environmental Engineering (CEE) at the University of Illinois at Urbana-Champaign invites applications for multiple full-time tenured or tenure-track faculty positions; all ranks will be considered. The Department seeks to expand its expertise in emerging interdisciplinary areas that are critical in addressing global challenges through innovative education and research.

The University of Illinois is an Equal Opportunity, Affirmative Action employer. Minorities, women, veterans and individuals with disabilities are encouraged to apply. For more information, visit <http://go.illinois.edu/EEO>. To learn more about the University's commitment to diversity, please visit <http://www.inclusiveillinois.illinois.edu>.

Desired areas of expertise for the positions are:

1. Smart Infrastructure and Construction / Sustainable Construction and Infrastructure Management.

Develop scientific and engineering based models and methods for the design, construction, and management of products, processes, and organizations involved in smart and sustainable buildings, civil infrastructure and lifeline systems; including but not limited to: (a) construction automation and robotics such as data sensing and advanced analytics; simulation, visualization, virtual and augmented reality; adaptive controls; rigid manipulators; smart construction methods; modular construction; additive manufacturing; (b) lean construction principles and innovative project delivery systems; (c) performance-based and sustainability assessment (including life cycle assessment) of buildings and infrastructure; (d) clean and efficient energy systems; protection of human health in the built environment; (e) condition assessment, retrofit and rehabilitation of buildings and infrastructure; and (f) preparedness, response and recovery from extreme events.

2. Smart and Resilient Materials for the Next Generation of Pavements and Infrastructure

Development and implementation of innovative and sustainable materials to enable design, construction, and operation of smart and resilient pavements and infrastructure. Areas of desired expertise include but are not limited to: smart materials or coatings that enable adaptive, multi-functional, self-healing, energy harvesting, phase changing or sensing properties; sustainable materials including advanced or alternative asphalt binders, polymers or cements, and materials with enhanced durability; and materials that promote emerging construction practice such as additive manufacturing and automated construction processes.

3. Hazard Mitigation, Design Optimization and Life-Cycle Performance for Large-Scale Structural Systems:

Advanced computational simulations and experimental testing methods for natural and anthropogenic hazard mitigation for structures and infrastructure; and design optimization and life-cycle performance assessment of large-scale structures and infrastructure under multi-hazards. Areas of desired expertise include but are not limited to: design and dynamic response of special and long-span bridges, high-rise buildings, coastal structures, wind turbines and off-shore structures; large-scale innovative experimental

testing; bio-inspired designs for civil structural systems; innovative hazard mitigation technologies and designs for large-scale structures and infrastructure.

4. Geoengineering to Address Climate Change Risks to the Built and Natural Environment and Geoengineering for Urban and Offshore Development Sustainability:

Modeling and geoengineering of the impacts of climate change on surface and subsurface geo-materials to identify and address risks to the built and natural environment. Possible areas of study include, but are not limited to risks to geo-infrastructure and the natural environment related to sea level rise, coastal erosion, melting permafrost, extreme climate events, and other hazards linked to climate change. Foundation and infrastructure development, modeling, design, testing, maintenance, reuse and renewal in congested urban environments and in offshore settings. Possible areas of study include, but are not limited to analytical, experimental, and numerical study of soil-structure interaction, as well as the design and advancement of smart geo-infrastructure for urban and offshore environments to improve infrastructure resilience to extreme events and geohazards.

5. Multimodal Transportation Systems to Address the Changing Paradigm of Efficiency, Sustainability and Safety:

Planning, design, monitoring, management, and control of complex multimodal transportation systems for enhanced efficiency, resilience, safety, and sustainability; integration of engineering fundamentals and principles, interdisciplinary approaches, and emerging technologies (e.g., high-performance computing, automation, robotics, networked sensing, data analytics) to address new challenges and opportunities such as autonomous and connected transportation in next-generation highway, railway, and aviation systems.

6. Physical and Chemical Processes for Emerging Challenges in Environmental Quality and Sustainable Development, and Physics and Mechanics of Porous Media for Energy and Environment:

Innovative solutions for grand challenges in natural and engineered environments, including but not limited to smart materials and systems for water/air purification and for energy production, recovery and storage, development of sensors and sensor networks, study of coupled flow, chemical, thermal, and mechanical processes in permeable materials for unconventional energy production and remediation of contaminated groundwater using innovative computational and experimental methods, effects of under-studied pollutants and extreme weather events on environmental and human health, predictive tools and solutions for public health protection using artificial intelligence, big data science, as well as other state-of-the-art science and technology.

7. Sustainable Groundwater, Surface Water and Urban Water Infrastructure under Changing Population, Climate, Energy and Land Use:

Integrated surface and subsurface water resource investigations using computational models, big data, novel experimentation, field investigation, and next generation in situ and remote sensing observations using sensor networks, drones, and low earth orbiting satellites. Climatologic, hydrologic, and environmental modeling of large urban areas; use of sensor networks to assess water and energy use, and environmental health. Possible areas of study may include: emerging challenges associated with competing water uses in a regional or global context; critical zone science approaches to water sustainability, carbon/nutrient cycling, and reactive and biological transport; urban water sustainability and risk management including impact of green infrastructure, interaction of urban areas with rivers and coastal zones, flood hazards, drought, and pollution control.

The department further invites qualified senior candidates for an Endowed Chair in **Climate-Driven Risks to Natural and Built Environments in the Age of Big Data** funded under the \$100-million Grainger Engineering Breakthroughs Initiative (<http://graingerinitiative.engineering.illinois.edu>). The area focuses on topics related to air, water, and/or earth surface and subsurface modeling to characterize and pose solutions to problems including, but not limited to, increase in demand for energy, variability in extreme hydroclimatic events, ecosystem and climate changes, climate driven migration, interactions between natural and built environment, and emergence and control of environmental pathogens associated with climate change and human activities.

The successful candidates are expected to develop and maintain an internationally recognized research program, to contribute fully to teaching of undergraduate and graduate courses, and to provide service to the profession and University. Successful candidates are also expected to develop interactions with faculty across the Department, College and campus. Opportunities exist to participate in related CEE and campus-wide communities, such as the Micro and Nanotechnology Laboratory, Prairie Research Institute, Illinois Center for Transportation, MAE Center (Creating a Multi-hazard Approach to Engineering), the National Rail Transportation Center, the Information Trust Institute, the National Center for Supercomputing Applications, the Institute for Genomic Biology, the Safe Global Water Institute, the Illinois State Geological Survey, as well as other Engineering Departments and the new College of Medicine. Applicants must hold an earned doctorate in an appropriate field. Ideal candidates include those who demonstrate evidence of a commitment to diversity, equity, and inclusion through research, teaching, and/or service endeavors. Salary and rank will be commensurate with qualifications.

To ensure full consideration, create your candidate profile through <https://jobs.illinois.edu/> and upload your application cover letter with area(s) of expertise indicated (addressed to Professor Benito J. Mariñas, Head, Department of Civil and Environmental Engineering, 1114 Newmark Civil Engineering Laboratory, 205 North Mathews Avenue, Urbana, IL 61801. Telephone: 217-333-6961) together with curriculum vitae, a concise summary of past research accomplishments and any teaching experience, a statement of future research and teaching plans, statement on commitment to diversity, and complete contact information for at least three references by **December 01, 2018**. The statement on diversity should address past and/or potential contributions to diversity, equity, and inclusion through research, teaching, and/or service. Only complete applications will be considered. Early applications are strongly encouraged as interviews may take place during the application period, but a decision will not be made until after the closing date. The starting date is negotiable, but is preferred to be August 16, 2019. Information about the department may be found at our website at <http://cee.illinois.edu/>. Questions should be referred to Vicki Dixon, vdixon@illinois.edu, (217) 244-0857.

The University of Illinois conducts criminal background checks on all job candidates upon acceptance of a contingent offer.

We have an active and successful dual-career partner placement program and a strong commitment to work-life balance and family-friendly programs for faculty and staff (<https://provost.illinois.edu/faculty-affairs/work-life-balance/>).