American University of Beirut

AUB American University of Beirut الجامعة الأميركية في بيروت

The PhD Programs in Civil Engineering (CE) Environmental and Water Resources Engineering (EWRE)

2007–08

General Information

The Department of Civil and Environmental Engineering offers two PhD programs, one in Civil Engineering and the other in Environmental and Water Resources Engineering. Through these two PhD programs, graduate students are trained to address and solve state of the art civil and environmental engineering challenges, and to develop theory, methodology, and adequate experimental skills to investigate emerging issues in these domains. Graduates of the PhD programs shall have the maturity and ability to assume academic and professional leadership roles in various fields related to civil and environmental engineering.

PhD Program Objectives

The objectives of the PhD programs are:

1. To cultivate expertise in specialized concentration areas of civil and environmental engineering.
2. To develop research skills which include the formulation and study of original ideas as well as the development of theory, methodology, and experimental skills.
3. To promote involvement in inter-disciplinary teams and activities and develop skills pertinent to group and collaborative efforts.
4. To acquire teaching expertise through class lectures and assisting in courses and labs.

Admission Requirements

Applicants to the PhD program are expected to have demonstrated distinct academic ability. To be eligible for admission to the program, a candidate must:

1. Hold a Master's degree in Civil Engineering or a related discipline from AUB or other recognized institution of higher learning with a minimum cumulative average of 85 over 100 or its equivalent.
2. Provide scores for the General Exam part of the Graduate Record Examination (GRE).
3. Students from non-English-speaking countries must show proficiency in the English language. A minimum score of 600 on the Test of English as a Foreign Language (TOEFL) (or 250 on the computer-based TOEFL) exam is required, or its equivalent.
4. Submit a complete application including a statement of interest, transcripts of academic record from all institutions attended after high school, and three letters of recommendation.
5. Complete an interview, either in person or by phone.

The application to the doctoral program will follow the deadlines as set by the Office of Admissions at AUB.

Program Requirements

The proposed PhD program requires a minimum of 24 credit hours of course work beyond the Master's degree and 24 credit hours of dissertation work. Students enrolled in the program must be admitted to candidacy at least two semesters before obtaining their PhD degree. To be eligible for candidacy, students must pass the qualifying and comprehensive examinations and complete at least 24 credits of course work with a minimum cumulative grade average of 85.

To earn a PhD degree in the Department of Civil and Environmental Engineering, a student must fulfill the following graduation requirements:

1. Attained a minimum grade of 80 in 24 credits taken at the PhD level.
2. Attained a minimum cumulative average of 85 in 24 credits of course work taken at the PhD level.
3. Passed the PhD dissertation defense.
4. Satisfied the minimum residence requirements.
5. Presented evidence of a paper submittal to a leading international journal.

Financial Support

PhD students may apply for fellowships that cover full tuition, and that include a stipend of 12,000 USD per year. PhD students may also apply for graduate assistantships that cover tuition, and/or research assistantships that provide a monthly stipend.
Research Areas of Strength - Civil Engineering

More information can be found at the website listed next page.

The PhD Programs in

Civil Engineering (CE)
Environmental and Water Resources Engineering (EWRE)

Structural and Materials Engineering

- Advanced design and behavior of reinforced concrete, prestressed concrete, steel structures, and fiber-reinforced composites
- Strengthening and rehabilitation of structural systems under static and seismic loading; structural health monitoring
- Advanced concrete technology including plain, hot weathered, and high-strength concrete
- Petrographic, chemical, and mechanical properties of sands and aggregates
- Seismic evaluation and assessment, earthquake engineering design, and use of fiber-reinforced polymers (FRP) for structural application under static and seismic loading
- Numerical modeling and computer-aided structural engineering

Geotechnical Engineering

- Foundation engineering and excavation support systems
- Land reclamation and site improvement
- Geographic Information Systems (GIS) in decision and expert tool applications
- Geo-environmental engineering (waste disposal and site remediation)
- Geotechnical earthquake engineering, geo-hazards and risk assessment

Transportation Systems

- Maritime transport and optimization of port operations (container terminals)
- Transport infrastructure management
- Intelligent Transportation Systems (ITS) – traveler information systems and behavior
- Public and urban transport planning and operations

Research Areas of Strength - Environmental and Water Resources Engineering

- Water and wastewater treatment systems
- Solid and industrial waste management
- Air pollution control and air quality management
- Environmental and water resources management and planning
- Water resources optimization and conflict management
- GIS and IT applications in water resources
- Risk assessment, mass emergency and disaster, with emphasis on dam safety
- Groundwater systems analysis
- Watershed modeling and management
- Hydraulic systems analysis

Laboratories

The Civil and Environmental Engineering programs maintain specialized teaching and research laboratories for environmental, geotechnical, hydraulics, and structural engineering. Equipment and instrumentation are also available to conduct investigations and surveys in transportation and surveying engineering. The laboratories are used for research purposes as well as to enhance teaching through hands-on experience in the various fields of civil and environmental engineering.

Relevant Websites

Department of Civil and Environmental Engineering
www.aub.edu.lb/fea/cee

PhD Programs in CEE
http://webfea.fea.aub.edu.lb/fea/cee/programs/phd.aspx

Laboratories and other facilities
http://webfea.fea.aub.edu.lb/fea/cee/facilities/labs.aspx

Faculty List and Research Interests

Name	Rank	Deg	Institution – Year	Yrs Serv	Research Interests
Assaf, H.	Asst.	PhD	UBC Vancouver - 1991	4	Water resources planning and management, watershed modeling, GIS, risk analysis, integration of information technology in engineering applications, agents technology.
Ayoub, G.	Prof.	PhD	Imperial College - 1971	37	Water and wastewater management, physico-chemical and biological treatment processes, development of low cost methods and materials in water and wastewater treatment, industrial waste treatment.
Basha, H.	Prof.	PhD	UC Berkeley - 1989	17	Development of analytical and numerical models for infiltration, modeling groundwater flow, solute transport in water networks, rainfall-runoff, mathematical analysis of conduit flow.
El-Fadel, M.	Prof.	PhD	Stanford U - 1991	11	Management of environmental and water resources, solid and industrial waste, air quality, environment impact assessment, and climate change, greenhouse gas emissions.
Hamad, B.	Prof.	PhD	UT Austin - 1990	25	Design and behavior of reinforced concrete structures, bond and development of reinforcement, repair and strengthening of reinforced concrete structures, and concrete technology.
Harajli, M.	Prof.	PhD	UM Ann Arbor - 1985	20	Design and behavior of reinforced, pre-stressed and fiber reinforced concrete under static and seismic loads, repair and rehabilitation of concrete structures using advanced composites.
Kaysi, I.	Prof.	PhD	MIT - 1992	16	Maritime transport & port operations, advanced technology applications in transport, transportation planning, and public transport systems.
Mabsout, M.	Prof.	PhD	UT Austin - 1991	16	Structural mechanics, finite element analysis, soil-structure interaction, computing in civil engineering.
Madanat, S.	Prof.	PhD	MIT - 1991	*	Transportation infrastructure systems management, modeling of infrastructure condition; and maintenance decision-making under uncertainty.
Sadek, S.	Assc.	PhD	UC Berkeley - 1993	14	Electrical properties of clays, properties of solid waste fills and their evaluation, alternative landfill cover systems, seismic design of dams.
Saikaly, P.	Asst.	PhD	University of Cincinnati - 2005	*	Water and wastewater treatment, biological processes.

***** *Drs. Madanat and Saikaly are expected to join in Summer 2007*