



**Eastern
Mediterranean
University**

**DEPARTMENT OF
CIVIL ENGINEERING**



Graduate Programs in Civil Engineering

MSc | PhD

**Master of Science
in Civil Engineering**

With Thesis (522)

**Master's Program in
Construction and
Real Estate Management**

Without Thesis (52Y)

**PhD Program
in Civil Engineering**

With Thesis (622)



EASTERN MEDITERRANEAN UNIVERSITY

DEPARTMENT OF CIVIL ENGINEERING



GRADUATE PROGRAMS AT A GLANCE



The Department of Civil Engineering at Eastern Mediterranean University in Famagusta, North Cyprus offers graduate programs under the Institute of Graduate Studies and Research. Our programs are designed to provide advanced knowledge, research opportunities, and professional expertise to prepare graduates for leadership in the built environment.

01

Master of Science in Civil Engineering

(522, with Thesis)

The program offers advanced technical training across several specialized disciplines, including: Geotechnical, Structural, Transportation, Water Resources, Construction Materials, and Construction Management. It is research-oriented and prepares students for high-level professional practice or further doctoral study.

02

Master's Program in Construction and Real Estate Management

(52Y, without Thesis)

The program provides specialized professional training at the intersection of engineering and business, focusing on project appraisal, cost control, and strategic management specifically designed for professionals looking to lead within the dynamic construction and real estate sectors.

03

PhD Program in Civil Engineering

(622, with Thesis)

This is a research-intensive program designed for students seeking to contribute original knowledge to the field. Focused on advanced theoretical study and independent inquiry, the program culminates in a comprehensive doctoral dissertation across key disciplines such as Geotechnical, Structural, Water-Resources, Transportation, Construction Materials, and Construction Management.



All programs are offered under the Institute of Graduate Studies and Research at EMU. For comprehensive information regarding academic procedures, admission requirements, and graduation criteria, please refer to: grad.emu.edu.tr/tr





EASTERN MEDITERRANEAN UNIVERSITY

DEPARTMENT OF CIVIL ENGINEERING



ADMISSIONS, SCHOLARSHIPS & APPLICATIONS

MS PROGRAMS

Bachelor's degree in Civil Engineering or a related field. Applicants from other engineering fields may be accepted on probation and required to take deficiency courses.

✓ Minimum CGPA: **2.50/4.00.**

PhD PROGRAMS

Master's degree in Civil Engineering or a related field. Applicants from other engineering fields may be accepted on probation and required to take deficiency courses.

✓ Minimum CGPA: **3.00/4.00.**

INTERNATIONAL STUDENTS

Applicants from all countries are welcome. International students must fulfill admission requirements and obtain a student visa in accordance with regulations of the Turkish Republic of Northern Cyprus.

ENGLISH PROFICIENCY

Fluency in written and oral English. Minimum scores: **TOEFL (IBT) 79, IELTS 6.5** (not applicable to Turkish nationals), **PTE Academic 58, YDS/YÖKDİL 66, EMU FLEPS English Language Stage II Exam 75.**



For details regarding

- Online application
- Scholarships
- Research assistantship opportunities



Please visit the official website of the Institute of Graduate Studies and Research:

grad.emu.edu.tr

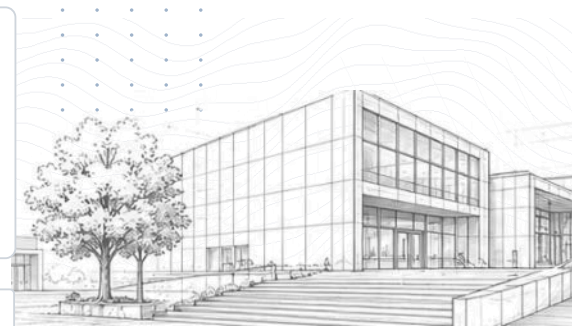


Contact Information:

For general inquiries:

civil.grad@emu.edu.tr

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EASTERN MEDITERRANEAN UNIVERSITY

DEPARTMENT OF CIVIL ENGINEERING

Academic Staff

Full-Time Academic Staff (1/2)



FULL-TIME ACADEMIC STAFF

01



Eriş Uygar

Assoc. Prof. Dr.
Department Chair

Full Time

CE/227

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eris.uygar
@emu.edu.tr

Research Interests:

Soil mechanics and foundation engineering for problematic soils; compressibility and shear strength of carbonate sand; soil stabilization using polymers, biopolymers, and recycled additives; compressibility, creep analysis, and settlement prediction, including tunnelling effects; earthquake geotechnics and soil liquefaction; soil-pile-structure interaction; environmental geotechnics; clay liners; and landfill leachate impacts.

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Yöksis

02



Giray Özay

Prof. Dr.

Full Time

CE/234

+90 392 630 2338

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@emu.edu.tr

Research Interests:

Non-prismatic frame analysis; sequential and performance-based structural analysis; structural assessment, rehabilitation and historical structures; finite-element analysis and machine-learning methods.

Find me on:



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Yöksis

03



Khaled Hamed Marar

Prof. Dr.

Full Time

CE/132

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@emu.edu.tr

Research Interests:

High-strength concrete; fiber-reinforced concrete; cement replacement materials; pozzolanic materials in concrete; self-compacting concrete; permeable concrete; sulfur concrete; non-destructive testing; mechanical properties of hardened concrete; and physical properties of concrete-making materials.

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Yöksis

04



Mehmet Cemal Genç

Assoc. Prof. Dr.

Full Time

CE/125

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Research Interests:

Earthquake engineering and computational mechanics; performance-based assessment of RC and masonry buildings; strong-motion instrumentation, and vulnerability modeling; seismic base isolation; HPC and parallel computing for large-scale nonlinear ODE/PDE simulations; soil-structure and fluid-structure interaction; computational elasticity; CFD.

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Yöksis

05



Mehmet Metin Kunt

Assoc. Prof. Dr.

Full Time

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Research Interests:

Computational methods, smart sensing and data-driven transportation engineering; pavement engineering, low-cost sensor development; micromobility and multimodal safety planning; ML, real-time object detection/YOLO; pavement distress identification; traffic monitoring and AI in transportation infrastructure.

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Yöksis

06



Mustafa Ergil

Prof. Dr.

Full Time

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+90 392 630 2333

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@emu.edu.tr

Research Interests:

Water resources engineering; groundwater and salinity; basin hydrology and unit hydrographs; precipitation analysis and statistical modeling; river sediment transport; integrated water resources of North Cyprus; including basin geomorphology; potential flood assessment and flood-control scenarios; and water harvesting.

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EASTERN MEDITERRANEAN UNIVERSITY

DEPARTMENT OF CIVIL ENGINEERING

Academic Staff

Full-Time Academic Staff (2/2)



FULL-TIME ACADEMIC STAFF

07



Tolga Çelik

Prof. Dr.

Full Time

CE/240

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@emu.edu.tr

Research Interests:

Construction management and technology; BIM in the AEC industry; BIM-based cost estimation, risk management, and site safety; construction planning, scheduling, and life-cycle costing; socio-economic impacts of the built environment; urban regeneration; revitalization of degraded spaces; and urban sustainable development.

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Yöksis

08



Tülin Akçaoğlu

Prof. Dr.

Full Time

CE/135

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Research Interests:

Concrete microcracking and interfacial transition zone behavior; effects of aggregate properties on concrete behavior; sustainable construction materials; waste glass and plastics as replacements, geopolymer mortars, self-healing efficiency of engineered composites; regression analysis and ANNs; treated wastewater effects on corrosion resistance and durability.

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Yöksis

09



Umut Türker

Prof. Dr.

Full Time

CE/139

+90 392 630 2362

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@emu.edu.tr

Research Interests:

Coastal engineering and water resources; process-based analysis and quantitative modeling; coastal and fluvial dynamics, including storm-driven beach evolution, sediment transport parameterization, and flow-vegetation-sediment interactions; hydro-environmental sustainability; groundwater vulnerability, contamination risk, and drought propagation in coupled systems; uncertainty quantification with geospatial and remote-sensing data; modeling frameworks for resilient and sustainable water management.

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10



Umut Yıldırım

Assoc. Prof. Dr.

Full Time

CE/243

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Research Interests:

Seismic resilience, AI for infrastructure safety; SHM with wireless sensors, real-time damage detection, structural control with active mass dampers; rubberized concrete for energy dissipation; PINN; ML seismic design and vision-based monitoring; experimental validation; intelligent solutions for resilient buildings and bridges.

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11



**Zalihe
Nalbantoğlu
Sezai**

Prof. Dr.

Full Time

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Research Interests:

Problematic soils: expansive, soft compressible and liquefiable soils; moisture-induced volume change in clays, long-term settlement of soft saturated deposits; soil liquefaction mechanics during seismic events ground improvement and stabilization for shear strength and compressibility.

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EASTERN MEDITERRANEAN UNIVERSITY

DEPARTMENT OF CIVIL ENGINEERING

Academic Staff

Distinguished Professors & Part-Time Academic Staff



DISTINGUISHED PROFESSORS

12



Mürüde Çelikağ

Prof. Dr.

Part-time

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Research Interests:

Steel beam-to-column, RBW and reverse-channel connections; mixed-frame dynamics, progressive collapse, structural repair, composite steel-deck slabs, occupational safety and sustainable construction.

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13



Özgür Eren

Prof. Dr.

Part-time

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Research Interests:

Concrete and civil engineering materials; cement replacement materials; fiber-reinforced concrete; stone buildings; and repair and maintenance of reinforced concrete buildings.

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PART-TIME ACADEMIC STAFF

14



Mahmood Hosseini

Prof. Dr.

Part Time

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Research Interests:

Earthquake-resilient, repairable, and sustainable structures; self-sufficient water and energy systems integrated with lifeline earthquake engineering; seismic design and retrofit of bridges, dams, and industrial facilities; tsunami and liquefaction hazards; urban planning and architectural design for seismic zones; risk mitigation, disaster management, rapid post-event usability, and long-term stability.

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RESEARCH FACILITIES

The Department fosters a robust, research-centric environment for graduate scholars, underpinned by a suite of specialized, ABET-accredited laboratories. These facilities are designed to facilitate high-level technical inquiry across the following core disciplines:

1. Structural and Mechanics Laboratory

Stability and durability under static and dynamic loading, displacement-based seismic assessment, finite element analysis, and earthquake engineering testing.

2. Geotechnical and Soil Mechanics Laboratory

Physical and mechanical properties of soils, hydro-mechanical behavior of compacted clays, liquefaction potential, chemical/polymer additives in stabilization and soil improvement.

3. Construction Materials Laboratory

Advanced instrumentation for durability of fiber-reinforced and self-consolidating concrete, non-destructive testing, and thermal analysis of lightweight mortar and alternative materials.

4. Transportation Laboratory

Marshall and CBR tests, abrasion resistance of aggregates, viscometer-based asphalt analysis, traffic simulation, and pavement management systems.

5. Tevfik Tarımcıoğlu Hydraulics Laboratory

Hydromechanics, hydrology, and water-resources equipment.

7. Surveying Laboratory

Ground-surveying instruments, total stations, GPS, and levelling equipment.

SCIENTIFIC RESEARCH PROJECTS (BAP-C)

EMU's Type C Scientific Research funding supports sustainability-and social-development-oriented research.

- Procure high-precision equipment and materials.
- Conduct complex experimental methodologies aligned with regional and international needs.
- Bridge theoretical modeling and empirical validation.

research.emu.edu.tr

RESEARCH AWARDS

EMU Scientific Research Support Principles cover publication awards, citation awards, scientific book publication awards, outsourced project support, publication achievement awards, research incentive awards, intellectual rights and copyright, and other approved scientific research support.

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COMMUNITY SERVICE PROJECTS

Our faculty support the construction industry and local governance through consultancy, quality assurance, expert witness services, earthquake safety advice, seismic risk assessment, retrofitting strategies, material testing, site inspection, and technical oversight for municipal and community development projects.

KEY PUBLICATIONS &
CAREER OPPORTUNITIES

SELECTED KEY PUBLICATIONS

1. Deldar, O., Akçaoğlu, T., & Ergil, M. (2024). Assessing the impacts of treated wastewater on concrete's mechanical properties and corrosion resistance. *Iranian Journal of Science and Technology, Transactions of Civil Engineering*, 48(6), 4093-4112.
2. Abrari, E., Dadianahangar, H., & Ergil, M. (2022). Prediction of the key parameters of free over-fall flows within the generalized circular cross-section with varying flat bases. *Flow Measurement and Instrumentation*, 86, 102196.
3. Rafie, B., Marar, K. H., & Akçaoğlu, T. (2026). Evaluating the Effects of Two Modifiers on the Mechanical Properties of Sulfur Concrete Using a Novel, High-Capacity Lab-Scale Mixer for Sustainable Construction. *Turkish Journal of Civil Engineering, (Advanced Online Publication)*.
4. Yalciner, H., & Marar, K. (2017). Experimental study on the bond strength of different geometries of corroded and uncorroded reinforcement bars. *Journal of Materials in Civil Engineering*, 29(7), 05017002.
5. Moussa, H., Elabeidy, A. B., & Akçaoğlu, T. (2024). Predicting the compressive strength of rubberized concrete containing silica fume using stacking ensemble learning model. *Construction and Building Materials*, 449, 138254.
6. Akbas, E. N., Sensoy, S., & Eren, O. (2025). Combined compression-bending-torsion behaviour of corrosion damaged reinforced concrete columns. In *Structures* (Vol. 82, p. 110644). Elsevier.
7. Sayı, C. Ö., & Eren, Ö. (2022). Physical and durability properties of recycled polyethylene terephthalate (PET) fibre reinforced concrete. *European Journal of Environmental and Civil Engineering*, 26(14), 7084-7102.
8. Tapia-Hernández, E., Genes, M. C., & Guerrero-Bobadilla, H. (2025). Damages observed in Turkey due to the Kahramanmaraş earthquakes of February 6, 2023. *Journal of Earthquake Engineering*, 29(16), 3393-3411.
9. Tapia-Hernández, E., Genç, M. C., & Güllan, P. (2025). Damage assessment and seismic response of steel buildings during the Kahramanmaraş, Turkey earthquakes of February 6, 2023. *Earthquake Spectra*, 41(2), 1565-1588.
10. Ghorbani, N., Hosseini, M., & Azizian, H. (2025). Introducing Cradle-Form Rolling Pendulum Seismic Isolator, and Numerical Study of Its Performance. *Bulletin of Earthquake Science and Engineering*, e731717.
11. Ghasemi, S., Hosseini, M., Hu, S., & Shahram, A. (2024, December). Seismic isolation strategy via controlled soft first story with innovative multi-stage yielding damper: Experimental and numerical insights. In *Structures* (Vol. 70, p. 107553). Elsevier.
12. Eissa, M., & Celikag, M. (2025). Seismic performance assessment of low-rise reinforced concrete moment frames with different slab types using nonlinear time history analysis (performance of LR RC frames with different slabs by NLTHA). *International Journal of Structural Engineering*, 15(4), 458-503.
13. Sehswail, M. M., & Celikag, M. (2024). Inelastic Behavior of Hybrid Cellular Steel Beams Made from Hot-Rolled Parent Sections. *Arabian Journal for Science and Engineering*, 49(10), 13297-13314.
14. Babaei, Z., & Kunt, M. M. (2024). A correlated random parameters ordered probit approach to analyze the injury severity of bicycle-motor vehicle collisions at intersections. *Accident Analysis & Prevention*, 196, 107447.
15. Babaei, Z., & Kunt, M. M. (2023). Tempo-categorization of road accident hotspots to enhance the problem diagnosis process and detect hidden hazardous locations. *Journal of Transportation Safety & Security*, 15(12), 1271-1298.
16. Saeed, H., Nalbantoglu, Z., & Uygar, E. (2025). A comprehensive review of hydrocarbon contaminated soil behavior, geotechnical properties and potential remediation. *Soil and Sediment Contamination: An International Journal*, 34(6), 1023-1067.
17. Abdullah, Z. O., Çelik, T., & Çelik, T. (2025). Proposing an Affordable Real-Time Camera-Based Safety and Quality Management Framework for Construction Industries in Developing Countries. *Buildings*, 15(2), 156.
18. Habib, A., & Yildirim, U. (2025). Investigating the Performance of Data-Driven Ensemble Machine Learning Models in Preliminary Designing Multi-Stage Friction Pendulum Bearings. *Structural Engineering International*, 35(3), 435-451.
19. Mousavi, S. M. F., & Sensoy, S. (2023). Effects of the vertical component of ground motion on the maximum-inelastic-horizontal-response of SDOFs. *Journal of Earthquake and Tsunami*, 17(04), 2350012.
20. Payab, A. H., & Türker, U. (2025). Resilience of rainfed agriculture in northern part of Cyprus: a comprehensive drought severity level impact analysis and adaptive strategies. *Environment, Development and Sustainability*, 27(2), 3033-3058.
21. İpek, C., & Türker, U. (2024). Geospatial based groundwater resources susceptibility and contamination risk mapping for Yeşilköy aquifer, Cyprus. *Environmental Earth Sciences*, 83(15), 446.
22. Alibrahim, B., Garoushi, A. H. B., & Uygar, E. (2025). The role of calcium-based additives in bentonite stabilization: a comparative evaluation. *Arabian Journal for Science and Engineering*, 50(11), 8425-8438.
23. Youssefi, I., & Celik, T. (2024). Comparative analysis between different risk score calculation approaches. *Engineering, Construction and Architectural Management*, 31(10), 4099-4124.
24. Sadeghpour, A., & Ozay, G. (2025). Investigating the predictive capabilities of ANN, RSM, and ANFIS in assessing the collapse potential of RC structures. *Arabian Journal for Science and Engineering*, 50(16), 13169-13190.
25. Karayel, O., & Ozay, G. (2026). Seismic Performance Assessment of Special Truss Moment Frames Retrofitted with Fluid Viscous Dampers: A FEMA P695-Based Approach. *International Journal of Steel Structures*, 1-16.
26. Saeed, H., Nalbantoglu, Z., & Uygar, E. (2023). Liquefaction susceptibility of beach sand containing plastic fines. *Marine Georesources & Geotechnology*, 41(1), 1-13.
27. Habib, A., & Yildirim, U. (2024). Proposing unsupervised clustering-based earthquake records selection framework for computationally efficient nonlinear response history analysis of structures equipped with multi-stage friction pendulum bearings. *Soil Dynamics and Earthquake Engineering*, 182, 108732.

CAREER EMPLOYMENT OPPORTUNITIES FOR MS AND PHD GRADUATES



Work as consultants in highway, water resources, geotechnics, structural design, construction materials, and management.



Become academic faculty members or lecturers.



Serve as civil engineers in government and non-governmental organizations.



EASTERN MEDITERRANEAN UNIVERSITY

DEPARTMENT OF CIVIL ENGINEERING



Graduate Courses for MS and PhD Students



Programs 522 and 622



MATHEMATICAL / COMPUTATIONAL

- CIVL502** Systems Engineering
- CIVL506** Computational Methods in Civil Engineering
- CIVL511** Mathematical Topics for Engineers
- CIVL548** Matrix Methods in Structural Analysis
- CIVL558** Computational Methods in Geotechnical Engineering



HYDRAULICS / WATER RESOURCES

- CIVL530** Special Topics in Hydraulics
- CIVL531** Groundwater Engineering
- CIVL532** Applied Engineering Hydrology
- CIVL533** Irrigation and Drainage Engineering
- CIVL535** Open Channel Hydraulics
- CIVL536** Coastal Hydraulics
- CIVL537** Advanced Sediment Transport
- CIVL538** Design of Coastal and Harbour Structures



STRUCTURAL ENGINEERING

- CIVL512** Stability of System
- CIVL523** Theory of Plates and Shells
- CIVL543** Finite Element Method
- CIVL544** Advanced Topics in Steel Structures
- CIVL547** Structural Reliability
- CIVL548** Matrix Methods in Structural Analysis
- CIVL570** Structural Dynamics
- CIVL571** Special Applications in Reinforced Concrete
- CIVL573** Assessment, Repair and Strengthening of Structures
- CIVL575** Sustainability in Building Construction
- CIVL576** Soil-Structure Interaction
- CIVL577** Seismic Performance Assessment of Buildings
- CIVL579** Bridge Engineering
- CIVL644** Connections in Steel Structures



GEOTECHNICAL ENGINEERING

- CIVL550** Special Topics in Geotechnical Engineering – Structured Soils
- CIVL551** Advanced Soil Mechanics
- CIVL552** Geotechnical Earthquake Engineering
- CIVL553** Soil Behaviour
- CIVL554** Advanced Soil Stabilization
- CIVL555** Expansive Soils
- CIVL556** Measurements of Shear Strength of Soils
- CIVL557** Mechanics of Unsaturated Soils
- CIVL558** Computational Methods in Geotechnical Engineering
- CIVL651** Advanced Geotechnical Engineering – I



TRANSPORTATION ENGINEERING

- CIVL563** Special Topics in Traffic Engineering
- CIVL564** Research in Road Safety
- CIVL565** Pavement Management Systems
- CIVL567** Computer Applications in Transportation Engineering – I
- CIVL568** Computer Applications in Transportation Engineering – II



CIVIL ENGINEERING MATERIALS

- CIVL582** Creep and Shrinkage of Concrete
- CIVL585** Concrete Construction
- CIVL586** Chemical Admixtures for Concrete
- CIVL587** Cement Replacement Materials
- CIVL588** Durability of Building Materials
- CIVL589** High Strength Concrete
- CIVL685** Fiber Reinforced Concrete



CONSTRUCTION TECHNOLOGY / MANAGEMENT / BIM

- CIVL591** Construction Management – I
- CIVL592** Construction Management – II
- CIVL593** Risk Management in Construction Projects
- CIVL594** Estimating and Tendering
- CIVL595** Contract Administration
- CIVL596** Construction Technology
- CIVL597** Construction Technology – II
- CIVL599** Occupational Health Safety Management in Construction
- CIVL691** Building Information Modelling Theory and Practice
- CIVL692** Organizations in Construction
- CIVL694** Project Management



NOTE: The following courses are open to MS and PhD students across all areas:

CIVL598 Seminar | **CIVL600** PhD Thesis | **CIVL698** Seminar | **CIVL699** PhD Qualifying Exam



COURSE DESCRIPTIONS

➔ Mathematical / Computational



CIVL502 Systems Engineering

Systems approach. Mathematical modelling of engineering systems. Optimization principles. Problems with and without constraints. Linear programming. Nonlinear programming. Dynamic programming. Engineering economic analyses. Cost and benefit. Decisions. Uncertainty and risk. Reliability.

CIVL506 Computational Methods in Civil Engineering

Introduction to basic concepts. Curve fitting. Numerical interpolation and integration. Solution of systems of algebraic equations. Finite differences. Stability, consistency and convergence. Boundary and initial conditions. Partial differential equations. Numerical solutions to parabolic, hyperbolic and elliptic equations. Method of characteristics. Applications in civil engineering.

CIVL511 Mathematical Topics for Engineers

Matrices, canonical forms of matrices, bilinear and quadratic forms, symmetrizable matrices, extremum properties of eigenvalues, Rayleigh quotient, Courant-Fisher's theorem. Calculus of variations, natural boundary conditions, transition conditions, variable end points, Lagrange multipliers, Sturm-Liouville problems, Hamilton's principle, Lagrange's equations, Rayleigh-Ritz procedure

CIVL548 Matrix Methods in Structural Analysis

Structural analysis versus actual response. Principle of virtual displacements. Principle of virtual forces. Betti's law. Influence coefficients. Force and displacement transformations. Transformation of member flexibility and stiffness. Fixed end forces, automated matrix displacement and force methods of structural analysis. Releases. Substructures. Nonlinear analysis. Introduction to finite element method.

CIVL558 Computational Methods in Geotechnical Engineering

Constitutive modeling for geomaterials. Finite element implementation of constitutive models, and coupled solid-fluid mechanical governing equations for inelastic porous media. Transient and steady state conditions. Geotechnical, geological, structural, and other related modern engineering problems. Analysis of engineering works using state of practice software to provide insight into geotechnical design and the performance of constructed facilities. Use of finite element software program for implementation and analysis.



COURSE DESCRIPTIONS

➔ Hydraulics Engineering



CIVL530 Special Topics in Hydraulics

A hydraulic branch course offered to any graduate student related mainly to his/her thesis topic.

CIVL531 Groundwater Engineering

Occurrence of groundwater, techniques and methods in groundwater investigations, groundwater hydraulics, aquifer analysis, techniques and methods in groundwater extraction, groundwater contamination.

CIVL532 Applied Engineering Hydrology

System approach in hydrology, hydrologic modelling, probabilistic methods in hydrology, stochastic hydrology, synthetic flow generation, remote sensing techniques in hydrology, isotope techniques in hydrology.

CIVL533 Irrigation and Drainage Engineering

Soil and water types, reclamation of saline and alkali soils, land classification, types of drainage, drainage structures, design of drainage systems, irrigation practices, types of irrigation and their requirements, moisture in soil and crop water requirements, design of irrigation systems, economic evaluation, operation and maintenance of irrigation systems.

CIVL535 Open Channel Hydraulics

Introduction: General equation of gradually varied flows - GVF. Types of channel slopes. Characteristics and classification of GVF profiles. Solution of GVF equations. Characteristics of rapidly varied flow. Flow over spillways. Crest shape and discharge of the overflow spillways. Basic characteristics of the jump. Stilling basins. Flow measurement in open channel. Types of flows measurement structures. Sharp, short, and broad-crested weirs. Design of open channels.

CIVL536 Coastal Hydraulics

The coast and coastal processes, short-period waves (wind waves), wave climate, waves in coastal region, long-period waves (tides and tsunamis), coastal currents and storm surges, the interaction between waves and structures, coastal sediments problems, coastal pollution and control.

CIVL537 Advanced Sediment Transport

Introduction; properties of sediment; incipient motion of a sediment particle; fall velocity; bed-forms mechanics and resistance laws (ripples, dunes and anti-dunes); bed load, suspended load and total load theories and calculations; regime concept and stable channel design (the design of erodable channels); settling basin types and intake structures; scour criteria, isotope techniques in sediment transport studies. Sediment transport under wave action.

CIVL538 Design of Coastal and Harbour Structures

Types and functions of coastal and harbour structures, wave forces on coastal and harbour structures, principles of coastal sediment transport, coastal erosion and deposition, coastal pollution and pollutant transport processes in coastal waters, design of coastal defence structures and seawalls, design of breakwaters, design of quay walls, design of turning basin and approach channel, design procedures of marine outfalls.



COURSE DESCRIPTIONS

➔ Structural Engineering



CIVL512 Stability of System

Fundamental concepts of stability, Lyapunov's definitions. Linear systems and stability criteria. Classification of systems. The concept of a stability boundary and multiply-parameter systems. Conservative systems and elastic buckling problems. Pseudo-conservative systems, gyroscopic systems and circulatory systems. Examples.

CIVL523 Theory of Plates and Shells

This course provides an in-depth study of the theory and analysis of plates and shells, which are fundamental components in many engineering structures. It covers both classical and modern approaches to the analysis and design of these elements.

CIVL543 Finite Element Method

Fundamental concepts, Principle of Minimum Potential Energy, Rayleigh-Ritz Method. Matrix algebra, Gaussian Elimination, Cholesky and symmetric banded matrices, Skyline solution. One dimensional problems: The steps include development of shape functions, derivation of element stiffness, formation of global stiffness, treatment of boundary conditions, solution of equations and stress calculations using potential energy formulation. Trusses, two dimensional problems using constant strain triangles, beams, frames and axisymmetric solids subjected to axisymmetric loading. Computer implementation.

CIVL544 Advanced Topics in Steel Structures

Introduction to Limit State Design of structural elements. Initial sizing, analysis and design of single-storey and multi-storey buildings. Structural behaviour and practical aspects of connections, including semi-rigid connections. Understanding the behaviour and design of members that are subject to combined bending and torsion.

CIVL547 Structural Reliability

Development of probabilistic bases for the design and evaluation of structural safety and reliability. Concepts of probability and stochastic processes. Description of random occupancy, wind and earthquake loadings, and of variability in material properties. Structural system reliability. Quantitative risk evaluation, systematic assessment and analysis of uncertainties, optimum design accounting for uncertainty and failure consequences. New probability-based code specifications. Applications.

CIVL548 Matrix Methods in Structural Analysis

Structural analysis versus actual response. Principle of virtual displacements. Principle of virtual forces. Betti's law. Influence coefficients. Force and displacement transformations. Transformation of member flexibility and stiffness. Fixed end forces, automated matrix displacement and force methods of structural analysis. Releases. Substructures. Nonlinear analysis. Introduction to finite element method.

CIVL570 Structural Dynamics

Introduction. Single degree of freedom systems: Undamped free and forced vibrations, Damped free and forced vibrations, Support motions of undamped systems. Lumped mass multi degree of freedom systems: Free vibrations, Characteristic shapes of vibrations, Orthogonality of modes, Modified Rayleigh Method, Modal analysis, Multi-storey rigid frames, Frames with flexible beams, Damping. Earthquake analysis and design: Response spectra, Modal analysis, Equivalent static load approach in earthquake design.

CIVL644 Connections in Steel Structures

Common connections and matters relating to their design, detailing, fabrication and erection. Behaviour of semi-rigid connections. Modelling of joint behaviour. Ductility of connections. Cyclic behaviour of beam-to-column connections. Blast and impact resistance of connections.



COURSE DESCRIPTIONS

➔ Structural Engineering (*Continued*)



CIVL571 Special Applications in Reinforced Concrete

Yield line analysis of slabs. Equilibrium and virtual work methods. Isotropically and orthotropically reinforced slabs. Composite beam and slab bridges. Composite building floors. Steel deck composite slabs. Reinforced Concrete bridges: loads, construction details, design of slab, deck girder. Introduction to arch bridges.

CIVL573 Assessment, Repair and Strengthening of Structures

Introduction to assessment of structures. Destructive and non-destructive tests on RC, Steel and masonry constructions. Repair and strengthening techniques of RC structures. Strengthening of beams, columns and walls. Repair and Strengthening of other types of constructions.

CIVL575 Sustainability of Building Construction

Introduction to sustainability: Environmental, Economical and Social Impacts. Environmental management: what is environment, pollution and Sustainable Development (SD). Sustainability and construction: sustainable design, construction, use and end of life. Key issues of environmental concern: materials and resources, waste and land-use, energy, transport, emissions, recycle and reuse, performance and quality, health and well-being, social issues. Energy management: alternative energy sources.

CIVL576 Soil-Structure Interaction

Introduction to SSI, D'Alembert Principle, Virtual Displacement method, Formulation of Dynamic Response of Elastic Structural Systems by Using Coding Technique, Preliminary Information about Fourier Transform (FT), FT Technique for MDOF Systems, Hysteretic Damping Ratio, Discrete Fourier Transform (DFT), Fast Fourier Transform Algorithm (FFT), Substructure Method, Extension of Substructure Method to Dynamic Analysis, Review of Elastic Waves, Plane Waves, Equations of The Linear Theory of Elasticity, Constitutive Equations for Isotropic Linearly Elastic Solids, Displacement Equation of Motion. Elements of Soil-Structure Interaction Analysis.

CIVL577 Seismic Performance Assessment of Buildings

Review of seismic performance objectives and code design criteria. Linear and nonlinear procedures of analysis. Procedures for evaluating existing buildings. Factors affecting vulnerability of buildings. Vulnerability assessment techniques: seismic response vs. damageability. Loss estimation.





COURSE DESCRIPTIONS

➔ Geotechnical Engineering



CIVL550 Special Topics in Geotechnical Engineering

Advanced topics of special interest to graduate students on recent developments in geotechnical engineering. Specific topics and prerequisites identified for each section and varied from term to term.

CIVL551 Advanced Soil Mechanics

The nature of soils. States of stress within a soil mass. Mohr circle and stress path. Stress-strain relationships under various soil conditions. Seepage theory and flow in anisotropic and multi-layered soils. Concept of failure. Failure theories. Shear strength of soils. Pore pressure coefficients.

CIVL552 Geotechnical Earthquake Engineering

Vibratory motion. Single degree-of-freedom systems. Wave propagation through soils. Dynamic soil properties. Strength and deformation characteristics of cyclically loaded soils. Earthquake site response analysis. Ground motion characterization. Liquefaction. Ground settlement. Seismic analysis and stability of slopes. Seismic analysis and design of retaining structures.

CIVL553 Soil Behaviour

The microscopic nature of soils. Crystallography. Clay mineralogy; determination of clay mineral composition. Physico-chemical properties of clays. Properties of double layer. Soil fabric and soil structure. Soil behavior in regard to soil composition and soil structure. Rheology.

CIVL554 Advanced Soil Stabilization

Introduction to engineering ground modification and some problematic soils. Site exploration and characterization. Field reconnaissance, surface and subsurface exploration. Classification of ground modification techniques. Modification by admixtures. Types of admixtures and their effect on soil properties. Mechanical modification: shallow surface compaction. Deep compaction techniques, and hydromechanical compaction. Preloading and the use of vertical drains. Preloading with and without vertical drains. Introduction to grouting. Definition and purpose of grouting. Grout materials, and grouting techniques. Geosynthetics. Thermal modification. Electro-osmosis and electrokinetic dewatering and stabilization.

CIVL555 Expansive Soils

Identification of expansive soils. Laboratory and in situ testing techniques on expansive soils. Soil suction applications to expansive soils. Influence of climatic changes on expansive soils: cyclic swell-shrink behaviour. Shrinkage of expansive soils. Heave prediction methods. Treatment of expansive soils. Remedial methods. Design of foundations on expansive soils.

CIVL556 Measurement of Shear Strength of Soils

States of stress in geotechnical engineering (isotropic, K0 conditions). Shear Strength Failure Criteria. Concepts of critical state soil mechanics. Direct shear test: loose and dense sands. Triaxial equipment and testing philosophies: deformation behavior (isotropic and shear loading). Unconsolidated undrained triaxial test. Consolidated undrained test with pore water pressure measurement. Skempton's A and B pore water pressure parameters. Cam Clay Model: framework and theoretical basis, predicted behaviour of NC and OC clays. Vane shear test for clays.





COURSE DESCRIPTIONS

➔ Geotechnical Engineering (*Continued*)



CIVL557 Mechanics of Unsaturated Soils

Introduction to unsaturated soil problems. Phase properties and relations. Effective stress concepts for unsaturated soils. Measurement of unsaturated soil properties. Flow of water in unsaturated soils. Steady state and transient flows. Soil water characteristic curve. Hydraulic conductivity-suction relations. Infiltration, evaporation and drainage and applications to soil covers and earth dams. Mechanical behaviour of unsaturated soils. Pore pressure parameters. Volume change constitutive relations under drained and undrained loading.

CIVL558 Computational Methods in Geotechnical Engineering

Constitutive modeling for geomaterials. Finite element implementation of constitutive models, and coupled solid-fluid mechanical governing equations for inelastic porous media. Transient and steady state conditions. Geotechnical, geological, structural, and other related modern engineering problems. Analysis of engineering works using state of practice software to provide insight into geotechnical design and the performance of constructed facilities. Use of finite element software program for implementation and analysis.

CIVL651 Advanced Geotechnical Engineering-I

Geotechnical site investigation methods and in situ tests used to estimate engineering parameters. In situ test methods: standard penetration test, cone penetration with and without pore pressure measurements (CPTU and CPT), self-boring and cone pressuremeters (SBPMT and CPMT), flat dilatometers (DMT) and field vane shear test. Correlations of strength and stiffness properties, in situ state parameters, consolidation coefficients, stress history, and other parameters. Bearing capacity of shallow and deep foundations. Settlements of shallow and deep foundations leading to structural damage. Soil-structure interaction models using finite element based softwares. Design procedures and construction considerations for shallow and deep foundation systems.





COURSE DESCRIPTIONS

➔ Transportation Engineering



CIVL563 Special Topics in Traffic Engineering

Vehicle operating characteristics. The driver. Traffic characteristics. Traffic volume studies. Speed characteristics and studies. Travel time and delay studies. Origin-Destination surveys. Parking studies. Traffic accidents. Highway capacity and levels of service. Traffic signs, markings, signals and intersections. At grade and grade-separated intersections and their control. Economic analysis of highways.

CIVL564 Special Topics in Transportation Engineering-Road Safety

The nature and dimensions of the Road Safety Problem. Safety Management Systems. Human factors in Road Traffic. Data Needs and Limitations. Hazardous Road Locations. Diagnosis of Road Accident Problems. Development of Countermeasures. Road design. Intersections. Delineation, Signing and Lighting.

CIVL565 Pavement Management Systems

Introduction to pavement management process. Systematic approach to pavement management. Framework for a PMS. Monitoring and evaluation. Pavement serviceability and performance concepts. Pavement design. Pavement condition data collection, equipment processing. Distress survey methods and use. Field measurement of serviceability and roughness. Non-destructive testing and evaluation. Pavement maintenance. Pavement rehabilitation. Overlay design concept. Pavement life cycle, costing and economic analysis.

CIVL567 Computer Applications in Transportation Engineering I

Multi-layered elastic theory, stress, strain, and deflection analysis in flexible and rigid pavements. Thickness design of various pavement types for highways, streets, parking lots, and industrial areas. Westergaard's edge and interior loading models for airport pavements. Design of asphalt concrete and Portland cement concrete pavements for airports. Analysis of asphalt mixtures for pavement surface courses. Application of engineering software for pavement structural analysis, mix design optimization, and automated generation of design outputs.

CIVL568 Computer Applications in Transportation Engineering II

Overview of data-driven and computational methods for transportation infrastructure monitoring and traffic analysis. It covers sensor technologies such as inertial measurement units, accelerometers, ground-penetrating radar, and IoT-based systems. Topics include data acquisition, preprocessing, and statistical analysis, along with digital image processing and computer vision. Deep learning, including convolutional neural networks and YOLO, enables automated detection of pavement distress like cracks, rutting, and potholes. Applications include vehicle counting, classification, speed estimation, and traffic modeling. Practical labs use Python, real-world datasets, and pre-trained models for hands-on experience, reinforcing skills in integrating detection outputs with level-of-service evaluation and decision-making for transportation systems management.



COURSE DESCRIPTIONS

➔ Civil Engineering Materials



CIVL582 Creep and Shrinkage of Concrete

Creep. General form of strain-time relationship for concrete. Concrete as a composite material. Factors influencing creep. General prediction of creep. Behavior of cracks in brittle materials. Features of failure in concrete.

CIVL585 Concrete Construction

Cement. Aggregate. Admixtures. Water, batching and mixing. Transporting, placing, compaction and curing. Strength of concrete. Deformations and cracks. Polymer reinforced concrete. Roller compacted concrete and shotcrete. Self-compacting concrete. Temperature problems of concrete. Quality of concrete.

CIVL586 Chemical Admixtures for Concrete

Classification of cement admixtures. Water-reducing admixtures. Air-entraining admixtures. Pumping aids for concrete. Integral water-proofers. Mortar plasticisers. Superplasticisers. Accelerators. Polymer dispersion or lattices. Novel admixtures.

CIVL587 Cement Replacement Materials

Hydration of Portland cement. Pozzolanic reactions. Portland-Pozzolan mixes. Calcined clay, shale and other soils. Slags and slag cements. Natural pozzolans. Silica fume. Fly ash.

CIVL588 Durability of Building Materials

Factors causing deterioration of materials. Durability of building stones. Decay and preservation of timber. Mechanisms of metal corrosion. Corrosion protection for metals. Deterioration of concrete. Mechanisms of concrete corrosion. Effect of various chemicals, sea water, ground water and industrial wastes. Protective measures against concrete corrosion. Corrosion of steel reinforcement in concrete.

CIVL589 High Strength Concrete

Historical review and materials used. Concrete mix design calculations for HSC. Properties of fresh and hardened concrete. Mechanical properties of hardened concrete. Durability of HSC. Quality assurance and quality control. HSC structures and economical considerations.

CIVL685 Fiber Reinforced Concrete

Concept of FRC. Fiber types. Physical and chemical properties of fibers. Properties of freshly mixed and hardened fiber reinforced concrete. Mix proportioning of FRC. Mechanical properties of FRC and high strength FRC. Cost and economical benefits of FRC.





COURSE DESCRIPTIONS

➔ Construction Technology & Management



CIVL591 Construction Management 1

This course aims to provide graduate students with the necessary information related to project management in the construction industry, which will help them in their professional careers. It covers the topics such as advanced construction planning and scheduling, resource management and construction progress control such as, cos and time, as well as quality management and quality control.

CIVL592 Construction Management 2

This course aims to provide graduate students with the information and practices in project appraisal, life cycle costing, value management and environmental management. This course covers a wide range of subjects that are required in the daily operations in the construction industry. Students will gain valuable experience through different types of projects which will require the application of life cycle costing methods, value management, environmental appraisal and management and an overall project appraisal.

CIVL593 Risk Management in Construction Projects

This course aims to provide an overview of what is meant by risk and way in which it influences decisions made in the construction industry. It should provide graduate students with the necessary systems and techniques used in management of risk on construction projects as well as the whole construction industry. This course also covers the theoretical aspects of risks as well as the application of risk to real life projects.

CIVL594 Estimating and Tendering

The project management context; Introduction to project management, project management context, project management processes. Project management knowledge areas; project integration management, Project scope management, project time management, project cost management, project quality management, project human resources management, project communication management, project risk management, project procurement management

CIVL595 Contract Administration

This course aims to provide graduate students with the knowledge of contract administration and how contracts in the industry function. This course covers topics such as different contracting arrangements in the construction industry, fundamentals of contracts, significance of different forms of organization, different types of bonds, how contracts are awarded and how payment of contracts is performed.

CIVL596 Construction Technology

This course aims to provide graduate students with the necessary information related to Construction Technology in the construction industry, which will help them in their professional careers. Site work. Excavation equipment. Rock excavation. Protection of excavation. Lifting equipment. Transporting equipment. Soil compacting equipment. Masonry construction, and concrete construction.

CIVL597 Construction Technology-II

This course aims to provide graduate students with the necessary information related to Construction Technology in the construction industry, which will help them in their professional careers. Formworks technology, formwork design. Scaffolding system, scaffolding design. Foundation construction. Demolition & recycling. Compressed air system. Wood construction and dewatering technology.

CIVL599 Occupational Health Safety and Management in Construction

This course aims to provide graduate students with the necessary information related to Safety and health management in the construction industry, which will help them in their professional careers. Safety and health management. Development of the safety and health function. Information systems. Process safety and disaster preparedness. Building and facilities. Personal protection. Fire protection. Materials handling and storage.



COURSE DESCRIPTIONS

➔ Construction Technology & Management (Continued)



CIVL691 Building Information Modelling Theory and Practice

Building Information Modeling as an innovative and new way of working methodology in the construction sector has been becoming very critical for lean efficiency gains and effectiveness for the construction stakeholders involved in the building lifecycle. The aim of this course is to contribute to the development of skills of students in: Building Information Modeling and its approach to design and construction in terms of time and cost efficiency gains with an understanding of lean process and using REVIT tool competently for BIM modeling.

CIVL692 Organizations in Construction

This course examines the structure, behavior, and management of organizations operating in the construction industry. Emphasis is placed on organizational theory, project-based firms, stakeholder coordination, contractual and governance arrangements, leadership, and decision-making under uncertainty. Students critically analyze how organizational design, culture, and inter-organizational relationships influence project performance, innovation, and risk management in complex construction environments. The course integrates theoretical frameworks with real-world case studies and current research in construction management.

CIVL694 Project Management

The project management context; Introduction to project management, project management processes. Project management knowledge areas; project integration management, Project scope management, project time management, project cost management, project quality management, project human resources management, project communication management, project risk management, project procurement management, Stakeholders management.





COURSE DESCRIPTIONS

➔ GENERAL NON-CREDITED COURSES



CIVL500 MS Thesis

The MS thesis should present the results of a scholarly investigation of a topic related to one of the fields of Civil Engineering. All MS students are required to prepare and defend a MS thesis under the supervision of a faculty member approved by the Civil Engineering Department. To each student a MS thesis supervisor is appointed until the end of add/drop period of the third semester of their graduate studies.

CIVL598 Graduate Seminar

To provide basic knowledge about the research and other activities related with MS Thesis. It includes a schedule of invited speakers on infrastructure-related to MS studies.

CIVL600 PhD Thesis

The PhD thesis should demonstrate the student's ability to address a significant research problem in the field of Civil Engineering, and arrive at a successful resolution of the problem. A PhD thesis must give evidence of at least one of the following qualities: (a) a new scientific approach or innovation, (b) the development of a new scientific method, (c) the application of a known method to a new field.

CIVL698 Graduate Seminar

To provide basic knowledge about the research and other activities related with PhD Thesis. It includes a schedule of invited speakers on infrastructure-related to PhD studies.

CIVL699 PhD Qualifying Examination

The qualifying examination is intended to test the student's understanding of basic courses at the undergraduate and graduate levels, as well as his/her capability to perform research on a specified thesis topic. It consists of two parts: a two-session written examination (general and specialty), and an oral examination.





Master's Program in Civil Engineering (522, with Thesis)



OBJECTIVE

The objective of the Master's program in Civil Engineering is to prepare students at a more specialized level to meet present and future challenges in a specialty area in civil engineering. The students gain the necessary engineering research skills to engage in successful research and engage in further graduate studies. They earn the ability to effectively communicate the results of their research findings both in writing and through oral presentations. The program enables the students to demonstrate advanced technical knowledge to pursue careers in civil engineering professional practice at various levels.



PROGRAM DURATION

- Full-time 4 semesters
- Part-time 6 semesters
- Possible maximum extension of 2 semesters
- English preparatory and deficiency course periods are excluded from the duration; however, parallel enrollment in any graduate course starts the MS period that semester.



THESIS REQUIREMENT

- MS students must prepare and defend an MS thesis under the supervision of a faculty member approved by the department.
- A supervisor is assigned by the end of add/drop period of the second semester.
- Thesis writing guidelines are available at

<https://grad.emu.edu.tr>



PROGRAM STRUCTURE

- Minimum **seven** courses (21 credit hours, 126 ECTS), a **seminar**, and a **thesis**.
- Students on probation must complete assigned undergraduate deficiency courses.
- Course selection is made with the approval of the thesis supervisor and academic advisor.
- At most one undergraduate course may count toward the program if it has not been previously taken.

Reference	Course Code	Type	Credit	ECTS
225R1	Mathematics Related Course *	Compulsory	(3,0)	9
225R2	Departmental Elective	Elective	(3,0)	9
225R3	Departmental Elective	Elective	(3,0)	9
225R4	Departmental Elective	Elective	(3,0)	9
225R5	Departmental Elective	Elective	(3,0)	9
225R6	Departmental Elective	Elective	(3,0)	9
225R7	Restricted Elective **	Elective	(3,0)	9
225RS	CIVL598 Seminar	Compulsory	(1,0)	3
225R0	CIVL500 MS Thesis	Compulsory	–	60

* Mathematics course selected from the mathematical course list.

** Restricted elective subject to Graduate Committee approval.

21**credit-hours**

minimum, and qualifying examination

3.00**Min CGPA**

expected each semester

C**minimum**

course grade, otherwise the course is repeated



Contact information:

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Master's Program in Construction and Real Estate Management (52Y, without Thesis)



PROGRAM OVERVIEW

The Non-Thesis Master's Program in Construction and Real Estate Management is a timely and well-prepared response to the demand for expertise in this sector. This program has been strategically designed in alignment with the evolving needs of the construction and real estate sector, aiming to equip students with the practical skills and knowledge necessary to excel in the field of construction and real estate management.



ADMISSION REQUIREMENTS

- Four-year undergraduate degree from a recognized higher education institution.
- Official transcript.
- Notarized diploma copy.
- Two recommendation letters from academic or professional references.
- ALES score of 55 for Turkish citizens.
- Statement of purpose.
- Proof of English proficiency (if required).
- Interview / evaluation (if needed).
- Work experience (optional).



PROGRAM FEATURES

- Welcomes students from diverse academic backgrounds.
- Includes prerequisite support for non-engineering entrants when needed.
- Practical orientation toward construction and real estate management.
- Builds a shared foundation for advanced study.
- Combines management, real-estate insight, and project-based learning.
- Designed in line with evolving sector needs.



COURSE REQUIREMENTS

Students must complete **10 courses**, 3 of which must be area electives. Students are required to take one area elective from the undergraduate courses listed under AE4XX and two area electives from the graduate courses listed under AE5XX and/or CIVL694.

Code	Course Code	Course Title	Credits	ECTS
2Y5T1	CIVL591	Construction Management - I	3	8
2Y5T2	CIVL592	Construction Management - II	3	8
2Y5T3	CIVL595	Contract Administration	3	8
2Y5T4	MRKT501	Marketing Management	3	8
2Y5T5	CMRE592	Real Estate Valuation and Analysis	3	8
2Y5T6	MGMT580	Statistics and Data Analysis	3	8
2Y5T7	FINA521	Investment Appraisal	3	8
2Y5T8	REQ1	Elective Course	3	8
2Y5T9	REQ2	Elective Course	3	8
2Y5TA	REQ3	Elective Course	3	8
2Y5TP	CMRE599	Term Project	0	20

Area electives include 1 undergraduate elective (AE4XX) and 2 graduate electives (AE5XX and/or CIVL694).



Master's Program in Construction and Real Estate Management (52Y, without Thesis)

➔ Course Descriptions — Core Courses



CIVL591 – Construction Management 1

This course aims to provide graduate students with the necessary information related to project management in the construction industry, which will help them in their professional careers. It covers the topics such as advanced construction planning and scheduling, resource management and construction progress control such as, cost and time, as well as quality management and quality control.

CIVL592 – Construction Management 2

This course aims to provide graduate students with the information and practices in project appraisal, life cycle costing, value management and environmental management. This course covers a wide range of subjects that are required in the daily operations in the construction industry. Students will gain valuable experience through different types of projects, which will require the application of life cycle costing methods, value management, environmental appraisal and management and an overall project appraisal.

CIVL595 – Contract Administration

This course aims to provide graduate students with the knowledge of contract administration and how contracts in the industry function. This course covers topics such as different contracting arrangements in the construction industry, fundamentals of contracts, significance of different forms of organization, different types of bonds, how contracts are awarded and how payments of contracts is performed.

MRKT501 – Marketing Management

The course focuses on formulating and implementing marketing management strategies and policies, a task undertaken in most companies at the strategic business unit level. The course will provide you with a systematic framework for understanding marketing management and strategy.

CMRE592 – Real Estate Valuation & Analysis

The Advanced Analysis and Valuation of Real Estate course provides students with an in-depth understanding of various methods and techniques used in real estate valuation. Through the course, students will gain knowledge on the various factors that impact real estate value, including market trends, property characteristics, location, and more. The course will cover the valuation methods used in real estate appraisal, and will focus on techniques such as income capitalization, sales comparison, and cost approach. In addition, the course will cover the analysis of different types of real estate, including single-family homes, condos, multi-unit rental properties, retail real estate, office and industrial real estate, lodging and tourism industry real estate, and mixed-use real estate. Through practical exercises and case studies, students will gain hands-on experience in analyzing real estate properties using different valuation methods, and will learn to evaluate the feasibility and profitability of real estate investments. The course is designed for students interested in pursuing careers in real estate appraisal, investment analysis, and development.

MGMT580 – Business Statistics and Data Analysis

The course is aimed at providing the graduate students with an understanding of statistics and data analysis for managers. The course objective is to teach "the methods to be followed after collecting data for a problem to be solved". The quality of research decisions depends to a great extent on the information available to the decision makers. Data analysis transforms raw data into information which can help in this decision making process. A manager who lacks the analytic skills to obtain insights from the available data is very much like a general manager who does not know how to read the income statement for his/her company.

FINA521 – Investment Appraisal & Risk Analysis

This course is devoted to the techniques of cost-benefit analysis of investment projects. The course covers both the analytical techniques and as well as their practical applications in decision-making. The course topics will cover financial modeling, alternative investment criteria, and maintaining consistency between real and nominal prices, inflation rates, exchange rates and interest rates. It will also cover how to determine the optimal scale and timing of investments and how to construct income statements and balance sheets from cash flow projections.



Master's Program in Construction and Real Estate Management (52Y, without Thesis)

➔ Course Descriptions — Undergraduate Area Electives



CIVL437 – Environmental Impact Assessment

Planning and management of impact studies. Description of environmental settings. Environmental indices and indicators, affected environment. Prediction and assessment of impacts on air, surface water, soil and ground water, noise, biological cultural and visual.

CIVL496 – Life Cycle Costing for Construction

This course aims to provide graduate students with the information and practices in project appraisal, life cycle costing, value management and environmental management. This course covers a wide range of subjects that are required in the daily operations in the construction industry. Students will gain valuable experience through different types of projects which will require the application of life cycle costing methods, value management, environmental appraisal and management and an overall project appraisal.

CIVL497 – Procurement Systems in Construction

The project management context; Introduction to project management, project management context, project management processes. Project management knowledge areas; project integration management, Project scope management, project time management, project cost management, project quality management, project human resources management, project communication management, project risk management, project procurement management.

CIVL482 – Advanced Materials of Construction

Review of production of metals. Polymers: different types, polymerization reactions. Production of clay products. Refractories. Glass: manufacturing, various types and uses in construction. Timber. Lightweight aggregates. Fiber reinforced concrete. Ferro cement. Insulation of buildings: heat, sound, moisture. Asbestos. Burning of concrete. Assessment of fire damaged buildings.

CIVL466 – Urban Public Transportation: Systems and Technology

History and role of Public Transportation in urban development. Urban passenger transport modes. Vehicle characteristics and motion. Highway transit modes: Buses and trolleybuses. Rail transit modes: Street cars, light rail, rapid transit and regional rail. New concepts and proposed modes. Transit system performance: capacity, productivity, efficiency and utilization.

CIVL481 – Design and Quality Control of Concrete

This course provides insight into proven construction practices that will produce quality concrete construction. Contents include how to organize for quality, concrete mix designs, foundations, formwork, reinforcement and embedment in structures, joints and reinforcement for slab on grade, preparing for concreting, concrete placing and finishing common field problems, and safety.

CIVL433 – Water Supply and Sewerage

Quantity of water and wastewater, consumption for various purposes, the sources of water supply, types of transmission lines, water storage, water treatment, design of water distribution network, wastewater collection, sewers, flow in sewers and sewer appurtenances, design of sewer systems for domestic sewage and storm water, waste water treatment, reuse.

CIVL452 – Deep Foundations

Types of deep foundations: piles, drilled shafts. Classification of piles. Load transfer mechanism. Methods of estimation of pile capacity. Settlement of piles and pile groups. Uplift resistance of piles. Lateral load capacity of piles. Structural design of piles: pile design issues and procedures. Drilled shafts: load transfer mechanism load bearing capacity, settlement.



Master's Program in Construction and Real Estate Management (52Y, without Thesis)

➔ Course Descriptions — Postgraduate Area Electives



CIVL593 – Risk Management in Construction Projects

This course aims to provide an overview of what is meant by risk and way in which it influences decisions made in the construction industry. It should provide graduate students with the necessary systems and techniques used in management of risk on construction projects as well as the whole construction industry. This course also covers theoretical aspects of risk as well as the application of risk to real life projects.

CIVL694 – Project Management

The project management context; Introduction to project management, project management processes. Project management knowledge areas; project integration management, Project scope management, project time management, project cost management, project quality management, project human resources management, project communication management, project risk management, project procurement management, Stakeholders management.

CIVL506 – Computational Methods in Civil Engineering

This course aims to provide an overview of what is meant by risk and way in which it influences decisions made in the construction industry. It should provide graduate students with the necessary systems and techniques used in management of risk on construction projects as well as the whole construction industry. This course also covers theoretical aspects of risk as well as the application of risk to real life projects.

CIVL695 – Occupational Health and Safety & Management in Construction Projects

This course aims to provide graduate students with the necessary information related to safety and health management in the construction industry, which will help them in their professional careers. Safety and health management. Development of safety and health function. Information systems. Process safety and disaster preparedness. Building and facilities. Personal protection. Fire protection. Materials handling and storage.

CIVL575 – Sustainability of Building Construction

Introduction to sustainability: Environmental, economical, and social impacts. Environmental management: what is environment, pollution, and sustainable development. Sustainability and construction: sustainable design, construction, use and end of life. Key issues of environmental concern: materials and resources, waste and land-use, energy, transport, emissions, recycle and reuse, performance and quality, health and well-being, social issues. Energy management, alternative energy sources.

CMRE591 – Property Management

This course is designed to provide students with a comprehensive understanding of the theories, concepts, and practices involved in the effective management of real estate properties. The course aims to equip students with the knowledge and skills needed to excel in property management roles, whether in the commercial or residential sectors. The course covers a wide range of topics related to property management, including leasing, tenant relations, maintenance, financial management, sustainability in property management and legal and regulatory issues. Students will learn how to develop and implement property management strategies that optimize the performance of real estate assets while meeting the needs of tenants and stakeholders.

CIVL573 – Assessment, Repair, and Strengthening of Structures

Introduction to assessment of structures. Destructive and non-destructive tests on RC, Steel and Masonry constructions. Repair and strengthening techniques of RC structures. Strengthening of beams, columns, and walls. Repair and strengthening of other types of constructions.

CIVL550 – Special Topics in Geotechnical Engineering

Advanced topics of special interest to graduate students on recent developments in geotechnical engineering. Specific topics and prerequisites identified for each section and varied from term to term.



EASTERN MEDITERRANEAN UNIVERSITY

DEPARTMENT OF CIVIL ENGINEERING



Master's Program in Construction and Real Estate Management (52Y, without Thesis)

➔ Term Project



CMRE599 – Term Project

This is an individual project given to students that involves the application of knowledge and skills gained through coursework and research to address a specific practical problem or issue in a real-world context undertaken in collaboration with a real-world organization or industry partner. The goal of an applied project is to provide students with an opportunity to put their academic knowledge into practice and develop practical skills that can be applied in their future careers. This course would require the students to draw upon their knowledge of construction project management principles, and real estate market dynamics to develop a plan that is both feasible and profitable. Moreover, this project course would require the students to conduct research on the local/global real estate market, assess the financial viability of the projects, and develop recommendations for project design and management.

Throughout the course, students will engage with cutting-edge research in property management, drawing on theoretical frameworks and empirical evidence to develop a deep understanding of the field. They will also have the opportunity to apply this knowledge to real-world scenarios, working on case studies and practical exercises that simulate the challenges faced by property managers in today's rapidly changing real estate market.

By the end of the course, students will be able to identify the key drivers of value in real estate assets, assess the risks and opportunities associated with different types of properties, and develop effective management strategies that balance the competing demands of tenants, owners, and other stakeholders. They will also be equipped with the tools and knowledge needed to navigate the complex legal and regulatory landscape of property management, and to stay abreast of emerging trends and best practices in the field.



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PhD Program in Civil Engineering (622, with Thesis)



PROGRAM OVERVIEW

The basic objectives of the Civil Engineering Graduate program leading to the Doctor of Philosophy (PhD) degree in Civil Engineering are;

1. To ensure a deeper understanding of the fundamental aspects of the Civil Engineering field,
2. To provide opportunities for advanced specialization and creative research activities in Civil Engineering,
3. To stimulate independent study, critical thinking, and a team work,
4. To contribute to the education of prospective academicians for EMU and other Universities.

The offered programme helps achieve these objectives through course studies and thesis preparation.



Program Duration

A PhD candidate should complete all the required studies, including courses and thesis work, within the mini/max time set by EMU by-laws. Currently, the duration of studies for full time and part time students who have been admitted with a master's degree is a minimum of 10 and a maximum of 12 semesters and for those who have been admitted with an undergraduate degree is a minimum of 12 and a maximum of 14 semesters. The duration of studies can be extended for a maximum of 2 more semesters for PhD students who have been admitted to the program with an undergraduate degree and who have completed their 12th semester in the program and for those who have been admitted to the program with a master's degree and who have completed their 10th semester in the program.

The maximum period for the successful completion of the credit courses and the seminar course of the PhD program is 4 semesters for students who have been admitted to the program with a master's degree and 6 semesters for those registering for the program with an undergraduate degree. Students who fail to complete assigned courses or who possess a CGPA of less than 3.00 at the end of the specified study period are dismissed from the Institute. Periods of time spent in English Preparatory School or for deficiency courses are not included. If any graduate course is taken parallel to deficiency courses mentioned above, the duration of PhD study will start on that semester.



COURSE REQUIREMENTS

The candidates are required to take the following courses:

Reference	Course Code	Course Title	Type	Credit	ECTS
226R1	*	Mathematics Related Course	Compulsory	(3,0) 3	9
226R2	CIVLXXX	Departmental	Elective	(3,0) 3	9
226R3	CIVLXXX	Departmental	Elective	(3,0) 3	9
226R4	CIVLXXX	Departmental	Elective	(3,0) 3	9
226R5	CIVLXXX	Departmental	Elective	(3,0) 3	9
226R6	CIVLXXX	Departmental	Elective	(3,0) 3	9
226R7	**		Restricted Elective	(3,0) 3	9
226R0	CIVL600	PhD Thesis	Compulsory	0	150
226RS	CIVL698	Seminar	Compulsory	(1,0) 0	3
226RQ	CIVL699	PhD Qualifying Exam	Compulsory	0	30

(*) This course is to be selected from the Mathematical Course list provided above.

(**) This course should be approved by the Graduate Committee of the Department

21**credit-hours**

minimum, and qualifying examination

3.00**Min CGPA**

expected each semester

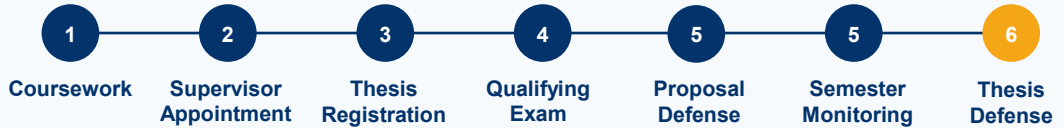
B**minimum**

course grade, otherwise the course is repeated



PhD Program in Civil Engineering (622, with Thesis)

PHD PATHWAY



THE QUALIFYING EXAM

PhD candidates are required to take a qualifying exam after their coursework is successfully completed. The purpose of the qualifying examination is to evaluate the students' knowledge related to the courses taken in the program, and to assess the students' research capabilities on written and oral basis. The PhD qualifying examination is held on a date determined by the Chair of the Civil Engineering Department, which is within the last 15 days before the end of the classes in that semester. The jury evaluates the student's performance as either "satisfactory" or "unsatisfactory" and informs the Institute of Graduate Studies and Research about the decision. The student should pass this examination in at most two trials. A student whose performance is twice evaluated as being "unsatisfactory" is dismissed from the PhD program.



MONITORING COMMITTEE

"Thesis Monitoring Committee" committee consists of three faculty members including thesis supervisor of the student, one member from the respective department/program, and one external member outside the department/program. When a co-supervisor exists, the co-supervisor can attend the Monitoring Committee meeting without the right to vote.

The monitoring committee will meet once every semester for the candidate whose thesis proposal was accepted. The candidate is required to submit a report to the committee at least one month before the meeting date, explaining the progress on the thesis work, outlining future work plans and listing any national and/or international publications planned for the next academic year. The supervisor gives the semester grade to the student in consultation with the monitoring committee.



THESIS REQUIREMENT

All PhD candidates are required to prepare and defend a PhD thesis under the supervision of a faculty member approved by the Department. The PhD thesis should demonstrate the student's ability to address a significant research problem in the field of Civil Engineering and arrive at a successful resolution of the problem. A PhD thesis must give evidence of at least one of the following qualities: (a) a new scientific approach or innovation, (b) development of a new scientific method, (c) application of a known method to a new field.

To each candidate, a thesis supervisor is appointed until the end of add/drop period of the second semester of their graduate studies. A form named "Thesis Supervisor/Co-Supervisor Appointment Form" should be filled and approved until the end of add/drop period of the second semester. Candidates should register for CIVL600 and CIVL698 at the end of add/drop period of the third semester. PhD students who have completed the seminar and relevant courses register for the qualifying exam during the registration period of the following semester. A thesis monitoring committee is appointed for each student who has passed the qualifying exam within one month following the date of the qualifying exam upon the views of the thesis supervisor, recommendation of the department/program chair and the approval of the Institute Directorate.

The student prepares his/her thesis proposal which includes the research purpose, methodology, and study plans, within 6 months, the latest and, upon the approval of the thesis supervisor, applies to the relevant department asking for a date to defend the proposal orally to the monitoring committee members. The department chair's office determines on a date for oral defense and announces it to the department within 15 days, the latest. The student's thesis proposal is sent to the members of the thesis monitoring committee minimum 15 days prior to his/her oral defense date. The student defends his/her proposal orally to the thesis monitoring committee. The meeting is open for audience but only members of the monitoring committee are allowed ask questions to the student.



Contact information:

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