

CIVIL ENGINEERING DEPARTMENT  
22/23



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## MESSAGE OF THE CHAIR

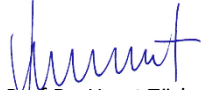
Welcome to the Department of Civil Engineering which is one of the major and active engineering departments at Eastern Mediterranean University (EMU). We offer BS, MS and PhD in Civil Engineering. The Civil Engineering department was founded more than 40 years ago and produced more than 2500 high quality graduates to the national and international construction industries. Our graduates have a wide variety of employment opportunities in both the private and the public sectors. They work in diverse fields of civil engineering in different places around the world.

As a matter of fact, civil engineers play a key role in the development of nations. This is a profession, in which, one designs, constructs, operates and maintains the basic systems that make our life simple and sustainable. These systems and the natural environment are in constant interaction, which frequently cause social, economic, legal and environmental issues.


Civil engineering programs are intended to satisfy the needs of the society from technical points of view. The rapid introduction of modern materials, measurement techniques, construction methods and management tools require properly trained civil engineers. Our program objectives are continuously updated keeping in view these factors. The undergraduate program of civil engineering at EMU is designed to develop knowledgeable and creative engineers with strong capabilities for innovation and management. The Civil Engineering Department was accredited by ABET in 2010. The well equipped and sophisticated extensive teaching and research laboratories play a major role in the professional and practical development of our students.

Civil Engineering Department has qualified and experienced full-time faculty members comprising 8 professors, 6 associate professors, 1 assistant professors and 6 part-time lecturers. In addition, we have 12 research assistants. All of the faculty members have national and international reputations. We also provide consultancy services to local community and industry. In this way, Civil Engineering Department contributes to the economic, social and cultural development of the nation. There are also administrative staff comprising a computer operator, two laboratory engineers, a secretary and four cleaning ladies.


This leaflet is prepared to introduce our department to our undergraduate students and their parents, as well as prospective students who might be interested in joining our department in the future. Our graduates are also welcome for obtaining a copy of this leaflet which might be of help in reminding the times they spent here at EMU.



Prof. Dr. Umut Türker  
Chair



## **VISION MISSION AND EDUCATIONAL OBJECTIVES**



### **Vision**

In addition to raising well equipped graduates in the field of civil engineering, our vision also comprises of becoming a leading institution in the region, increasing its reputation and global recognition and being knowledgeable on contemporary issues relating to civil engineering, scientific and ethical values.

### **Mission**

Providing civil engineering education with the aim of developing graduates who can prioritize social interests, embrace global values, use/integrate science and technology effectively. Raise graduates who are fully aware of environmental concerns and self-confident about civil engineering issues. Increase awareness of industry and society on contemporary civil engineering practices.

### **Program Educational Objectives**

Three to five years after graduation, the Civil Engineering undergraduate program graduates are expected to accomplish the following educational objectives;

- work successfully in industry and/or have successful career in government or academia, contribute to the development of the civil engineering profession, conform to ethical values and environmentally friendly policies,
- specialize through further studies and/or work experience in the areas of civil engineering,
- stay up to date in their profession and contribute to the advancement of the society
- depict effective leadership in multicultural work environment of the competitive world



## STUDENT OUTCOMES



### Student Outcomes

All courses have been designed to contribute to the following program outcomes in accordance with ABET accreditation requirements:

- an ability to identify, formulate, and solve complex engineering problems, by applying principles of engineering, science and mathematics
- an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- an ability to communicate effectively with a range of audiences
- an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- an ability to develop and conduct appropriate experimentation, analyze and interpret data and use engineering judgement to draw conclusions
- an ability to acquire and apply new knowledge as needed, using appropriate learning strategies
- capability of independent learning as a consequence outcome of laboratory and field research and design competitions.
- an ability to communicate in a bilingual environment.

## THE HISTORY OF THE DEPARTMENT

Ministry of National Education in 1979 founded the Institute of Higher Technology as the first organization aiming to contribute to higher education in the northern part of Cyprus. The Department of Civil Engineering is one of the first Departments established in 1980 under the Institute umbrella.

Later, the Institute developed all its powers under the name of Eastern Mediterranean University and has persisted under this name until today. Till 1986, the Department of Civil Engineering focused only on undergraduate education (BSc) in English, but in the following years, it successfully carried out undergraduate Turkish program, and postgraduate programs (MSc. and PhD.). The total number of graduates from all these programs are more than 3 thousand. The Department, which is well known with its qualified educational tools, has proven itself in the international arena with ABET accreditation for the English Undergraduate Program (since 2010).

Civil Engineering Department was the founding member of the conference series “Advances in Civil Engineering” together with Middle East Technical University. The conference was organized at Eastern Mediterranean University in 1993 and since then periodically (every two years) repeated while increasing the number of partners. Nowadays, the number of partners is seven and includes the reputational Universities of Türkiye and Chamber of Civil Engineers.

Lately, Department of Civil Engineering has signed a graduate level agreement with University of Illinois – Chicago and preparing itself to the Abet 3<sup>rd</sup> Cycle visit which will held for 2021/26 ABET accreditation approval.

Parallel to the Eastern Mediterranean University, Civil Engineering Department has 42 years of history, and many valuable people have served during this period. Many lecturers and administrative staff who have served and put efforts to create the history of the Department deserves to be mentioned with respect. Today, the younger generation is managing the Department inspired by the spirit of friendship and bona fides left by those who retired but still feel themselves with us. Thus the philosophy of the servants of this Department is to work for maintaining the concept of a sustainable institution within the framework of organizational flexibility and resilience principles.



## ACADEMIC STAFF



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***Materials of Construction***

**Education:** BSc, EMU 1990; MSc, University of Leeds 1991; PhD, EMU 1999.

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**Research keywords:** Fiber reinforced concrete, self-consolidating concrete, natural building stones, repair and maintenance of concrete.



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**Research keywords:** High strength concrete, fiber reinforced concrete, cement replacement material, concrete technology.



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**Research keywords:** Problematic soils, soil stabilization, soil behavior.



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**Research keywords:** Non-linear dynamics and stability of engineering systems, seismic vulnerability assessment of existing buildings, earthquake resistant design of buildings





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**Research keywords:** Ductility and behavior of steel beam to column connections, behavior of steel frames, use of composite floor with deck in reinforced concrete frames.



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**Research keywords:** Microcracking behavior (ITZ), self-healing and long term durability of concrete, geopolymer concrete.



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***Construction Management***

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**Research keywords:** Cost estimation, Social costs, Life Cycle Cost Calculations, Cost-Benefit Analysis, Value Management, Construction Planning and Scheduling



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**Research keywords:** Soil-Structure Interaction, Parallel Computing in Engineering Problems, Structural Dynamics, Base Isolation, Structural Health Monitoring



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**Research keywords:** Traffic accident analysis, ANN, asphalt modification, pavement performance.



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**Research keywords:** Structural dynamics, nonlinear analysis, non-prismatic members, performance based analysis, seismic base isolation, finite element analysis.



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**Research keywords:** soil improvement, problematic soils, soil structure interaction using finite element method, mechanics of granular matter.



**Umut YILDIRIM, Asst. Prof. Dr.**

***Structures***

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**Research keywords:** System identification, structural control and monitoring, vibration based damage detection

## PART-TIME ACADEMIC STAFF



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**Geotechnics**

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**Research keywords:** Soil stabilization, problematic soils, expansive soil.



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**Research keywords:** Project Management, Construction Management, Risk Management, Time Management, Cost Management, Health and Safety in Construction



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**Research keywords:** Swelling-shrinking soils, stabilization of expansive soils by using waste materials, unsaturated soils, landfill liners

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## CIVIL ENGINEERING FAMILY



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## DEPARTMENT CURRICULUM

REF. NO	COURSE CODE	COURSE NAME	CREDIT HOURS	PRE-REQUISITE(S)	
1	22711	CIVL100	INTRODUCTION TO CIVIL ENGINEERING	(0,1) 0	
	22712	CIVL103	CIVIL ENGINEERING DRAWING	(2,3) 3	
	22713	CHEM101	GENERAL CHEMISTRY	(4,1) 4	
	22714	ENGL191	COMMUNICATION IN ENGLISH-I	(3,1) 3	
	22715	MATH151	CALCULUS-I	(4,1) 4	
	22716	UE - 01	UNIVERSITY ELECTIVE - 1 (CULTURE)	(3,0) 3	
(TERM)/(CUMULATIVE) CREDITS=			(17)/(17)		
2	22721	CMPE108	ALGORITHMS AND PROGRAMMING	(2,3) 3	
	22722	ENGL192	COMMUNICATION IN ENGLISH-II	(3,1) 3	22714 ENGL191
	22723	MATH152	CALCULUS-II	(4,1) 4	22715 MATH151
	22724	PHYS101	PHYSICS-I	(4,1) 4	
	22725	UE - 02	UNIVERSITY ELECTIVE - 2 (ENVIRONMENT)	(3,0) 3	
	22726	HIST280/TUSL181	HIST. TURK. REF./TURK. AS A SECOND LANG.	(2,0) 2	
(TERM)/(CUMULATIVE) CREDITS=			(19)/(36)		
3	22731	CIVL211	STATICS	(4,1) 4	22724 PHYS101
	22732	CIVL261	SURVEYING	(3,2) 4	
	22733	CIVL283	MATERIALS SCIENCE	(3,1) 3	22713 CHEM101
	22734	MATH322	PROBABILITY AND STATISTICAL METHODS	(3,1) 3	22715 MATH151
	22735	PHYS102	PHYSICS-II	(4,1) 4	22724 PHYS101
(TERM)/(CUMULATIVE) CREDITS=			(18)/(54)		
4	22741	CIVL222	STRENGTH OF MATERIALS	(4,1) 4	22731 CIVL211
	22742	CIVL284	MATERIALS OF CONSTRUCTION	(3,2) 4	
	22743	ENGL201	COMMUNICATION SKILLS	(3,0) 3	22722 ENGL192
	22744	MENG233	RIGID BODY DYNAMICS	(4,1) 4	22731 CIVL211
	22745	MATH241	LINEAR ALGEBRA AND ORD. DIFFERENTIAL EQUATIONS	(4,1) 4	22715 MATH151
(TERM)/(CUMULATIVE) CREDITS=			(19)/(73)		
5	22751	CIVL300	SUMMER PRACTICE	(0,0) 0	min.Cum.Crd.=73
	22752	CIVL331	FLUID MECHANICS	(4,1) 4	22745 MATH241
	22753	CIVL343	INTRODUCTION TO STRUCTURAL MECHANICS	(4,1) 4	22741 CIVL222
	22754	CIVL353	EARTH SCIENCE	(4,1) 4	min.AT=4*
	22755	CIVL361	TRANSPORTATION ENGINEERING	(4,1) 4	22732 CIVL261
	22756	MATH373	NUMERICAL ANALYSIS FOR ENGINEERS	(3,1) 3	22745 MATH241
(TERM)/(CUMULATIVE) CREDITS=			(19)/(92)		
6	22761	CIVL332	HYDROMECHANICS	(4,1) 4	22752 CIVL331
	22762	CIVL344	STRUCTURAL ANALYSIS	(4,1) 4	22753 CIVL343
	22763	CIVL354	SOIL MECHANICS	(4,1) 4	22754 CIVL353
	22764	CIVL372	FUNDAMENTALS OF REINFORCED CONCRETE	(4,1) 4	22753 CIVL343
	22765	CIVL394	CIVIL ENGINEERING CONSTRUCTION & ECONOMY	(3,1) 3	min.AT = 4*
(TERM)/(CUMULATIVE) CREDITS=			(19)/(111)		
7	22771	CIVL401	INTRODUCTION TO CAPSTONE PROJECT	(0,2) 1	min.AT = 6*
	22772	CIVL451	FOUNDATION ENGINEERING	(4,1) 4	22763 CIVL354
	22773	CIVL471	DESIGN OF REINFORCED CONC. STRUCTURES	(4,1) 4	22762 CIVL344 &
	22774	CIVL473	FUNDAMENTALS OF STEEL DESIGN	(4,1) 4	22762 CIVL344
	22775	CIVL493	CONSTRUCTION MANAGEMENT	(4,1) 4	22765 CIVL394
	22776	UE - 03	UNIVERSITY ELECTIVE - 3	(3,0) 3	
(TERM)/(CUMULATIVE) CREDITS=			(19)/(130)		
8	22781	CIVL402	CAPSTONE PROJECT	(2,3) 3	22771 CIVL401
	22782	AEL-01	AREA ELECTIVE - 1	(3,1) 3	
	22783	AEL-02	AREA ELECTIVE - 2	(3,1) 3	
	22784	AEL-03	AREA ELECTIVE - 3	(3,1) 3	
	22785	UE - 04	UNIVERSITY ELECTIVE - 4 (ETHICS)	(3,0) 3	
(TERM)/(CUMULATIVE) CREDITS=			(16)/(146)		



## AREA CORE COURSES

### **CIVL100 Introduction to Civil Engineering**

Civil Engineering history, Introduction to Civil Engineering, Branches of Civil Engineering; water resources engineering, structural engineering, geotechnical engineering, concrete and materials engineering, construction technology and management, transportation engineering. Leadership and communication skills. Introduction to library. Field trips. Introduction to computer skills.

### **CIVL103 Civil Engineering Drawing (2,3)3**

Drawing instruments and their use. Types of lines and line quality. Orthographic drawing, Pictorial drawing. Sections. Architectural drawings. Civil engineering drawings. Computer-aided drawing.

### **CIVL211 Statics (4,1) 4**

Basic definitions, concepts and principles. Statics of particles, resultant of forces in space, equilibrium and free-body concept. Statics of rigid bodies, moments, couples and equivalent force systems. Equilibrium of rigid bodies. Definition of determinacy of structures, analysis of statically determinate structures, including trusses, beam, frames and arches. Distributed forces, centroids, center of gravity and, moment of inertia, friction. *Prerequisites: PHYS101*

### **CIVL222 Strength of Materials (4,1) 4**

Concept of Stress and Strain. Elastic deformation of axially loaded members. Internal forces and moments in beams and their diagrams. Stresses in beams. Torsion. Deflection of beams, buckling of columns. Energy theorems. *Prerequisites: CIVL211*

### **CIVL261 Surveying (3,2) 4**

Distance measurement. Taping. Linear surveying principles and mapping. The level. Methods and principles of levelling. Applications of levelling: vertical sections, contouring, setting out of level. Errors and adjustment. Traverse computations, errors and adjustments. Tachometry. Working with coordinates. Electronic Distance Measurement equipment. Trigonometric levelling. Areas and volumes of irregular figures

### **CIVL283 Materials Science (3,1) 3**

The fundamentals of materials (atomic bonding, the architecture of solids, development of microstructure, surface properties), behaviour of materials under stress (response of materials to stress, failure and fracture, rheology of fluids and solids fatigue), particulate composites: portland cement and asphalt concretes (particulate composites, aggregates, portland cement concrete, asphalt cements and asphalt concrete) and polymers will also be covered.

### **CIVL284 Materials of Construction (3,2) 4**

Production, types, uses in construction, properties and related tests for the following materials are covered: gypsum, lime, cement, aggregates. Properties of fresh and hardened concrete and concrete mix design calculations. Bricks, building stones, plasters, steel, timber

### **CIVL300 Summer Practice (0,0) 0**

Students who have completed their 4th academic term or who are in higher academic terms will do their Summer Training for a duration of 40 working days. All of the training must not be in the same establishment. At least 5 activities should be observed during this training. These could be setting out works, excavation, concreting, curing, reinforcement works, formworks, etc. Each student will write a Summer Training Report. The report will be presented as a seminar. To consider the Summer-Training as "Completed", the student must receive an "S" grade for the report and the seminar. Prerequisites: Min. Cum. Cr. = 73.



### **CIVL331 Fluid Mechanics (4,1) 4**

Definitions, physical properties. Hydrostatic, forces on plane and curved surfaces, buoyancy, hydrostatics in moving and rotating containers. Lagrangian and Eulerian descriptions, derivatives, rate of deformation, flow lines. System and Control volume approach, Reynolds Transport Theorem, principles of conservation of mass, momentum and energy, Bernoulli equation. Dimensional analysis, Buckingham pi theorem, similitude. Prerequisites: MATH241

### **CIVL332 Hydromechanics (4,1) 4**

Laminar and turbulent flows. Friction factor in pipe flow. Computation of flow in single pipes. Hydraulic machinery, turbines and pumps. Pipe line system and networks. General characteristics and classification of open channel flow: pressure and velocity distribution. Continuity equation. Energy concept. Momentum principle. Uniform flow. Rapidly varied flow. Gradually varied flow. Design of non-erodible and erodible channels. Prerequisites: CIVL331

### **CIVL343 Introduction to Structural Mechanics (4,1) 4**

Modeling of structures. Unsymmetrical bending. Shear center. Determinacy, indeterminacy and stability. Virtual work. Deformation and deflected shapes. Force method of analysis. Plastic behavior of structural members. Prerequisites: CIVL222

### **CIVL344 Structural Analysis (4,1) 4**

Slope deflection method. Stiffness method of analysis. Modeling and analysis of continuum. Loads acting on structures. Computer applications. Influence lines. Prerequisites: CIVL343

### **CIVL353 Earth Science (4,1) 4**

Overview of earth science, composition of the earth and atomic structure. Some physical properties of minerals. The dynamic earth, theory of plate tectonics and plate boundaries, drifting continents.

Earthquakes, mountain building. Geologic time scale, age dating of rocks, early earth. Earthquakes, earthquake classification and prediction. Seismic waves, liquefaction. Surface processes on earth weathering, erosion, mass movements, wind, and glaciers, surface water, groundwater. The rock cycle and rock deformation. Rocks: Igneous, sedimentary and metamorphic rocks. Soil formation and clay mineralogy. Phase relationships. Classification of soils. Prerequisites: Min. Ac. T. = 4

#### **CIVL354 Soil Mechanics (4,1) 4**

Introduction of engineering problems involving soils. Soil compaction. Effective stress concept. Permeability and its measurement. Seepage. One and two dimensional flow conditions. Flow nets. Stresses in a soil mass. Consolidation process. Immediate and consolidation settlement. Terzaghi's theory of one-dimensional consolidation. Degree of consolidation. Shear strength of soils. Lateral earth pressure theories: Rankine and Coulomb wedge theories. Stability of retaining walls. Slope stability. Prerequisites: CIVL353

#### **CIVL361 Transportation Engineering (4,1) 4**

Transportation Modes. Vehicle and Human Characteristics. Vehicle Motion. Sight Distance. Geometric Design. Pavements. Traffic Flow. Highway Capacity. Prerequisites: CIVL261

#### **CIVL372 Fundamentals of Reinforced Concrete (4,1) 4**

Behavior of RC members: Single reinforced beams, double reinforced beams, T-beams, short columns, slender columns. Moment curvature relations of reinforced concrete beams and columns. Torsion in RC members. Bond and anchorage. Prerequisites: CIVL343

#### **CIVL394 Civil Engineering Construction & Economy (3,1) 3**

Introduction to micro and macro economy. Basics of engineering economy. Fundamentals of life cycle costing. Equipment cost. Equipment Acquisition methods. Fundamentals of earth moving materials. Excavating machines: shovels, dragline, backhoe, and clamshell. Loading and hauling equipment: dozers, trucks, wagons, scrapers. Compacting equipment. Rippers. Prerequisites: Min. Ac. T. = 6

#### **CIVL401 Introduction to Capstone Project (0, 2) 1**

To prepare the senior year students for their capstone design projects provides guidance with the selection of their project advisors, topics and teams. First the students form their team, select project topic, and carry out literature review, performing preliminary design and feasibility study of the project. Prepare schedule for project completion in capstone project. Lecture will be given on different topics such as, team work, leadership and communication skills, and project report, oral and written presentation. Basic concepts regarding major civil engineering branches will be reviewed. Prerequisites: Min. Ac. T. = 6 / D.C.

#### **CIVL451 Foundation Engineering (4,1) 4**

Geotechnical properties of soils. Exploration, sampling, and in-situ soil measurements. Bearing capacity of foundations. Foundation settlements, improving site soils for foundation use. Factors to consider in foundation design. Spread footing design: Structural design of spread footings. Rectangular, eccentrically loaded spread and wall footings, design of spread footings with overturning moment. Rectangular combined footings, trapezoid-shaped footings, strap footings, mat foundations. Design of reinforced concrete retaining walls. Piles, piers, sheet pile walls: Introduction to design. Prerequisites: CIVL354

#### **CIVL471 Design of Reinforced Concrete Structures (4,1) 4**

Design of slabs: One-way and two-way edge supported slabs, joist floors. Earthquake resistant design principles: Seismic behavior of moment resisting frames. Ductility. Earthquake code requirements. General principles of footing design and its applications. Computer aided design. Prerequisites: CIVL344 and CIVL372

**CIVL473 Fundamentals of Steel Design (4,1) 4**

General concepts in steel design. Design methods, loads, codes, safety. Behavior of steel structures. Tension members, compression members, trusses, beams, beam-columns, column base plates, bolted and welded connections, single story and multi-story steel frames with simple connections, bracing systems for stability. Prerequisites: CIVL344

**CIVL493 Construction Management (4,1) 4**

Gives information to the students about project management and construction management. It prepares the senior year students for real life projects that could be faced on a construction site. It covers contract administration, contractual organizations, specifications, and bill of quantities, construction planning techniques, resource management, least cost calculations and cash flow calculations. Prerequisites: CIVL394



**CIVL402 Capstone Project (2,3) 3**

An interdisciplinary project based course involving engineering design, cost estimating, environmental impacts, project schedule and team work. Students are expected to work in pre-assigned team under the supervision of faculty on a predetermined project. Each team will submit final report including drawing, specification, and cost estimate that completely describe their proposed design. Each team will make oral presentation defending their final design and project feasibility for their peers and for faculty members. Prerequisites: CIVL401



## AREA ELECTIVE COURSES

### **CIVL410 – Environmental Sustainability**

This course will introduce students to the concept of sustainability and help students to understand the role of the civil engineer in sustainable development. It includes the investigation of climate and air quality problems and possible solutions; overview of water supply, quality and treatment and water resources management issues; sustainable development issues surrounding agricultural and forestry resources; an investigation of current patterns of energy use and sustainable energy options; use of recyclable materials in constructions; explores environmentally sustainable development options for industry and creating a sustainable built environment.

### **CIVL433 Water Supply and Sewerage (3, 1) 3**

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. Prerequisite: CIVL332

### **CIVL434 Coastal and Harbor Engineering (3, 1) 3**

Linear wave theory, wave processes, wind-generated waves and their prediction, wave climate, the interaction between waves and structures, coastal currents, coastal sediment problems, coastal structures and their functions, harbors, site selection, ship problems, optimum capacity of harbors.

### **CIVL435 Open Channel Hydraulics (3, 1) 3**

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. Prerequisite: CIVL332

### **CIVL436 Sediment Transport (3, 1) 3**

General consideration, initiation of motion, the critical conditions in free surface flows, scour criteria, bed load-suspended load-and total load theories, bed-form mechanics and resistance laws, regime concept and stable channel design, flow of solid liquid mixtures in pipes, sediment transport under wave action. Prerequisite: CIVL332

### **CIVL437 Environmental Impact Assessment (3, 1) 3**

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, visual and socioeconomic environment.

**CIVL442 Advanced Structural Analysis (3, 1) 3**

Review of basic concepts in structural analysis. Approximate methods of structural analysis. Flexibility and stiffness matrices, special topics in structural analysis. Variable loading analysis for indeterminate structures. Prerequisites: CIVL344

**CIVL452 Deep Foundations (3, 1) 3**

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. Prerequisites: CIVL451

**CIVL454 Ground Modification Techniques (3, 1) 3**

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 hydro mechanical 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. Geo-synthetics. Thermal modification. Electro-osmosis and electro-kinetic dewatering and stabilization. Prerequisites: CIVL451

**CIVL455 Earth Retaining Structures (3, 1) 3**

Lateral earth pressures: classical lateral earth pressure theories, equivalent fluid method, presumptive lateral earth pressures. Rigid and flexible wall systems: gravity walls, reinforced concrete cantilever walls, sheet piles and braced cuts. Seismic analysis and design of rigid and flexible retaining walls. Mechanically stabilized earth (MSE) retaining walls: metallic strip and geotextile. In-situ reinforced walls: soil nailing. Prerequisites: CIVL451

**CIVL461 Highway Materials (3, 1) 3**

Sources of asphalt. Manufacture of asphalt. Chemistry and composition of asphalt. Classification of asphalt. Physical properties of asphalt. Application type of surfacing. Classes and properties of mineral aggregate. Physical properties of aggregates. Gradation analysis and combination of aggregates. Surface area calculations. Types of asphalt pavements. Properties of asphalt mixtures. Prerequisite: CIVL361

**CIVL467 Public Transportation (3, 1) 3**

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

**CIVL476 Prestressed Concrete (3, 1) 3**

Basic concepts and principles. Types of pre-stressing: Posttensioning and pre-tensioning. Material properties. Pre-stress concrete bridges. Losses in pre-stress. Elastic analysis of concrete beams. Design of pre-stressed concrete elements. Prerequisites: CIVL372

**CIVL481 Design and Quality Control of Concrete (3, 1) 3**

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 slabs on grade, preparing for concreting, concrete placing and finishing common field problems, and safety. Prerequisites: CIVL284

### **CIVL482 Advanced Materials of Construction (3, 1) 3**

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 and moisture. Asbestos. Burning of concrete. Assessment of fire damaged buildings. Prerequisites: CIVL284

### **CIVL484 Repair & Maintenance of Concrete (3, 1) 3**

Concrete behavior: embedded metal corrosion, disintegration mechanisms, moisture effects, thermal effects, load effects, faulty workmanship, concrete evaluation: test methods for concrete evaluation, surface repair: analysis strategy & design, material requirements, material selection, surface preparation, reinforcing steel cleaning repair & protection, bond repair materials to existing concrete, placement methods, strengthening & stabilization techniques/design considerations, beam shear capacity strengthening between members, stress reduction techniques Prerequisites: CIVL284

### **CIVL497 Procurement Systems in Construction (3, 1) 3**

Categorization of procurement systems in construction, Concept and evolution of construction procurement systems, Level of use of procurement systems, Integrated procurement systems, Management-oriented procurement systems, Successful procurement system selection, Partnerships, Integrated project delivery, Emerging trends and future developments in procurement systems.

### **CIVL498 Implementation of Information Technology in Construction (3, 1) 3**

The role of information technology in the construction industry, Information technology drivers within the industry, people and information technology systems, contemporary business processes in construction, capturing knowledge in construction industry, capturing information at project level, electronic document management system, the implementation of information technology for construction organizations.

### **CIVL499 Collaborative Working in Construction (3, 1) 3**

Collaboration: key concepts, Planning and implementation of effective collaborative working in construction, Information management and collaboration, Mobile technologies and wireless technologies, Multidisciplinary collaborative design optimization, Change management, Change management framework, Collaboration implementation in construction: case studies, Industry perspective.



## COURSES FROM OTHER DEPARTMENTS

### **CHEM101 General Chemistry (4,1) 4**

Atoms molecules and ions; mass relations in Chemistry; stoichiometry. Gases, the ideal gas law, partial pressures, mole fractions, kinetic theory of gases. Electronic structure and the periodic table. Thermochemistry, calorimetry, enthalpy, The First Law of Thermodynamics. Liquids and Solids. Solutions. Acids and Bases. Organic Chemistry.

### **CMPE108 Programming Fundamentals (2,3) 3**

Problem-Solving concepts for computer. Program structures for computer languages. Sequential logic structures: algorithm instructions and flowcharts. Problem-Solving with: decisions, loops and case logic structures. Data structures: arrays, lists. File processing. Laboratory applications will be done with programming languages such as Fortran, C or Visual Basic or other languages.

### **ENGL191 Communication in English I (3,1) 3**

ENGL191 is a first semester Basic Academic English course for students at the Faculty of Engineering. The purpose of the course is to introduce students to writing, reading, speaking and listening in academic settings as well as provide an introduction to appropriate study skills.

### **ENGL192 Communication in English II (3,1) 3**

ENGL192 is a second semester Basic Academic English course for students at the Faculty of Engineering. The purpose of the course is to further develop students' writing, reading, speaking and listening skills in academic settings and to improve their study skills. Prerequisite: ENGL191

### **ENGL201 Communications Skills (3,0) 3**

ENGL201 is a second year English course for students at the Faculty of Engineering. This course is intended for students with an upper intermediate level of English. The course aims to enhance a range of skills, including effective written and oral communication, research skills and study skills. Throughout the course the students will be involved in project work, intended to help them in their immediate and future academic and professional life. This will include library research, technical report writing and an oral presentation. By investigating a topic of their own choice students will develop an understanding of independent research skills. During the report writing process, students will improve their writing and develop the ability to produce organized, cohesive work. The oral presentation aims to enhance spoken fluency and accuracy and provide training in the components of a good presentation. In addition to the project work, students will work on their job search skills by writing a curriculum vitae (CV) and an application cover letter. Prerequisite: ENGL192

### **PHYS101 Physics I (4,1) 4**

Families of physical quantities having different dimensions, units and rules of mathematics. Vector mathematics and calculus, their applications to motion. Newton's laws. Integrals of the second law, work-energy, impulse-momentum, conservation of energy and momentum, applications. Rotations. Static equilibrium.



**PHYS102 Physics II (4,1) 4**

Heat, heat transfer and heat conduction. Kinetic theory of ideal gases, equipartition of energy. The laws of thermodynamics, applications to engine cycles, Coulombs law and electrostatic fields. Gauss's law, symmetry. Electric potential. Magnetic fields. Amperes law. Faradays law. Prerequisite: PHYS101

**MATH151 Calculus I (4,1) 4**

Limits and continuity. Derivatives. Rules of differentiation. Higher order derivatives. Chain rule. Related rates. Rolle's and the mean value theorem. Critical Points. Asymptotes. Curve sketching. Integrals. Fundamental Theorem. Techniques of integration. Definite integrals. Application to geometry and science. Indeterminate forms. L'Hospital's Rule. Improper integrals. Infinite series. Geometric series. Power series. Taylor series and binomial series.

**MATH152 Calculus II (4,1) 4**

Vectors in R3. Lines and Planes. Functions of several variables. Limit and continuity. Partial differentiation. Chain rule. Tangent plane. Critical Points. Global and local extrema. Lagrange multipliers. Directional derivative. Gradient, Divergence and Curl. Multiple integrals with applications. Triple integrals with applications. Triple integral in cylindrical and spherical coordinates. Line, surface and volume integrals. Independence of path. Green's Theorem. Conservative vector fields. Divergence Theorem. Stokes' Theorem. Prerequisite: MATH151

**MATH241 Linear Algebra and Ordinary Differential Equations (4,1) 4**

Review of Matrix Algebra; Basic operations on matrices, Determinants, Adjoint and inverse matrices, Linear equations, Rank of matrices, Gauss Elimination, Linear Independence, Transformation between Bases. The Eigenvalue Problem; The Characteristic Equation, Eigenvalues and Eigenvectors, Repeated Eigenvalues, Some Useful properties of Eigenvalues, Symmetric Matrices. Ordinary differential equations (DE); First order DE; Basic idea and terminology, Separable DE, First order Linear DE, Change of variables, Exact DE. Second Order DE; Basic theoretical Results, Reduction of order, Second order Homogeneous constants coefficients LDE, The method of undetermined coefficients, The variation of parameters, A DE with non-constant coefficients. Partial DE; Solution of the Wave Equations, Solution of the Heat Conduction diffusion equation, Solution of the Laplace Equation. Prerequisite: MATH151

**MATH322 Probability and Statistical Methods (3,1) 3**

Introduction to probability and statistics. Operations on sets. Counting problems. Conditional probability and total probability formula, Bayes' theorem. Introduction to random variables, density and distribution functions. Expectation, variance and covariance. Basic distributions. Joint density and distribution function. Descriptive statistics. Estimation of parameters, maximum likelihood estimator. Hypothesis testing. Prerequisite: MATH151

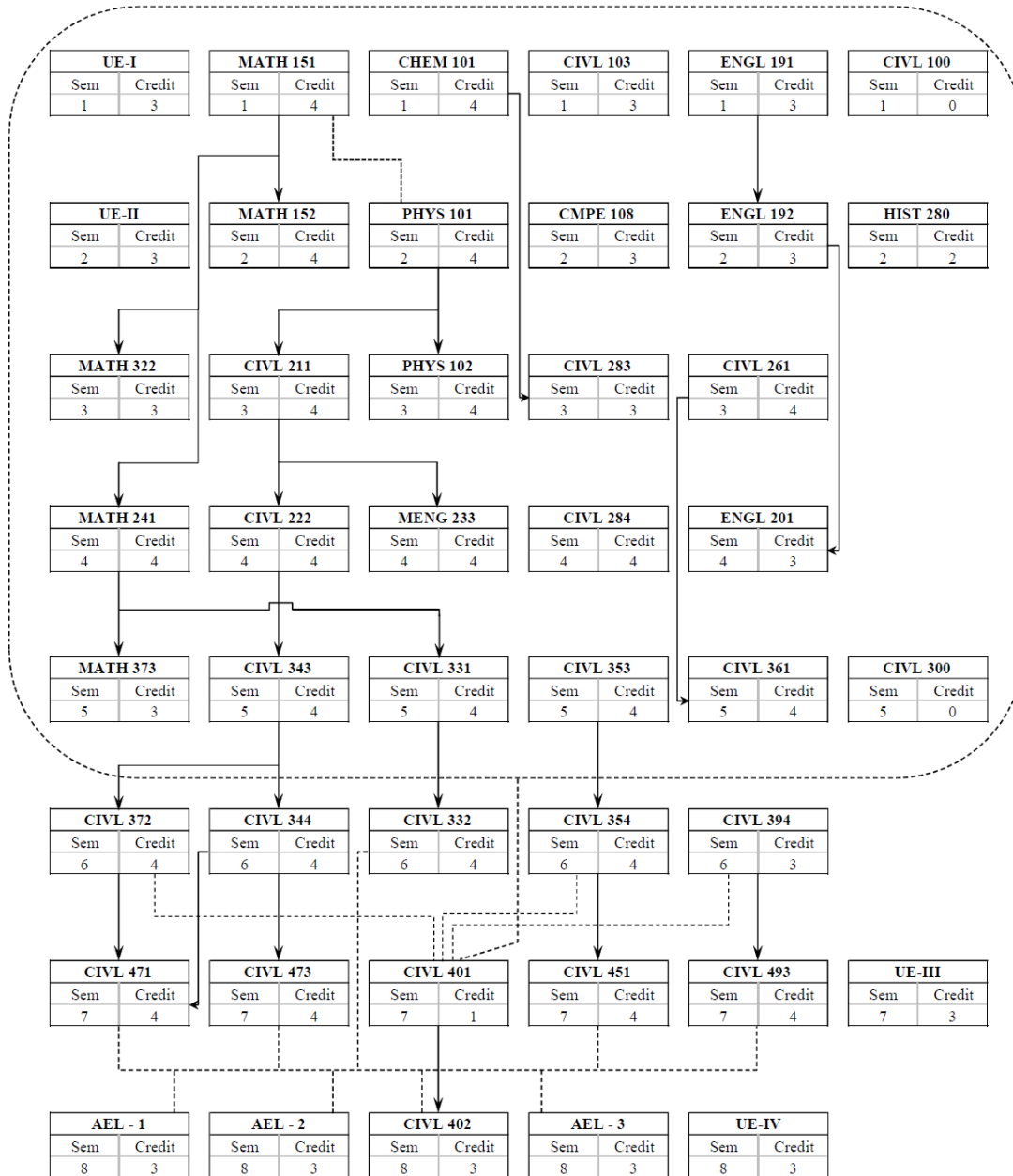
**MENG233 Rigid Body Dynamics (4,1) 4**

This course deals with the motion of bodies under the action of a single or multiple forces. It covers kinematics and kinetics of particles in rectilinear and curvilinear motions using various coordinate systems, work and energy, impulse and momentum, planar kinematics using analytical and graphical methods. Kinetics of rigid bodies using force and acceleration, work and energy, and impulse and momentum principles. Vibration of single and two-degree of freedom systems. Prerequisite: CIVL211

**IENG355 Ethics (3,1) 3**

This course is designed to introduce moral rights and responsibilities of engineers in relation to society, employers, colleagues and clients. Analysis of ethical and value conflict in modern engineering practice.

## CIVIL ENGINEERING PROGRAM, COURSE FLOW-CHART



**Legend**

↓ Pre-requisite

--- Feeding course

## ACADEMIC CALENDER 2021-2022

### FALL TERM

September	08	2022	2021 - 2022 Summer Term, Last Day Of Classes
September	10 - 14	2022	2021 - 2022 Summer Term, Final Exams
September	12 - 30	2022	Orientation Days For New Students
September	16	2022	Last Day For The Submission of Summer School Grades To The Registrar
September	20	2022	Last Day For The Submission of 2021 - 2022 Spring and Summer Term 'Incomplete' Grades and Graduation Make up Grades To The Registrar
September	21	2022	Last Day For The Submission of 2021 - 2022 Summer Term Graduation Decisions and Graduation Decisions of Students who will Graduate as a Result of Spring or Summer Term Graduation Make up examination or as a Result of Spring or Summer Term Incomplete Grades To The Registrar
September	23	2022	Graduation of students graduating at the end of the Summer Term and Graduation of Students Who Complete Their Graduation Procedures Late
September	26	2022	English Proficiency Test 1st Stage *
September	27	2022	Last Day For Online Course Registration
September	28	2022	English Proficiency Test 2nd Stage
September	28 - 30	2022	Course Registration Period (Course Registrations Accompanied by Advisor and Approval of Registration)
September	29	2022	Announcement of English Proficiency Test 2nd Stage Results
October	03	2022	2022 - 2023 Fall Term Classes Commence First Day Of Late Registration
October	08	2022	Religious Day (Mawlid Oct.07 night)
October	10	2022	Last Day For Late Registration
October	11	2022	Academic Year Opening Ceremony ***
October	14	2022	Last Day For The Submission of 2021 - 2022 Spring and Summer Term Letter Grade Changes To The Registrar
October	17	2022	Last Day For Add/Drop
October	29	2022	TR Republic Day (National Holiday)
November	10	2022	Commemoration of Atatürk
November	15	2022	TRNC Republic Day (National Holiday)
Nov./Dec.	21 - 03	2022	Mid-Term Examinations Period
December	05	2022	System Will Be Accessible For Entering Courses To Be Offered In Spring Term 2022-2023
December	19	2022	Last Day for submission of University Elective Courses to be Offered in the Spring Term of 2022 - 2023 by the Elective Courses Commission to the Rectorate
December	23	2022	Last Day For Course Withdrawal
December	25	2022	Christmas Day **
December	30	2022	Last Day For Entering Courses To Be Offered In Spring Term 2022 - 2023 to the system
December	30	2022	Last Day For Applying To Get Leave Of Absence
January	01	2023	New Year's Day
January	05	2023	Last Day of Classes
January	09 - 24	2023	Final Examinations
January	25	2023	Online Course Registration For Spring Term 2022 - 2023 Commences
January	30	2023	Last Day For The Submission Of Grades To The Registrar

**SPRING TERM**

February	09 - 15	2023	Fall Term Resit Examinations
February	13 - 18	2023	Orientation Days For New Students
February	13	2023	Last Day For The Submission of Fall Term 'Incomplete' Grades To The Registrar
February	16	2023	English Proficiency Test 1st Stage *
February	17	2023	Last Day For The Submission of Fall Term Resit Examination Grades To The Registrar
February	19	2023	Last Day For Online Course Registration
February	20	2023	English Proficiency Test 2nd Stage
February	20 - 22	2023	Course Registration Period (Course Registrations Accompanied by Advisor and Approval of Registration)
February	21	2023	Announcement of English Proficiency Test 2nd Stage Results
February	23	2023	2022 - 2023 Spring Term Classes Commence
First Day Of Late Registration			
March	03	2023	Last Day For Late Registration
March	9	2023	Last Day For The Submission of Fall Term Letter Grade Changes and Graduation Make-Up Grades To The Registrar
March	10	2023	Last Day For Add/Drop
March	13	2023	Last Day For Submission Of Graduation Decisions of the Students Who Will Graduate as a Result of; Fall Term Graduation Make-Up, Resit Examinations or Incomplete Grades To The Registrar
March	15	2023	Graduation for Fall Term Resit Exams Graduates or Graduation of Students Who Complete Their Graduation Procedures Late
April	20	2023	Ramadan Bairam Eve
April	21 - 23	2023	Ramadan Bairam
April	23	2023	National Sovereignty & Children's Day
April/May	24 - 08	2023	Mid-Term Examinations Period
May	1	2023	Workers' and Spring Day
May	02	2023	System Will Be Accessible For Entering Courses To Be Offered In Summer Term 2022 - 2023
May	12	2023	Last Day for submission of University Elective Courses to be Offered in the Summer Term of 2022 - 2023 by the Elective Courses Commission to the Rectorate
May	17 - 20	2023	Spring Festival
May	19	2023	Atatürk Commemoration, Youth and Sports Day
May	22	2023	Last Day For Course Withdrawal
May	26	2023	Last Day For Applying To Get Leave Of Absence
May	26	2023	Last Day For Entering Courses To Be Offered In Summer Term 2022 - 2023 to the system
June	02	2023	Last Day of Classes
June	02	2023	Online Course Registration For Summer Term 2022 - 2023 Commences
June	06 - 22	2022	Final Examinations
June	19	2023	System Will Be Accessible For Entering Courses To Be Offered In Fall Term 2023 - 2024
June	27	2023	Kurban Bairam Eve
June/July	28 - 01	2023	Kurban Bairam
July	03	2023	Last Day For The Submission Of Grades To The Registrar

**SUMMER TERM**

July	13 - 19	2023	Spring Term Resit Examinations
July	20	2023	Peace and Freedom Day

July	21	2023	Last Day For The Submission of Spring Term Resit Examination Grades To The Registrar
July	23	2023	Last Day for Summer Term Online Course Registration
July	24	2023	Last Day For Submission Of Graduation Decisions of the Students Who Will Graduate as a Result of Spring Term Resit Examinations To The Registrar
July	24 - 25	2023	Course Registration Period (Course Registrations Accompanied by Advisor and Approval of Registration)
July	26	2023	Summer Term Classes Commence First Day Of Late Registration
July	28	2023	Graduation for Spring Term Resit Exams Graduates or Graduation of Students Who complete Their Graduation Procedures Late
July	28	2023	Last Day For Entering Courses To Be Offered In Fall Term 2023 - 2024 to the system
August	01	2023	National Holiday
August	02	2023	Last Day For Late Registration
August	04	2023	Online Course Registration For Fall Term 2023 - 2024 Commences
August	09	2023	Last Day For Add/Drop
August	25	2023	Last Day For Course Withdrawal
August	30	2022	Victory Day
September	01	2023	Last Day of Classes
September	04 - 07	2023	Summer Term Final Examinations
September	11	2023	Last Day For The Submission Of Summer Term Grades To The Registrar
September	13	2023	Last Day For Submission of The Summer Term Graduation Decisions To The Registrar
September	18	2023	Graduation of students graduating at the end of the Summer Term

## LABORATORIES

Courses offered in construction materials, hydraulics, geotechnics, structures, and transportation are supported with experimental work in the laboratories. In addition to demonstration of some of the experiments, students are encouraged to do hands-on laboratory work as a major objective. A written report, generally including analysis and interpretation of data is required. In some courses, an oral presentation is also required at the end of a laboratory work. Interested students are always welcome to work in the laboratory and gain more experience. These students are encouraged to take higher level courses as area electives to further enhance their laboratory skills. The laboratories can be listed as below,

**Mustafa Harmancı Computer Laboratory** is comprised of 25 computers for the usage of undergraduate and graduate students. Connection to the EMU networks and internet is available to all students. The lab is used for computer applications in various departmental courses. Apart from lecture times, the lab is also available for students to use when they need to study upon their request.

**Okay Camgöz Geology Laboratory** comprises educational level microscopes for students to observe structure of minerals from slides, mineral and rock specimens for hands on testing and investigations.

**Soil Mechanics Laboratory** includes all necessary equipment for standard soil testing such as: specific gravity, grain size distribution, liquid limit, plastic limit, shrinkage limit, in situ density, shear strength parameters of soil, CBR, compaction, handheld auger and cone penetrometer, mackintosh probe, plate load test, oedometers, triflex-system for soil permeability, constant head and falling head permeability, electronic data acquisition systems. The laboratory is used for hands on experiments for undergraduate students, research and service to the industry. The civil engineering students perform soil mechanics experiments to help illustrate the concepts covered in the courses. These experiments provide soil parameters necessary for both engineering analysis and design work and for routine material testing and field inspection work.

**Tevfik Tarımcıoğlu Hydraulics Laboratory** was providing instructional facilities in the fields of hydromechanics, hydrology, and water resources. Currently, most of the systems require repair and maintenance work or replacement such as a tilting flume, a hydrology bench, wide sediment channel, water supply reservoir. Therefore, the laboratory isn't operational for the students.

**Materials of Construction Laboratory** is equipped with modern apparatus to perform all the standard physical and mechanical tests on construction materials. This laboratory is used for undergraduate and graduate studies and service to industry in terms of civil engineering materials. The laboratory consists of two computerized compressive and flexural strength testing machines (low scale and high scale) and tools to measure physical and mechanical properties of construction materials. The properties of concrete, gypsum, lime, cements, bricks, blocks, aggregates, etc., can be determined in this laboratory. It is used both for instruction and research and for services to the construction industry. This laboratory has mixing facilities and bulk materials for concrete. Materials are stocked in the laboratory and used most frequently for the experimental purposes. The following experiments are conducted by students under the supervision of laboratory Engineer and Research Assistants; consistency & setting time of hydraulic cements, sampling of aggregates, physical properties of aggregates (specific gravity, moisture content, absorption capacity), sieve analysis for fine and coarse aggregates, design and casting of concrete mixes with known classes of concrete, fresh concrete properties (slump test, VeBe test, compacting factor test, flow test, air content),

compressive strength of concrete at specified ages, testing bricks for strength, and flexural strength of timber.

In 2021, a new temperature and humidity controlled curing room has been built for use in the undergraduate and graduate programs as well as in the services to third parties. In 2022, new equipment is purchased for upgrading and modernization of tests conducted in the undergraduate program.

**Structural Engineering Laboratory** provides educational and research facilities. Various types of tests can be conducted using the available testing machines, including; tension, flexure, compression, torsion, and buckling tests on models and structural elements. The laboratory also has the necessary equipment for studying photo-elasticity. This laboratory supports the hands-on experimental programs of concrete beam and column fabrication and testing. The facility includes setups for testing of structural panels, and frames. It includes data acquisition equipment for measuring force, displacement, and strains. Demonstrations are also used in support of courses dealing with structural elements both under static and dynamic loads. In 2022, a corrosion and aging pool for reinforced concrete structural elements is added to the laboratory facilities.



**Structural Mechanics Laboratory** provides educational facilities as part of numerous structures courses laboratory requirements within undergraduate program. There are some equipment's which are not ready to be used yet and hence the laboratory can be considered as still being developed. The following are some of the tests that can be carried out by students in this laboratory: deflection of beam, buckling of column and portal frame, internal forces of truss, braced and unbraced frame behavior, restraining effects in a beam, moment distribution, bending moment and shear force in a beam, support rotation in a beam.

**Surveying Laboratory** contains all necessary conventional and modern surveying instruments for conducting ground surveying work; tapes, levels, theodolites, electronic theodolites, total stations (EDM), GPS, planimeters, reflectors, eyepiece prisms, ranging rods, levelling staffs, tripods, marking arrows. The instruments are used in applications that give practical training and provide insights about the topics covered in surveying lectures. Topics include chain survey, chainage across obstacles, differential levelling, profile levelling, pavement chainage, horizontal and vertical angle measurements by using theodolites, traversing.

**Transportation Laboratory** is equipped to perform various tests on bituminous materials and mixtures, including Marshall, penetration, softening point, and bitumen extraction tests. Students learn how to compact asphalt concrete using the Marshall and Super pave procedures and test for mix properties, such as stability, flow, unit weight, air voids, and Rice specific gravity. The facilities are also used for traffic data collection processes.

**Soil Science Laboratory** was founded in 2017. It comprises facilities for microstructural studies such as; electronic microscope, dew point tensiometer for soil suction, total electrolyte contents, sensitive balance for gravimetric measurements, cation exchange capacity using methylene blue method, rheometer test for viscosity of soft mixes, optical microscope investigations for granular soils. This laboratory is currently used by graduate students. There are future plans for further development of the laboratory for environmental testing, which can also be experienced by undergraduate students.



## OTHER FACILITIES

### **Departmental Library**

Civil Engineering Department has a library, which is supplementary to the main library (Özay Oral Library). It contains mainly civil engineering books, journals and proceedings.

### **Construction Club**

Civil Engineering Construction Club is a formal activity club for students organizing social, cultural and academic activities. The activities start with the orientation program at the beginning of the academic year and continue with seminars, conferences, and field trips throughout the semester. A Civil Engineering Week (CEW) is also organized by the club, traditionally in May. During CEW, the professionals, preferably selected from EMU graduates and stakeholders in the industry, are invited to deliver seminars about the interesting projects they are involved and a view of their career progression.



## POLICIES FOR STUDENTS

### **Student Admissions**

Student Admissions are dealt by the Registrar's Office, based on the relevant by-laws established by the Senate.

### **All Students:**

All students are required to take the English Proficiency Exam administered by the School of Modern Languages (SFL) at EMU, unless they present documents demonstrating their English proficiency level in accordance with the acceptable certification announced by the SFL. The students who fail to receive an acceptable passing grade from English Proficiency Exam are admitted to the SFL to study English for a period of one to four semesters.

### **Registration:**

Full time status is assigned to a student when registered to at least three credited courses. A student registered to a maximum of two credited courses is assigned "Part-time" status.

Once they are admitted to the department, each student is assigned an academic advisor. It is the responsibility of, and compulsory for, each student to visit their academic advisors for face to face discussion of their academic performance and registration matters.

### **Evaluating Student Performance**

During registration for each semester, the on-line registration system initially screens the tentative list of courses proposed by the student to ensure that it complies with the academic rules and the curriculum (i.e. number of allowed credits, prerequisites, performance status, etc.). The advisors then review the proposed schedule of each student, as well as their up-to date performance, and provide guidance so that the student's entire program is of a nature which is best suited to his interests and capacity, as well as to the curriculum of the Civil Engineering Program.

Students are granted a letter grade for each course attended in accordance with the instructor's course evaluation criteria, which is announced at the beginning of the semester.

### **Course Grades and Grade-Points**

Thirteen categories of scholastic achievement, ranging from "superior" to "failure" (A, A-, B+, B, B-, C+, C, C-, D+, D, D-, F, NG), are recognized as valid end-of-course grades or letter grades. These grades are indexed on a scale of "0 to 4", termed "Grade-Points." The symbol "NG" (Nil Grade), indicates poor attendance and/or a failure to complete assigned work (including exams). The letter grades are indexed to Grade-Point equivalents as shown in the following table.

Grade	Grade Point Equivalent	Description	Grade	Grade Point Equivalent	Description
A	4	PASS	D	1	CONDITIONAL PASS
A-	3.7	PASS	D-	0.7	FAIL
B+	3.3	PASS	F	0	FAIL
B	3	PASS	NG	0	NIL GRADE
B-	2.7	PASS	S	-	SATISFACTORY
C+	2.3	PASS	U	-	UNSATISFACTORY
C	2	PASS	I	-	INCOMPLETE
C-	1.7	CONDITIONAL PASS	W	-	WITHDRAWAL
D+	1.3	CONDITIONAL PASS			

Four other symbols are also used in grading, for special circumstances. "W" (Withdrawn), indicates withdrawal from a course before the end of a term. In case where a student has been authorized to delay completion of course work past the normal end-of-term, the "I" (Incomplete) grade may be given until a formal grade is reported by latest one week before the starting date of the following semester (unless a change is reported, the letter grade "I" changes to an "F" grade). Achievement in a non-credit-hour course is indicated by the symbol "S" (Satisfactory) or "U" (Unsatisfactory). No grade-point equivalent is assigned for the notations I, W, S, and U. In the case of repeated course work, the last grade earned is considered the official course grade. A student cannot withdraw from a course that was withdrawn before, a course that is repeated (a different course with the same reference code) or a course that has no credit. Students in "Part-Time" status cannot withdraw from a course.

#### Evaluation of a Course

A course is said to have been successfully completed if a student, obtains a grade of A, A-, B+, B, B-, C+, C, C-, D+, D or S. A course in which a student receives a grade of D-, F, NG or U is not satisfactorily completed, and the student is required to repeat such a course in the next semester if it is offered. A letter grade E (Exemption) which will not contribute to GPA and CGPA calculations will be awarded for the courses of the students transferred from other institutions based on Department's transfer criteria.

Students must repeat required courses for which they have received a grade of D-, F, NG and U during the earliest semester the courses are offered. Students who have received D-, F or NG grade from an elective course must repeat that course in the first semester it is offered or take an equivalent course. In this case, the grade received in the new course replaces the D-, F or NG, but the previous grade will appear in the student's academic record sheet.

In order to determine student's Academic Status, "Actual Term" criterion is applied in conjunction with the curriculum. Actual Term can be briefly defined as the total number of semesters from the first admittance to the department to date, excluding Summer Semesters. For transfer students, Actual Term also includes the number of equivalent terms they are granted based on the total number of exempted courses (credited). The Academic Status of a student indicates the academic performance and it is also used as guidance for course registration. The following table categorizes the Academic Status in accordance with the Actual Term and "Cumulative Grade Point Average" (CGPA).

A student's achievement is determined by "Grade Point Average" (GPA), which pertains to courses taken in the semester completed, and cumulative "Cumulative Grade Point Average" (CGPA) that pertains to all courses completed to date. In order to calculate a student's CGPA, the numeric value of each letter grade earned in a course is multiplied by the number of credits awarded to that course, and their sum is divided by the total number of credits completed.

At the end of x <sup>th</sup> actual term	SATISFACTORY PROGRESS	ON PROBATION	UNSATISFACTORY (REPEATING)	COMPULSORY TRANSFER
1 <sup>st</sup> actual term				
2 <sup>nd</sup> actual term	CGPA ≥ 1.5	1 ≤ CGPA < 1.5	CGPA < 1	
3 <sup>rd</sup> actual term	CGPA ≥ 1.5	1 ≤ CGPA < 1.5	CGPA < 1	
4 <sup>th</sup> actual term	CGPA ≥ 1.5	1 ≤ CGPA < 1.5	CGPA < 1	CGPA < 1
5 <sup>th</sup> actual term	CGPA ≥ 1.8	1.5 ≤ CGPA <	1 ≤ CGPA < 1.5	CGPA < 1
6 <sup>th</sup> actual term	CGPA ≥ 1.8	1.5 ≤ CGPA <	1 ≤ CGPA < 1.5	CGPA < 1
7 <sup>th</sup> actual term	CGPA ≥ 1.6	1.5 ≤ CGPA <	1 ≤ CGPA < 1.5	CGPA < 1
8 <sup>th</sup> actual term	CGPA ≥ 2.0	1.8 ≤ CGPA <	1 ≤ CGPA < 1.8	CGPA < 1

Note: For transfer students, based on University regulations the above criteria is applied starting from their second semesters.

Students with poor academic performance are assigned “On-Probation” or “Repeating” status. When assigned “On-Probation” status, students cannot register for more than two new credited course, whereas students on “Repeating” status aren’t allowed to register any new credited or non-credited courses until they improve their academic performances. For Part-time students with “On-Probation” status, only one new course is allowed to be registered.

#### **Honour and High Honour Students**

A student who (with a normal course load) obtains a GPA between 3.00 and 3.49 is designated as "Honour Student". A student who obtains a GPA between 3.50 and 4.00 is designated as "High Honour Student".

#### **Compulsory Transfer**

If a student receives CGPA less than 1.00 from the 5th Actual Term or above, a compulsory transfer from the Civil Engineering Department program to another program is obligatory in accordance with the By-laws of the University.

#### **Advising Students**

Once the students are admitted, they are guided through their academic programs by their assigned academic advisors. Students are given an undergraduate catalogue and an orientation program describing the registration and academic rules and procedures of the University.

The students are constantly encouraged to meet with their advisors regularly to discuss their academic/social affairs and general well-being. Any applications such as registration (add-drop, withdrawal, credit overload or underload) and enrolment in a student exchange program require approval by the advisor before submission for Department Chair’s review and the Faculty Dean.

The on-line registration system tracks the registration process, including add-drops, withdrawals, term freeze applications via student and academic advisor portals. In addition, it also accepts online course exemptions applications for transfer students.

Students with disabilities and/or having emotional problems need special advisor-student interaction. Advisors act as frontline resource in advising the students to seek help at the University Counselling Office (PDRAM).

#### **Transfer Policies**

All internal and external transfer student applications are dealt in accordance with the regulations approved by the University Senate.

### Graduation Requirements

A student is entitled to graduate if:

- satisfactorily completes all the minimum required number of credited and non-credited courses as detailed in the curriculum, and
- attains a CGPA of at least 2.00

### GPA and CGPA calculations

Assume that a student is registered to the following courses and received the following letter grades.

Semester - 1

<u>Course</u>	<u>Course Credits</u>	<u>Letter Grade</u>	<u>Equivalent Grade Points</u>	<u>Grade Points Earned</u>
CIVL100	0	S	0	0
CIVL103	3	D-	0.7	3 x 0.7 =2.10
CHEM101	4	B-	2.7	4 x 2.7 =10.80
ENGL191	3	D	1	3 x 1.0 =3.00
MATH151	4	F	0	4 x 0.0 =0.00
UE-01	3	C	2	3 x 2 =6.00
	<u>+</u>			<u>+</u>
total credits=	17		total grade points earned=	21.90

$$\text{GPA} = 21.9/17=1.28$$

$$\text{CGPA} = 21.9/17=1.28$$

(the calculated value is 1.2882, however, Academic Status is determined using the first two digits after the decimal point without rounding)

Semester - 2

<u>Course</u>	<u>Course Credits</u>	<u>Letter Grade</u>	<u>Equivalent Grade Points</u>	<u>Grade Points Earned</u>
CIVL103 (repeat)	3	B+	3.3	3 x 3.3 =9.90
MATH151(repeat)	4	C+	2.3	4 x 2.3 =9.20
CMPE108	3	B	3	3 x 3 =9.00
ENGL192	3	D	1	4 x 1 =3.00
PHYS101	4	D	1	3 x 1 =4.00
	<u>+</u>			<u>+</u>
total credits=	17		total grade points earned=	35.10

$$\text{GPA} = 35.1/17=2.06$$

$$\text{CGPA} = (4 \times 2.7 + 3 \times 1 + 3 \times 2) + (3 \times 3.3 + 4 \times 2.3 + 3 \times 3 + 4 \times 1 + 3 \times 1) / (10 + 17) = (19.8 + 35.1) / 27 = 2.03$$

(note that the last earned letter grade is used in the CGPA calculation, and the total number of credits for two semesters is 10+17 = 27 as two of the courses in the first semester are repeated)