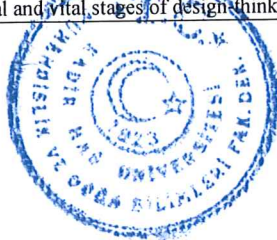


COURSE CONTENTS FOR CIVIL ENGINEERING

Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Origins and Consequences	KHAS 101	Fall	03+00+00	Compulsory	3	5
Course Objectives:	This course aims to introduce the students with a broad outline on fundamental sciences by focusing on a discussion of groundbreaking discoveries, innovations and inventions in various scientific fields. The course also aims to develop the students' curiosity for scientific fields and their connections, help them understand the consequences of scientific developments and the role science and technology play in shaping today's world.					
Course Contents:	The course explores groundbreaking discoveries / innovations / inventions in astronomy, geoscience, biology, chemistry, physics and technology, and provides the students with a background in science and today's world.					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
History of Humankind	KHAS 103	Fall	03+00+00	Compulsory	3	5
Course Objectives:	The main objective of this course is to introduce the students with major concepts in humanities and social sciences as they relate to world civilizations and history. It is expected that the students will become familiar with social scientific theories that utilize and build upon these concepts and understand that concepts and ideas change in time and space, and are institutionally framed. The course also aims to help the students develop their capacities for critical thinking and analysis; learn ways of reading (primary) texts and expressing arguments and ideas verbally, visually, and in writing; and develop intellectual responsibility and respect for others.					
Course Contents:	This course focuses on the content and social context of concepts such as civilization, science, history, time, space, myth, religion, individual, society, family, state, nation, race, gender, culture, globalization, which the students will encounter in their four years of university education. Following a quasi-chronology, the course will enable the students to understand the historical context and intellectual conditions that give rise to certain developments. The overarching theme will be how we understand civilization and the implications of different notions of civilization on how we interpret the world around us and how we organize our everyday practices. The course will cover the period from the beginnings of the world, as depicted in scientific, religious, and mythical origin stories to the times of colonialisms and revolutions up until early twentieth century. Throughout the term the students will read primary or secondary texts and watch documentary and/or feature films dealing with history, family, religion, city, and/or nation, and respond to them utilizing the concepts covered in class.					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Universal Values and Ethics	KHAS 105	Fall	03+00+00	Compulsory	3	5
Course Objectives:	This transdisciplinary course is designed to help students reflect critically on the ethical implications of their conceptions of life and of their relationship with other human beings, with the society at large, and with the rest of existence. It aims to encourage them to think freely - to be free of prejudice and misinformed preconceptions; to build self-confidence and become responsible individuals who appreciate the rights of other living beings; and to empower them to become active agents in society's development through civic engagement. The course also aims to equip the students with basic research skills and reinforce their command of English by developing their reading, writing, listening, and speaking skills, and to expand students' academic vocabulary both at the receptive and productive level.					
Course Contents:	The course consists of five modules designed to focus on some of the most pressing issues of our times, i.e. diversity, citizenship, gender, information technologies, and bioethics, all of which involve ethical dilemmas that are hard to resolve and even hard to recognize most of the time. Rather than equipping the students with normative moral values that would supposedly guide them in such situations, the course emphasizes the ability to evaluate issues with empathy, to think and analyze contextually and relationally, and, most importantly, with the ability to see tones of grey in ethical matters, and to recognize that their personal views and choices may have broader implications that go well beyond their immediate consequences.					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Design	KHAS 107	Fall	03+00+00	Compulsory	3	5
Course Objectives:	This course aims to introduce the students to the wide world of design and its change-inducing mindset through a variety of perspectives and examples by forming links with the concepts of creativity, innovation, problem-defining and solving, intellectual sensibility, viable improvement and sustainability. The course presents design in an expanded scope including technical/technological, material, spatial, ecological, political, economic, and global perspectives. It presents a rich variety of works in various scales blurring the boundaries between design, arts, architecture, engineering, science, business and many other fields in which design-thinking can be implemented and can exert large-scale impact and positive change. Seeing students as creative individuals and parts of a creative community, the course also aims to foster team work and acute communication (verbal, written and visual) along with the skills of project management, presentation and storytelling.					
Course Contents:	<p>The course comprises of 4 main modules concentrating on different aspects, stages and implementations of design-thinking in relation to various fields, complemented by a following workshop (studio) session of 5 weeks engaging students to work in interdisciplinary teams and in a design project of their own devising which will also be tutored by a respective mentor.</p> <p>1. Understanding the nature and power of design-thinking and doing: The module will concentrate on the fundamentals, values and purposes vested in design-thinking in general. Students will be introduced to the impact and place of design in everyday life, culture, history and many contemporary fields – all in relation with the concepts and practices of creative-thinking, innovation, human-centered design and social change.</p> <p>2. Stories of Design: As a more expanded episode to the previous module, students will be introduced various inspirational cases from various fields (architecture, product / UX design, engineering, business, health, non-profit projects etc.) directly by the stories told by the makers and organizers of these respective examples.</p> <p>3. Problem-Defining, Field-Research, Analysis and Visualization: The module will be focusing on the initial and vital stages of design thinking. Students will be introduced to the preliminary preparations and</p>					

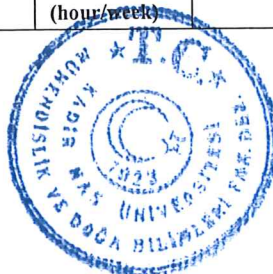
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	<p>necessary perspectives in setting up a design-project as well as conducting it further. Various tools and modes of research, problem-defining, analysis, ideation and effective visualization will also be introduced through examples and small assignments.</p> <p>4. Prototyping, Testing and Iteration:</p> <p>The final module, expanding on the concepts and stages introduced in the previous one, will be centered on the methods and means of devising the design work through modelling, testing and further iterative development through its finalization. This and the third module will also be following the main stages in design-thinking, and will include small assignments for each phase in a way that corresponds with the following workshop session which will proceed in a similar, stage-by-stage fashion.</p> <p>PROJECT WORKSHOPS:</p> <p>In this 5-week phase, students will shape and conduct a design project of their own, working in teams and with the mentorship of a tutor, and will experience the design process in a customized fashion resulting a final work that aims to meet the needs of the end-user or the intended social impact.</p> <p>a. Defining problem & needs, market / field / user identification and specifying requirements</p> <p>b. Concept design / Ideation</p> <p>c. Design Specifics & Development</p> <p>d. Modelling / Production</p> <p>e. Testing & Feedback</p> <p>f. Documentation</p>					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Computational Thinking	KHAS 109	Fall	03+00+00	Compulsory	3	5
Course Objectives:	<p>This course aims to present an applied introduction to algorithmic thinking for complex problem solving tasks. It seeks to build up a wide variety of interdisciplinary problem and conflict-resolution skills and competencies derived from computation, mathematics, logic and design. It introduces a multitude of problem solving skills such as pattern recognition, abstraction, induction-deduction that students will work on in groups, as well as preparing students to use programming interfaces like Python to work with datasets to address popular and exciting riddles and problems. Overall, the course prepares students for the rest of their university life and the problems they may encounter throughout.</p>					
Course Contents:	<ul style="list-style-type: none"> • Critical Thinking and Logical Reasoning • Deduction and Induction • Computational Thinking and its 4 pillars: Problem Decomposition • Pattern Recognition • Abstraction • Fun with Algorithms • Algorithms and Procedures • Data Collection • Data Analysis • Data Representation / Presentation 					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Critical Reading and Writing in Turkish I	TLL 101	Fall	02+00+00	Compulsory	2	3
Course Objectives:	<p>This course aims to develop skills to express themselves orally and in writing in daily life and to comprehend argumentative essays in various forms and analyze them critically. This course encourages students to express their thoughts / arguments individually or as a member of a group in accordance with the manners of discussion. In this course students gain the ability to use relevant materials and resources in conducting academic research and the reflex to apply the rules of academic integrity in written and oral productions.</p>					
Course Contents:	<p>Critical Reading and Writing in Turkish I is designed each week as a 2-hour reading and writing workshop in order to improve students' reading and writing skills in Turkish and to develop their critical thinking and ensure to express their thoughts in a proper, comprehensible and fluent Turkish. In the course, students are encouraged to express themselves individually or in a group work, verbally and in written form in daily life, to read and understand critically argumentative essays, to be able to produce arguments and conduct academic research on a particular subject using relevant sources. The course is also designed to raise awareness in terms of academic integrity among the students.</p>					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Equilibrium of Physical Systems	CIV 102	Spring	02+04+00	Compulsory	4	6
Course Objectives:	<p>Understand mechanisms that keeps physical systems at equilibrium.</p>					
Course Contents:	<ol style="list-style-type: none"> 1. Introduction to basic civil engineering concepts. 2. Force concept, different force types acting around the universe. 3. Understanding vector algebra. 4. Moment concept. 5. Balance concept, forces, and moments at the equilibrium state. 6. Concept of static and concept of stable and the difference between them. 7. Free body diagrams. 8. Basic connection types used in common civil engineering applications. 9. Understanding truss systems 10. Couple moment concept. 11. Distributed load concept, first area integrals. 12. Moment of inertia concept, second area integrals. 					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS

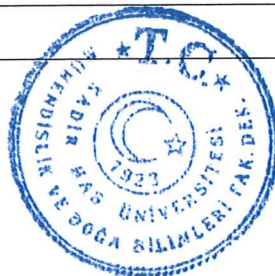
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Litosphere	CIV 106	Spring	03+00+00	Compulsory	4	5
Course Objectives:	The course aims to examine various aspects of the crust of the globe that sustains life.					
Course Contents:	Project 1: Support for the built environment Project 2: Composition of the Lithosphere focusing on Rocks and Soils Project 3: Plate Tectonics Project 4: Erosion Project 5: Groundwater Project 6: Energy Sources					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Civic Responsibility Project	KHAS 110	Spring	00+02+00	Compulsory	1	2
Course Objectives:	This course introduces students to the concept of social responsibility with theoretical knowledge and universal values. It aims to transform this information into active citizenship skills through civic engagement activities.					
Course Contents:	This course introduces civic engagement and active citizenship concepts within the framework of social responsibility. The course presents basic knowledge and understanding in the field of social responsibility theoretically. Additionally, the course also allows the students to design and implement a project to develop their skills of realizing problems of the society they live in and developing solutions for these problems.					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Thinking Mathematically	KHAS 112	Spring	03+00+00	Compulsory	4	6
Course Objectives:	The goal of this course is to cover basic concepts of mathematics that will be of use to the students of any background using a modular teaching model. Students will be able to identify solution strategies for real-life problems and comprehend the need for mathematical tools. Mathematical concepts will be discovered/thought through experiments hence the student will be able to observe the need for mathematics.					
Course Contents:	-Joy of Numbers (Introduction Module) -Uncertainty in Life (Module 1) -Finding Trends in Everyday Life (Module 2) -Rate of Change (Module 3) -Areas and Volumes (Module 4) -Abstract Thinking (Module 5)					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Critical Reading and Writing in Turkish II	TLL 102	Spring	02+00+00	Compulsory	2	3
Course Objectives:	The course aims to define the elements of fiction (novel and short story) such as character, plot, point of view, description, time, space etc. and to interpret and criticize Turkish novels and short stories in an analytical way. Additionally, the course enable students to write critical articles on fiction using secondary sources and to develop their skills on storytelling/depiction/editing with short creative writing studies. The course also aims to explore the various relationships of novel and short story with different genres through concepts such as intertextuality, adaptation and rewriting.					
Course Contents:	The content of the course is based on the genres, novel and short stories. Focusing on the concept of "fiction" through novels and short stories in modern Turkish literature, students will be able to interpret and criticize novels and stories in an analytical way and produce their own critical points of view. In addition, the relationship between novels and short stories with other texts and genres is discussed through concepts such as intertextuality, adaptation and rewriting. Besides, in-class activities are designed in order to encourage the creative writing skills of students.					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Summer Practice I	CIV 199	Fall	02+02+00	Compulsory	3	4
Course Objectives:	<ul style="list-style-type: none"> To get ability of field and topography measurement and application To get ability of technical drawing and reading To get ability of develop algorithms and problem solving by using scientific computation techniques via MATLAB 					
Course Contents:	<ul style="list-style-type: none"> Introduction of topography and map concepts Units of measurement, concept of scaling, error calculations, polygonization Measurement of areas and volumes Map drawing Technical drawing terminology and tools Perspective drawing and scaling Section drawing Introduction to MATLAB Analysis and algorithm of scientific problems 					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Project Management	CIV 221	Fall	03+00+00	Compulsory	3	4
Course Objectives:	Understand how a construction project is run.					
Course Contents:	Design Mobilization					

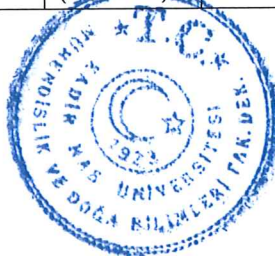
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	Construction Handing over					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Strength of Materials	CIV 261	Fall	03+02+00	Compulsory	3	6
Course Objectives:	Understand the stress-strain mechanisms in structural members.					
Course Contents:	<ul style="list-style-type: none"> • Normal stress and strain • Axially loaded bars (normal stress, normal strain) • Bolted/riveted connections (shear stress, shear strain) • Stress-strain relationship, modulus of elasticity Poisson's effect • Compatibility, statically indeterminate problems • Torsion of circular bars • Bending (pure and bi-axial) • Combined bending and axial load • Combined shear and bending • Stress transformation, Mohr's Circle 					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Dynamics of Physical Systems	CIV 263	Fall	03+00+00	Compulsory	3	4
Course Objectives:	Understand the dynamics of particles.					
Course Contents:	<ul style="list-style-type: none"> • Particle dynamics. • Introduction to rigid body dynamics. • Springs (as a 1D motion) • Work, energy and power • Linear, angular and relative motion • Impulse and momentum • Conservation laws 					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Probability and Statistics	FENS 200	Fall	02+02+00	Compulsory	3	4
Course Objectives:	The aim of this course is to introduce students to probability and statistical theory and applications and provide some basic information necessary for data analysis in engineering systems.					
Course Contents:	Module 1: Data presentations and analysis, probability concepts and probability axioms, random variables, mathematical averages Module 2: Discrete and continuous probability distributions, probability calculations, common distributions, conditional probability and independence Module 3: Probability distributions, estimation and confidence intervals, hypothesis testing Module 4: Experimental design Module 5: Risk and reliability concepts					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Applied Engineering Mathematics I	FENS 201	Fall	03+02+00	Compulsory	4	6
Course Objectives:	The aim of this course is to provide the mathematical background (derivatives, integrals, linear systems of equations, linear differential equations) necessary for engineering applications.					
Course Contents:	<ul style="list-style-type: none"> • Engineering applications of differentiation and integration • First-order ordinary differential equations and their applications • Linear systems of equations • Higher-order ordinary differential equations 					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
History of Modern Turkey I	HST 101	Fall	02+00+00	Compulsory	2	2
Course Objectives:	The main objective of this course is to introduce students major themes and events in the history of modern Turkey with a focus on the modernization process during the Ottoman era. Students will become familiar with the major issues in the modernization process of Turkey through a variety of sources, including archival, visual, and fictional ones. It is expected that students will be able to develop critical thinking and historical perspective to analyze current social, political and economic developments.					
Course Contents:	This course explores the modernization process in the Ottoman Empire and how those transformations were reflected in the making of modern Turkey. Although there is a chronological frame, the course is organized as modules focusing on certain themes. Throughout six modules, modernization of the state apparatus, integration to the global economy, transformation of the cities, modern forms of art and changes in social life will be discussed. Students will become familiar with the political reforms of the late Ottoman period, Ottoman political and intellectual figures of the modern era, changes in social structure with the process of modernization, demographic structure of the cities, urban planning, cultural life and lastly wars which triggered change in various areas. These topics will be covered through the primary and secondary sources.					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS

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Investigation of Behavior of Fluids	CIV 242	Spring	03+00+02	Compulsory	4	6
Course Objectives:	The aim of this course is to discuss the basic principles of fluid mechanics with students and apply these principles to the liquid form of water.					
Course Contents:	Project 1: Properties of fluids, Project 2: Hydrostatics Project 2: Fluid kinematics, method of analysis Project 3: Fluid dynamics, mass, momentum and energy conservation equations Project 4: Dimensional analysis, similitude and modeling					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Theory of Structures	CIV 252	Spring	03+00+00	Compulsory	3	4
Course Objectives:	Understand the theory of structures and structural analysis principles.					
Course Contents:	<ul style="list-style-type: none"> • Linear elastic theory of structures • Statically determinate and indeterminate systems • Slope-deflection equations • Structural analysis principles (stiffness and flexibility approaches) • Sketching deflected shapes • Structural analysis software (together with engineering judgement) • Load transfer mechanisms 					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Investigation of Construction Materials	CIV 282	Spring	04+00+04	Compulsory	6	8
Course Objectives:	Understand the construction materials and their typical behavior.					
Course Contents:	<ul style="list-style-type: none"> • Creep, relaxation, brittleness, ductility, hardness, fatigue, toughness, resilience, and damping characteristics of materials. • Elasticity; elastic and plastic behavior; viscosity; rheological models • Lime, gypsum, hydraulic cements, mineral aggregates, concrete, clay products, ferrous metals, polymers, bituminous materials, timber 					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Applied Engineering Mathematics II	FENS 202	Spring	03+02+00	Compulsory	4	6
Course Objectives:	The aim of this course is to provide mathematical background on functions of many variables (partial derivatives, gradient fields, optimization; divergence, curl; volume and surface integrals, special topics on differential equations) necessary for engineering applications.					
Course Contents:	<ul style="list-style-type: none"> • Functions of many variables, partial derivatives, optimization • Gradient, divergence, and curl and their applications • Surface and volume integrals and their applications • Advanced topics in differential equations 					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Economics for Engineers	FENS 310	Spring	03+00+00	Compulsory	3	4
Course Objectives:	The aim of this course is to train engineering students on the principles of economics, principles of macroeconomics, investment analysis tools and methods in order to use them in engineering and business life. The course also aims to train students on topics such as cost accounting, time value of money, decision-making among alternatives, taxation and budgeting.					
Course Contents:	Financial statements and macroeconomics (Module 1) Time value of money, interest rates, current value analysis (Module 2) Annual equity analysis, Rate of return analysis (Module 3) Money flow analysis, depreciation (Module 4) Cost-benefit analysis (Module 5)					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
History of Modern Turkey II	HST 102	Spring	02+00+00	Compulsory	2	2
Course Objectives:	The main objective of this course is to introduce the students major themes and events in the history of modern Turkey. Students will learn about different perspectives about the major issues of Turkey through a variety of sources, including archival, visual, and fictional ones. The course aims to help students in situating Turkey in a global context besides realizing the pluralistic nature of the history of Turkey. In the end, the course is intended to make students informed and questioning citizens.					
Course Contents:	This course explores the history of modern Turkey from the early Republican period until today in its political, social, economic, and cultural aspects. Following a module-based structure based on specific themes, the course centers on the ruptures and continuities in general trends and processes of the history of Turkey. Throughout six modules, the shifts from empire to Republic, a single-party system to a multi-party system, the Cold War to the new global world will be discussed in relation to various social and economic aspects including rural to urban migration, social movements, neoliberalism, political Islam and identity politics. In this regard, the class is planned on three principles: First, it places Turkey in a global context hence emphasizes connections as well as disconnections. Second, it evaluates both the transformations at the state level and how 'ordinary' people are influenced by those transformations. Third, besides secondary guiding sources, primary sources are used to help students relate in a personal way to the past and promote a deeper understanding of history instead of a series of events.					

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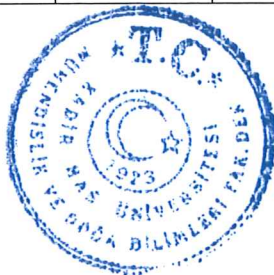



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Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Summer Practice II	CIV 299	Fall	00+04+00	Compulsory	2	3
Course Objectives:						
Course Contents:						
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Site Management	CIV 321	Fall	02+00+00	Compulsory	2	3
Course Objectives:	Understand all the stages of construction site management					
Course Contents:	<ul style="list-style-type: none"> • Site characteristics • Organization charts • QA/QC and HSE requirements at a site • Testing/Commissioning and handover • Project close out report • Employee relations aspects of construction site management 					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Hydraulics	CIV 341	Fall	03+00+02	Compulsory	4	5
Course Objectives:	The aim of this course is to discuss the basic principles of hydraulics with students and apply these principles to hydraulic problems in Civil Engineering.					
Course Contents:	Pipe flows and energy losses (Module 1) Pipe flows and pipe networks (Module 2) Open channel flows and uniform flow (Module 3) Open channel flows and fast changing regimes (Module 4) Open channel flows and slow changing regimes (Module 5)					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Design of Steel Structures	CIV 351	Fall	03+02+00	Compulsory	4	7
Course Objectives:	Understand the behavior of structural steel and its design principles.					
Course Contents:	<ul style="list-style-type: none"> • Structural Steels and properties • Codes, regulations • Tension members, trusses • Connections • Joints • Structural fasteners and welding • Non-structural design considerations 					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Investigation of Properties of Soil	CIV 371	Fall	03+00+04	Compulsory	6	7
Course Objectives:	This course aims to help students comprehend the properties and engineering behavior of different types of soils and how they can impact the design and construction of structures.					
Course Contents:	Project 1: Characterization of Soils Project 2: Phase Relationships in soils Project 3: Soil Compaction Project 4: Water in Soils Project 5: Consolidation Settlement and Time Rate of Consolidation Project 6: Stress at a Point					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Transportation Engineering	CIV 332	Spring	02+02+00	Compulsory	3	4
Course Objectives:	This course aims to investigate and teach students the essential components of Transportation Engineering, focusing on planning and design of highway and railway facilities.					
Course Contents:	Project 1 Planning: Survey and field study Project 2 Planning: Capacity Project 3 Geometric Design: Modeling in 2D (plan, profile, cross-sections) Project 4 Design of Intersections and Interchanges Project 5 Earthwork Project 6 Design of highway and railway elements (design of the supporting way)					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS

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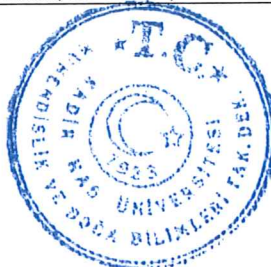



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Water Resources Engineering	CIV 342	Spring	02+02+00	Compulsory	3	4
Course Objectives:	This course covers the water resources concepts in civil engineering applications. Overall Educational Objective of the course is to understand water resources development and the required methodologies, and to gain skills for applying mathematics, science and engineering knowledge on the solution of water resources problems.					
Course Contents:	The following major topics are covered in detail: <ul style="list-style-type: none"> • Water resources management, • Hydrology, • Groundwater hydrology, • Dams and reservoirs, • Spillways and dissipation structures, • Diversion weirs, • Hydroelectric power plants, • Water supply and distribution, and • Wastewater and storm water collection and removal. 					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Foundation Engineering	CIV 372	Spring	03+02+00	Compulsory	4	5
Course Objectives:	This course aims to help students comprehend the basics of foundation design and construction by applying principles of geology, soil mechanics, rock mechanics and structural engineering.					
Course Contents:	Project 1: Site Investigation techniques and idealized soil profile Project 2: Shear strength of soils and bearing capacity of foundations Project 3: Induced pressure and settlement of foundations Project 4: Lateral earth pressure and earth retaining structures Project 5: Axial capacity of pile foundations					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Behavior of Reinforced Concrete Members	CIV 382	Spring	03+00+04	Compulsory	6	7
Course Objectives:	Understand the behavior of reinforced concrete member.					
Course Contents:	<ul style="list-style-type: none"> • Mechanical properties of concrete and steel • Structural safety • Axial loading (tied and spiral columns) • Pure bending • Combined bending and axial load (including slenderness) • Combined shear and bending, punching • Torsion, combined torsion and bending 					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Numerical Methods	FENS 300	Spring	02+02+00	Compulsory	3	5
Course Objectives:	This course aims to introduce students to mathematics, logic and language of numerical methods as used in engineering and basic sciences. Students will learn how numerical methods are applied to important problems in science and engineering.					
Course Contents:	Describe numerical methods and their applications in engineering, error analysis of numerical methods, analytical solutions (Module 1) Numerical methods for solving linear and nonlinear equation systems (Module 2) Approximation methods, interpolation, linear regression, numerical integration (Module 3) Numerical methods for solutions of differential equations (Module 4)					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Summer Practice III	CIV 399	Fall	00+04+00	Compulsory	2	3
Course Objectives:						
Course Contents:						
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Design of a Reinforced Concrete Structure	CIV 491	Fall	02+02+00	Compulsory	3	6
Course Objectives:	Get the ability of dimensioning RC members in a basic structure.					
Course Contents:	<ul style="list-style-type: none"> • Slabs (one-way/two-way) • Shallow foundations • RC structural systems (frame, wall, cast-in-place, precast etc.) • Design loads • Structural design and detailing (beams, columns, connections) 					

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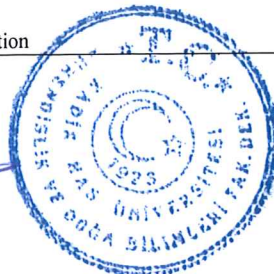



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	<ul style="list-style-type: none"> • Principles of seismic design • Principles of repair and strengthening 					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Engineering Design Project I	FENS 401	Fall	01+02+00	Compulsory	2	6
Course Objectives:	The aim of the course is to give engineering students the basic definitions and nature of engineering problem solving along with the theory and application of the well-known methodologies. The course also covers the project management and related topics that will be very helpful for engineering students.					
Course Contents:	This course covers the following topics: definition of engineering problems, classification of open- and closed-ended problems, engineering design, conceptual design, embodiment design, detailed design, concurrent engineering, teamwork, human as a social entity in team works, project management, project proposal writing, innovation problem-solving.					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Engineering Design Project II	FENS 400	Spring	00+08+00	Compulsory	4	10
Course Objectives:	In the design project course, students will find realistic solutions to open-ended engineering problems, and will lead to a product or model by using the knowledge gained from their undergraduate education.					
Course Contents:	A design project is the last stage of undergraduate education. An interdisciplinary project with a team of 2-4 students is carried out under the supervision of one or more faculty members. The faculty assignment, the proposal dates and the final report submission along with the defense dates are announced before the semester begins.					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Highway Design	CIV 431	Fall	02+02+00	Elective	3	5
Course Objectives:	The objective of this course is to teach students how to design a highway by applying principles of transportation engineering.					
Course Contents:	This course covers essential components of a highway design. The course consists of a project that is divided into six phases: Phase 1: Traffic data for design and selection of geometric standards Phase 2: Preliminary geometric calculations and drawings Phase 3: Evaluation of the location survey Phase 4: Finishing the location survey Phase 5: Earthwork Phase 6: Cost analysis and project file					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Design of Railway Systems / Highways	CIV 432	Fall	02+02+00	Elective	3	5
Course Objectives:	The objective of this course is to teach students how to design railway systems by applying principles of transportation engineering.					
Course Contents:	This course covers essential components of a railway design in the form of a project. The project is divided into six phases: Phase 1: Traffic data for design and selection of geometric standards Phase 2: Preliminary geometric calculations and drawings Phase 3: Evaluation of the location survey Phase 4: Finishing the location survey Phase 5: Earthwork Phase 6: Cost analysis and project file					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Culvert Design	CIV 441	Fall	02+02+00	Elective	3	5
Course Objectives:	This is an elective course. It is a design course.					
Course Contents:	The following major topics are covered in detail: Collection of Hydrological and Site Data Hydraulic Design Special Applications Structural Design Cost Analysis					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Design of a Small Hydraulic Power Plant and a Diversion Weir	CIV 442	Fall	02+02+00	Elective	3	5
Course Objectives:	This is an elective course. It is a design course.					
Course Contents:	The following major topics are covered in detail: Collection of Hydrological and Site Data Assessment of Environmental Effects Pre-feasibility on power potential calculation					

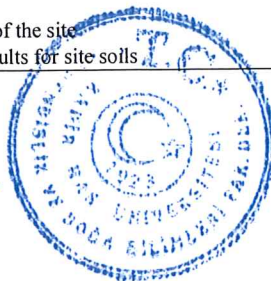
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	Design on components (diversion weir and canal/pressure tunnel, head pond and penstock, power house including türbine, generator, draft tube, tail water canal/ tunnel Cost analysis Project using a Retscreen software					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Investigating Dynamics of Structures	CIV 451	Fall	02+02+00	Elective	2	4
Course Objectives:	Investigate dynamics of structural systems.					
Course Contents:	<ul style="list-style-type: none"> • Fundamentals of structural dynamics • Earthquake and wind loading • Response of undamped and damped single/multi degree-of-freedom structures subjected to earthquake or wind dynamics loadings • Response spectra • Fourier analysis and frequency domain 					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Bridge Design	CIV 452	Fall	02+02+00	Elective	3	5
Course Objectives:						
Course Contents:						
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Seismic Performance Assessment of Buildings	CIV 453	Fall	02+02+00	Elective	3	5
Course Objectives:	Understand the seismic performance assessment methods of buildings and how to implement them.					
Course Contents:	<ul style="list-style-type: none"> • The Performance-Based Design Process • Updates to the Methodology and Limitations • Performance Measures • Types of Performance Assessment • Define Earthquake Hazards • Analyze Building Response • Develop Collapse Fragility • Calculate Performance • Decision Making 					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Retrofitting of Existing Structures	CIV 454	Fall	02+02+00	Elective	3	5
Course Objectives:	Understand and be able to implement retrofitting of existing structures.					
Course Contents:	<ul style="list-style-type: none"> • Retrofit Fundamentals • Structural Retrofit Philosophy • Seismic Retrofit of Existing Structures • Retrofitting and Energy Upgrades 					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Settlement Issue	CIV 471	Fall	02+02+00	Elective	3	5
Course Objectives:	The objective of the course is to teach students how to design a foundation where the soils are susceptible to excessive settlement by applying principles of geology, soil mechanics, and foundation engineering					
Course Contents:	<p>The project is divided into 5 phases:</p> <p>Phase 1: Creating the Idealized soil profile of the site</p> <p>Phase 2: Interpretation of laboratory test results for underlying soils</p> <p>Phase 3: Selection of the appropriate foundation and possible ground improvement technique</p> <p>Phase 4: Calculating bearing capacity and settlement (or axial capacity and settlement) of the foundation</p> <p>Phase 5: Finalizing the dimensions of the foundation</p>					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Deep Excavations and Retaining Structures	CIV 472	Fall	02+02+00	Elective	3	5
Course Objectives:	The objective of the course is to teach students how to design retaining structures for deep by applying principles of geology, soil mechanics, and foundation engineering					
Course Contents:	<p>The project is divided into 5 phases:</p> <p>Phase 1: Creating the Idealized soil profile of the site</p> <p>Phase 2: Interpretation of laboratory test results for site soils</p>					

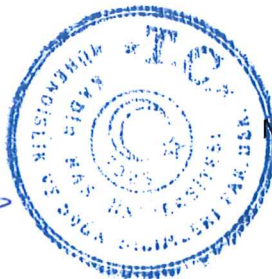
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	Phase 3: Selection of the appropriate retaining structure for the excavation Phase 4: Calculating lateral earth pressures and doing preliminary design Phase 5: Finalizing the design of the retaining structure					
Course Name	Code	Semester	T+A+L (hour/week)	Type (C / O)	Local Credit	ECTS
Innovative Materials in Civil Engineering Applications	CIV 481	Fall	02+02+00	Elective	3	5
Course Objectives:						
Course Contents:						

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