

## FIRST SEMESTER

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
MATH 101	CALCULUS 1	4	0	5

### COURSE DESCRIPTION

This course aims to create an awareness of functions occurring around us, to provide the learners to see the hidden mathematics in life and to guide them in the analyses and use of these functions. At the end of this course students will be able to: list the hierarchy of number systems and identify any number's belonging, construct function with the sufficient data they obtained and examine the function's features and examine whether it is continuous or discrete or none of them, paraphrase a formulated function into words and argue the behavior of the function as we change the value or the form of the function, evaluate a given limit if it exists, state the advantages of continuous functions rather than discontinuous ones and apply related theorems in case of need, criticize discontinuous functions from the perspective of existence of limit for discontinuous points and predict the behavior of the function at that point, interpret the geometric meaning of derivative at any point and use it in construction of formulas for some geometrical shapes, calculate the derivative of any function, find the maximum and minimum values of any function, and sketch the graph of the function and apply derivative rules to optimize a given source.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
SCI 101	SCIENCE OF NATURE 1	3	2	7

### COURSE DESCRIPTION

The objectives for this course are scientific inquiry, complexity, critical thinking, mathematical and quantitative reasoning. And the specific objectives are: Demonstrate an understanding of the theory and concepts central to the study of a particular area or topic treated by the natural sciences. Understand how to formulate a testable hypothesis and design an informative experiment to explain phenomena observed in the natural world. Be able to interpret data from scientific experimentation both qualitatively and quantitatively, in order to derive conclusions appropriate to the scope and quality of data. Be able to recognize limitations of experimental and observational methods and understand concepts of probability, causation, and correlation.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
COMP 101	ART OF COMPUTING	3	2	6

#### **COURSE DESCRIPTION**

The course aims to teach the essentials of computing to students who have little or no background in programming. The students will learn how to write basic computer programs using SNAP and Java. This course is far more than just learning to program. It focuses on some of the "Big Ideas" of computing, such as recursion, abstraction, and design. During this course students will learn beautiful applications of computing that have changed the world and where it will go in the future. The course will introduce the fundamental concepts and techniques of computing using a graphical programming language SNAP and the application-oriented programming language Java.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
HUM 101	UNDERSTANDING CONTEMPORARY WORLD	3	0	5

**COURSE DESCRIPTION**

This course focuses on contemporary issues and problems of the present day by bridging humanities and social sciences disciplines. This course aims to provide the students with critical thinking abilities about the world they live in. It will introduce the students to the major issues of contemporary world grouped under certain topics. Being a university-wide core course, it aims the students to develop basic awareness and understanding on global issues. In this course, instead of using textbooks, the coursework will be conducted by reading internet blogs, newspaper articles, reports (of think tanks, NGOs...); having group projects; watching documentaries & movies and by auditing seminars from the experts. Depending their areas of specialization, the course will be offered by a group of academic staff.

<b>CODE</b>	<b>COURSE NAME</b>	<b>CONTACT(h/w)</b>	<b>LAB (h/w)</b>	<b>ECTS</b>
PDA 101	PROFESSIONAL DEVELOPMENT ACTIVITIES 1	1	1	1

**COURSE DESCRIPTION**

Different personal and professional development activities like time management, information about different professions, seminars, conferences, reflection reports.

<b>CODE</b>	<b>COURSE NAME</b>	<b>CONTACT(h/w)</b>	<b>LAB (h/w)</b>	<b>ECTS</b>
ENG 101	ENGLISH 1	4	0	4

**COURSE DESCRIPTION**

The aim of this course is to introduce students to an academic approach to thinking, reading, speaking and writing in an integrated, meaningful manner such that they are able to apply the skills learnt to their departmental studies.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
TURK 101	TURKISH 1	2	0	2

#### **COURSE DESCRIPTION**

The meaning and nature of language; importance of language in society; language-culture relationship; world languages and Turkish; history and the present state of Turkish; Turkish languages; phonetic features of Turkish; structure of Turkish; punctuation and style; introduction to speech and composition.

### **SECOND SEMESTER**

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
MATH 102	CALCULUS 2	4	0	5

#### **COURSE DESCRIPTION**

Limits and continuity of functions of several variables. Partial derivatives, directional derivatives, gradient, finding and classifying local and global extreme values, Lagrange multipliers method. Multiple integrals in Cartesian, polar, cylindrical and spherical coordinates; Fubini's Theorems; change of variables. Sequences and series: Convergence tests, power series, Taylor series.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
SCI102	SCIENCE OF NATURE 2	3	2	7

#### **COURSE DESCRIPTION**

Electrostatics, Gauss' Law, electrical potential, capacitors, inductors, current and resistance, direct current circuits, magnetic fields, Maxwell's equations, optics, waves.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
CE 102	EXPLORING PROFESSION	3	2	6

**COURSE DESCRIPTION**

This course is a required course for the students in the department of civil engineering and it presents past, status, and future challenges of civil engineering profession; ethics and professional responsibility; written and oral communication; concepts of analysis, design, computational approaches, and experiences with experiments in lab and a technical trip; interpretation of results and decision making.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
HUM 102	IMAGINING FUTURE	3	0	5

**COURSE DESCRIPTION**

This course focuses on issues related to Economy, Technology and Space from an anthropological viewpoint combining and contrasting it with Economics, Archaeology and Architecture. In this sense, it is an interdisciplinary course keeping however the methodological "heart" of social anthropology and enriching it with the theoretical traditions of other disciplinary fields. The material of the course will be textbooks, internet blogs, newspaper articles, documentaries and movies.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
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PDA 102	PROFESSIONAL DEVELOPMENT ACTIVITIES 2	1	1	1
<b>COURSE DESCRIPTION</b>				
Different personal and professional development activities like time management, information about different professions, seminars, conferences, reflection reports.				

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
ENG 102	ENGLISH 2	4	0	4
<b>COURSE DESCRIPTION</b>				
The central basis of this course is to consolidate students' academic approach to thinking, reading, speaking and writing and language usage, as initiated in ENG 101. In addition, the ENG 102 course aims to develop the students' abilities to synthesize and evaluate information and conduct basic, independent research.				

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
TURK 102	TURKISH 2	2	0	2
<b>COURSE DESCRIPTION</b>				
The meaning and nature of language; importance of language in society; language-culture relationship; world languages and Turkish; history and the present state of Turkish; Turkish languages; phonetic features of Turkish; structure of Turkish; punctuation and style; introduction to speech and composition.				

### THIRD SEMESTER

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
CE 221	MECHANICS	2	2	5

#### COURSE DESCRIPTION

This course is the first engineering-science based course, which is required for the students in the department of civil engineering at AGU and it presents a proper utilization of vector algebra and free body diagrams to solve simple problems in engineering for both static and dynamic cases. This course, briefly, consists of a total of seventeen major areas of study: 1-) vector algebra of forces and moments, 2-) equilibrium of particles and rigid bodies, 3-) centroids of two and three dimensional bodies, 4-) analysis of several structures (trusses, frames, machines, and cables), 5-) friction, 6-) moments of inertia, 7-) kinematics of particles, 8-) kinetics of particles by using different methodologies (force-acceleration, work-energy, and impulse-momentum), 8-) kinematics of rigid bodies, and 9-) kinetics of rigid bodies by using different methodologies (force-acceleration, work-energy, and impulse-momentum).

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
MATH 201	ENGINEERING MATHEMATICS 1	4	0	6

#### COURSE DESCRIPTION

Vectors and Geometry of Space, Vector-Valued Functions and Motion in Space, Partial derivatives, Multiple Integrals, Integration in Vector Fields, First Order Differential Equations, Second Order Differential Equations.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
MATH 203	LINEAR ALGEBRA	3	0	5

**COURSE DESCRIPTION**

The main subjects of the course are the following topics: Linear equations, solving systems of linear equations, matrix algebra, determinants and their properties, vector spaces, linear independence of a set of vectors, subspaces and bases of vector spaces, linear transformations and the matrix of a linear transformation, eigenvalues and eigenvectors, orthogonality, orthogonal projections, least-square approximations, inner products, diagonalization of symmetric matrices and some of their applications and computer algebra system like Mathematica, Matlab, Maple, Magma etc.

<b>CODE</b>	<b>COURSE NAME</b>	<b>CONTACT(h/w)</b>	<b>LAB (h/w)</b>	<b>ECTS</b>
CE 201	CIVIL ENGINEERING DRAWING	1	2	4

**COURSE DESCRIPTION**

The course aims to teach the major drawing techniques by using a CAD tool; to enable students to read details on engineering drawings; to develop the visualization skills of the students. This course provides fundamental knowledge and skills for the technical language of engineering visualizations by using computer aided drafting (CAD) tools. The course covers the following topics; Principles and General Rules of Engineering Drawing, Basics of CAD; Drawing, Editing and Configuration on the CAD Software; Orthographic Drawing; Sectioning; Dimensioning; Isometric and Oblique Projections.

<b>CODE</b>	<b>COURSE NAME</b>	<b>CONTACT(h/w)</b>	<b>LAB (h/w)</b>	<b>ECTS</b>
CE 262	GEOLOGY FOR CIVIL ENGINEERING	3	0	4

**COURSE DESCRIPTION**

This course mainly focus on Structure of the Earth, Geological cycles, minerals and rocks, External processes on land and in the sea, Internal processes, including deformation of rocks and earthquakes. It gives the topics of interest to Civil Engineering students. At the end of the course, it is aimed to determine the basic types of earth materials, earth structures and earth processes and expected to link this information to Civil Engineering applications.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
BA 221	ENTREPRENEURSHIP AND INNOVATION	4	0	4

**COURSE DESCRIPTION**

This course develops leadership and entrepreneurial skills using collaborative, problem-based projects, with engineering and business students working in teams.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
HIST 201	HISTORY OF MODERN TURKEY 1	2	0	2

**COURSE DESCRIPTION**

This course focuses on aspects of Turkey's history with an emphasis on research. It is designed as an interactive course with the objective to investigate events, chronologically short historical periods, as well as historic representations.

**FOURTH SEMESTER**

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
MATH 202	ENGINEERING MATHEMATICS 24		0	6

### COURSE DESCRIPTION

Introduction to Linear Systems, Vector Spaces, Linear Transformations, Systems of Differential Equations. First Order Differential Equations, Second Order Linear Equations, Introduction to Higher Order Linear Equations, Introduction to Series Solutions of Second Order Linear Equations, W10The Laplace Transform, Systems of First Order Linear Equations, Introduction to Partial Differential Equations and Fourier Series, Boundary Value Problems.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
CE 222	STRENGTH OF MATERIALS	3	2	6

### COURSE DESCRIPTION

Passing CE221-Mechanics is a prerequisite for taking this course (CE222, Strength of Materials), because students should be aware of a proper utilization of vector algebra and free body diagrams to solve simple problems in engineering for both static and dynamic cases. This course, briefly, consists of a total of nine major areas of study: 1-) concept of stress, 2-) stress and strain under axial loading, 3-) torsion, 4-) Design of Beams for Bending, 5-) Pure Bending, 6-) Shear Stress in Beams and Thin-Walled Members, 7-) Transformations of Stress and Strain, 8-) Deflection of Beams, and 8-) Columns.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
CE 242	MATERIALS SCIENCE	2	1	5

### COURSE DESCRIPTION

This course provides fundamental knowledge for understanding the properties and behavior of engineering materials, which is crucial for achievement of the structural safety, serviceability and the economics of the engineering projects. The course covers the following topics; the structure of matter; interatomic bonding, structural imperfections, concepts of force, stress, deformation and strain; elasticity; elastic and plastic behavior; viscosity; rheological models. Creep, relaxation, brittleness, ductility, hardness, fatigue, toughness, resilience, and damping characteristics of materials.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
CE 272	FLUID MECHANICS	3	0	6

#### **COURSE DESCRIPTION**

This course focuses on; fundamental fluid properties for different fluids and flows; pressures in both static and flowing fluids, and the velocities associated with different flows; forces in complicated momentum balance problems ; energy loss and the flow rates associated with different flow networks in channels and pipes ; dimensionless numbers important for design of experiments and practical engineering work; properties of a boundary layer, both turbulent and laminar; water depth variation for flows in rivers and channels.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
CE 202	NUMERICAL METHODS FOR ENGINEERS	2	2	5

#### **COURSE DESCRIPTION**

The objective of the course is realize the need for numerical methods and understand their capabilities and weaknesses ; practice algorithmic thinking ; learn fundamental numerical techniques used in engineering calculations ; learn how to implement the

studied techniques in MATLAB and be aware of its built-in functionalities.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
HIST 202	HISTORY OF MODERN TURKEY 2	2	0	2

#### COURSE DESCRIPTION

This course focuses on aspects of Turkey's history with an emphasis on research. It is designed as an interactive course with the objective to investigate events, chronologically short historical periods, as well as historic representations.

### FIFTH SEMESTER

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
CE 300	SUMMER PRACTICE	0	0	6

#### COURSE DESCRIPTION

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
MATH 301	PROBABILITY AND STATISTICS	3	0	5

#### COURSE DESCRIPTION

This course covers quantitative analysis of uncertainty and risk for engineering applications. Topics include: basic combinatorics, random variables, probability distributions, Bayesian inference, hypothesis testing, confidence intervals, and linear regression. A statistical software program is used to facilitate the analysis of data sets and the understanding of statistical concepts, and to carry out simulation of experiments. There is an emphasis placed on real-world applications to engineering problems.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
CE 344	MATERIALS OF CONSTRUCTION	2	1	4

#### **COURSE DESCRIPTION**

This course provides an introductory overview of the various materials used in construction. Studies in construction materials are intended to make structural, transportation and foundation engineers aware of the fundamental properties of the materials they use. It emphasizes basic systematic and elemental behavior, principles of structural behavior, and analysis of individual structural elements and strategies for load carrying. Students have the opportunity to experience material capacity and behavior as well as construction methods in demonstrations and lab experiments.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
CE 371	HYDROMECHANICS	3	1	5

#### **COURSE DESCRIPTION**

The objective of the course is to introduce students; the field of hydraulics and the important physical influences upon it, dimensioning pipes and channels for a given flows and conditions, fields of hydraulic applications, flow in pipes and applications,

and flow in open channels

. The student will acquire basic knowledge of basic laws and principles of hydromechanics and hydrostatics, understand the principles of Continuity Law and energy balance of flowing fluid.

<b>CODE</b>	<b>COURSE NAME</b>	<b>CONTACT(h/w)</b>	<b>LAB (h/w)</b>	<b>ECTS</b>
CE 363	SOIL MECHANICS	3	2	5

#### **COURSE DESCRIPTION**

Soil Mechanics is the branch of science that deals with the study of the physical properties of

soil and the behavior of soil masses subjected to various types of forces. You examine

the identification and classification of rocks and soils, the stresses that exist within a soil mass, soil deformation under loading and peculiarities of local soils. In particular it is concerned with the interaction of structures with their foundation material. This includes both conventional structures and also structures such as earth dams, embankments and roads which are their-selves made of soil.

<b>CODE</b>	<b>COURSE NAME</b>	<b>CONTACT(h/w)</b>	<b>LAB (h/w)</b>	<b>ECTS</b>
CE 383	STRUCTURAL ANALYSIS	4	0	5

#### **COURSE DESCRIPTION**

This course, briefly, consist of main principles of structural analysis, information about the forces, loads, virtual work principles, equilibrium conditions and other methods for calculating moments and forces of structures, moment / shear forces / axial forces diagrams, slope deflection, solution of indetermined system, stiffness method and element stiffness matrices.

## SIXTH SEMESTER

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
CE 332	CONSTRUCTION ENGINEERING AND MANAGEMENT	3	0	5
<b>COURSE DESCRIPTION</b>				
Construction managers need to learn the basics in commercial and residential construction in addition to leadership, planning and supervisory skills. The course provides students with skills in planning, designing, and implementing construction processes and systems. Students will understand basic construction history, examine responsibilities and risks involved in the construction process and demonstrate basic understanding of construction law, regulations, and means of project delivery.				

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
CE 366	FOUNDATION ENGINEERING	2	2	5
<b>COURSE DESCRIPTION</b>				
This course, briefly, consist of application of soil mechanics, geotechnical design of foundations, including variety of footings, piles and drilled shafts and structural members such as retaining walls, sheet piles whose primary function is to provide lateral earth support, subsoil exploration, shallow foundations: bearing capacity,				

settlements, methods of site and soil exploration, mat foundations, pile foundations, drilled shaft and caisson foundations, lateral earth pressure, retaining walls.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
CE 374	HYDROLOGY AND WATER RESOURCES ENGINEERING	4	0	5

#### **COURSE DESCRIPTION**

This course introduces students to the key concepts and methods in physical and engineering hydrology. It covers fundamentals such as the hydrological cycle, catchment, losses, hydrographs and hyetographs. The student would be able to estimate the risk and probability of occurrence of certain hydrologic events, and in particular, assess the magnitude of the rainfall, and runoff from a catchment. Knowledge of engineering hydrology is required for the design of storm water drainage systems, for the management of flooding.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
CE 382	REINFORCED CONCRETE	3	0	5

#### **COURSE DESCRIPTION**

This course, briefly, consist of introducing behaviour and design principles of reinforced concrete members, mechanical properties and behaviour of concrete and reinforcing steel, assumptions for limit state design, reinforced concrete short columns, types of columns, minimal conditions, reinforced concrete beams, types of beams, behaviour of the beam in pure bending, capacity and design of the beam, axially and eccentrically loaded columns, design of columns.

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
CE 352	INTO TO TRANSPORTATION AND TRAFFIC ENGINEERING	3	2	5
<b>COURSE DESCRIPTION</b>				
<p>This course aims to give an overview of the engineering of multi-modal transportation systems and to introduce the fundamental concepts of transportation engineering through an in-depth study of road-based transportation systems. It covers the topics such as characteristics of transportation supply and demand; measuring and estimating demand; social and environmental impacts; planning of transportation systems; characteristics of transportation modes; interaction between modes; mode interfaces; transportation technology; economics; public policy, implementation and management.</p>				

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
CE 384	STEEL STRUCTURES	3	0	5
<b>COURSE DESCRIPTION</b>				
<p>This course, briefly, consist of general information about steel material, calculation methods, design methods, safety, loading conditions, connection types(bolted and welded) for steel structures , tension members, compression members, buckling of steel members, beams, beam-coloumns, stability connections in steel structures.</p>				

## SEVENTH SEMESTER

CODE	COURSE NAME	CONTACT(h/w)	LAB (h/w)	ECTS
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ECON 222	ECONOMICS FOR ENGINEERS	3	0	4
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**COURSE DESCRIPTION**

Analysis of alternatives by basic engineering economic methods and applications of basic statistics. The objective of this course is introducing the fundamentals of engineering economics and enable students to perform economic analysis of different projects. Upon completion of the course, the student should be able to perform economic evaluation and financial analysis of investments and projects. Students are prepared to make decisions regarding money as capital within a technological or engineering environment.