1. Semester

Course Code:	HST181	**Course Title:**	Atatürk's Principles and History of Revolutions I					**Semester:**	1
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	This course teaches the spirit and significance of Atatürk's Revolution which aimed at achieving contemporary civilization.								
Course Content:	Basic Concept Information, Ottoman Empire and Its Decline, Tanzimat and Constitutional Periods, Idea Movements in the Last Period of Ottoman State, Tripoli War, Balkan Wars, First World War, Mudros Armistice and Occupations, Birth of National Struggle and National Organizations, Amasya Circular, National Congresses, Announcement of National Assembly, Opening of the Grand National Assembly, War of Independence, Mudanya Armistice, Lausanne Peace Treaty.								

Course Code:	TRK181	**Course Title:**	Turkish Language I					**Semester:**	1
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aim of this course is to inform students about the content, characteristics, and development of Turkish language and to provide them with writing and reading skills in Turkish and to raise the awareness of using Turkish as the national language.								
Course Content:	This course is designed to teach the definiton of language and culture, language-culture relation, the role of language as a social institution in societies, the situation of Turkish Language among world languages, the development and historical periods of Turkish language, the current condition of Turkish Language and span of usage, Turkish Phonology, inflectional and derivational morphemes in Turkish, types of lexicon in Turkish, and elements of the sentence.								

Course Code:	FOL181	**Course Title:**	Foreign Language I					**Semester:**	1
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aim of this course is to equip students with language knowledge and skills which are essential for general communication purposes and future academic studies, and also help students develop positive attitudes towards the target foreign language.								
Course Content:	The course is designed to teach basic grammatical structures of English languages such as to be, there is/are, have/has got, tenses, modals, passives, conditionals, noun clauses, reported speech, gerunds/infinitives.								

Course Code:	CME183	**Course Title:**	Information Technologies And Applications					**Semester:**	1
Lecture:	2	**Practice:**	2	**Lab:**	0	**Credit:**	3	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To be able to prepare students for information age, to inform about computer hardware and software, to create awareness in word processors, presentations, spreadsheets, internet and e-mail issues and to use tools and applications related to this field effectively.								
Course Content:	Computer hardware, Software and operating system, Internet and internet browser, E-mail management, Newsgroups and forums, Web based learning, Word processing, Spreadsheet, Presentation maker, Personal web site development, E-commerce and making a identifier material.								

Course Code:	PHY183	**Course Title:**	General Physics I					**Semester:**	1
Lecture:	4	**Practice:**	0	**Lab:**	0	**Credit:**	4	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To teach the concepts of statics, dynamics and kinematics given in the course content, their applications in daily life and modern technology.								
Course Content:	Units, physical quantities and vectors, linear motion, motion in two and three dimensions, The Newton laws of motion, Applications of Newton's laws, Work and kinetic energy, Potential energy and conservation of energy, Linear momentum, Impuls and collisions, Rotation of a rigid body, Dynamics of rotational motion, Equilibrium and elasticity, Gravitation.								

Course Code:	CHE183	**Course Title:**	General Chemistry					**Semester:**	1
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	3
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	This course teaches and examines the behavior of atoms and molecules and providing knowledge to students to forecast the behaviour of them in reactions.								
Course Content:	Knowledge of matter , structure of atom, sequence of electrons, periodic system, Chemical bonds and interactions, classification and atomicity, mole and equivalency concept, chemical laws, reactions, gases, solutions and concentration.								

Course Code:	CAL183	**Course Title:**	Mathematics I					**Semester:**	1
Lecture:	4	**Practice:**	0	**Lab:**	0	**Credit:**	4	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	This course aims at giving students the concept of sets, types of numbers, properties of one variable functions, meaning of limit, continuity and derivative over one variable functions. Explaning how the student use the derivative concept in engineering applications. Constructing the ability of solving maxima-minima problems. Giving the ability of solving engineering problems by using mathematics knowledge.								
Course Content:	This course covers, numbers, absolute value, inequalities, induction, coordinates. the concept of a function and function types, some kinds of special functions and their domains, limit and continuity of functions, properties of continuous functions. the concept of the derivative, rate of change, the mean value theorem and applications, finding the maximum and minimum and their applications, hyperbolic functions and derivatives, implicit and inverse functions and derivatives, parametric equations and their derivatives, and curve sketching, polar coordinates.								

Course Code:	MCE101	**Course Title:**	Introduction to Mechanical Engineering					**Semester:**	1
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	3
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	An introduction to Mechanical Engineering profession.								
Course Content:	Introducing the first year undergraduate students Mechanical Engineering concepts, definitions, symbols, and units.								

Course Code:	MCE105	**Course Title:**	Computer Aided Technical Drawing I					**Semester:**	1
Lecture:	2	**Practice:**	2	**Lab:**	0	**Credit:**	3	**ECTS:**	6
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aims of this course is to learn in students the basic principles and equipments about technical drawing, to gain the capability to draw and read manuf acturing drawing of a part and to perf orm the technical drawing in CAD sof tware media.								
Course Content:	Definitions and terms of technical drawing, technical drawing equipments, preperation of technical drawing sheets, standard fonts and heights of fonts, line types, properties and usage places of line types, drawing rules, geometrical drawings, inside and outside tangent drawings of lines with arcs, inside and outside tangent drawings of circles with each other; helical, ellipse, evolvement, cycloid, parabola and hyperbola drawings; scales, scales of enlargement and reduction, methods and planes of projection, views; auxiliary, special, rotated and local views; perspective views; isometric, cavalier, cabinet and bird's-eye projections; the terms and rules of dimensioning, sections and applications of sections, surface treatment symbols, surface quality, indication of surface conditions; definition of CAD system, operating CAD software, sample applications; learning line drawing on computer medium, arraying, conditional drawing, trimming; drawing circle and arc, adjusting view settings; drawing ellipse, polygon, polyline, spline, rectangular; moving, rearranging and scaling drawings; dimensioning, obtaining section view, hatching, texting, filleting, chamfering, extending, stretching, making block, replacing block, forming table and letterhead, calculating distance and area, view and zooming commands.								

2. Semester

Course Code:	HST182	**Course Title:**	Atatürk's Principles and History of Revolutions II					**Semester:**	2
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	This course provides the Turkish youth with consciousness about Ataturk's Principles and Revolutions and educates them in accordance with Kemalism.								
Course Content:	Political Reforms, Legal Reforms, Educational and Cultural Reforms, Economic Reforms, Social Reforms, Atatürk's Principles, Atatürk's Foreign Policy, Turkey in the World War II, The concept of Jeopolitics and Jeopolitics of Turkey.								

Course Code:	TRK182	**Course Title:**	Turkish Language II					**Semester:**	2
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	This course aims at comprehending elements of sentences and their functions to form sentences; introducing and applying types of written and spoken expressions, differentiating and correcting the mistakes in language exercises; getting acquainted with the rules regarding the preperation of research articles; and developing students' writing and speaking skills via texts chosen from Turkish and World literature, and history of thought.								
Course Content:	This course is designed to teach the definition of sentence and elements of sentence; sentence analysis and examples of sentence analysis; types of sentences; composition skills; planning of written composition; types of written and oral expression and examples; means of expression and brainstorming in forming paragraphs; ambiguities in sentences; and the rules employed in the conduction of reseach articles.								

Course Code:	FOL182	**Course Title:**	Foreign Language II					**Semester:**	2
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aim of this course is to improve the students' fluency and comprehension skills in the target language, to teach the students to use the grammar points correctly, to understand the passage they read and to make sentences using tenses and the other grammar items.								
Course Content:	This course is designed to teach adjectives and adverbs, relative clauses, adverbial clauses, pronouns, nouns, quantifiers, articles, causatives, tag questions, prepositions.								

Course Code:	CME182	**Course Title:**	Computer Programming					**Semester:**	2
Lecture:	2	**Practice:**	2	**Lab:**	0	**Credit:**	3	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	This course teaches the fundamental concepts of programming, algorithm for the solution of a problem and writing programme for it.								
Course Content:	Introduction to programming languages, algorithm design and flow chart, data types and variables, operators(arithmetic, relational, logical), control structure (if, while, for), User defined function, arrays and strings, pointers, recursion, searching algorithms, sorting algorithms, file operations.								

Course Code:	PHY186	**Course Title:**	General Physics II					**Semester:**	2
Lecture:	4	**Practice:**	0	**Lab:**	0	**Credit:**	4	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The application of the electrical and magnetic interaction to static and mobile charges and the related fundamental laws and principles.								
Course Content:	Electric charge and electric fields, Gauss's law, Electric potential, Capacitance and dielectrics, Current, resistance and electromotive force, Direct-current circuits, Magnetic fields and magnetic forces, Source of the magnetic field, Electromagnetic induction and Faraday's law, Inductance, Alternating current, Electromagnetic waves.								

Course Code:	CAL186	**Course Title:**	Mathematics II					**Semester:**	2
Lecture:	4	**Practice:**	0	**Lab:**	0	**Credit:**	4	**ECTS:**	4
Course Level:	ASc - Associate of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To make students competent in mathematical field in their work life. To be able to use mathematical concept in practice, to use mathematics for developping solutions.								
Course Content:	Functions, trigomometry, linear equation systems and matrices, limit and continuity, derivation, integral, differential equations, statistics.								

Course Code:	CAL192	**Course Title:**	Lineer Algebra					**Semester:**	2
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	3
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aim of this course is to introduce the concepts of matrices, determinant, vector spaces and inner products.								
Course Content:	Matrix Algebra, Elementary Row Operations on Matrices and Solution of Linear Equations, Special Types of Matrices, Elementary Matrices, Equivalent Matrices, nxn Determinants, properties of Determinants, Vector Spaces, Subspaces, Linear Independence, Basis and Dimension. Linear Transformation and matrix of a Linear Transformation, Eigenvalues and Eigenvectors, Diagonalization Inner Product Spaces.								

Course Code:	MCE102	**Course Title:**	Statics					**Semester:**	2
Lecture:	4	**Practice:**	0	**Lab:**	0	**Credit:**	4	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The purpose of this course is to introduce a clear understanding of the principles of rigid body mechanics and the assumptions and idealizations and then to give students the knowledge about equilibrium and internal force concepts, related applications.								
Course Content:	Statics of particles: forces in plane, forces in space, equilibrium. Moment of a force, moment of a couple. Equivalent systems of forces on rigid bodies. Equilibrium in two dimensions. Equilibrium in three dimensions. Distributed forces: centroids and center of gravity. Analysis of structures: trusses, frames and machines. Internal forces in beams and cables. Friction. Moments of inertia of areas, moments of inertia of masses. Method of virtual work.								

Course Code:	MCE108	**Course Title:**	Measurement Techniques					**Semester:**	2
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Purposes of this course is teach the measurement technique principles and give the measurement ability to students.								
Course Content:	The measurement and control. The measurement techniques. Measurement of the size, angle and area. Classic measuring and control devices. Caliper, micrometer, marking gauge, comparator, indicator, gage. Surface roughness. Hardness measurement techniques. Coordinate measuring. Measurement of vibration. Pressure, flow and temperature measuring. Energy productivity. Uncertainty analysis. Design and reporting of the experiments.								

Course Code:	MCE110	**Course Title:**	Computer Aided Technical Drawing II					**Semester:**	2
Lecture:	2	**Practice:**	2	**Lab:**	0	**Credit:**	3	**ECTS:**	3
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aims of this course is to teach students the capability to create technical drawing and 3D designing the single or multi machinery systems 3D on PC media, to make animation of 3D assembly models.								
Course Content:	Intruduction to assembly drawing, the basic principles of design in assembly modelling. Drawing the manufacturing drawing of machine part and assembly: assembly letterhead, surface texture symbols, dimensioning and geometric tolerances, create to 2D manufacturing drawing from 3D model. Standard machine elements (Screw, nut, bolt, washer, coupling, wedge, pulley, pin, pin, ring, bracelet, spring, gear wheel, bearing, etc.). Section views on assembly modelling and applicaitons. 3D solid modeling methods with a current 3D design software. User interface, tool bars, file save and copy, file delete, opening of multiple file and windows. View control. Solid feature modeling: Primitive features. Secondary features. Feature modify, feature processes. Parametric modelling. Create to work planes. Surface modeling, interactive surface modeling. Assembly, Assembly-Part processes. 3D Part and assembly modelling. Assembly animation, views, section views processes, dimensioning, surface texture symbols, size and geometric tolerances. Printing processes on technical drawing papers. Industrial design applications.								

3. Semester

Course Code:	EEE261	**Course Title:**	Basic Electric and Electronic					**Semester:**	3
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	3
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The objective of this course is to introduce the basic electrical definitions and electrical measurment instruments, basic electrical laws and circuit analysis, circuit components and to gain the practicing abilities of the circuits.								
Course Content:	Fundamentals of electricity, Electrical and electronic components, Measuring instruments, Direct current circuits, Circuit analysis, Electronic circuit applications.								

Course Code:	CAL283	**Course Title:**	Differantial Equations					**Semester:**	3
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The main aims of this course are provide the student general knowledge about the usage of natural languace of mathematics as a toll for modeling, formulating and solving of engineering problems.								
Course Content:	Classification of differential equations, obtaining of differential equations, first order differential equations, higher order linear differantial equations, Laplace transform.								

Course Code:	MCE215	**Course Title:**	Dynamics					**Semester:**	3
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The objectives of the lecture are to develop the capacity to predict the effects of force and motion. In lectures, different applications of engineering systems are solved in order that students understand subjects and apply his knowledge rapidly.								
Course Content:	Kinematics of particles; velocity and acceleration in rectangular, cylindrical, spherical and normal and tangential coordinates, Rectilinear motion, Relative motion, Kinetics of particles; Newton's law of motion, Equation of motion, Work, Impulse, Momentum, Principle of work and energy, Principle of impulse and momentum, Angular momentum, Angular impulse and momentum principle, Kinetics of systems of particles, Planar kinematics of rigid bodies, Instantaneous center of rotation, Planar kinetics of rigid bodies, Three dimensional kinematics of rigid bodies, Three dimensional kinetics of rigid bodies.								

Course Code:	MCE217	**Course Title:**	Strength of Materials I					**Semester:**	3
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The purpose of this course are to;Introduce the basic principles of stress analysis and application of strenght theory by connecting the internal force and moment with the stresses on basic elements under simple loading conditions.								
Course Content:	Definition of mechanism, statics of rigid bodies, stability of rigid bodies, center of gravity, moment of inertia, mechanical properties of materials, elasticity and law of hookers, type of stresses, calculation of the size of resultant tension.								

Course Code:	MCE219	**Course Title:**	Manufacturing Processes I					**Semester:**	3
Lecture:	3	**Practice:**	1	**Lab:**	0	**Credit:**	4	**ECTS:**	5
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To develop in students the capability to understand, analyze, design, and/or select the processes of metal casting, joining, bulk deformation, sheet metal, and plastic components for the production of metallic and polymer components. The focus will be on enabling students to understand the process technologies with particular emphasis on: – the identification of product defects; the safe design of forming tooling and the selection of forming equipment; the optimum and efficient use of materials and energy and the selection of appropriate manufacturing processes with particular emphasis on safety, both personal and environmental.								
Course Content:	Metal Casting Processes: Sand casting, Sand moulds, Type of patterns, Pattern materials, Pattern allowances, Types of Moulding sand, Properties, Core making, Methods of Sand testing, Moulding machines, Melting furnaces, investment casting, Ceramic mould, Lost Wax process, Pressure die casting, Centrifugal casting. Joining Processes: Fusion welding processes, Types of Gas welding, Arc welding equipments, Electrodes, Coating and specifications, Principles of Resistance welding, Spot/butt, TIG welding, Weld defects, Brazing, Soldering process. Bulk Deformation Processes: Hot working and cold working of metals, Forging processes, Typical forging operations, Rolling of metals, Types of Rolling mills, Flat strip rolling, Shape rolling operations, Defects in rolled parts, Principle of rod and wire drawing, Tube drawing, Principles of Extrusion, Types of Extrusion, Hot and Cold extrusion. Sheet Metal Processes: Sheet metal characteristics, Typical shearing operations, Bending, Drawing operations, Stretch forming operations, Formability of sheet metal, Hydro forming, Rubber pad forming, Metal spinning, Introduction to Explosive forming. Manufacturing of Plastic Components: Types of plastics, Characteristics of the forming and shaping processes, Moulding of Thermoplastics, Working principles and typical applications of Injection moulding, Plunger and screw machines, Compression moulding, Transfer moulding, Blow moulding, Rotational moulding, Film blowing, Extrusion, Thermoforming, Bonding of Thermoplastics.								

Course Code:	MCE221	**Course Title:**	Thermodynamics I					**Semester:**	3
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	1. To teach basic principles of clasical thermodynamics. 2. To give basic concepts of thermal system design based on first law. 3. To introduce basic principles of energy conversion.								
Course Content:	Basic concepts and definitions, System, boundary, Surrounding, Property, Equilibrium, State and process, Cycle, Properties of a pure substance, Equations of state, The state for ideal gas, Specific heat, Energy (by heat and work) interactions between system and surrounding, Closed and open systems, First law of thermodynamics, Internal energy and enthalpy, Second law of thermodynamics, reversibility and irreversibility, Carnot cycle.								

Course Code:	MME261	**Course Title:**	Materials Science					**Semester:**	3
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	1. Teach the general purpose of the Materials Science. 2. Teach atomic structure of materials. 3. Explain the general physical properties of materials. 4. Establish the relationship between the product's features with the atomic structure of materials. 5. Classify advanced technological materials, to teach their usage fields. 6. Demonstrate the required important points for their usage areas and manufacturing, quality and the structure of the functional materials in engineering field is aimed.								
Course Content:	Classification of materials, metals, semiconductors, plastics, ceramics, composites, metals and alloys, Crystal structure and defects, Types of chemical bonding, energy levels and band structures, Solid solutions, atomic diffusion, Phase transformations and phase diagrams, Ferro alloys, iron and steel production, Non-ferrous alloys, Polymers, Ceramics, Semiconductors, Composites, Mechanical properties of materials, Thermal and electrical properties of materials, Material characterization methods, the selection of high quality materials.								

Course Code:	FOL281	**Course Title:**	Technical Foreign Language 1					**Semester:**	3
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	This course teaches engineering terminology in English and develops text comprehension, writing, reading and listening skills.								
Course Content:	The Concept and basic definitions of science, technology, engineering, engineer. History of engineering, The methodology of engineering work, The concept and steps of scientific method, The concept and steps of engineering design process, Problem solving techniques in engineering, Seven steps to problem solving in engineering, Fields of engineering, Aerospace Engineering, Biological Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Engineering Science, Financial Engineering, Industrial Engineering, Meterial Engineering, Mechanical Engineering, Military Engineering, Nuclear Engineering, Ocean Engineering, Petroleum Engineering, Reverse Engineering, Geo engineering,Textile Engineering, Safety Engineering.								

4. Semester

Course Code:	CAL282	**Course Title:**	Numerical Analysis					**Semester:**	4
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The purpose of numerical analysis is to find acceptable approximate solutions when exact solutions are either impossible or so arduous and time-consuming as to be impractical, and to devise alternate methods of solution better suited to the capabilities of computers.								
Course Content:	This course includes; elements of error analysis, real roots of an equation, polynomial approximation by finite difference and least square methods, interpolation, quadrature, numerical solution of ordinary differential equations, and numerical solutions of systems of linear equations, programming a computer in addition to using a graphing calculator.								

Course Code:	INE260	**Course Title:**	Engineering Statistics					**Semester:**	4
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	3
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To promote the importance of the statistics in engineering applications. The collection and summarizing of statistical data and to teach the techniques of used in inferences.								
Course Content:	Data analysis methods, the teories and techniques of numerical data examining, economic indices, interpretation of the economic parameters, information of the possibility distributions and use of this informations in economics and business.								

Course Code:	MCE220	**Course Title:**	Strength of Materials II					**Semester:**	4
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The purpose of this course is Introduce the transverse shear, combined loads and teach the stress and strain transformation, express to design and deflection of beams and shafts, bucling of column								
Course Content:	Stress Transformations, Mohr Circle, Principal Stresses and Principal Stress Planes, Criteria of Strain and Failure, Moments of Areas,Moment and Moment of Inertia, Torsion, Simple Bending, Transverse Loading, Beam Cutting Normal force and bending moment, Shear force and bending moment diagrams, Stresses in beams, Displacements in beams and elastic curve, Integral method, Superposition method, Moment field method, Hyperstatic problems.								

Course Code:	MCE212	**Course Title:**	Mechanisms					**Semester:**	4
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Teaching preliminary concepts of mechanisms, methods of analysis for the transmission of motion in mechanisms, kinematics of cam and gear mechanisms.								
Course Content:	Position analysis of mechanisms, Instant centers of rotation, Velocity analysis of mechanisms,Acceleration analysis of mechanisms, Gear Mechanisms, Cam Mechanisms.								

Course Code:	MCE216	**Course Title:**	Manufacturing Processes II					**Semester:**	4
Lecture:	3	**Practice:**	1	**Lab:**	0	**Credit:**	4	**ECTS:**	5
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To develop in students the capability to understand cutting theory and analyze, design, and/or select the processes of material removing processes of turning, shaping, milling, drilling, grinding, discharging. To understand CNC machining and programming aspect for the production of components. The focus will be on enabling students to understand the process technologies with particular emphasis on: – the identification of product defects; the safe design of forming tooling and the selection of forming equipment; the optimum and efficient use of materials and energy and the selection of appropriate manufacturing processes with particular emphasis on safety, both personal and environmental.								
Course Content:	Introduction to material removal processes. Types of machine tools. Theory of metal cutting. Chip formation, Orthogonal cutting. Cutting tool materials. Tool wear, Tool life. Surface finish. Cutting fluids. Universal lathe. Cutting tool geometry. Various operations: Taper turning, Thread cutting, Special attachments. Machining time and power estimation. Turret lathes, Automats, Automatic screw type, Turret Indexing mechanism, Bar feed mechanism. Reciprocating machine tools: shaper, planer and slotter. Milling: types, milling cutters, operations. Hole making: Drilling, reaming, boring, tapping. Sawing machine: Hack saw, band saw, circular saw. Broaching machines: Broach construction, Push, pull, surface and continuous broaching machines. Abrasive processes, Grinding wheel, Specifications and selection, Types of grinding process. Cylindrical grinding. Surface grinding. Centreless grinding. Honing, lapping, super finishing, polishing and buffing. Abrasive jet machining. Electro Discharge Machining. Theory of discharging. Parameters. Wire Electro Discharge Machining. CNC machine tools and types, constructional details. Design considerations of CNC machines for improving machining accuracy. Structural members, Slide ways, Linear bearings, Ball screws, Spindle drives and feed drives. Part programming fundamentals, Manual programming, Computer assisted part programming. Safety measures about the processes.								

Course Code:	MCE218	**Course Title:**	Thermodynamics II					**Semester:**	4
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	1- To teach basic terms related second law such as energy quality, entropy and exergy. 2- To give second law analysis. 3- To introduce application of thermodynamic laws to power and refrigeration cycles. basic principles of energy conversion.								
Course Content:	Clausius inequality and definition of entropy, Principle of the increase of entropy, Entropy balance for closed and open systems. Adiabatic efficiencies. Entropy change of pure substances, liquids and solids, ideal gases. Exergy, second law analizi. Gas power cycle (Otto, Diesel, Stirling, Ericsson, Brayton), Vapor power cycle (Rankine), Cogeneration, binary vapor cycle, combined gas-vapor power cycle. Refrigeration cycles (vapor –compression, gas, absorption, and thermoelectric), heat pumps.								

Course Code:	MME260	**Course Title:**	Engineering Materials					**Semester:**	4
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To learn the fundamentals of engineering materials.								
Course Content:	Structures, properties and processing of metal alloys. Surface properties, corrosion and metal coatings. Nonmetallic materials; polymers, ceramics. Composite materials. Selection of engineering materials.								

Course Code:	FOL282	**Course Title:**	Technical Foreign Language II					**Semester:**	4
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	In global world ,it is too important following developed technology and new acedemic studies.By this lecture, the students can learn technical English and this enables to beter understand of acedemic issue or new design techonology. Furthermore , their translation and communication skills can improve by this way.								
Course Content:	Basic technical terms of industrial engineering, Systems engineering, Operations research, Computer engineering, Hardware and network software engineering, Metallurgical engineering, Iron and steel casting, Ceramic engineering, Mechanical engineering, Mechatronics and mechanic, Electrical engineering, Automotive engineering.								

5. Semester

Course Code:	MCE399	**Course Title:**	Industrial Practice I					**Semester:**	5
Lecture:	0	**Practice:**	0	**Lab:**	0	**Credit:**	0	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Students recognize factories and learn factory production processes, so they gain practical information.								
Course Content:	Students are required to make a summer internship for at least four weeks (twenty-four working days and Working 4 hours per day to 24 Business days) in a suitable workshop plant. Students can make engineering measurements, machining, foundry work, metal forming, welding, non-traditional machining, heat treatment, excellence and so on. applications, such as manufacturing processes. Report on the work done by the student should be prepared.								

Course Code:	MCE309	**Course Title:**	Hydraulics and Pneumatics					**Semester:**	5
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	3
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To introduce principles of hydraulic and pneumatic systems, to illustrate hydraulic and pneumatic system design, to gain analysis abilities of hydraulic and pneumatic system in automotive engineering.								
Course Content:	Introduction to hydraulics and pneumatics; Principles of power hydraulics and pneumatics, Hydraulic and pneumatic elements, Hydraulic and pneumatic piping and sealing, Hydraulic circuits and symbolic presentation, Circuits design, Design of vehicle hydraulic and pneumatic systems.								

Course Code:	MCE301	**Course Title:**	Fluid Mechanics I					**Semester:**	5
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	3
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	This course introduces the student to knowledge of the the basic concepts of fluid mechanics and the basic equations of hydrostatic.								
Course Content:	Basic concepts and definitions, Fluid statics, Manometers and pressure measurements, Hydrostatic forces on immersed bodies, Forces on immersed and floating bodies, Fluid as Rijid body translation and rotation.								

Course Code:	MCE305	**Course Title:**	Heat Transfer					**Semester:**	5
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	3
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	This course is designed to teach students fundamentals of conduction, convection and radiation heat transfer. Students are informed about the analysys and solution of basic heat transfer problems with analitical solution techniques, practical tables and charts given.								
Course Content:	General laws of heat transfer, steady one-dimensional heat conduction, differential equation of heat conduction, unsteady heat conduction, an overview of the convection heat transfer.								

Course Code:	MCE307	**Course Title:**	Dynamics of Machinery					**Semester:**	5
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	3
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Teaching basic concepts of mechanisms, methods of analysis for the motion and force transmission in mechanisms, fundamentals of vibrations and principles of balancing of machinery.								
Course Content:	Kinematic analysis of simple mechanisms, Force analysis of linked mechanisms, Force analysis of gear mechanisms, Force analysis of cam mechanisms, Mechanical vibration, Balancing, Balancing of rotating and reciprotating masses, Balancing line engine.								

Course Code:	MCE303	**Course Title:**	Machine Elements I					**Semester:**	5
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	3
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	1. To introduce the analysis phase and machine elements in mechanical design. 2. To develop mathematical models for functional analysis and stress calculation of machine elements by using engineering sciences. By using the available experimental models determine the input and output values of the machine system elements. 3. To use the standards and design criteria. 4. To improve the goal recognition, creativity and intuition and also to enable the students to gain experience in machine design. 5. To provide the necessary knowledge and capability for task spesification, consept formation and synthesis phases of the machine design. To develop the further stages of the machine design; manufacturing of prototypes, testing and marketing."								
Course Content:	Mechanical engineering design activity and importance of machine elements knowledge in this activity. Fundamentals of design and applications of machine elements. Welded, soldered, adhesive bonded, riveted joints. Shaft-hub connections. Bolted joints and power screw mechanisms. Pins, knuckles, springs, shafts and axles, coupling and clutches, lubricants and lubrication theory, sliding and rolling bearings, Fundamentals of speed reduction mechanisms, kinematics and geometry of gearsbelt drive and chain mechanisms.								

Course Code:	FOL381	**Course Title:**	Speaking and Reading Tech. at Foreign Language					**Semester:**	5
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	This course is aimed to improve speaking skill of english in both acedemic and social environment, to have effective communication skill, to provide proficiency in using English.								
Course Content:	The weighted subject is speaking skill. The contents of lecture are ; source searching in web, academic presentation about occupational subject, group and team studies, acting, speaking , communication etc.								

5th SEMESTER ELECTIVE COURSES

Course Code:	MCE315	**Course Title:**	Alternative Energy Sources					**Semester:**	5
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	3
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To introduce all energy sources except fossil fuels, teaching the existing potential of these resources in the world and to teach the methods to obtain these resources. Examining environmental and economic dimensions of alternative energy sources.								
Course Content:	Energy sources, Fossil and inexhaustible natural energy resources, Major applications of solar energy, Biogas production and use, Natural gas, Geothermal energy, Wind energy, Tidal energy, Wave energy, Biomass fuels, Biodiesel fuels.								

Course Code:	MCE317	**Course Title:**	Plumbing Systems and Design					**Semester:**	5
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	3
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To present plumbing systems and to teach its necessary design and sizing.								
Course Content:	What is plumbing? The importance of systems, City water, the shapes, the application states, Indoor and outdoor installation, Indoor plumbing and partitions, Pressurization systems, air pressure tanks, Water tanks, Water softening systems, Clean water supply, Wet places in the building structure and organization of information, Plumbing materials and end materials, Waste water installations inside buildings, partitions, Rain water and fire fighting equipment, Clean and dirty water pipe diameter of the accounts, Clean and dirty water pipe diameter of the accounts.								

Course Code:	MCE319	**Course Title:**	Modern Engineering Measure Techniques					**Semester:**	5
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	3
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aim of this course: To introduce the principles of measurement technologies and increasing the experimental abilities of engineering students.The attenders take the ability of planning and designing a measurement system.								
Course Content:	Analyses of experimental results. Undetermination analysis. Pressure measurement.Flow measurement.TEmperature measurement.Thermal conductivity measurement.Energy efficiency measurement tools.Designs of experiments and presentation.								

Course Code:	MCE321	**Course Title:**	Advanced Manufacturing Planning					**Semester:**	5
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	3
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Understanding and analysis of manufacturing production lines, esnel manufacturing cells, group technology and part of the lecture								
Course Content:	Basic concepts; production phases of the product, manufacturing systems, automation, with the help of computer design (CAD), with the help of computer manufacturing (CAM), computer integrated manufacturing (CIM). Manufacturing systems, manufacturing and process planning, production capacity for calculating techniques.								

Course Code:	MCE323	**Course Title:**	Surface Treatment					**Semester:**	5
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	3
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	1. Be able to benefit from material in the longer time 2. To produce material that have new and superior surface features. 3. Learning behaviors of materials working in contact with each other.								
Course Content:	Surface definition, metal surface properties, process applied to surface and their important, processes applied to metal surface before surface processing, process changed to surface properties, Surface modification process, General view to surface coating process and their descriptions, processes making in the gas phase.								

Course Code:	MCE311	**Course Title:**	Heating Technology					**Semester:**	5
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To teach applications of heating system and tools used in the heating systems.								
Course Content:	Importance of heating and heaters, heating systems, local and central heating systems, efficient of boiler, boiler montage rules, piping, chimneys, dilating tanks, hot water heating systems, function of pumps, maintenance of pumps, floor heating systems, high temperature water heating systems.								

Course Code:	MCE313	**Course Title:**	Machine Tools					**Semester:**	5
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	This course introduces the student to the design of machine tools, cutting theory and its components. It gives knowledge about machine tool construction and machine tool materials. It concentrates on the design of machine tool elements and selection of standard mechanical components. Design of bearing mechanisms, slip-stick phenomenon in addition to cutter and work holding mechanisms are also introduced. Safety in machine tools is also handled.								
Course Content:	Introduction to the machine shop and anatomy of machine tools, Basic machines, cutting theory, feeds, speeds, Types of machine tools, Sawing Machines, Lathes, Milling Machines, Drilling Machines, Grinding Machines and CNC Machine Tools and their axis, Machine tool construction, Materials used in machine tools, Machine tool elements, Motors, Beds, Slide ways, Shafts, Machine tool elements, Gears, Keys, V-Belts, Bearings, Cams, Selection of standard mechanical components in machine tool construction, Ball screws, ball return systems, reversibility, anti-reversing option, Slip-stick phenomenon, Lubrication, Power requirement in a machine tool, Cutter holders and holding methods, Work holding principles and equipments, Jigs and fixtures, Safety in machine tools.								

Course Code:	SOC301	**Course Title:**	Values Education					**Semester:**	5
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Value education and the basic concepts of the framework and requirements and importance of value education in educational institutions, examination of the world and Turkey values education studies.								
Course Content:	Concepts of value and basic concepts of values education. Sociological, psychological and philosophical values. Value types and properties of values.								

Course Code:	ESC301	**Course Title:**	Labor Law					**Semester:**	5
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To teach the basic concepts of labor law and employee-employer rights, basic properties of syndicates.								
Course Content:	Individual Labour law, Concept of Labour Law, Sections of labour law, Sources of labour law, Basics of labour law, Employee, Employer relationships, Workplace, Plant, Labor contracts and kinds, Labour contracts making								

Course Code:	ESC303	**Course Title:**	Patent and Industrial Design					**Semester:**	5
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	This course explores intellectual property rights, patent application for the industrial design and its examination, rights derived from industrial patents, protection of the rights of designer and patent owners, and international agreements. This course is to train student's capacity in the thinking, method, and skill in industrial design. It is expected that the students will be able to understand and grasp the logic of design process for industrial artefacts.								
Course Content:	Introduction to intellectual property rights, Product design and development, Industrial design, General provisions, Patent application for the industrial design and its examination, Industrial design patent, Rights derived from industrial patents, Industrial design use, Protection of the rights of designer and patent owners, International agreements, Examination of sample patents, Preparation of a sample patent.								

Course Code:	ESC305	**Course Title:**	Entrepreneurship					**Semester:**	5
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The course introduces the students to the preceding and early phases of an enterprise. It provides the students with basic ideas about entrepreneurial orientation, opportunity recognition.								
Course Content:	Core Managerial Concepts and Entrepreneurship, Finding a new idea, From business model to business plan, Marketing plan in Business Plan, Production Planning, Management Plan, Financial Plan, Business Planning workshops, Legal and regulatory issues, Current Issues in Entrepreneurship, Communicating with Business People, Communicating Business Plans, Investor Presentations.								

Course Code:	ESC307	**Course Title:**	Communication Skills					**Semester:**	5
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To teach base business concepts of behavioral sciences and relationships between individual, environment individuality, culture, attitude.								
Course Content:	Historical development of behavioral sciences, Scientific methods of social psychology, Research techniques of social psychology, Individual and its environment, Individuality-character relationship.								

Course Code:	ESC309	**Course Title:**	International Communication					**Semester:**	5
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aim of this lecture is to educate students how to communicate in the conditions of globalizing world.								
Course Content:	Definiton of international communication, Purpose and Progress of International communication, a short history of international communication. Relationship between international communication to basic definitions such as economy, culture, politics. The relevance of the communication process with the process of globalization, international, technology, raw material, organization, and the transfer of the law.								

Course Code:	ESC311	**Course Title:**	Crucial Analytical Thought Tech.					**Semester:**	5
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aim of this lecture is to educate student to think in a critical way.								
Course Content:	Definitions, Brain as the thinking organ, Grouping thinking, Optional thinking and properties, Critical and Analytical thinking.								

6. Semester

Course Code:	INE360	Course Title:	Engineering Economy					Semester:	6
Lecture:	2	Practice:	0	Lab:	0	Credit:	2	ECTS:	3
Course Level:	BSc - Bachelor of Science	Language:	English	Course Type:	Compulsory	Mode of Delivery:		Work Placement(s):	
Course Objectives:	Aim of this course is systematic study of net project investments as a result of investments and expenditures in works and enterprises in relation to engineering.								
Course Content:	Determination and formulation of the engineering problem, Analyzing the problem, Investigating alternative solutions for the problem, Determination of the alternatives to be chosen, Economically decision making for the chosen alternative.								

Course Code:	MCE310	Course Title:	System Dynamics and Controls					Semester:	6
Lecture:	3	Practice:	0	Lab:	0	Credit:	3	ECTS:	3
Course Level:	BSc - Bachelor of Science	Language:		Course Type:	Compulsory	Mode of Delivery:		Work Placement(s):	
Course Objectives:	The purpose of the lecture is, teaching the basic concepts of System Dynamics and Classiacal systems.								
Course Content:	Modeling of physical systems, Energy gates, One and two-port elements, Mechanical, electrical, fluid and thermal system elements, Linear graph, Determining Dynamic equations, Modeling of impure elements, Linearization, State variables, Determining System of equations in the form of A-matrix, Physical, canonical and phase variables, Functions and block diagrams of system answers, Transfer time, Basic concepts of automatic control, Control operations, Time response, Stability and Routh-Hurwitz criterion, Location of the root curves, Methods of frequency response and Bode diagrams.								

Course Code:	MCE302	Course Title:	Mechanical Engineering Laboratory					Semester:	6
Lecture:	2	Practice:	1	Lab:	0	Credit:	2	ECTS:	3
Course Level:	BSc - Bachelor of Science	Language:	English	Course Type:	Compulsory	Mode of Delivery:		Work Placement(s):	
Course Objectives:	To provide students make experiments for system parameters by desgining the experiment setup, installing and calibrating.								
Course Content:	Enabling students to make experiments on “thermodynamics” and “energy” areas of mechanical engineering. Given the basic mechanical engineering subjects, student groups will design of the experiment setup, installation and calibration and make experiments for specified system parameters. Detailed reports will be prepared and presented for each experimental study.								

Course Code:	MCE304	**Course Title:**	Fluid Mechanics II					**Semester:**	6
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	3
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	This course introduces the student to knowledge of the the basic concepts of fluid mechanics conservation laws and the basic equations of hydrodynamics.								
Course Content:	Introduction to differential analysis of fluid motion.Continuity, momentum and energy equations. Incompressible viscous flow. Dimensional analysis and similarity. Incompressible viscous flow, Navier-Stokes equations. Laminar and turbulent boundary layer flow. Flow around immersed bodies. Introduction to compressible flow.								

Course Code:	MCE330	**Course Title:**	Machine Elements II					**Semester:**	6
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	3
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To teach the sizing, strength calculations and design of machine elements encountered in engineering applications.								
Course Content:	Spur Gears, Helical Gears, Cone Gears, Shaft, Spiles, Cotter Pin, Coupling, Break and Flywheel, Belt and Chain Connections.								

Course Code:	FOL382	**Course Title:**	Foreing Language For Business					**Semester:**	6
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aim of this course is to teach Business English to students.								
Course Content:	Job application to various institutions and companies, project application, writing articles to establish commercial relations, job interviews with companies, talking on the phone, Working in English-dominated work environment, preparation of documents such as the application, request, response , report forms etc.								

6th SEMESTER ELECTIVE COURSES

Course Code:	MCE318	**Course Title:**	Solar Energy and Applications					**Semester:**	6
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	5
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To give necessary knowledge to the students on solar energy and its applications. The aim of the course is to help the development of national industry and engineering skills of students.								
Course Content:	Solar radiation, calculation of solar radiation on horizantal surfaces, Transmission of solar radiation through glass and plastics, Performance and theory of flat plate solar collectors, Concentration collectors, Energy storage, Electric power generation using Energy, Various applications of solar energy, Heat losses from solar collectors, Conversion of solar energy into electrical energy, Solar cells.								

Course Code:	MCE320	**Course Title:**	Natural Gas Installation					**Semester:**	6
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	5
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To train students with sufficient background on the subject of natural gas installation, To give engineering education about determining natural gas problems, To give information that can check security measures.								
Course Content:	General Features of natural gas, Building Exterior Natural Gas Installation, Interior Building Natural Gas Installation, Gas Consumption Working with Devices, E. Natural Gas Safety Rules, Natural Gas Installation Basic Concepts, Natural Gas Equipment and Classification, Placement Rules, Natural Gas Installation Account and Projection, Combustion Air Supply Disposal of gas and burnt, Tube Circuit Control and Commissioning, Project implementation (starting with 3 weeks until the end of the period continued application.								

Course Code:	MCE322	**Course Title:**	Energy Management					**Semester:**	6
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	5
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aim of this course is to introduce, industry-oriented energy efficiency and management, the human and technical aspects to students.When this course is introduced successfully: (i), energy efficiency concepts and differences between them can be learnt, (ii) To taech establishing energy management system the basic principles (iii) learning energy equivalent and the importance and (iv)to be able to learn to work as a group at an engineering project.								
Course Content:	Turkey's overall energy situation, Turkey, the structure of industry and textile sector; energy efficiency and management concepts, energy management systems golden rules, and energy management system creation, fuels and combustion, steam systems, steam boilers and energy efficiency, mass and energy balances; Waste heat utilization; trijenerasyon Cogeneration and electricity systems, energy efficiency, thermal insulation and economic analysis methods.								

Course Code:	MCE324	**Course Title:**	Modern Manufacturing Methods					**Semester:**	6
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	5
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To introduce principles of modern manufacturing methods. Selection of the most appropriate method for manufacturing the technical information that may be able to introduce students.								
Course Content:	Introduction to advanced production methods, with the electron beam processing, ion beam treatment, chemical processing, with Electro-erosion machining, ultrasonic machining, laser beam and processing, water jet machining, Plasma arc manufacturing, Rapid Prototyping and private methods.								

Course Code:	MCE326	**Course Title:**	Systematic Design					**Semester:**	6
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	5
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	This course explores a systematic approach to solve any system design problem. This course is to train student's capacity in designing systems in terms of phases of system such as preliminary system study, detailed system study, system analysis, design, coding, testing, implementation and maintenance are explained. Computer based systems are defined. System development life cycle and the different phases of the development of system are explained in detail.								
Course Content:	Introduction to system analyses and design, Defining a system, System life cycle, Phases of system development life cycle, Preliminary system study, Feasibility study, Detailed system study, System analysis, System design, System testing, Implementation, Maintenance, Case studies in system design.								

Course Code:	MCE328	**Course Title:**	Computer Aided(CNC) Machine Programming					**Semester:**	6
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	5
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Aim of this course; 1-To introduce CNC machine tools, building components and teach the working principles. 2-CNC lathes and milling machines manual programming skills.								
Course Content:	CNC machining and their advantages, CNC vertical milling machines and CNC lathes. Programming on CNC milling machines. Technological and geometrical information for programming.Operating and programming on cnc turning machines. Selecting proper cutting tools and İdeal machining parameters and conditions for cutting tools. General safety rules and principles of clamping and fixing workpieces on the machine table. Absolute and incremental dimensioning, M and G codes, linear and circular interpolation, counturing, milling and turning cycle programming. Control panels and their functions, tool magazines. Practice of programming methods on the CNC machines. Practical work and practicing and using these programming methods on the machines. Peck drilling, thread cutting. etc operations and other machining cycles.								

Course Code:	MCE314	**Course Title:**	Refrigeration Technology					**Semester:**	6
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	6
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Teaching third year undergraduate students about different Refrigeration Systems and Refrigeration System Components.								
Course Content:	Residential and commerical Refrigeration systems.								

Course Code:	MCE316	**Course Title:**	Computer Aided Design I					**Semester:**	6
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	6
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Learn to computer-aided solid model design (lines, arcs, circles, rectangles, surfaces, etc..) and create solid models. Free-surface model development. Industrial and engineering products modeling. Learn to assembly of solid models and construction techniques to create images.								
Course Content:	3D solid modeling design software with a current 3D methods. The Software User Interface, Toolbars, File Storage and Backup Creating, Deleting Files, Multiple Files and Window Opening Session, apparently Control, Appearance Mode, Mouse Gestures for Object Orientation Process, Solid Modeling Elements, Home Elements, Secondary Elements, Correction factors, Element Operations, Surface Modeling, Interactive Surface Design, Assembly, Assembly-Track Operations, Drawing (Technical Drawing), measurement classification, Surface Roughness, Size and Geometric Tolerance signs, Drawing File Creation. Industrial Applications.								

Course Code:	ESC302	**Course Title:**	Research and Presentation Technics					**Semester:**	6
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aim of this course is to teach scientific research and analysizing techniques and to teach the use of obtaining data and presentation of obtaining data.								
Course Content:	Scientific research and analysis techniques, Data collecting and data analyisis according to scientific research techniques, Reporting the results of researchs according to report writing techniques, Presentation of research subjects, The use of presentation equipments and technologies.								

Course Code:	ESC304	**Course Title:**	Human Resources Management					**Semester:**	6
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	It is aimed that students have recognition of principles like conditionality, being scientific and being historical while evaluating cases and problems. It is aimed that students have ability to function on a project as a team member or leader. Improving the ability of oral and written communication. It is aimed that students have recognition of universal values like reconciliation, change and sharing. It is aimed that students have ability to analyze, explain and solve the problems.								
Course Content:	Personnel management, definitions and scope, Relationship with other sciences, Personnel problems and solutions, Personnel control, Human resources (internal resourcing and outsourcing), Work load analysis, Workforce analysis, Personnel evaluation methods, Personnel education and development, Work evaluation techniques, Wage systems, Motivation, Leardership, Complaint mechanism, Communication, Discipline, Health and protection.								

Course Code:	ESC306	**Course Title:**	Management Systems					**Semester:**	6
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To teach scientific knowledge and abilities for managing production and service systems.								
Course Content:	Definition of management. Historical development of management concept. Definition, and types of organization, Organization charts, Managemant of information, learning, culture, structure, continuity, power and politics in organizations. Management etics, Gender and management, Management functions (planning, organising, carrying out, coordination, auditing), New management techniques, Management with objectives, Management according to exceptions, Quality control chambers, Benchmarking, Management of change, Strategic management, Relationships between organizations.								

Course Code:	ESC308	**Course Title:**	Occupational Health and Safety					**Semester:**	6
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aim of this course is to introduce importance of work safety and healthy and to emphasize work safety and healty in terms of employee and employer.								
Course Content:	Basic concepts of occupational safety and health, Basic working areas of ergonomics, Reasons of work accidents, Avoidance models, Calculation of costs, Investigation and reporting, Occupational illness, its types and avoidance methods, Occupational safety methods at workshop and laboratuaries, Personel and machine protective equipments, Fire and explosion prevention methods, Principals and objectives of first aid, ISG legislation.								

Course Code:	ESC310	**Course Title:**	Institutive Behavior					**Semester:**	6
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aim of this course is to introduce technical and humanistic aspects of industrial R&D and R&D management and to explain importance of technology, impacts of technology and permanent development of technology.								
Course Content:	Configuration of technology and industry, Adventages of technology and competition, Technologic options, strategies and analitic tools, Partnerships and strategic agreements, Technology and structure, Technology and process, Technology and culture, Technology and total quality, Technology transfers, R&D management. R&D productivity, National politics and and R&D, Technoparks and innovational organizastions, University-industry R&D association, Patents and legal regulations, R&D trends.								

Course Code:	ESC312	**Course Title:**	Standardizasyon					**Semester:**	6
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To teach the principles and practices of standardization in national and international areas.								
Course Content:	Principles of standardization, standardization in Turkey, International Trade Relations for Standardization, Application of Standards which is compulsory in Turkey.								

7. Semester

Course Code:	MCE403	Course Title:	Machine Project I					Semester:	7
Lecture:	2	Practice:	0	Lab:	0	Credit:	2	ECTS:	2
Course Level:	BSc - Bachelor of Science	Language:	English	Course Type:	Compulsory	Mode of Delivery:		Work Placement(s):	
Course Objectives:	The aim of this course is to make the project students who wish to specialize in one area, individually or in groups, from the perspective of a scientific theoretical and / or practical and to teach project preparation, presentation, prepare for working life.								
Course Content:	Project topic selection, Team work, A machine, a system or a process design, Project preparation, implementation, completion of all the stages.								

Course Code:	MCE499	Course Title:	Industrial Practice II					Semester:	7
Lecture:	0	Practice:	0	Lab:	0	Credit:	0	ECTS:	4
Course Level:	BSc - Bachelor of Science	Language:	English	Course Type:	Compulsory	Mode of Delivery:		Work Placement(s):	
Course Objectives:	Students recognize factories and learn factory production processes, so they gain practical information.								
Course Content:	Students are required to make a summer internship for at least four weeks (twenty-four working days and working 4 hours per day to 24 Business days) in a suitable workshop plant. Students can make engineering measurements, machining, foundry work, metal forming, welding, non-traditional machining, heat treatment, excellence and so on. applications, such as manufacturing processes. Report on the work done by the student should be prepared.								

Course Code:	ATE461	Course Title:	Engines					Semester:	7
Lecture:	3	Practice:	0	Lab:	0	Credit:	3	ECTS:	3
Course Level:	BSc - Bachelor of Science	Language:	English	Course Type:	Compulsory	Mode of Delivery:		Work Placement(s):	
Course Objectives:	The aims of the course is to provide essential knowledge on structure, operating and cycle of Internal Combustion Engines.								
Course Content:	Thermodynamic cycles of internal combustion engines, Engine performance parameters, fuel and combustion in engines, mixture formation (carburation and injection), engine testing, engine performance characteristics.								

Course Code:	MCE401	Course Title:	Factory Organization					Semester:	7
Lecture:	2	Practice:	0	Lab:	0	Credit:	2	ECTS:	3
Course Level:	BSc - Bachelor of Science	Language:	English	Course Type:	Compulsory	Mode of Delivery:		Work Placement(s):	
Course Objectives:	Managing the business processes and facility environment systematicly with the given knowledge of business administration and production management concepts is aimed.								
Course Content:	Corporate Change, Learning and Communication, R&D and Inovation, Systems Approach, Business Administration and Management, Basic Functions of Management, Decision Making Process in Management, Organization Structures, Quality Related Terms, Total Quality Management Principles, Production Quality and Productivity, Production Systems, Facility Layout Planning, Facility Layout and Process Flow Samples.								

7th SEMESTER ELECTIVE COURSES

Course Code:	MCE419	Course Title:	Thermal Insulation					Semester:	7
Lecture:	2	Practice:	0	Lab:	0	Credit:	2	ECTS:	4
Course Level:	BSc - Bachelor of Science	Language:	English	Course Type:	Elective	Mode of Delivery:		Work Placement(s):	
Course Objectives:	To learn about the basics of heat insulation.and insulation to reduce heat loss, thermal insulation applications in structures.								
Course Content:	Importance necessity and related standards of the Isolation, The varieties insulating material of the insulating material, Specifications, User locations and other information applications (cold and hot insulation), and insulation to reduce heat loss, Thermal insulation applications in structures, Insulation and insulation-free status of the comparison.								

Course Code:	MCE421	Course Title:	Nuclear Power Engineering					Semester:	7
Lecture:	2	Practice:	0	Lab:	0	Credit:	2	ECTS:	4
Course Level:	BSc - Bachelor of Science	Language:	English	Course Type:	Elective	Mode of Delivery:		Work Placement(s):	
Course Objectives:	Teaching fourth year undergraduates about Nuclear Energy, Nuclear Power Plants, and Operation Safety.								
Course Content:	Energy in general, Nuclear Energy, Nuclear Reactions, Nuclear Plants.								

Course Code:	MCE423	Course Title:	Power Generation Systems					Semester:	7
Lecture:	2	Practice:	0	Lab:	0	Credit:	2	ECTS:	4
Course Level:	BSc - Bachelor of Science	Language:	English	Course Type:	Elective	Mode of Delivery:		Work Placement(s):	
Course Objectives:	Aim of this course is learning basics and practices of the energy machines which are using industry.								
Course Content:	Primary energy sources, Thermodynamic basics, Heat exchangers, Boiler and steam generators, Gas turbines, Steam power plant, Combined cycle power plant, cogeneration, Combined heat and power.								

Course Code:	MCE425	**Course Title:**	Heat Economy					**Semester:**	7
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Savings when using heat, introduction abaut storage properties and storage methods for waste heat.								
Course Content:	Need of heat economy , Importance of ideal insulation thickness, The total heat transfer coefficient, Thermal insulation on pipes, Graphic analysis of the insulation thickness detection, Isolation materials, Cost and depreciation analysis, Pipe flow, the temperatures decreases, In the steam circuit yield reduction, Interval superheating of steam , Economizer, Heating boiler feed water.								

Course Code:	MCE427	**Course Title:**	Heat Pumps					**Semester:**	7
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aim of this course is to teach heat pump applications and provide basic information about the suitable size for heat pumps.								
Course Content:	General information about vapor compression, Absorbtion, thermolelectric and other types of heat pumps, Heat pump systems, Their design and analyses, Applications in buildings, Hot water supply, Heating, Cooling and moisture removal operations, Industrial applications of heat pumps.								

Course Code:	MCE429	**Course Title:**	Gas Turbines					**Semester:**	7
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Is to ensure the understanding of students these the historical development of gas turbines, operation principles combustion in engines and energy conv ersion, exhaust emissions, aviation applications and latest technological developments and to reinforce the knowledges about these issues.								
Course Content:	Historical development of gas turbines, classification, classification of stream processing, Theoretical cycles, theoretical stirling cycle, Theoretical Brayton cycle, regeneration, Gas turbines with intercooler and interheater, Closed system gas turbines, Actual cycles, Stagnation values, Compressor and turbine efficiency, Pressure losses, Regenerator efficiency , Mechanical losses, The air/fuel ratio and combustion efficiency , Performance, work and air ratios, Aviation gas turbines, performance criteria, efficiencies, Compressors, centrif uges compressors, axial compressors, The speed diagrams of the compressor stages, Characteristic of stage, Combustion chambers, Ensure of fuel, Type of combustion chamber, Combustion characteristics, Gas turbine fuels, Emissions, Turbines, turbine stage, velocity diagrams, impulse and reaction, fins parameters, Recent developments, Fuel economy, Weight and dimensions, Transmission needs materials, Comparison.								

Course Code:	MCE431	**Course Title:**	Computer Applications in Construction					**Semester:**	7
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aim of this course is to teach computer-aided machinery construction design and strength analysis techniques and technologies.								
Course Content:	Design theory– statics and strength of materials. Strength analysis of mechanical constructions in PC media. The design steps of mechanical construction. Systematic analysis of mechanical construction. Construction Methods and Materials, Construction Graphics, Estimating Methods. Preparing of construction plans. The assignments of employees' on construction design and scheduling. The basic principles of mechanical construction for safety.								

Course Code:	MCE433	**Course Title:**	Ergonomic Product Design					**Semester:**	7
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Aim of this course to teach effect of the human factors on the mechanical design.								
Course Content:	Human Factors And Systems, Human Factors Research Methodologies, Human Output And Control, Workplace Design, Environmental Conditions, Human Errors, Accidents And Safety, Human Factors And The Automobile, Human Factors İn Systems Design.								

Course Code:	MCE435	**Course Title:**	Kinematic Synthesis					**Semester:**	7
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To give the sufficient teoretical knowledges to understand mechanism design techniques and to present the mechanism design problems in application.								
Course Content:	Introduction to kinematic synthesis, Basic bar mechanism design, Grashof Theorem, The optimum connecting angle, Arm-pendulum and Slider-Crank mechanism, Two, three and four position synthesis, Graphical and analytical methods, Modeling with complex numbers, applications of Freudenstein equation, Correlation of arm angle, Current practices.								

Course Code:	MCE437	**Course Title:**	Design of Control System					**Semester:**	7
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To teach the materials using to represent the dynamic systems, to supply that optaining of answers in time plane of first and second order systems.								
Course Content:	System definition, the concept of feedback, Structures and properties of open and closed loop control systems, Calculation of transfer function, Block diagrams, simplifying methods and simplification of block diagrams with MATLAB commands, Signal flow diagrams and their properties, Transfer function calculation by Mason gain formula and the sample applications, To be expressed of the systems in the form of state-space detection of state variables and be created of phase variation block diagrams.								

Course Code:	MCE439	**Course Title:**	Computational Methods in Mechanical Engineering					**Semester:**	7
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To teach the basic numerical methods used in solving engineering problems, to gain the skill of implementation of numeric methods and to improve the ability of computer-use.								
Course Content:	Error analysis, Solving sets of linear equations and the equation, Solving sets of nonlinear equations , Interpolation, Numerical differentiation, Numerical integration, numerical solution of ordinary differential equations.								

Course Code:	MCE441	**Course Title:**	Electric and Hybrid Vehicles					**Semester:**	7
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aims of this course are to; teach the advantages of electric vehicles to other vehicles and introduce the systems which compose electric vehicle.								
Course Content:	Electric vehicles, Environmental effects of electric vehicles, Electric vehicle types, Energy storage systems, Battery and battery modeling, Fly wheel and supercapacitor, Electrical machinery and control systems, Electric machines for hybrid vehicles, Electric vehicle design, Electric vehicle conversion.								

Course Code:	MME463	**Course Title:**	Powder Metallurgy					**Semester:**	7
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Teaching the ability to use the current processes and the technological advances in these processes while the production of the products, shaping, determining the properties and evaluating the results, also teaching enough Professional knowledge to produce recomendations for production optimization.								
Course Content:	The importance of the industry and the production of powder metallurgy parts, Powder production methods, Metal powders important properties, Technological Characteristics and Inspection of dust, Powder metallurgy parts manufacturing method and process steps, The preparation of pressed powder, Metal powder densification and the main events that occur during shaping, Dust concentration methods, Sintering methods and materials, solid and liquid phase sintering stages and mechanisms, Latest developments in sintering furnaces, Common application areas of powder metallurgy.								

Course Code:	MTE461	**Course Title:**	Robotics					**Semester:**	7
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Areas and aims to investigate the use of robots of which are expressed as a mathematical movement and their basic principles to be able to tell.								
Course Content:	Short history and present-day practice areas, Coordinate systems and conversion charts, Robot arm with the representation of notasyonlandırılması and homogeneous matrix, Direct and inverse kinematics, Jacobian matrix, Camera and image processing.								

Course Code:	ATE461	**Course Title:**	Vehicle Technology					**Semester:**	7
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The purposes of this course are to; introduce the vehicle systems to students and give the knowledge about vehicle performance.								
Course Content:	Classification of vehicles, Engine performance characteristics, Power transmission system, Mechanics of the wheel and tire, Rolling resistance, Vehicle aerodynamics, Air resistance, Gradient and inertia resistance, Brake systems, Suspension systems, Chassis and car body, Steering systems.								

Course Code:	ATE465	**Course Title:**	Air and Space Vehicles					**Semester:**	7
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aim of this course is teaching design and production techniques of aerospace vehicles.								
Course Content:	Design synthesis, optimisation and flight simulation of novel aircraft concepts, Conceptual design methodologies for future aerospace vehicles, Development of robust control-theoretical foundations for linear feedback flow control of unstable fluid systems that recognise the limitations set by the requirements of wall sensing and actuation, Stability analyses and provision of benchmark data for transition, Active and passive control of boundary layers by surface deformation.								

Course Code:	MCE407	**Course Title:**	Basics of HVAC					**Semester:**	7
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	5
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Ability to appreciate of basic princibles of psychometric properties, air-conditioning processes, the cooling load and mass transfer calculation.								
Course Content:	Basic psychometric concepts, Heating, refrigeration, dehumidification and moisture making applications and representation at psychrometric diagram, Cooling load calculation, Air Duct calculation, Winter air conditioning, Summer air conditioning, Cooling Towers, Mass Transfer.								

Course Code:	MCE409	**Course Title:**	Heat Exchangers					**Semester:**	7
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	5
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	This course introduces the student to in-depth knowledge of the heat exchanger design.								
Course Content:	Classif ication of Heat Exchangers, Heat Transf er Analy sis of Heat Exchanger, Heat Exchanger Pressure Drop and Pumping Power Design Correlations f or Condensers and Ev aporators, Shell-and-Tube Heat Exchangers, Compact Heat Exchangers, Condensers and Evaporators.								

Course Code:	MCE411	**Course Title:**	Combustion Technology					**Semester:**	7
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	5
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Teaching fourth year undergraduate students about fuels, combustion equation, and combustion process.								
Course Content:	Combustion, Fuels and combustion systems.								

Course Code:	MCE413	**Course Title:**	Computer Aided Manufacturing					**Semester:**	7
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	5
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Aims of the this course is; to teach the necessary machining operations using CAM programme for turning and milling parts, to make the toolpath of cutting tools on turning and milling, to teach convert the toolpath to NC code, to choose the available cutting tool and machine.								
Course Content:	Manufacturing model creation by any type of CAD part format, Operation step organizing for special machine center, Tool and fixture setting CNC manufacturing for specific 3d model, Milling, Drilling and turning operations, Cutter location data creation, inspection, simulation and post processing.								

Course Code:	MCE415	**Course Title:**	Welding Technology					**Semester:**	7
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	5
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To present the welding methods, which is an important manufacturing technique, from its theory to inspection methods; including the modern welding methods, design of constructions with welded areas, and application areas.								
Course Content:	Introduction welding machines, Welding electrodes, Welding arc and formation theory, Melting and non-melting welding types, Factors effecting the welding capability of the materials, Welding of stainless steel and materials other than iron, Design of welding plans and presentation of applications at various industries, Welding metallurgy, quality at welding manufacturing and parameters affecting quality, Welding symbols, Welding errors, Destructive and non-destructive welding inspection methods, Labour health and work safety during welding.								

Course Code:	MCE417	**Course Title:**	Computer Aided Design II					**Semester:**	7
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	5
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aim this course, to teach the advanced 3D solid modeling programs and modules, to teach making the parametric part and assembly design, to teach making mold design, cast modeling, sheet metal modeling, to consider mechanism simulation, making analysis depends on static and dynamic loading.								
Course Content:	Introduction to parametric design techniques for 3D parametric solid modeling softwares, Parametric product (part&assembly) design, Special modules such as mold and cast modeling, sheet metal modeling, mechanism simulation design.								

Course Code:	MME461	**Course Title:**	Material Inspection					**Semester:**	7
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	5
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aim of this course is teaching non-destructive inspection and destructive methods that used commonly in industry.								
Course Content:	The importance of quality control and quality control methods. Widely used non-destructive inspection methods; liquid penetrant, magnetic particle, ultrasonic, radyografik (x-ray, gamma), with eddy currents and other methods of examination. Introduction to destructive methods.								

8. Semester

Course Code:	MCE400	**Course Title:**	Graduation Thesis					**Semester:**	8
Lecture:	0	**Practice:**	2	**Lab:**	0	**Credit:**	1	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aim of the thesis is to make the thesis students who wish to specialize in one area, individually or in groups, from the perspective of a scientific theoretical and / or practical and to teach thesis preparation, presentation, prepare for working life.								
Course Content:	Graduation thesis topic selection, Team work, A machine, a system or a process design, Thesis preparation, Implementation, Completion of all the stages.								

Course Code:	MCE404	**Course Title:**	Machine Project II					**Semester:**	8
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	2
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aim of this course is to make the project students who wish to specialize in one area, individually or in groups, from the perspective of a scientific theoretical and / or practical and to teach project preparation, presentation, prepare for working life.								
Course Content:	Project topic selection, Team work, A machine, a system or a process design, project preparation, Implementation, Completion of all the stages.								

Course Code:	MCE406	**Course Title:**	Control Elements and Applications					**Semester:**	8
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Compulsory	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The main goal of the course to students, introduce control elements, control elements to explain the principles of application of the control system can set up to provide trainin.								
Course Content:	Introduction to Industrial automatic control systems, Sensors used in industrial automatic control systems, Transducers and applications, Operational amplifier and applications, analog digital (ADC), Digital analog (DAC), Frequency voltage (F / V), Voltage frequency (V / F) converters, Discrete circuit elements using controlled applications, Microprocessor-based control applications, Temperature and motor control system design and application, Applications software and LabView control.								

Course Code:	ENG402	Course Title:	Engineering Ethics					Semester:	8
Lecture:	2	Practice:	0	Lab:	0	Credit:	2	ECTS:	2
Course Level:	BSc - Bachelor of Science	Language:	English	Course Type:	Compulsory	Mode of Delivery:		Work Placement(s):	
Course Objectives:	The aim of the course is provide information for engineering ethics and ethical values in business.								
Course Content:	Ethical concepts, Professionalism and professional ethics codes, Ethics in design, Rights and responsibilities of business life, Ethical problem-solving techniques, Risk, Safety and accidents, Responsibility for scientific research, Responsibility for the experimental study, Powers and responsibilities of the printing and publication of research results.								

8th SEMESTER ELECTIVE COURSES

Course Code:	MCE422	Course Title:	Computational Fluid Dynamics					Semester:	8
Lecture:	2	Practice:	0	Lab:	0	Credit:	2	ECTS:	4
Course Level:	BSc - Bachelor of Science	Language:	English	Course Type:	Elective	Mode of Delivery:		Work Placement(s):	
Course Objectives:	The student computational fluid dynamics (CFD) to introduce the principles. CFD to teach the application of fluid mechanics and heat transfer problems. Create a theoretical foundation on the subject. CFD'ni using a commercial program to teach the application of various engineering problems.								
Course Content:	Application of the equations of fluid mechanics and heat transfer in finite volume method, Equations of diffusion, Convection, and source terms, Explain the time-dependent, Quantitative approaches, algebraic equations, numerical cell structure, Finite volume method, Diskritizasyon process, General guidelines, Examples. Computational fluid dynamics principles of SAD entry, PHOENICS CFD code, PHOENICS how it works, Finite volume method, Grid geometry, Algebraic equations, The solution method, Boundary conditions.								

Course Code:	MCE424	Course Title:	LPG and Natural Gas Applications					Semester:	8
Lecture:	2	Practice:	0	Lab:	0	Credit:	2	ECTS:	4
Course Level:	BSc - Bachelor of Science	Language:	English	Course Type:	Elective	Mode of Delivery:		Work Placement(s):	
Course Objectives:	To teach basic concepts about LPG. To teach technical information about natural gas distribution lines and to show their applications. In addition, students who complete the course learn about natural gas distribution lines and their applications.								
Course Content:	Type of Degree Courses Language Courses Pre-Conditions Of LPG properties of LPG storage, LPG tanks be vapor, the tank locations, placement of LPG tanks, regulators, automatic converters, OPSO-Upson (tank and burner) Regulators, LPG hose, Fire precautions and procedures, Bulk gas supply systems, Storage capacity, Tank Controls, Distribution jobs, PE piping works, LPG dimensions of pipes, Pipe sizes and pressure losses, Service piping, pressure test, Natural gas main and distribution line service couplings, Pipe types and all kinds of standards used in the field study safety.								

Course Code:	MCE426	**Course Title:**	Pumps					**Semester:**	8
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	This course introduces the student to in-depth knowledge of the pump working principles, characteristics and pump selection.								
Course Content:	Pump Types and Operating Principles, The pump performance curves, Cavitation and net suction head in pumps, Pump scaling laws, The pump selection.								

Course Code:	MCE428	**Course Title:**	Heating System Design					**Semester:**	8
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Gaining basic principles of hot-water heating systems, components, applications and automation.								
Course Content:	Central hot water heating systems, Auxiliary elements, Elements selection, Heat loss calculation, Thermal insulation, Heating system automation, Energy efficiency and heating energy efficiency legislation.								

Course Code:	MCE430	**Course Title:**	Air Conditioning and Ventilation Systems Design					**Semester:**	8
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Teaching tp project Fundamentals and rules of air conditioning.								
Course Content:	The introduction of ventilation and air conditioning systems, And the introduction of the machines belonging to this system, Representing use and purpose as practical.								

Course Code:	MCE432	**Course Title:**	Drying Technique					**Semester:**	8
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To introduce students abaut drying system. Teaching drying systems application by heat transfer and fluid mechanics. Creating the theorcal bases on students abaut the subject.								
Course Content:	Heat treatment principles, The principles of drying, Drying technique, Drying process, Cylinder drying, Spray drying, Jet dryers, Drying of the presentation scheme, Water activity, Psychrometry, Drying rate, Dryer types, Principles of evaporation, Single effect evaporators, Multiple effect evaporators.								

Course Code:	MCE434	**Course Title:**	Aerodynamics					**Semester:**	8
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To give the basic concepts of incompressible aerodynamics, To solve the problems of the basic aerodynamics								
Course Content:	Ideal flow models, wing profiles, thin profile theory, finite wing theory, effects of compressibility and viscosity.								

Course Code:	MCE436	**Course Title:**	Industrial Energy Efficiency					**Semester:**	8
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To know the status of Turkey's overall energy. To know the structure of the Turkish Industry and comprehending energy consumption. To understand energy management.								
Course Content:	Turkey's overall energy situation, the structure of Turkish industry, energy consumption, energy management, measurement instruments and measurement techniques, the winner in the energy efficiency increased, electrical systems, lighting energy savings, economic analysis, environment, alternative energy sources, combined heat-power production systems. Measurements of the measurement instruments and measurement techniques can be able to apply, Boilers Boosting energy efficiency can comprehend. To know the electrical system, able to apply methods of economic analysis. To know the environmental laws. Combined heat-power generation systems.								

Course Code:	MCE438	**Course Title:**	Modern Welding Methods					**Semester:**	8
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The purpose of this course is to give detailed knowledge to the student about fusion and solid state welding techniques.								
Course Content:	Introduction of specific welding method, Fusion welding method, Solid state welding method, Pressure welding method, Resistance welding method and Welding and cutting with power beams methods.								

Course Code:	MCE440	**Course Title:**	Computer Aided Constructive Forming					**Semester:**	8
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Based on the information the students have taken different courses; a machine and / or system design and draw, the project report format, load and resistance to the accounts of the system can also be used materials.								
Course Content:	Fundamentals of machine desing, Conceptual desing and innonation, Design input parameters, Reviewing fundamentals of related courses (such as Thermodynamics, Heat Transfer, Fluid Mechanics, Engineering Materials, Strength of Materials, 3D CAD), Design process and preparing solid models/technical drawings, Economical analysis and life estimation, project report and its presentation.								

Course Code:	MCE442	**Course Title:**	Intoduction to Biomechanics					**Semester:**	8
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	People make up the structure of bone, muscle, cartilage, tendon, nerve, blood and other structures and mechanical properties of engineering analysis approach.								
Course Content:	General anatomical information, Biological materials, bone, cartilage, muscle, tendon, nerve and soft tissue structure and mechanical properties, Biological classification of structural elements: arm, leg, spine and knee cap, The dynamics of the musculoskeletal system, Resistance of biological material, Stress-strain analysis.								

Course Code:	MCE444	**Course Title:**	Maintenance and Repair in Manufacturing					**Semester:**	8
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To understand the today's principles of maintenance and breakdown finding. To understand the breakdown warning and detection systems. To prepare the breakdown finding flow chart. To care and to repair on the electrical-electronic components, electrical machinery and mechanical systems.								
Course Content:	Maintenance and repair concepts, Requirement of maintenance, Transition from unplanned maintenance to planned maintenance, Planned, preventive, predictive maintenance systems, Statistical applications and reliability on maintenance planning, Total Productive Maintenance (TPM).								

Course Code:	MCE446	**Course Title:**	Dynamic Systems Design					**Semester:**	8
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To present the dynamical systems. To present the mathematical analysis methods in the modeling of dynamical systems and to understand the modeling methods with examples.								
Course Content:	Introduction to Modeling and Simulation, Formulation of engineering system models and the system similarity, Dynamics of mechanical, fluid, electrical, electromechanical and thermal systems, Equations of motion, Dynamic behavior of the base system (the answers), Transfer functions, Simulations of dynamics of complex systems, Stability analysis of the systems, Engineering Applications: The system design and selection of system components.								

Course Code:	MCE448	**Course Title:**	Agricultural Machinery					**Semester:**	8
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	The aim of this course is to teach the agricultural mechanization system, general features of agricultural equipment and machinery for agricultural production, agricultural tractors and energy resources in agriculture.								
Course Content:	In this course, agricultural tools and machinery using in agricultural production will be explained as theoretical and applied.								

Course Code:	MME462	**Course Title:**	Plastic Forming					**Semester:**	8
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To present the mechanical and metallurgical principles of plastic forming. To introduce the basic mathematical methdos in plastic forming and to understand the basic plastic forming methdos with examples.								
Course Content:	Basic principles of plastic deformation, Plastic deformation mechanisms, Effusion criteria, Stress-strain relations in the plastic deformation, Factors affecting plastic deformation, Cold and hot forming, Structural changes occurring after plastic forming, Plastic forming methods, Hammering, Rolling, Extrusion, Wire and rod drawing, Sheet metal forming, Limit diagrams.								

Course Code:	MME464	**Course Title:**	Composite Materials and Production Methods					**Semester:**	8
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To give information about the definition, importance, application and production methods of composite materials. Teaching about composite structures as ceramics elastoplastic and plastic composites, metal composites etc. Industrial applications of composites and comparison of these materials to the ones which are natural as iron, wood etc.								
Course Content:	General definitions and classification of the composite materials, Analysing of micromechanical and macromechanical behavior of the composite materials, Applications of the composite materials, Reinforcements in a composite materials, Reinforcements-matrix interface and wetting, Processing of metal matrix composites, ceramic matrix composites and polymer matrix composites, Some commercial metal matrix composites, Ceramic matrix composites and polymer matrix composites.								

Course Code:	MTE460	**Course Title:**	Mechatronic System and Design					**Semester:**	8
Lecture:	2	**Practice:**	0	**Lab:**	0	**Credit:**	2	**ECTS:**	4
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To ensure that Mechanical Engineering student can design mechatronic systems using by sensitive components, rousing, electric-electronic components and microprecessors.								
Course Content:	An introduction to the concept of mechatronics, mechatronic systems and their components. Microprocessors and microprocessor programming, Engineering design theory, design models, systematic design, New trends in Mechatronics. Mechatronics design project, Elements selection or production, Performance Testings of Design Results.								

Course Code:	MCE408	**Course Title:**	Thermic Turbo Machines					**Semester:**	8
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	6
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Course under steam turbines, compressors, ventilators and a mechanical engineer facing the most machines. In the past only used in thermal power plant turbines, vehicles and factories today are finding wide application possibilities. These machines are very expensive in our country are produced in limited. For these reasons these machines project, selection and knowledgeable engineers are needed to operate.								
Course Content:	One-dimensional compressible fluid flow, Voice over, voice-six, sonic flow, Fluctuations, lock in the flow and sizing, Diffusers, General equation for turbo machines, velocity triangles, pressure and velocity diagrams, power, Steam Turbines: Yield and losses, condensation effect, Classification, Turbine selection, Centrifugal and axial ventilators: Yield, characteristic curves, fan laws, Axial and centrifugal compressors: Speed triangles, sizing, wing design, the characteristic curve, yield.								

Course Code:	MCE410	**Course Title:**	Steam Boilers					**Semester:**	8
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	6
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Steam Boilers and principles to explain the general concepts related to the design of Steam Boilers and project basics.								
Course Content:	Thermodynamic properties. Construction of steam boilers. Flame-smoke and water-pipe kazanlar. Water boilers. Special design steam boilers. Casting boilers. Fluidized bed boilers. Elements of the auxiliary steam boilers, water heaters, blowers institutions, ovens and combustion systems, measurement and control systems.								

Course Code:	MCE412	**Course Title:**	Thermal System Design					**Semester:**	8
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	6
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Introduction to basic concepts of heating, heating types, stove types,chimney types and chimney connections, hot water, distribution systems, explanations of systems working with boiling water and vapor, boiler parts, boiler flat designing, insttallation of heat exchangers to boiler system, Heaters, burners,automatic control on and energy saving, insulation applications.								
Course Content:	Analysis, design, and optimization of thermal systems, Modeling of thermal systems and components, Thermal system component characteristics and their effect on overall system performance, Relationship among thermal sciences in design process, Introduction to thermoeconomic optimization.								

Course Code:	MCE414	**Course Title:**	Transport Techniques					**Semester:**	8
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	6
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	Main purpose of the course students, giving knowledge abaut lifting and moving machinery-related topics in basic engineering design projects.								
Course Content:	Lifting and handling machinery elements; load related components, drive components, motors and gearboxes between loads, Pulleys and pulley systems, drums, Stop and load holding brakes, lock gears. wheels and rails, Feeders and belt, chain, vibratory, endless screw conveyors, Pneumatic conveying systems. Design projects.								

Course Code:	MCE418	**Course Title:**	Mechanical Vibrations					**Semester:**	8
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	6
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To present the basic characteristics of vibrations and their place and importance in the mechanical engineering applications.To teach and to apply the methods using analysis of engineering problems including vibrations.								
Course Content:	Basic concepts, Degree of freedom systems: Equations of motion, damped and undamped vibrations, free and forced vibrations, the system response to forcing, Vibration isolation, Two degree-of-freedom systems: Equations of motion, coordinate transformation, natural coordinates, vibration modes, Torsional vibrations. Introduction to multi degree-of-freedom systems.								

Course Code:	MCE420	**Course Title:**	Die/Mold Design Techniques					**Semester:**	8
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	6
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	This course introduces the student to in-depth knowledge of the design and manufacture of dies and molds for metal engineering and plastics components. It gives skills in assessing the related performance of tooling and processes. It also concentrates on the components of dies and molds and related process parameters in order to obtain quality finished products.								
Course Content:	Die design basics and theory of sheet metal, Metal stamping dies, their construction, and assembly, Metalworking machinery, Blanking and piercing operations, Blank calculation or flat layout, Bending and forming operations, Die process quality and automation, die maintenance, Springs, their design and calculations, Materials and surface finish, Case Studies for Dies, Mold design basics, Molding Cycle, Mold Classifications, Mold Components: Cavity and Core, Runner Systems, Conventional, Runnerless, Gate Types, Temperature Control, Vents, Ejector Systems, Interlocks, Mold Actions and Undercuts, Unscrewing Molds, Shrinkage of Plastics and Rates, Plastic Part Analysis, Case Studies for Molds, Cost estimation for dies and molds, Safety in Die and Mold Processes.								

Course Code:	MME460	**Course Title:**	Heat Treatment					**Semester:**	8
Lecture:	3	**Practice:**	0	**Lab:**	0	**Credit:**	3	**ECTS:**	6
Course Level:	BSc - Bachelor of Science	**Language:**	English	**Course Type:**	Elective	**Mode of Delivery:**		**Work Placement(s):**	
Course Objectives:	To give information and practice about the general heat treatment information, applications and principles, and the heat treatment of the ferrous and non-ferrous alloys.								
Course Content:	Introduction to heat treatment, Physical metallurgy of Fe-Fe3C alloy, Iron carbon alloys, Isothermal retention and steady cooling, Transformation diagrams, The general heat treatment method and principles, Hardening and tempering, austempering and martempering, Effects of alloy elements to hardableness, Hardableness, Determination of hardableness with Grossman and Jominy method, Surface hardening, Precipitation hardening, Tool steels, Cast irons, Thermal processing of stainless steel, Heat treatments that can be applied to non-ferrous alloys.								