

FACULTY OF ENGINEERING – KTO KARATAY UNIVERSITY



**KTO KARATAY
ÜNİVERSİTESİ**

KTO KARATAY UNIVERSITY FACULTY OF ENGINEERING

ERASMUS+ Course Catalogue

for the academic year 2019/2020 Spring Semester

(ALPHABETICAL) LIST OF COURSES WITH CODES

- 1. Technical Drawing II**
- 2. Manufacturing Processes-II**
- 3. Material Science-II**
- 4. Introduction to Mechanical Engineering**
- 5. Strength Of Materials**
- 6. Dynamics**
- 7. Applied Thermodynamics**
- 8. Applied Heat Transfer**
- 9. Theory of Machines**
- 10. Machine Elements-II**
- 11. Control Engineering**
- 12. Mechanical Engineering Laboratory**
- 13. Graduation Project-II**
- 14. Experimental Stress Analysis**
- 15. Finite-Element Analysis**
- 16. Internal Combustion Engines**
- 17. Renewable Energy Sources**
- 18. Turbomachinery**

FACULTY OF ENGINEERING – KTO KARATAY UNIVERSITY

Course Name: Technical Drawing II - Course Code: MAM 2201

FACULTY: Engineering	CLASS TYPE: Undergraduate – Must Course
NUMBER OF HOURS: 4 (2 Lectures + 2 Lab.)	ECTS TYPE: 4
SEMESTER: Spring	CLASS LEVEL: First Year
LANGUAGE OF INSTRUCTION: Turkish	
PRELIMINARY REQUIREMENTS: No	
CONTENTS	Working drawings, assembly drawings. Screw threads, threaded fasteners. Keys, springs, locking devices, rivets, welding, piping layouts. Gears and cams. Dimensioning and tolerances. Introduction to descriptive geometry, points, lines, planes. Piercing points, dihedral angle. Angle between line and plane. Parallelism, perpendicularity. Intersections. Developments.
EFFECTS OF EDUCATION PROCESS: To give an ability to draw 2D drawings in standard 2D blueprint format. To provide the applications of dimensioning in 2D drawings. To give an ability to create solid model of a part. To give an ability to design and align given parts in an assembly. To give an ability to print out and present 2D and 3D drawings.	
LITERATURE: Thomas E. French, Charles J. Vierck and Robert J. Foster, Engineering Drawing and Graphics Technology, McGraw-Hill Inc., 1993.	
TEACHING METHODS: Theory + Workshop	
ASSESSMENT METHODS: Mid-term Exam, Workshops, Homeworks, Final Exam.	
LECTURER: Instructor: Gökhan YALÇIN	

FACULTY OF ENGINEERING – KTO KARATAY UNIVERSITY

Course Name: Manufacturing Processes-II-Course Code: MAM2203

FACULTY: Engineering	CLASS TYPE: Undergraduate – Must Course
NUMBER OF HOURS: 4 (3 Lectures + 1 workshop)	ECTS TYPE: 4
SEMESTER: Spring	CLASS LEVEL: First Year
LANGUAGE OF INSTRUCTION: Turkish	
PRELIMINARY REQUIREMENTS: No	
CONTENTS	Introduction to Tool Machine, Definition of Tool Machine, Processing Quality, Classifications, Machining Process Methods, Tool Materials, Cutting Fluids, Lathe and Machining Methods, Milling Machine and Machining Methods, Drilling Machine and Drilling, Shepers-Planers Grinding Machines, Oxygen Torch Cutting and Plasma Arc Cutting, Laser Cutting Technology, Welding Technology, Welding Methods, Waterjet Cutting and Cutting with Electrical Discharge Wire, Casting Technology, Calculation of Machining Process and Time. Machine shop practices.
EFFECTS OF EDUCATION PROCESS: The objective of this course is to teach students the descriptions of manufacturing processes. Students are to learn to identify the processes and to perform simple calculations like machining time in metal removal processes, etc.	
LITERATURE: E. Paul De Garmo, Materials and Processes in Manufacturing, Wiley; 9th edition	
TEACHING METHODS: Theory + Workshop	
ASSESSMENT METHODS: Mid-term Exam, Homeworks, Final Exam.	
LECTURER: Prof. Dr. Faruk ÜNSAÇAR – faruk.unsacar@karatay.edu.tr	

FACULTY OF ENGINEERING – KTO KARATAY UNIVERSITY

Course Name: Material Science-II - Course Code: MAM2205

FACULTY: Engineering	CLASS TYPE: Undergraduate – Must Course
NUMBER OF HOURS: 4 Lectures	ECTS TYPE: 4
SEMESTER: Spring	CLASS LEVEL: First Year
LANGUAGE OF INSTRUCTION: Turkish	
PRELIMINARY REQUIREMENTS: No	
CONTENTS	Introduction and classification of materials; Atomic bonding in solids; the structure of crystalline solids; diffusion and rate equation; mechanical properties of metals; failure; physical properties of materials; electrical, thermal and magnetic properties. Corrosion and degradation of materials.
EFFECTS OF EDUCATION PROCESS: To give students the background required to pursue further studies in materials processing, design and related engineering fields To develop an understanding of the differences between engineering materials through the application of laboratory experiments to determine their physical and mechanical behavior To introduce students the failure modes and the use of non destructive testing techniques of engineering materials.	
LITERATURE: W.D. Callister Jr., Materials Science and Engineering: An Introduction, John Wiley and Sons Inc., 1998 (5th Ed.)	
TEACHING METHODS: Theory	
ASSESSMENT METHODS: Mid-term Exam, Homeworks, Final Exam.	
LECTURER: Associate Prof. Dr. Hasan KOTAN	

FACULTY OF ENGINEERING – KTO KARATAY UNIVERSITY

Course Name: Introduction to Mechanical Engineering - **Course Code:** MAM 2206

FACULTY: Engineering	CLASS TYPE: Undergraduate – Must Course
NUMBER OF HOURS: 3 Lectures	ECTS TYPE: 3
SEMESTER: Spring	CLASS LEVEL: First Year
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: No	
CONTENTS	Mechanical engineering history, interests and relationships with other engineering disciplines. Sub-branches, design, materials, mechanical and thermal units. New technologies and trends in the development of mechanical engineering. Mechanical engineers need to gain skills and education program. The techniques used in solving engineering problems and some problems in applications of these techniques. Written, oral and electronic communication importance. Creative thinking, problem solving, lifelong learning and the importance of team work. Mechanical engineers work areas of business. professional approach to ethics. Factory tours support, engineering and industrial application examples
EFFECTS OF EDUCATION PROCESS: To give students the background required to pursue further studies in materials processing, design and related engineering fields To develop an understanding of the differences between engineering materials through the application of laboratory experiments to determine their physical and mechanical behavior To introduce students the failure modes and the use of non destructive testing techniques of engineering materials.	
LITERATURE: W.D. Callister Jr., Materials Science and Engineering: An Introduction, John Wiley and Sons Inc., 1998 (5th Ed.)	
TEACHING METHODS: Theory + Laboratory	
ASSESSMENT METHODS: Mid-term Exam, Homeworks, Final Exam.	
LECTURER: Assistant Prof. Dr. Amar Hasan HAMEED	

Course Name: Strength Of Materials - Course Code: MAM 4201

FACULTY: Engineering	CLASS TYPE: Undergraduate – Must Course
NUMBER OF HOURS: 4 Lectures	ECTS TYPE: 4
SEMESTER: Spring	CLASS LEVEL: Second Year
LANGUAGE OF INSTRUCTION: Turkish	
PRELIMINARY REQUIREMENTS: No	
CONTENTS	Normal and shear stress, strain. Materials, factor of safety, stress concentration. Pressurized thin walled cylinders. Simple loading tension, torsion and bending. Deflections with simple loadings, superposition techniques. Statistically indeterminate members, thermal stresses. Combined stresses, Mohr`s circle, combined loadings. Buckling. Energy methods.
EFFECTS OF EDUCATION PROCESS: To provide the basic concepts and principles of strength of materials. To give an ability to calculate stresses and deformations of objects under external loadings. To give an ability to apply the knowledge of strength of materials on engineering applications and design problems.	
LITERATURE: Mechanics of Materials, by F.P. Beer, E.R. Johnston, J.T. De Wolf, D.F. Mazurek 5th Edition in SI Units, McGraw Hill 2009 (or 4th or 3rd Editions in SI Units, McGraw Hill, 2006 and 2004, respectively).	
TEACHING METHODS: Theory	
ASSESSMENT METHODS: Mid-term Exam, Homeworks, Final Exam.	
LECTURER: Instructor: Haşmet Çağrı SEZGİN – cagri.sezgin@karatay.edu.tr	

FACULTY OF ENGINEERING – KTO KARATAY UNIVERSITY

Course Name: Dynamics - Course Code: MAM 4203

FACULTY: Engineering	CLASS TYPE: Undergraduate – Must Course
NUMBER OF HOURS: 4 Lectures	ECTS TYPE: 4
SEMESTER: Spring	CLASS LEVEL: Second Year
LANGUAGE OF INSTRUCTION: Turkish	
PRELIMINARY REQUIREMENTS: No	
CONTENTS	Kinematics and kinetics of particles and system of particles. Plane kinematics and kinetics of rigid bodies. Newton's second law of motion. Methods of work-energy and impulse-momentum.
EFFECTS OF EDUCATION PROCESS: To teach the basic principles of particle and rigid body kinematics and dynamics. To give the ability to form dynamics related mathematical models of engineering mechanisms and machines. To give the abilities of calculating the motion that results due to applied forces and moments and calculating the forces and moments that are necessary to result in prescribed motion characteristics.	
LITERATURE: Meriam, J. L. and Kraige, L. G., "Engineering Mechanics, Dynamics" Sixth Edition (SI Version), John Wiley and Sons Inc., 2007.	
TEACHING METHODS: Theory	
ASSESSMENT METHODS: Mid-term Exam, Homeworks, Final Exam.	
LECTURER: Instructor: Haşmet Çağrı SEZGİN - cagri.sezgin@karatay.edu.tr	

FACULTY OF ENGINEERING – KTO KARATAY UNIVERSITY

Course Name: Applied Thermodynamics - Course Code: MAM 4319

FACULTY: Engineering	CLASS TYPE: Undergraduate – Must Course
NUMBER OF HOURS: 4 Lectures	ECTS TYPE: 4
SEMESTER: Spring	CLASS LEVEL: Second Year
LANGUAGE OF INSTRUCTION: Turkish	
PRELIMINARY REQUIREMENTS: No	
CONTENTS	Introduction to thermodynamics cycles and their applications in engineering. Vapor and combined power cycles; Carnot vapor and ideal Rankine cycle, ways to increase the efficiency of the Rankine cycle, Cogeneration, binary vapor cycles. Gas power cycles; Otto, Diesel, Stirling, Ericsson and Brayton cycles. Brayton cycle, the ideal jet-propulsion cycles. Refrigeration cycles; refrigerators and heat pumps, reversed Carnot cycle. Ideal and actual vapor-compression refrigeration cycles. Absorption refrigeration and heat pump systems. Second law analysis of vapor power, gas power and refrigeration cycles.
EFFECTS OF EDUCATION PROCESS: The aim of these lessons is to inform students about thermal systems applications, which is involving energy and its conversion, conservation, and transfer, its dizayn and its efficiency. To be familiar with the second law of thermodynamics and its applications. To have an idea about the concept of exergy and the second law efficiency.	
LITERATURE: Yunus A.Çengel , Michael A.Boles , Thermodynamics : An Engineering Approach, 2008	
TEACHING METHODS: Theory	
ASSESSMENT METHODS: Mid-term Exam, Homeworks, Final Exam.	
LECTURER: Asistant. Prof. Dr . Remzi ŞAHİN – remzi.sahin@karatay.edu.tr	

FACULTY OF ENGINEERING – KTO KARATAY UNIVERSITY

Course Name: Applied Heat Transfer - Course Code: MAM 6203

FACULTY: Engineering	CLASS TYPE: Undergraduate – Must Course
NUMBER OF HOURS: 4 Lectures	ECTS TYPE: 4
SEMESTER: Spring	CLASS LEVEL: Third Year
LANGUAGE OF INSTRUCTION: Turkish	
PRELIMINARY REQUIREMENTS: No	
CONTENTS	Introduction to thermodynamics cycles and their applications in engineering. Vapor and combined power cycles; Carnot vapor and ideal Rankine cycle, deviation of actual vapor power cycles from the idealized ones, ways to increase the efficiency of the Rankine cycle, the ideal reheat and regenerative Rankine cycle. Cogeneration, binary vapor cycles. Gas power cycles; Otto, Diesel, Stirling, Ericsson and Brayton cycles. Brayton cycle with regeneration, intercooling and reheating, the ideal jet-propulsion cycles. Refrigeration cycles; refrigerators and heat pumps, reversed Carnot cycle. Ideal and actual vapor-compression refrigeration cycles. Absorption refrigeration and heat pump systems. Second law analysis of vapor power, gas power and refrigeration cycles.
EFFECTS OF EDUCATION PROCESS: To create and provide the ability to solve mathematical model of thermal systems. Introduce examples of heat transfer applications.	
LITERATURE: Yunus A.Çengel , Michael A.Boles , Thermodynamics : An Engineering Approach, 2008 F.P. Incropera and D.P. deWitt, Fundamentals of Heat and Mass Transfer, 6th Ed., Wiley, 2007	
TEACHING METHODS: Theory	
ASSESSMENT METHODS: Mid-term Exam, Homeworks, Final Exam.	
LECTURER: Asistant. Prof. Dr . Remzi ŞAHİN – remzi.sahiin@karatay.edu.tr	

FACULTY OF ENGINEERING – KTO KARATAY UNIVERSITY

Course Name: Theory of Machines - Course Code: MAM 6201

FACULTY: Engineering	CLASS TYPE: Undergraduate – Must Course
NUMBER OF HOURS: 4 Lectures	ECTS TYPE: 4
SEMESTER: Spring	CLASS LEVEL: Third Year
LANGUAGE OF INSTRUCTION: Turkish	
PRELIMINARY REQUIREMENTS: No	
CONTENTS	Virtual work method. Driving torque characteristics and machine-prime mover interactions. Modeling and elements of vibratory systems. Free and forced vibrations of single degree-of-freedom systems. Introduction to multi degree-of-freedom systems. Vibration control. Critical speeds of shafts. Balancing of rotating machinery.
EFFECTS OF EDUCATION PROCESS: Introducing the approaches and mathematical models used in kinematical and dynamical analysis of machinery. Giving the fundamental knowledge on kinematic and dynamic design of machinery.	
LITERATURE: Theory of Machines and Mechanisms: John J. Uicker, Gordon R. Pennock, Joseph E. Shigley, 3rd Ed., (2006)	
TEACHING METHODS: Theory + Laboratory	
ASSESSMENT METHODS: Mid-term Exam, Homeworks, Final Exam.	
LECTURER: Asistant. Prof. Dr . Ahmet MERAM - ahmet.meram@karatay.edu.tr	

FACULTY OF ENGINEERING – KTO KARATAY UNIVERSITY

Course Name: Machine Elements-II - Course Code: MAM 6207

FACULTY: Engineering	CLASS TYPE: Undergraduate – Must Course
NUMBER OF HOURS: 4 Lectures	ECTS TYPE: 4
SEMESTER: Spring	CLASS LEVEL: Third Year
LANGUAGE OF INSTRUCTION: Turkish	
PRELIMINARY REQUIREMENTS: No	
CONTENTS	Friction, wear and lubrication; systems of lubrication. Design of sliding bearings; journal and thrust bearings. Antifriction bearings; types, selection criteria and calculation procedure. Power transmission; prime mover characteristics and types. Design of gear drives; spur gears, helical gears, bevel gears, worm gears. Design of couplings, clutches and brakes. Design of belt drives; flat belts, V-belts. Design of chain drives and rope drives.
EFFECTS OF EDUCATION PROCESS: To introduce form connected speed reduction mechanisms and their kinematics. To give constructive characteristics and design methods of gear, worm, belt and chain drives. To improve knowledge and capability by projects. To give fundamentals of synthesis phase of design.	
LITERATURE: Shigley's Mechanical Engineering Design R.G. Budynas, J. K. Nisbett 8th SI Edition	
TEACHING METHODS: Theory	
ASSESSMENT METHODS: Mid-term Exam, Homeworks, Final Exam.	
LECTURER: Associate Prof. Dr . Murat Dilmeç	

FACULTY OF ENGINEERING – KTO KARATAY UNIVERSITY

Course Name: Control Engineering - Course Code: MAM 6204

FACULTY: Engineering	CLASS TYPE: Undergraduate – Must Course
NUMBER OF HOURS: 4 Lectures	ECTS TYPE: 4
SEMESTER: Spring	CLASS LEVEL: Third Year
LANGUAGE OF INSTRUCTION: Turkish	
PRELIMINARY REQUIREMENTS: No	
CONTENTS	Mathematical models of systems. State variable models: Signal-flow graph state models. Characteristics and performance of feedback control systems. The stability of linear feedback systems: The Routh-Hurwitz criterion. The root locus method. Frequency response methods: The Bode diagram. Stability in the frequency domain: Nyquist criterion.
EFFECTS OF EDUCATION PROCESS: This course aims to make the student should be able to do mathematical modelling of systems. Also this course aims to teach the control techniques and commenting on the system response.	
LITERATURE: Modern Control Systems, by Richard C. Dorf, Robert H. Bishop, 11th Edition, Prentice Hall, (2008)	
TEACHING METHODS: Theory	
ASSESSMENT METHODS: Mid-term Exam, Homeworks, Final Exam.	
LECTURER: Assistant Prof. Dr. İper FERHAT - iper.ferhat@karatay.edu.tr	

FACULTY OF ENGINEERING – KTO KARATAY UNIVERSITY

Course Name: Mechanical Engineering Laboratory - Course Code: MAM 8205

FACULTY: Engineering	CLASS TYPE: Undergraduate – Must Course
NUMBER OF HOURS: 4 Lectures	ECTS TYPE: 6
SEMESTER: Spring	CLASS LEVEL: Forth Year
LANGUAGE OF INSTRUCTION: Turkish	
PRELIMINARY REQUIREMENTS: No	
CONTENTS	Experimental methods in mechanical engineering. Experiment design principles. Realizing pre-designed experiments in groups concerning system dynamics and controls, heat transfer and thermodynamics, fluid mechanics, strength of materials, and machine dynamics, analyzing and presenting the results in written report. Realizing two additional experiments that are related with the division of students, Realizing an experiment design project, written and oral presentation of projects.
EFFECTS OF EDUCATION PROCESS: To provide students with theory and hands on laboratory experience. To teach students to design and analyze experiments for engineering systems. To provide students with practical illustration of concepts taught in the core classes.	
LITERATURE: "Engineering Design: A Materials and Processing Approach" by George Ellwood DIETER. Mc Graw Hill Publishing, 2000	
TEACHING METHODS: Theory + Laboratory	
ASSESSMENT METHODS: Mid-term Exam, Homeworks, Final Exam.	
LECTURER: Assistant Prof. Dr. Remzi ŞAHİN remz.,sahin@karatay.edu.tr	

FACULTY OF ENGINEERING – KTO KARATAY UNIVERSITY

Course Name: Graduation Project-II - Course Code: MAM 8203

FACULTY: Engineering	CLASS TYPE: Undergraduate – Must Course
NUMBER OF HOURS: 4 Lectures	ECTS TYPE: 4
SEMESTER: Spring	CLASS LEVEL: Forth Year
LANGUAGE OF INSTRUCTION: Turkish	
PRELIMINARY REQUIREMENTS: No	
CONTENTS	The complex system, process and apparatus containing engineering standards and realistic conditions / constraints are designed by using the acquired knowledge and skills in previous courses.
EFFECTS OF EDUCATION PROCESS: The aim of this course is to provide students with the basic subjects related to the mechanical engineering department.	
LITERATURE:	
TEACHING METHODS: Theory + Laboratory+workshop	
ASSESSMENT METHODS: Project and Presentation/Seminar.	
LECTURER: Assistant Prof. Dr. Remzi ŞAHİN – remzi.sahin@karatay.edu.tr	

FACULTY OF ENGINEERING – KTO KARATAY UNIVERSITY

Course Name: Experimental Stress Analysis - Course Code: MAM 6325

FACULTY: Engineering	CLASS TYPE: Undergraduate – Elective Course
NUMBER OF HOURS: 2 Lectures + 1 Laboratory	ECTS TYPE: 3
SEMESTER: Spring	CLASS LEVEL: Forth Year
LANGUAGE OF INSTRUCTION: Turkish	
PRELIMINARY REQUIREMENTS: No	
CONTENTS	Stress, Two-Dimensional Stress State at a Point, Principal Stress, Stress-Strain Relations, Strain and Displacement, Principal Strains and Mohr’s Strain Circle, Methods of Experimental Stress Analysis, Measurements Systems, Electrical resistance strain gages, The principle of measuring the electrical resistance strain gage, Strain Gage configurations and classification, Operations in preparation for strain gage bonding and measurement, Gage Factor and cross-sensitivity coefficient, Wheatstone bridge circuit.
EFFECTS OF EDUCATION PROCESS: To give basic information about experimental stress analysis , To make students learn about the methods of experimental stress analysis , To teach the Wheatstone bridge circuit and Strain gage application technique , To teach Stress Analysis with the data processing.	
LITERATURE: Strain Measurements and Stress Analysis, Akhtar S. Khan, Xinwei Wang, , Prentice Hall, 2001.	
TEACHING METHODS: Theory + Laboratory	
ASSESSMENT METHODS: Mid-term Exam, Lab., Final Exam.	
LECTURER: Prof. Dr. Mehmet ÇELİK – Mehmet.celik@karatay.edu.tr	

FACULTY OF ENGINEERING – KTO KARATAY UNIVERSITY

Course Name: Finite-Elements Analysis - Course Code: MAM 8341

FACULTY: Engineering	CLASS TYPE: Undergraduate – Elective Course
NUMBER OF HOURS: 3 Lectures	ECTS TYPE: 3
SEMESTER: Spring	CLASS LEVEL: Forth Year
LANGUAGE OF INSTRUCTION: Turkish	
PRELIMINARY REQUIREMENTS: No	
CONTENTS	Basic principles for FEM, shape functions, transformations in reference space, element mesh and selection, differential equations in FEM, elastic stability problems, 2D and 3D problems in structural engineering.
EFFECTS OF EDUCATION PROCESS: The purpose of this course is having an introduction to finite element method (FEM) to analyze engineering structures, present details about FEM, construct matrices in reference and time space, solve differential equations with FEM, provide solutions to basic elasticity problems with FEM and apply this method to 2D and 3D structural problems.	
LITERATURE: BATHE, Klaus Jürgen, Finite Element Procedures, Prentice Hall, 1037 page, 1995.	
TEACHING METHODS: Theory + workshop	
ASSESSMENT METHODS: Mid-term Exam, Homework, Final Exam.	
LECTURER: Prof. Dr. Mehmet ÇELİK – Mehmet.celik@karatay.edu.tr	

FACULTY OF ENGINEERING – KTO KARATAY UNIVERSITY

Course Name: Internal Combustion Engines - Course Code: MAM 8343

FACULTY: Engineering	CLASS TYPE: Undergraduate – Elective Course
NUMBER OF HOURS: 3 Lectures	ECTS TYPE: 3
SEMESTER: Spring	CLASS LEVEL: Forth Year
LANGUAGE OF INSTRUCTION: Turkish	
PRELIMINARY REQUIREMENTS: No	
CONTENTS	Thermodynamic cycle analysis of gas exchange, compression, expansion and combustion processes with dissociation. Mechanism of combustion. Fuel and additive characteristics. Real cycles. Performance characteristics. Brief analysis of the fuel metering and ignition systems, exhaust emissions and control systems, heat transfer, friction and lubrication systems.
EFFECTS OF EDUCATION PROCESS: At the end of this program students will be able to accomplish a thermodynamic cycle analysis of an internal combustion engine, able to apply such an analysis for calculating the cyclic gas forces to be used in a preliminary design, understand the physics of engine cyclic processes such as induction, compression, combustion, expansion and exhaust both descriptively and analytically,	
LITERATURE: Rogowski, A.R.; “Elements of Internal Combustion Engines”, Tata McGraw-Hill Publishing Co. Ltd., New Delhi, 1986.	
TEACHING METHODS: Theory	
ASSESSMENT METHODS: Mid-term Exam, Homeworks, Final Exam.	
LECTURER: Assistant Prof. Dr. Remzi ŞAHİN – remzi.sahin@karatay.edu.tr	

FACULTY OF ENGINEERING – KTO KARATAY UNIVERSITY

Course Name: Renewable Energy Sources - Course Code: MAM 8345

FACULTY: Engineering	CLASS TYPE: Undergraduate – Elective Course
NUMBER OF HOURS: 3 Lectures	ECTS TYPE: 3
SEMESTER: Spring	CLASS LEVEL: Forth Year
LANGUAGE OF INSTRUCTION: Turkish	
PRELIMINARY REQUIREMENTS: No	
CONTENTS	Renewable energy sources; Solar energy systems; Wind energy systems; Hydropower; Biomass; Wave energy; Geothermal energy, Hydrogen energy.
EFFECTS OF EDUCATION PROCESS: The objective of this course is to provide an overview of the most important renewable energy resources, and the state-of-the-art technologies harnessing these energy sources.	
LITERATURE: Boyle, G., Renewable Energy: Power for a Sustainable Future, Oxford University Press, 2004.	
TEACHING METHODS: Theory + Laboratory	
ASSESSMENT METHODS: Mid-term Exam, Homework, Final Exam.	
LECTURER: Assistant Prof. Dr. Remzi ŞAHİN - remzi.sahin@karatay.edu.tr	

Course Name: Turbomachinery - Course Code: MAM 8363

FACULTY: Engineering	CLASS TYPE: Undergraduate – Elective Course
NUMBER OF HOURS: 3 Lectures	ECTS TYPE: 3
SEMESTER: Spring	CLASS LEVEL: Forth Year
LANGUAGE OF INSTRUCTION: Turkish	
PRELIMINARY REQUIREMENTS: No	
CONTENTS	Fundamentals of compressible fluid flow in inertial and rotating coordinate systems. Energy exchange between fluid and rotor, loss mechanisms. 3D, 2D and 1D representation of flow in turbomachinery. Pitch-line design principles. Three dimensional flow and radial equilibrium. Internal aerodynamics of blades and axial flow cascades. Preliminary design principles for axial and radial flow compressors and turbines. Loss and deviation correlations.
EFFECTS OF EDUCATION PROCESS: At the end of this course, the student will apply basic thermo fluid concepts used for modeling compressible and incompressible fluid flow through turbomachines, appreciate the methodology used to approximate complex physical phenomena for modeling and design purposes, be able to appreciate the importance of empirical approaches at the preliminary design phase,	
LITERATURE: Fluid Mechanics and Thermodynamics of Turbomachinery, 3rd Ed., S.L. Dixon , Pergoman Press Ltd., 1978, Oxford.	
TEACHING METHODS: Theory	
ASSESSMENT METHODS: Mid-term Exam, Homework, Final Exam.	
LECTURER: Assistant Prof. Dr. İper FERHAT – iper.ferhat@karatay.edu.tr	