AĞRI İBRAHİM ÇEÇEN UNIVERSITY
VOCATIONAL SCHOOL
MECHATRONIC PROGRAM
ELECTRONIC AND OTOMATION DEPARTMENT

1.CLASS FALL SEMESTER

COMPULSORY COURSES

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MKT-101	Fundamentals of Mechatronics	1	3			
COURSE CONTENT	To give information about mechanical, electrical and basic engineering which are the basic subjects of physics. The student is able to comprehend the basic physical science rules that are at the basis of technology, solve various problems by using analytical approach method and gain the ability to apply this information in the field of technology. Lesson Content: Unit systems; Force, resultant force, moment; Balance, Work and Energy, conservation of energy, Electricity, electric charge, basic thermodynamics, basic fluid mechanics, Engines, Renewable Energy Sources					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MKT-103	Basic Physics	1	3			
COURSE CONTENT	It is aimed that the student will be able to comprehend basic physics rules, know the material and conduct experiments, to comprehend basic rules on materials, static, mechanics, fluids, wave propagation, electricity and magnetism, to identify variables in laboratory studies, to draw graphics and to develop analysis skills. . Lesson content: Material, static, dynamic, work, power, energy, wave motion, hydrostatic, electricity and magnetism.					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MKT-105	Direct Current Circuit Analysis	1	2			
COURSE CONTENT	In this lesson, it is aimed to teach the fundamentals of voltage and current, to apply safety principles, to choose the circuit components that will provide the desired electrical values, and to gain the competencies to establish the circuit and determine the electrical values in the current circuit. Lesson Content: Physical and electrical definitions of current, voltage, work, power, energy, and efficiency, basic circuit analysis techniques, methods and theories, current and voltage sources, as well as physical and electrical properties of capacitance and inductance and their transient response.					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS

MKT-107	Mechatronics Measurement Technique	1	2			
COURSE CONTENT	With this lesson, the student will be able to make all kinds of physical and electrical measurements. Lesson Content: Defining measurement, calibration, basic and electrical unit standards, basic principles of measurement, types and calculation of measurement errors, working principles of measuring instruments, learning and applying electrical and electronic sizes.					
COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
MAT101	Mathematics - I	1	2			
COURSE CONTENT	It is to produce a concrete and fast solution to the problems encountered in business life by using general mathematics knowledge, to make the best results by making evaluations from different perspectives at every decision and solution stage, to make the most profitable choice at the lowest cost and to disseminate the use of mathematical operations. Course Content: Numbers, Algebra Equations, Matrices, Trigonometry, Complex Numbers and Inequalities					
COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
TD101	Turkish Language-I	1	2			
COURSE CONTENT	The general aim of this course is; to make people comprehend what they listen to and read with subtlety and depth; To show that Turkish language is a rich, rooted and productive language; stimulating language love and consciousness; to gain reading pleasure and habit; Adopting the basic values of Turkish society; briefly, to develop individuals' thinking and communication skills. Course Content: Definition of language. Language and communication, language-thought-nation-literature-culture relationship. Types of language. Languages on earth. The place of Turkish among the world languages. Historical development of Turkish written language. Turkish status and spreading areas. Sound, syllable, word, sentence and semantic knowledge of Turkish.					
COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
YD101	Foreign Language-I	1	2			
COURSE CONTENT	The aim of foreign language teaching is to teach the students the basic rules of the foreign language, to improve their foreign language vocabulary, to understand that they are reading in a foreign language and to express themselves orally or in writing. Course content: Modals, tenses, vocabulary					
COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			

ATA101	Atatürk's Principles and Revolution History-I	1	2			
COURSE CONTENT	The general aim of this course is; In line with Ataturk's principles and reforms, his students are bound to Atatürk nationalism; It has adopted the national, moral, spiritual and cultural values of the Turkish Nation and raises generations open to universal and contemporary developments. Course content: * Basic Concepts, * Causes of Collapse of the Ottoman State, * Turkish Renewal Movements, * World War I, * Turkish National Struggle.					

COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
BIL101	Computer-I	1	2			
COURSE CONTENT	Basic computer and computer equipment knowledge					

Elective Courses of 1st Semester (*)

COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
MKT-105	Industrial Controls and Engines	1	2			
COURSE CONTENT	This is a course that gives information about industrial working principles and circuit application. With this course, the student; Industrial elements required for the technical service personnel will be introduced and skills to develop circuits that can be controlled with a computer will be gained. Course content: This course includes 1. Relay 2. Semiconductor Elements 3. Sensors and Transducers 4. DA - AD Converters 5. Motors					

COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
MKT-107	Technical Drawing	1	2			
COURSE CONTENT	To be able to comprehend basic machine picture drawings and read required for machine technicians. Course Content: To be able to make geometric drawings about angles, lines, arcs and polygons. To be able to comprehend the types of projection and projection, the methods of appearance, drawing special and auxiliary views. To be able to dimension views and perspectives. To be able to comprehend the need to take a section and appropriate section planes. To be able to comprehend perspective and make perspective drawings. Invisible details; Dimensioning: Standard dimensioning, Standard symbols used for treated surfaces; Sections; Perspective Drawings. To understand the importance of size and shape and location tolerances. To be able to define standards and to determine surface quality.					

COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**

SS-101	Communication	1	2			
COURSE CONTENT	Verbal Communication, Written Communication, Nonverbal Communication, Formal (Formal) Communication, Non-Formal (Informal) Communication, Non-Organizational Communication					
COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
SS-103	Occupational Health and Safety	1	2			
COURSE CONTENT	This course, Worker Health and Historical Development of Safety Health and Business Purpose and Importance of Safety Occupational Health and Safety Concepts in the field in Turkey Occupational Health and Overview of Work Safety Occupational Accidents Occupational Diseases to be Taken Against Occupational Accidents and Occupational Diseases Prevention and Occupational Accidents and It covers the costs of Occupational Diseases.					
COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
SS-105	Life Skills and Social Activity	1	2			
COURSE CONTENT	This course covers self-realization, self-knowledge, communication, factors that hinder communication, social skills, saying no, problem solving, self-disclosure, anger, stress, excitement, anxiety and fear, etc. coping with challenging emotions, healthy decision making, public speaking, self-concept, career and career planning, cv preparation, productive study, aggressive and entrepreneurial behavior development and emotional intelligence.					
COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
SS-107	University and Career Success	1	2			
COURSE CONTENT	In this course, career management and conceptual framework, career management process, tools and practices that form the organizational dimension of career development, career cycles of employees, career problems and solutions will be discussed.					

1.CLASS SPRING SEMESTER 2. SEMESTER

1.GLASS COMPULSORY COURSES

COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
MKT-102	Computer Aided Design-I	2	3			
COURSE CONTENT	The aim of this course is to enable students to produce technical drawing and professional drawing drawings in computer environment with AutoCAD Program, one of the developing project technologies. In the course, it is aimed to produce sample and homework drawings by producing coordinate display methods, object interlocking methods, drawing, editing, writing, dimensioning, layer management, two-dimensional drawing commands. Course Content: AutoCAD display components, two- and three-dimensional coordinate definition methods, object clamping methods, drawing commands, editing commands, writing, drawing dimensioning, layer management, producing image output by making two-dimensional and isometric perspective project drawings.					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MKT-104	Basic Manufacturing Processes	2	3			
COURSE CONTENT	To develop the student's skills on basic technological processes required for machining and machining without machining, and to comprehend basic measurement and control and manufacturing processes Course Content: Understands the features, principles, duties and information processing of the machinery technician profession; performs skill operations; wins attitudes and habits. To be able to comprehend the measurement principles of calipers and protractors and to be able to measure them. Ability to gain knowledge, skills and habits required for basic turning operations in universal turning lathes. To be able to sharpen various free hand tools and cutting tools in grinding machines. To understand the types and properties of joints that cannot be removed. To be able to select welding machine types, welding accessories, welding gases and electrodes, and perform basic welding processes.					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MKT-106	Alternating Current Circuit Analysis	2	2			
COURSE CONTENT	In this course, students learn the sizes and basic alternating current circuit elements used in alternating current, analyze one and three phase alternating current circuits, analyze the circuit with complex numbers, calculate and measure active, reactive and apparent power in one and three phase alternating current systems, alternating current. it is aimed to analyze magnetic circuits and make experimental applications. Course Content: Alternative current sizes, basic alternating current circuit elements, one and three phase alternating current circuits, circuit analysis with complex numbers, active, reactive and apparent power calculations and measurements in alternating current systems, alternating current magnetic circuits.					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MKT-108	Basic Electronics	2	2			
COURSE CONTENT	In this course, it is aimed to introduce students to the production and working properties and electrical characteristics of various semiconductor electronic devices. Diodes, rectifiers, filters, voltage regulators, transistors, FETs, MOSFETs. Transistor polarization techniques, amplifier classes, operational amplifiers, addition, derivative, integral, comparison circuits, oscillators, linear regulators, switched regulators.					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MAT102	Mathematics - II	2	2			
COURSE CONTENT	Functions, trigonometry, vectors, matrices					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS

TD102	Turkish Language-II	2				
COURSE CONTENT	The general aim of this course is; to make people comprehend what they listen to and read with subtlety and depth; To show that Turkish language is a rich, rooted and productive language; stimulating language love and consciousness; to gain reading pleasure and habit; Adopting the basic values of Turkish society; briefly, to develop individuals' thinking and communication skills. Course Content: The concept of expression. Ways to improve thought. The forms of expression. General features of reading, listening, speaking and writing. Oral expression and types of verbal expression. Written expression and types of written expression.					

COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
YD102	Foreign Language-II	2	2			
COURSE CONTENT	Bring students to A2 level in line with the CEFR (Common European Frame). Course content: Vocabulary, Grammar, Reading, Listening, Writing.					

COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
ATA102	Atatürk's Principles and Revolution History-II	2	2			
COURSE CONTENT	The general aim of this course is; In line with Ataturk's principles and reforms, his students are bound to Atatürk nationalism; It has adopted the national, moral, spiritual and cultural values of the Turkish Nation and raises generations open to universal and contemporary developments. Course Content: * Atatürk's reforms, Atatürk Period Turkish Foreign Policy * * * Principles of Ataturk in Turkey and the world political developments after 1938					

COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
BIL102	Computer-II	2	2			
COURSE CONTENT	Office software					

2nd Semester Elective Courses (**)

COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
MKT-110	Fault Finding	2				

COURSE CONTENT	It is a learning material that provides information and skills about using fault finding methods, making fault detection, finding the defective unit or element in electrical electronic circuits and troubleshooting. Course content: Definition of defect and its importance, Fault finding methods, Procedures used for troubleshooting, Finding the defective unit or element, reading the catalog

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MAT102	Mathematics - II	2	2			
COURSE CONTENT	Functions, trigonometry, vectors, matrices					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MKT-112	Basic Statistics	2	2			
COURSE CONTENT	Basic concepts, variables, measurement and scales, descriptive statistics, normal distribution, hypothesis, hypothesis testing, correlation					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MKT-114	Electronic Control Circuits	2	2			
COURSE CONTENT	Course content : Basic industrial systems, Open and Closed loop control systems, Digital and Analog control systems, Computer aided control systems, Motor driver circuits, Industrial power supplies. In this course, the issues related to the conceptual framework, approaches, functions, process, entrepreneurship culture, local and international context of entrepreneurship and entrepreneurship ethics will be discussed.					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
SS-104	Quality Assurance and Standards	2	2			
COURSE CONTENT	Historical development of standardization, related institutions and works, quality, quality control, total quality management, problem solving methods, new quality tools, quality assurance systems and standards by profession					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
SS- 106	Environmental Protection	2	2			
COURSE CONTENT	Environmental Regulation Information, Risk Analysis, Waste Storage, Personal Protection Measures, International Health and Safety Alerts, Occupational Health and Safety Regulation					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
SS-106	Professional Ethics	2	2			
COURSE CONTENT	Examine the concepts of ethics and morality, Examine the ethical systems, Examine the factors that play a role in the formation of morality, Examine the ethics of profession, Examine the consequences of unethical behavior in professional corruption and professional life, Examine the concept of social responsibility					

3rd SEMESTER
2.CLASS FALL SEMESTER
COMPULSORY COURSES

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MKT-201	Bilgisayar Destekli Tasarım-II	3	3			
COURSE CONTENT	The aim of this course is to enable students to produce technical drawing and professional drawing drawings in computer environment with Solidworks Program, one of the developing project technologies. In the course, it is aimed to produce sample and homework drawings by producing coordinate display methods, object interlocking methods, drawing, editing, writing, dimensioning, layer management, two-dimensional drawing commands. Solidworks display components, two- and three-dimensional coordinate definition methods, object clamping methods, drawing commands, editing commands, writing, drawing dimensioning, layer management, producing image output by making two-dimensional and three-dimensional project drawings, creating technical drawings from the drawings, assembling and simple animation					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MKT-203	Material Technology	3	3			

COURSE CONTENT	The aim of this course is to recognize the types of materials used in the industrial field, to comprehend the basic properties, to choose the most suitable materials for the usage areas and design. To be able to classify materials, to know their internal structure, to interpret Fe-C balance diagram, to have knowledge about steel hardening and standards, to have knowledge about hardness measurement, pull, compression, bacterial impact, torsion, fatigue tests which are commonly used in determining the mechanical properties of materials. To be able to do these experiments, to interpret the results. To know the difference between cold and hot process. To be able to comprehend material shaping methods. To learn the examination of macro and micro structures of metals, to have knowledge about plastics, composites and corrosion. To be able to recognize and classify the materials used in the industry. To be able to comprehend the basic information about the atomic structures of the materials and their arrangement. To be able to interpret by knowing the alloys made by iron and carbon. To be able to recognize non-ferrous metals and alloys, which are widely used in industrial areas, and to choose according to their usage areas To be able to recognize steel standards. Categorizes destructive examinations and explains that mechanical properties are determined by these experiments. Defines and classifies the Hardness Testing. It performs tensile testing with standard samples and calculates% elongation and% shrinkage. Explains and applies plastic molding (bakelite) process. To comprehend the general properties of composite materials. To be able to comprehend the formation of corrosion and the damages caused by preventing methods on the material. Knows the methods of corrosion protection, classifies protectors. To classify machine elements according to their properties, calculate the strength of machine elements and select the appropriate element.

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MKT-205	Digital Electronics	3	2			
COURSE CONTENT	The aim of Digital Electronics course is; to recognize number systems and codes, to understand the operation of logic circuits, to gain the ability to design digital circuits by using combinational logic circuit elements. Number systems and codes used in logic circuits. Transformations between number bases. Operation of logic circuits. Relationship of Boolean expressions with logic circuits and simplifying expressions using Karnaugh maps. Electrical properties of circuit elements used in logic circuits. Design of digital circuits using combinational circuit elements such as adder, comparator, decoder, encoder, data selector and multiplexers.					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MKT-207	Mechanisms	3				
COURSE CONTENT	In this course, the machine elements that students will encounter in practice; It is aimed to know their duties, properties, types, application areas, advantages and disadvantages, and to gain the ability to make new designs as well as to comprehend the general principles of basic mechanism designs. Technical System, Machine, Machine Construction, Machine Elements, Stresses (Theoretical), Tolerance, Surface Quality, Detachable Joints, Non-Disassembling Joints, Gear Wheels, Chain Mechanisms, Belt Pulley Assemblies, Supporting and Transporting Elements, Spooling Elements, Contact Elements, Machine, Mechanism Technique, Planar Mechanisms, Element Pairs, Kinematic Chains, Degree of Freedom, Limbs And Joints. Joint Types in Mechanisms ,, Mechanism Types, Grashof Theorem, Kinematics of Mechanisms, Motion					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
			3			

MKT-209	Engineering Science	3				
COURSE CONTENT	Course Content: Circular Motion, Potential and kinetic energy, Simple Machines, Fluid Fluids, Heat and State change, Expansion and contraction of objects with heat effect, temperature measuring instruments, gas fluids					

Elective Courses of 3rd Semester (***)

COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
MKT-213	Electric Motors and Drivers	3	3			
COURSE CONTENT	Recognition of electric motors used in industrial applications and various devices used in daily life. Learning the structures, operation and use of electronic driver circuits used in the control of these engines. Course Content: 1. Definition and scope of Motor Drives, 2. Repetition of types, structures and control principles of electrical machines, 3. Recall of basic circuit elements and basic circuit connections used in power electronics 4. Current source PWM inverter (CSI) structure, operation and use in motor control 5. Application of forward control methods in rectifiers and use in motor control, 6. Application of advanced control methods in AC choppers and use in motor control, 7. Types, structures and classes of DC frequency inverters (DFÇ), 8. Types of DC choppers , their structures and motor control, 9. Application of advanced control methods in PWM inverters and their use in motor control, 10. Static switch and semiconductor relay structures and their use in motor control, 11. Basic principles, structures, non-feedback and feedback applications of direct current motor drives, 12 Alternating current motor flock Principles, structures, uses of feedback and feedback, 13. Basic principles of servo motor drives, their structures and applications in motion control, 14. Motor drive circuit applications.					

COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
MKT-215	Electromechanical Control Systems	3	3			
COURSE CONTENT	With this course, the student will be able to assemble the control elements and operate one-phase and three-phase asynchronous motors, change direction of rotation, and brake using the control circuit elements. Course Content: 1 Control Elements and Protection Relays 2 Three-Phase Asynchronous Motors (UFAM) Cut and Continuous Operation 3 (UFAM) from Two Different Locations (Remote) 4 (UFAM) Reverse Direction Change and Resistance 5 Resistance to the Winding Asynchronous Motors 6 (UFAM) Starting with Reactance and Auto Transformer 7 (UFAM) Star Triangular Starting 8 (UFAM) Braking 9 Control in double-speed motors 10 One-Phase Asynchronous Motor Control Circuits 11 Direction of Direction of Directional Motors in Direct Current Motors 12 changing direction of rotation 14 Braking on DC motors					

COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
			3			

MKT-217	Sensors and Transducers	3				
COURSE CONTENT	In this course, it is aimed to transfer information on the use of sensors that detect physical effects and transform them into data that can be used in electrical circuits and actuators that convert electrical signs into physical effects. Temperature, humidity, velocity, acceleration, location, proximity, pressure, flow, level, color, radiation, image sensors, types and working principles are examined. Features to be considered in the selection of sensors are explained.					
COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
MKT-219	Flexible Production Systems	3	3			
COURSE CONTENT	Flexibility concept, advantages and disadvantages of modern production technologies					
COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
MKT-221	Bilgisayar Destekli Elektronik Devre Tasarımı	3	3			
COURSE CONTENT	The aim of this course is; To make circuit design, simulation and circuit analysis operations at the basic level by using electronic CAD programs. CAD / CAM systems, Electronic design automation programs (EDA), virtual devices and features, signal and power sources, animation-based simulation project preparation, graphic-based simulation project preparation, electronic circuit analysis, transfer to PCB module.					

4. SEMESTER
2.CLASS SPRING SEMESTER
COMPULSORY COURSES

COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
MKT-202	Computer Programming	4	4			
COURSE CONTENT	Objectives of the Programming Fundamentals Course; to comprehend the solution processes of a problem, to create process steps and flow charts and to transform them into code of a programming language. Course content: Algorithm, Flow Diagram, Programming Tools, Variables and Constant, Input-Output Operations, Operators, Decision Structures, Loop Controls, Loop Controls, One Dimensional Arrays, Multidimensional Arrays, Nonvalue Subprograms, Value Return Subprograms, Value Return Subprograms , Sequential Files, Random Access Files					
COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
MKT-204	Unconventional Production Methods	4	3			

COURSE CONTENT	The aim of this course is to be able to bring the machines, systems and techniques that produce with advanced technology necessary for manufacturing technicians. To be able to comprehend how production, production, production time and processes are more efficient with new technologies. Understand how and where different manufacturing capabilities can be used Course Content: To be able to define the basic properties of Electro Erosion method, which is one of the non-traditional production methods used in the industry. Understands the basic features, advantages and negativities of electro erosion machining. Understands the basic properties of the types of electro erosion, drilling, cutting and grinding processes. Chip Removal with Chemical Abrasion (ECM) Method. To be able to define the basic properties of the Chemical Abrasion method which is one of the non-traditional production methods used in the industry. Chip Removal with LASER Method. To be able to define the types and basic properties of LASER used in industry and production. Understands the basic features, advantages and negatives of processing with LASER. Industry also defines the basic features of cutting machining with LASER. To be able to comprehend the basic functions of advanced welding methods used in industry and production. Advanced welding methods are classified. Understands the basic functions of the applications of gas sources. Understands the basic functions of submerged arc welding applications.

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MKT-206	Hydraulic Pneumatic	4	3			
COURSE CONTENT	The aim of the course; to provide students with the knowledge and skills related to "hydraulic and pneumatic systems" they will need in their professional life The basic principles of hydraulics, hydraulic system elements and symbols, hydraulic fluids, hydraulic pipes and hoses, tanks and filters, pumps, directional control valves, pressure control valves, flow control valves, hydraulic motors and spools, hydraulic cylinders, connection types, circuit diagrams, Comparison of hydraulic and pneumatic systems, definition and properties of pneumatics, pneumatic elements and symbols, basic principles, compressors, preparation of compressed air, pneumatic control circuits and application areas					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MKT-208	programmable controllers	4	3			
COURSE CONTENT	To be able to understand the basic concepts of Programmable Logic Controllers (PLC). To develop an opinion about the types of interface modules required in the industry. Learning how to control a process and programming methods with PLC. To be able to apply error finding and elimination methods by loading a written program to PLC. Course Content: Basic concepts of Programmable Logic Controllers (PLC), introducing basic components such as microprocessor, input / output interfaces, power supply, memory, programming unit that make up the PLC. To teach how to control a process with PLC and programming methods. In this context, writing programs related to scenarios parallel to industrial applications in order to improve student's program writing skills. Installing a program written in PLC and applying fault finding and troubleshooting methods.					

4th Semester Elective Courses (****)

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MKT-210	Industrial Robots	4	3			
COURSE CONTENT	Robot concept, application areas of industrial robots, operation and mechanism of industrial robots, classification of robots, structural shapes of robots, system elements of robots, programming of robots.					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MKT-212	Mechatronic System Design	4	3			
COURSE CONTENT	To complete the studies on the selected Project topics, to make their tests. Course Content: Starting the design, getting to know the equipment required for the design, modeling the design, Preparing the printed circuit, Assembling and testing of the circuit and the design.					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MKT-214	Process Control	4	3			
COURSE CONTENT	The aim of the course is to understand the importance of measurement in process control, to be able to use and adjust the instruments used in industry. Definitions of the basic concepts of measurement used in industry. Usage areas of measuring instruments in industry. Explanation of process and process control concepts and comparative analysis of process control modes. Types of position sensors, principles of operation. Pressure measurements and working principles of measuring devices. Recognition of vacuum measuring devices and transmitter, I / P converter settings. Stress indicator and working principles of load cell. Measuring weight, force and pressure, etc. load cell application areas. Basic concepts of measuring speed, vibration and acceleration. Examination of the technical properties for the selection of a sensor suitable for the criteria.					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MKT-216	Computerized Data Collection and Control Systems	4	3			
COURSE CONTENT	The aim of the course is to make students acquire basic knowledge about computerized data collection and control. Comprehend data collection and control processes and SCADA applications with computer. To be able to recognize, understand and use computerized control systems. Define computerized data collection and control. Explains how to implement SCADA system with ports and cards used in computers. Explains how to make SCADA program with package program. To gain the skills of using control systems used for computerized data collection.					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
MKT-218	Industrial Automation Systems	4	3			
COURSE CONTENT	Definition and content of automation, types of automation, equipment used in automation					

COURSE CODE	COURSE TITLE	TERM / SEMESTER	COURSE WEEKLY HOURS			
			3			

MKT-220	Welding Technology	4				
COURSE CONTENT	It is aimed to gain melting based welding methods and welding competencies under protective atmosphere. Course Content: To understand the advantages and disadvantages of these types of welding by knowing the types of welding used in the industry such as Gas melting welding, Electric arc welding, MIG / MAG welding, TIG welding. In addition, information is provided about which stage of production and how to use it. In addition, it includes the welding place, shape, and the operations to be performed before and after the welding zone. It also learns the control of the source.					

COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
MKT-222	Microcontrollers and Microprocessors	4	3			
COURSE CONTENT	The aim of this course is to teach students basic information about microprocessors and microcontrollers. Although program writing in assembly language is the main subject of this course, this course will be more hardware-oriented. Students will be given the basic information necessary to install the microcontroller system. Experiments will be carried out in laboratory training sets using the microcontroller determined by the instructor. In this course, students will be given theoretical and practical information about microprocessor / microcontroller based systems. Applications Program development in 8051 microcontroller, loading and running program to microcontroller and debugging will be done. During the course, the structure, operation, peripherals, hardware and software combination, cutting control system, use of timers, communication with analog units and system design will be explained.					

COURSE CODE	**COURSE TITLE**	**TERM / SEMESTER**	**COURSE WEEKLY HOURS**			
MKT-223	Robot Technique	4	3			
COURSE CONTENT	Basic concepts of robotics and kinematics and dynamics of the robot arm information about the basics of analysis and robot control give. Course content: Introduction, Classification of Robots, Robot Arm Kinematics, Jacobian, Robot Arm Dynamics, Robot Kinematics and Mathematica of Dynamics Calculation in the Program, Trajectory Planning, Robot Sensors, Robot Control, Realization of Robot Control in MATLAB					