

MUNZUR UNIVERSITY
TUNCELİ VOCATIONAL SCHOOL
DEPARTMENT of MACHINE and METAL TECHNOLOGIES
MACHINERY PROGRAM FOUR-SEMESTER TEACHING PLAN

1st Year - I. Semester (Fall)

Course Code	Courses	Weekly Course Hours (Total)	Theory	App.	Total Credit	ECTS
AIT101	Atatürk's Principles and Revolution History I	2	2	0	2	2
TDI103	Turkish Language I	2	2	0	2	2
MAT105	Mathematics I	2	2	0	2	2
YDI107	Foreign Language I	2	2	0	2	4
FIZ109	PHYSICS	3	3	0	3	4
TII111	BASIC MANUFACTURING PROCESSES	4	4	0	4	4
MTR113	TECHNICAL DRAWING	4	2	2	3	5
MAL115	MATERIALS TECHNOLOGY I	3	3	0	3	4
MEL117	MACHINE ELEMENTS	3	3	0	3	3
TOTAL		25	23	2	24	30

1st Year - II. Semester (Spring)

Course Code	Courses	Weekly Course Hours (Total)	Theory	App.	Total Credit	ECTS
AIT102	Atatürk's Principles and Revolution History II	2	2	0	2	2
TDI104	Turkish Language II	2	2	0	2	2
MAT106	Mathematics II	2	2	0	2	2
YDI108	Foreign Language II	2	2	0	2	4
MAL110	MATERIALS TECHNOLOGY II	3	3	0	3	4
MII112	MANUFACTURING PROCESSES I	3	3	0	3	3
MMR114	MACHINE OCCUPATIONAL DRAWING	4	2	2	3	4
MTM116	STRENGTH OF MATERIALS	3	3	0	3	4
MBT118	COMPUTER AIDED DRAWING	4	2	2	3	5
TOTAL		25	21	4	23	30

2nd Year - III. Semester (Fall)

Course Code	Courses	Weekly Course Hours (Total)	Theory	App.	Total Credit	ECTS
MII201	MANUFACTURING PROCESSES II	3	3	0	3	4
BDÜ203	COMPUTER AIDED MANUFACTURING I	4	2	2	3	5
MTT205	CNC LATHE TECHNOLOGY	4	2	2	3	5
MKT207	WELDING TECHNOLOGY	4	2	2	3	5
MMB209	ENGINEERING SCIENCE I	3	3	0	3	4
MAY211	UNCONVENTIONAL MANUFACTURING METHODS	3	3	0	3	3
MIS213	HEATING SYSTEMS	2	2	0	2	2
STJ211	INTERNSHIP	(0)	(0)	(0)	(0)	3
Technical Elective Courses						
TMÜ215	MANUFACTURING MANAGEMENT	2	2	0	2	2
TME217	PROFESSIONAL ETHICS	2	2	0	2	2
TMI219	HEAT TREATMENT TECHNOLOGIES	2	2	0	2	2
TOTAL		25	21	4	23	30

(Note: 1 course with 2 credits must be selected from the Technical Elective Courses.)

2nd Year - IV. Semester (Spring)

Course Code	Courses	Weekly Course Hours (Total)	Theory	App.	Total Credit	ECTS
BDÜ204	COMPUTER AIDED MANUFACTURING II	4	2	2	3	5
MCF206	CNC MILLING TECHNOLOGY	4	2	2	3	5
MMB208	ENGINEERING SCIENCE II	3	3	0	3	4
MTM210	REVERSE ENGINEERING AND QUALITY CONTROL	3	3	0	3	4
MHP212	HYDRAULICS-PNEUMATICS	3	3	0	3	3
MCE214	CNC ELECTRO EROSION	3	3	0	3	4
MİS216	AIR CONDITIONING AND REFRIGERATION SYSTEMS	3	3	0	3	3
Technical Elective Courses						
TMİ218	JIGS AND FIXTURES	2	2	0	2	2
TMY220	OCCUPATIONAL FOREIGN LANGUAGE	2	2	0	2	2
TFT222	FACTORY INSTALLATION DRAWINGS	2	2	0	2	2
TOTAL		25	17	8	23	30

(Note: 1 course with 2 credits must be selected from the Technical Elective Courses.)

Machinery and Metal Technologies Department

Machinery Program Course Contents

I. SEMESTER COURSE CONTENTS

Course Code	Course Name	Course Content
TDI103	Turkish Language I	To comprehend that language is the product of human intellect, to grasp the structural features and richness of the Turkish language, to understand the ways to be successful in written expression, and to develop research, reading, and informing abilities.
AIIT101	Atatürk's Principles and Revolution History I	The purpose of studying Atatürk's principles and History of Revolution and the concept of revolution, an overview of the causes leading to the collapse of the Ottoman Empire and the Turkish Revolution; the fragmentation of the Ottoman Empire, the Armistice of Mudros, the situation of the country against the occupations, and Mustafa Kemal Pasha's arrival in Samsun, the first step for the national struggle, organization through congresses, Kuva-yi Milliye and Misak-ı Milli, the opening of the Turkish Grand National Assembly, the Assembly taking over the management of the War of Independence, the national struggle until the Sakarya Victory, the Battle of Sakarya and the Great... (continues).
YDI107	Foreign Language I	Introduction to English, introductions, daily life, adjectives, prepositions of place and direction, numbers, simple tense sentences, basic English rules, general English knowledge to form the basis for vocational foreign language proficiencies, grammar topics (Tenses, Passive Voice, Modals, Conditionals), basic speaking skills.
MAT105	Mathematics I	Basic mathematical operations, equations, inequalities, functions, calculus topics (limit, derivative, integral), trigonometry, matrices, determinants, and linear equation systems.
FIZ109	PHYSICS	Introduction of basic physical concepts and units, comprehension of calculations, physical unit systems, vector calculations, calculations of velocity, work, energy, power, Newton's laws of motion, fundamental electrical concepts, simple electric circuits, and magnetism.
TII111	BASIC MANUFACTURING PROCESSES	The concept of manufacturing, manufacturing methods, machining, turning, milling, grinding, cutting, drilling operations, casting, forging, welding, and sheet metal forming.
MTR113	TECHNICAL DRAWING	Definition and importance of technical drawing, drawing tools, basic geometric constructions, projection methods, sectioning, dimensioning, and perspective drawing.
MAL115	MATERIALS TECHNOLOGY I	Concepts of materials science and engineering, atomic structure and interatomic bonds, crystal structures, crystal imperfections, diffusion, mechanical properties, alloys and phase diagrams, iron-carbon equilibrium diagram.
MEL117	MACHINE ELEMENTS	Definition and classification of machine elements, standard machine elements, fasteners (bolts, nuts, pins, rivets, keys), shafts, axles, bearings, couplings, clutches, and brakes.

II. SEMESTER COURSE CONTENTS

Course Code	Course Name	Course Content
TDI104	Turkish Language II	Punctuation and spelling rules, written expression types, oral expression, structural errors in expression, rules for correct and eloquent speech.
AIIT102	Atatürk's Principles and Revolution History II	Stages of the Turkish Revolution, revolutions in political, legal, educational, cultural, social, and economic fields, Atatürk's Principles (Republicanism, Nationalism, Populism, Secularism, Statism, Revolutionism), Turkish foreign policy, and Turkey after Atatürk.
YDI108	Foreign Language II	General English knowledge that will form the basis for vocational foreign language proficiencies, developing grammar skills (Tenses, Passive Voice, Modals, Conditionals), reading, writing, listening, and speaking skills.
MAT106	Mathematics II	Differential equations, Laplace transforms, Fourier series, vector analysis, and functions of multiple variables.
MAL110	MATERIALS TECHNOLOGY II	Non-metal materials (polymers, ceramics, composites), destructive and non-destructive testing of materials, corrosion, and material selection.
MII112	MANUFACTURING PROCESSES I	Basic machining methods such as turning, milling, drilling, grinding, planing, and shaping, cutting tools, cutting speeds, and feed rates.
MMR114	MACHINE OCCUPATIONAL DRAWING	Drawing detail drawings of machine parts, assembly drawings, indication of tolerance and surface finish marks, and representation of standard machine elements in drawings.
MTM116	STRENGTH OF MATERIALS	Concepts of stress and strain, normal and shear stresses, simple tension and compression, buckling, bending, shear, moment and shear force diagrams, and combined stresses.
MBT118	COMPUTER AIDED DRAWING	Basic commands and applications of two-dimensional (2D) and three-dimensional (3D) drawing software (AutoCAD/SolidWorks), solid modeling, assembly, and technical drawing creation.

III. SEMESTER COURSE CONTENTS

Course Code	Course Name	Course Content
MII201	MANUFACTURING PROCESSES II	Non-machining manufacturing methods such as casting, forging, rolling, extrusion, powder metallurgy, and sheet metal forming.
BDÜ203	COMPUTER AIDED MANUFACTURING I	Basic concepts of CNC machines, G and M codes, part programming, tool path generation, and simulation.
MTT205	CNC LATHE TECHNOLOGY	Structure of CNC turning machines, turning programming, tool selection, cutting parameters, and turning applications.
MKT207	WELDING TECHNOLOGY	Welding methods (Arc, TIG, MIG/MAG), welding electrodes and wires, weld seams, welding defects, and inspections.
MMB209	ENGINEERING SCIENCE I	Laws of thermodynamics, heat transfer mechanisms (conduction, convection, radiation), basics of fluid mechanics, pressure, and buoyancy.
MAY211	UNCONVENTIONAL MANUFACTURING METHODS	Modern and unconventional manufacturing methods such as EDM, Laser machining, water jet cutting, and electrochemical machining.
MIS213	HEATING SYSTEMS	Heating systems types (central, individual), heat pumps, boilers, radiators, thermal insulation, and energy efficiency.
TMÜ215	MANUFACTURING MANAGEMENT (Elective)	Fundamental concepts of production systems, site selection, capacity planning, production process planning, facility layout, inventory control and management techniques, Material Requirements Planning (MRP), Total Quality Management (TQM), and methods for improving production efficiency are examined.
TME217	PROFESSIONAL ETHICS (Elective)	The concepts of ethics, morality, professionalism, and professional ethics are introduced. The basic ethical principles, professional responsibilities, honesty, confidentiality, and ways to avoid unethical conduct in professional decisions for personnel working in the field of machinery technologies are discussed.
TMI219	HEAT TREATMENT TECHNOLOGIES (Elective)	Heat treatment types applied to change the mechanical properties of materials (especially steels) (annealing, normalizing, hardening/quenching, and tempering) are examined in detail. Information is provided on heat treatment furnaces, control methods, and surface hardening techniques (carburizing, nitriding, etc.).

IV. SEMESTER COURSE CONTENTS

Course Code	Course Name	Course Content
BDÜ204	COMPUTER AIDED MANUFACTURING II	Computer Aided Manufacturing (CAM) software, 3-axis milling, and complex part programming.
MCF206	CNC MILLING TECHNOLOGY	Structure of CNC milling machines, milling programming, tool selection, cutting parameters, and milling applications.
MMB208	ENGINEERING SCIENCE II	Basic principles of hydraulic and pneumatic systems, hydraulic pumps, valves, cylinders, and pneumatic circuits.
MTM210	REVERSE ENGINEERING AND QUALITY CONTROL	Concept of reverse engineering, 3D scanning and measuring techniques, quality control methods, measuring and evaluation devices, and ISO 9001.
MHP212	HYDRAULICS-PNEUMATICS	Fluid power systems, hydraulic and pneumatic circuit elements, basic circuit diagrams, and application areas.
MCE214	CNC ELECTRO EROSION	Operating principle of CNC Erosion machines, wire and sinker erosion, programming, erosion applications, and dielectric fluids.
MİS216	AIR CONDITIONING AND REFRIGERATION SYSTEMS	Air conditioning systems, heat pumps and their application areas, heat recovery systems, combined heat and power systems, selection of air conditioning equipment, and design of air conditioning systems.
TMİ218	JIGS AND FIXTURES (Elective)	Basic design principles of sheet metal forming (cutting, punching, bending) and clamping (fixture) dies/jigs are taught. Information is given on the functions of die/jig elements, materials used in die/jig making, die/jig drawing, and maintenance.
TMY220	OCCUPATIONAL FOREIGN LANGUAGE (Elective)	Technical terms, standards, and drawing language specific to the field of machinery and manufacturing technologies are introduced with their English equivalents. Students gain skills in reading, understanding, and simple professional correspondence of vocational documents (technical specifications, catalogs, user manuals).
TFT222	FACTORY INSTALLATION DRAWINGS (Elective)	The preparation of layout plans for industrial facilities such as factories, workshops, and manufacturing plants, and the drawing standards for various installation systems (ventilation, water, steam, compressed air, electricity) are examined. Reading and drawing of installation schemes and piping diagrams are taught.