1st Semester

Code	Course Title	T	A	C	ECTS	Content
221611003	Turkish Language I	2	0	2	2	Definition and features of the language, historical development of the Turkish language, phonetics and morphology, and parts of speech in Turkish with respect to their meaning and functions.
221611005	English I	2	0	2	2	Basic English grammar, vocabulary, reading comprehension, oral expression, and writing skills required for students in their professional and post-graduate life.
221611101	Mathematics I	4	0	4	6	Numbers, Polynomials, and Equations, Matrices and Determinants, Trigonometry, Vectors, Line and Circle Equations.
221611103	Chemistry	2	1	2.5	4	Matter; atoms and atomic theory; chemical compounds; aqueous solution reactions; gases; thermochemistry; electron configuration of the atom.
221611104	Linear Algebra	3	0	3	4	Matrices and elementary row operations, Application of matrices to linear systems of equations, Algebraic operations with matrices, Special types of matrices, Elementary Matrices, Elementary Column operations, Equivalent matrices, Determinants and their properties, Inverse of a matrix, Vector spaces, subspaces and linear independence, Eigenvalues and Eigenvectors of matrices. Inner product in real and complex vector spaces.
221611105	Introduction to Electrical and Electronics Engineering	2	0	2	5	Fundamental concepts of Electrical and Electronics Engineering; basic circuit elements, parallel and series circuits, basic circuit theorems, systems, electrical and electronic devices, and models.
221611108	Occupational Health and Safety I	2	0	2	3	Definition and history of occupational health and safety, causes and types of occupational accidents, occupational diseases and preventive measures, qualifications and safety measures to be taken to prevent occupational accidents and diseases and to provide a healthy and safe working environment for employees; physical, chemical, biological, and psycho-social risk factors and their preventive measures, responsibilities, rights, obligations, and authorities of employers, employees, and occupational safety professionals, risk assessment, ergonomics, and Occupational Health and Safety Management System.
221611110	Programming Languages I	2	2	3	4	Algorithms and flowcharts, basic programming skills with Python and Java languages.
	Total	19	3	20.5	30	

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2nd Semester

Code	Course Title	T	A	C	ECTS	Content
221612004	Turkish Language II	2	0	2	2	Writing rules and punctuation marks, expression and expression disorders, composition studies and applications.
221612006	English II	2	0	2	2	Basic English grammar, vocabulary, reading comprehension, oral expression, and writing skills that students will need in their professional and post-graduate lives.
221612107	Mathematics II	4	0	4	6	Functions, limits, derivatives and their applications. Integration methods, definite integrals and their applications.
221612108	Statistics	3	0	3	5	Data analysis, probability distributions, confidence intervals, hypothesis testing, regression, correlation, ANOVA.
221612109	Measurement and Instrumentation	2	1	2.5	3	Voltage, current, resistance, capacitance, inductance, Ohm's law, Kirchhoff's laws, power measurements, frequency effects, transducers.
221612111	Programming Languages II	2	2	3	4	This course covers the basic concepts of object-oriented programming with Java or Python programming languages and topics in machine learning.
221612149	Physics	3	0	3	5	Coulomb Force, Electric Field, Electric Flux, Gauss's Law, Electric Potential, Capacitors, Current formation and Resistance, DC Circuits, Kirchhoff's Laws, Magnetic Field, Biot-Savart Law, Induction, Faraday's Law, Lenz's Law.
221612150	Occupational Health and Safety II	2	0	2	3	Occupational Safety in Electrical Engineering, Electrical Safety and Regulations, Occupational Health and Safety in Electrical Work, Insulation in Electrical and Electronics Engineering, Electrical Products and Equipment, Electrical Installation Controls, Safety in Electrical Facilities, Electrical Energy and General Definitions.
Total		20	3	21.5	30	

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3rd Semester

Code	Course Title	T	A	C	ECTS	Content
221613001	Principles of Atatürk and History of Reforms I	2	0	2	2	Events, principles, and ideas during the birth and development of the Republic of Türkiye.
221613200	Circuit Analysis I	3	1	3.5	6	Basic circuit concepts, Kirchhoff's and Ohm's laws, linear circuit analysis methods, mesh current method, node voltage method, Thevenin-Norton theorems, superposition theorem, star-delta transformations, maximum power theorem, steady-state RLC circuit solutions, first and second-order electrical circuits, RLC transient analysis.
221613202	Electronics I	3	1	3.5	5	Conductors, insulators, semiconductors; atomic structure, electrons, holes, conductive materials, conduction theory in semiconductors, energy levels, diodes, types of diodes and applications, transistors, types and structures, DC biasing structures and analysis, BJT AC analysis; transistor models and biasing structures, cascaded systems, Darlington connection, hybrid equivalent model and biasing analysis.
221613203	Engineering Software	3	0	3	3	Electricity and Magnetism, magnetic circuit concepts, magnetic equivalent circuits, structure and operation of DC machines, Lenz-Faraday laws, armature-inductor winding connections and excitation, armature reaction and commutation, motor and generator operations, Lorenz forces, starting and speed control of DC motors, electrical machine losses and efficiency, synchronous machine structure, operation, and types, load types and effects, parallel connection conditions.
221613204	Logic Circuits	2	2	3	5	Introducing analog and digital concepts, explaining number systems, providing coding-related concepts, explaining Boolean Mathematics rules.
221613208	Differential Equations	3	0	3	3	Exact differential equations, separable differential equations, homogeneous, linear, and Bernoulli differential equations, higher-order equations and inhomogeneous differential equations.
221613300	Electromagnetic Field Theory	3	0	3	3	Vector analysis, coordinate systems and transformations, electric charges and electric field concept, electric flux and Gauss's law, physical meaning and applications of divergence, industrial applications of static electric fields, electric potential and energy, current and current density, conductors and boundary conditions, dielectrics and boundary conditions, capacitors and applications, solutions of Laplace and Poisson equations, image method.
S2111	Social Elective I (Entrepreneurship)	3	0	3	3	Project, project management, project requirements, project stakeholders, project planning, feasibility and market research, project budget creation and business establishment, human resources management, determining project success criteria, project supports, intention and purpose in entrepreneurship, the necessity of entrepreneurship for our country, determining business ideas, reading opportunities for entrepreneurship, creating a business plan, forming the idea of innovation, risks in entrepreneurship, preparation of an applied project proposal.
Total		22	4	24	30	

Social Elective I	
221613212	Total Quality Management
221613213	Engineering Ethics
221613214	History of Science
221613215	Technical English I
221613216	Entrepreneurship

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4th Semester

Code	Course Title	T	A	C	ECTS	Content
221614002	Principles of Atatürk and History of Reforms II	2	0	2	2	Events, ideas, and principles during the birth and development of modern Türkiye.
221614201	Circuit Analysis II	3	1	3.5	6	Sinusoidal signals and steady state, AC properties, R-L-C behaviors in AC, Phasors and related concepts, current and voltage equations in the time domain using phasors, Circuit solution methods, series and parallel circuits, mesh current method, node voltage method, current-voltage source transformations, Thevenin-Norton theorems, star-delta transformations, power connections and complex power, power factor correction, resonance circuits, circuit solutions with complex numbers, coupled circuits, 3-phase systems.
221614203	Electronics II	3	1	3.5	6	Field Effect Transistors (FET), structure and characteristics of JFETs, MOSFET, depletion-type and enhancement-type MOSFET, FET biasing, FET amplifiers, frequency responses of BJTs and JFETs, Bode gain and phase plots, Class A, B, AB, C, and D power amplifiers, operational amplifiers (OP-AMPs), OP-AMP applications, oscillator circuits, filters.
221614304	Microcomputers	3	1	3.5	4	Concepts of microprocessors and microcontrollers, 4-bit, 8-bit, 16-bit, 32-bit microcontrollers, development environments and languages for microcontrollers, microcontroller manufacturers, technology trends and advancements.
221614305	Engineering Mathematics	3	0	3	4	First- and second-order differential equations and their applications in science and engineering, Laplace and inverse Laplace transformations and their properties, solutions of constant-coefficient linear differential equations using Laplace transform, electrical circuit applications, Fourier series and their applications.
221614350	Circuit Simulation	2	1	2.5	3	Introducing concepts of multivibrators and flip-flops, logic used in synchronous sequential/sequential circuits, explaining counters and their types, counter design, teaching registers and their types, enhancing memory capacity through addressability/grouping, explaining programmable logic elements.
S2122	Technical Elective I (Energy Storage Systems)	2	0	2	5	Information on commonly used and scientifically focused methods and applications for energy storage (electromechanical, thermal, chemical, electrical storage methods) is provided. Analysis and modeling for these methods and applications are also explained.
Total		18	4	20	30	

Technical Elective I	
221614401	Electrical Facilities
221614402	Electromagnetic Wave Theory
221614403	Energy Storage Systems

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5th Semester

Code	Course Title	T	A	C	ECTS	Content
221615302	Control Systems	3	1	3.5	4	System definition, feedback concept. Structures and characteristics of open and closed loop control systems, calculation of transfer functions. Simplification methods in block diagrams, signal flow diagrams, calculation of transfer functions with Mason's gain formula. Representation of systems in state-space form and extraction of phase change block diagrams. Example Matlab applications related to the topics.
221615303	Electrical Machines I	3	1	3.5	5	Electricity and Magnetism, Magnetic circuit concepts, Magnetic equivalent circuits, Structure and operation of DC machines, Lenz-Faraday laws, Armature-inductor winding connections and excitation, armature reaction and commutation, Motor and Generator operations, Lorenz forces, Starting and speed adjustment of DC motors, Electrical machine losses and efficiency, Structure and operation of synchronous machines and their types, Load types and effects, Parallel connection conditions.
221615305	Numerical Analysis	3	0	3	4	Concept of numerical analysis and errors, Reminder of basic matrix operations, Solution of systems of linear equations: Cramer method, Gauss-Jordan method, Gaussian elimination method, Gauss-Seidel method, Solution of nonlinear equations: Bisection method, regulafalsi method, Simple iteration, Newton-Raphson method, Secant method, Interpolation methods: Lagrange polynomial interpolation, Newton-divided differences method, Curve fitting: least squares method, generalized curve fitting, Differential equations: Taylor series method, Euler method, Runge-Kutta method.
221615306	Communication Systems	3	0	3	4	Analog and digital communication techniques and methods, components, designs, and applications involving modulation implementation.
S3111	Social Elective II	3	0	3	3	
S3112	Technical Elective II	3	0	3	5	
S3113	Technical Elective III	3	0	3	5	
Total		21	2	22	30	

Elective Courses		
221615311	Business Management	S3111
221615312	Human Resources Management	S3111
221615313	Technical English II	S3111
221615314	Scientific Research Techniques	S3111
221615320	Operational Amplifiers	S3112
221615321	Antennas and Propagation	S3112
221615322	Fiber Optics	S3112
221615330	Advanced Programming Languages	S3113
221615331	Robotic Systems	S3113
221615332	Mechatronics	S3113

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6th Semester

Code	Course Title	T	A	C	ECTS	Content
221616301	Power Electronics	3	0	3	4	Investigation of various control elements used in power electronics and the triggering elements used for their conduction. Implementation of different applications with these elements.
221616304	Electrical Machines II	3	1	3.5	5	Introduction to alternating current, single-phase and three-phase networks, electromagnetic induction, self-induction, Lenz-Faraday laws, transformer structure-types-operation, conversion ratio, iron and copper losses, equivalent circuit calculation, no-load and short-circuit tests, loaded operation and parallel operation tests, regulation, star/delta connection, polarity determination. Structure-types-operation of asynchronous motors, three-phase rotating field formation, star/delta connection, synchronous speed, slip, speed adjustment, rotor resistance and its effects, starting mechanisms, and braking systems.
221616307	Signals and Systems	3	0	3	3	Understanding signal and system types, their characteristics, parameters, and analysis methods.
221616330	Industrial Automation	2	2	3	3	Elements of automatic control circuits, various automatic control circuits, basic principles of programmable logic controllers (PLC), programming in PLC, and various programming logics, comparison of automatic control circuits with PLC.
S3124	Technical Elective IV	3	0	3	5	
S3125	Technical Elective V	3	0	3	5	
S3126	Technical Elective VI	3	0	3	5	
	Total	20	3	21.5	30	

Elective Courses		
221616340	Electric Energy Production	S3124
221616341	High Voltage Technique	S3124
221616342	Energy Efficiency	S3124
221616350	Semiconductor Solar Cells	S3125
221616351	Optical Communication Systems	S3125
221616352	Renewable Energy Sources	S3125
221616360	Microcontroller Applications	S3126
221616361	Fundamentals of Biomedical Engineering	S3126
221616362	Digital Communication	S3126

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7th Semester

Code	Course Title	T	A	C	ECTS	Content
221617400	Workplace Training	4	16	12	20	Active work in the industry or other engineering fields and subsequently presenting their work as a report to the university.
221617402	Internship I	0	2	1	5	Design of electronic and logic cards, installation, fault detection, and maintenance of electrical machines, troubleshooting and maintenance of electrical panels and control systems, PLC system applications, microprocessor and PIC applications, electrical lighting, and indoor installation projects and applications, hardware and software applications related to computer and network technologies. Applications of energy transmission lines and transformer systems.
221617403	Internship II	0	2	1	5	Design of electronic and logic cards, installation, fault detection, and maintenance of electrical machines, troubleshooting and maintenance of electrical panels and control systems, PLC system applications, microprocessor and PIC applications, electrical lighting, and indoor installation projects and applications, hardware and software applications related to computer and network technologies. Applications of energy transmission lines and transformer systems.
Total		4	20	14	30	

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8th Semester

Code	Course Title	T	A	C	ECTS	Content
221618401	Graduation Project	0	2	1	5	Within the scope of the study topic determined by the relevant faculty member and the student; conducting research, reviewing existing studies, gathering relevant information, and, if deemed appropriate, planning the topic or developing new designs.
S41210	Technical Elective X	3	0	3	5	
S41211	Technical Elective XI	3	0	3	5	
S4127	Technical Elective VII	3	0	3	5	
S4128	Technical Elective VIII	3	0	3	5	
S4129	Technical Elective IX	3	0	3	5	
Toplam		15	2	16	30	

Elective Courses		
221618410	Special Electrical Machines	S4127
221618411	Electromagnetic Energy Conversion	S4127
221618412	Electric Motor Drives	S4127
221618421	Production Planning and Control	S4128
221618423	Engineering Economics	S4128
221618430	Energy Transmission Systems	S4129
221618431	Harmonics in Power Systems	S4129
221618432	Reliability in Energy Distribution and Transmission Systems	S4129
221618440	Lighting Technique and Indoor Installation Project	S41210
221618441	Protection in Electrical Installations	S41210
221618442	Electric Drive	S41210
221618450	Artificial Neural Networks	S41211
221618451	Fuzzy Logic	S41211
221618452	Computer Communication and Network Technologies	S41211

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