I. Semester

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ATİ101	Atatürk's Principles and Revolution History-I	2	0	0	2	2	2	Compulsory

Concepts and Ottoman modernization. European developments, Industrial Revolution and French Revolution. New Ottomans, Constitutional Monarchy and Union and Progress Society. II. Constitutional Monarchy Period, Tripoli and Balkan Wars. Causes of World War I. World War I: Sharing the Ottoman Empire. National Struggle preparatory period. Congress. Sivas Congress, the last Ottoman Parliament and the National Pact. TBMM Period: Formation of fronts. Treaty of Lausanne.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK101	Direct Current Circuits	3	1	0	4	4	4	Compulsory

Electrical quantities and definition of basic concepts. Ohm's law, Resistance circuits. Star-delta and delta-star transform. Kirchoff's laws, Loop currents method. Node voltage method. Superposition theorem. Thevenin's theorem. Norton theorem. Maximum power transfer theorem. Storage elements in direct current. Power and energy in direct current.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK103	Mathematics I	3	1	0	4	4	4	Compulsory

Numbers. Clusters. Factorization. Exponential numbers. Root numbers. Absolute value. Base arithmetic. First order equations. Second order equations. Inequalities. Ratio and proportion. Functions. Exponential and logarithmic functions. Trigonometry. Complex numbers.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK105	Measurement Techniques	3	1	0	4	4	4	Compulsory

Units in measurement, measurement process, introduction of basic electrical quantities. Exponential and letter transformation applications of sizes. Errors and their classification. Introducing electrical quantities and working principles and structures of measuring instruments. DC measuring instruments, structure and operation of galvanometer, use of galvanometer in current and voltage measurements. Effect of basic properties of electrodynamic measurement instruments on measurement (accuracy, resolution). Current and voltage measurement in direct current (DC). Magnitudes in alternating current (AC). The use of oscilloscope, its structure and the use of oscilloscope in measuring different parameters. Current and voltage transformers, their use. Structure of electrodynamic measuring instruments and Wattmeter. Power in electricity, power factor, 1-phase power measurements in electricity. Measurement of 3-phase balanced and unbalanced (aron assembly) powers in electricity. Energy measurement active and reactive meters structure and operation. Industrial measurements, sensor and transducer concepts. Sensors and transducers.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK107	Basic Electronics	3	0	0	3	3	3	Compulsory

The structure of the atom. Electron orbits. Energy bands. Conductor, insulator, semiconductor. n-type and p-type semiconductors. PN junction. Forward and reverse polarity. PN diode and current-voltage characteristic. Diode types. Diode applications (DC circuits). Diode applications (AC circuits). Clippers. Clampers. Rectifiers. Definition and structure of Zener diode. Characteristic and robustness control of Zener diode. Zener diode applications (DC circuits). Zener diode applications (AC circuits). Description and structure of bipolar junction transistors (BJT). BJT characteristics. BJT's robustness check. BJT's work zones and DC bias stability.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
İSG101	Occupational Health and Safety	3	0	0	3	3	3	Compulsory

Development of occupational health and safety concepts and rules. Business law. Physical risk factors. Chemical risk factors. Biological risk factors. OHS in construction and mining. Occupational diseases. Ergonomics. Emergency plans. Accidents at work. Work environment monitoring. OHS in electrical works. Personal protective equipment. Risk assessment.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
TDİ101	Turkish Language-I	2	0	0	2	2	2	Compulsory

Definition of language. The relationship between nation and language. The relationship between language and culture. Family of languages, the place of Turkish language among other languages. Historical development of Turkish language. The current situation of Turkish language, its history and current examples, vernacular, accent, dialect. Definition of grammar and its sections, features of Turkish language. Phonetic, phonetic of Turkish, its features and classification of phonemes. Grammatical rules of Turkish. Punctuations. Word structure of Turkish and particles, derivational affix, inflexional suffix.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
YDİ101	Foreign Language-I	2	0	0	2	2	2	Compulsory

Greetings. Brainstorming about the mutual expectations. Ice breakers. To be. Possessive adjectives. Countries. Describing jobs. Simple present tense. Word order. WH questions. Expressing likes/dislikes. Foods and drinks. Ordering. Speaking about food from all over the World. Writing and speaking about free time activities. Making dialogues using frequency adverbs. Reading passage about basketball and vocabulary practice. Talking and writing about what people are doing. Using present progressive. Understanding the polite rules of talking on the phone and acting. Talking about past events using simple past tense. Was/were. Understand an article about past and present.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK151	Fault Analysis	1	1	0	3	2	2	Elective

Fault isolation. Finding the faulty unit or element. Failure and maintenance. Catalog. Archiving.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK153	Home Devices	1	2	0	3	2	3	Elective

Washer and dryer devices. Use of washer and dryer devices. Heating and cooking devices. Use of heating and cooking appliances. Cooling devices. Use of cooling devices. Cleaner and aerating devices.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK155	Entrepreneurship	2	0	0	3	2	2	Elective

Entrepreneurship approaches. Entrepreneurship culture. Types of entrepreneurship. Entrepreneurship functions. Entrepreneurship fields. Entrepreneurship process. Business idea and resources. Business idea development. Business plan and elements. Preparing business plan. Local, national and international context of entrepreneurship.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK157	Fine Arts	2	0	0	3	2	2	Elective

Definition of art. Definitions and concepts related to art. Source and functions of art. Art movements: Renaissance. Art movements: Romance. Art movements: Realism. Expressionism. Subject. Object. Abstract artwork. Postmodernism. New conceptualism. New approaches in art.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK159	Energy Management	2	0	0	3	2	2	Elective

Energy concept and units. Energy types. Energy sources. Energy management. Energy study. Energy efficiency. Measuring technique and electrical measuring instruments. Energy efficiency in pumps. Energy efficiency in electric motors. Effect of variable drive design on energy efficiency. Energy saving in lighting. Energy saving in houses.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK161	Communication	2	0	0	3	2	2	Elective

Introduction to communication. Types and forms of communication: Personal communication, Interpersonal communication. Types and forms of communication: Group communication, Mass communication. Communication skills: Verbal, non-verbal and written communication skills. Oral communication: Speaking. Oral communication: Listening. Oral communication: Empathy. Nonverbal communication: Body language. Nonverbal communication: Vocal elements. Nonverbal communication: Objective communication. Written communication: Formal written communication. Written communication: Informal written communication. Written communication: Internet and social media.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK163	Information and Communication Technologies	2	0	0	3	2	2	Elective

Introduction to information technologies, internet, internet browser. Operating systems. Newsgroups / Forums. Web based learning. Web site applications. Electronic trade. Preparing resume in word processing program. Internet and career. Preparation for job interview. Preparation of presentation.

II. Semester

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ATİ102	Atatürk's Principles and Revolution History-II	2	0	0	2	2	2	Compulsory

Political revolutions: Abolition of the Sultanate, Declaration of the Republic, Abolition of the Caliphate. Political parties and political events established in the period of Atatürk and represented in the Turkish Grand National Assembly. Legal reform and legal order. Revolutions in education. Revolutions in culture and social area. Revolutions in economic area. Turkish foreign policy in Atatürk period (1923-1930). Turkish foreign policy in Atatürk period (1930-1938). Principles of Atatürk and complementary principles. After Atatürk's Turkey.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK102	Analog Electronics	3	1	0	4	4	4	Compulsory

DC bias circuits of BJT: Fixed bias, Emitter-resistant fixed bias, Voltage divider bias, Collector feedback bias. Circuits with common emitter, common base and common collector. Current and voltage gain. DC solution of BJT circuits. AC equivalent circuits of BJT. AC solution of BJT circuits. Description and structure

of JFET. JFET characteristics. JFET's robustness check. JFET DC bias circuits. DC solution of JFET circuits. Description and structure of MOSFET. MOSFET characteristics. MOSFET's robustness check. Definition and structure of operational amplifiers. Operational amplifier applications: Voltage follower circuit, inverting and non-inverting amplifier circuits, adder, differential and comparator circuits.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK104	Mathematics II	3	0	0	3	3	3	Compulsory

Matrices, Limit, Continuity, Differentiation methods, Derivative applications, Integration methods, Integral applications.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK106	Alternative Current Circuits	3	1	0	4	4	4	Compulsory

Definition of alternating current. Explanation of amplitude, period, cycle, instantaneous value, mean value, maximum value, peak value and frequency. Investigation of the behavior of resistor, coil and capacitor in alternating current. Investigation of the behavior of series RL, series RC and series RLC connections in alternating current and calculation of phase differences. Investigation of the behavior of parallel RL, parallel RC and parallel RLC connections in alternating current and calculation of phase differences. Power coefficient in alternating current. Correction of the power coefficient. Complex numbers and their application to alternating current circuits. Mesh currents method. Node voltages method. Superposition theorem. Thevenin's Theorem calculations in AC circuits. Norton's Theorem calculations in AC circuits. Maximum power theorem. Definition of resonance, investigation of series-parallel resonances. Calculation of current, voltage and power in a three-phase circuit.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK108	Computer Aided Design	1	1	0	3	2	2	Compulsory

Introduction of the interface of electrical and electronic circuit drawing program. Electric and electronic circuit symbols. Analog circuit symbols and circuit drawing. Digital circuit symbols and circuit drawing. Using visual measuring instruments for analog circuits. Using the graphic (analysis) menu for analog circuits. Using visual measuring instruments for digital circuits. Using the graphic (analysis) menu for digital circuits. Introduction of the printed circuit drawing program interface. Electronic circuit symbols. Manual printed circuit drawing. Netlis acquisition from electronic scheme drawing programs. Automatic printed circuit drawing, printing. Transferring the circuit drawing on the copper plate and obtaining information about the subsequent processes.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK110	Transformers and Direct Current Machines	3	1	0	4	4	4	Compulsory

General information about electrical machines. Direct current machines. Transformers.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
STJ102	Internship	0	0	0	10	0	0	Compulsory

Workplace application.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
TDİ102	Turkish Language II	2	0	0	2	2	2	Compulsory

Definition of language. The relationship between nation and language. The relationship between language and culture. Family of languages, the place of Turkish language among other languages. Historical development of Turkish language. The current situation of Turkish language, its history and current examples, vernacular, accent, dialect. Definition of grammar and its sections, features of Turkish language. Phonetic, phonetic of Turkish, its features and classification of phonemes. Grammatical rules of Turkish. Punctuations. Word structure of Turkish and particles, derivational affix, inflexional suffix.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
YDİ102	Foreign Language II	2	0	0	2	2	2	Compulsory

Talking about clothes. Using comparative adjectives. Making dialogues about shopping. Speaking activity about fashion. Describing appearances and personalities of people, Using "be like" and "look like". Speaking and writing activity about describing our friends. Talking about tourist sites. Using can/can't. Listening and comprehending a passage about city attractions. Talking about places around town. Using "There is" and "There are". Reading a text about favourite places around town and vocabulary gain. Talking about vacation activities. Using past tense. Reading text about describing a hotel. Talking about future plans. Using future tense. Listening activity about travel plans and follow-up activities. Reading text about travel activities.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK150	Chess	1	1	0	3	2	2	Elective

Principles and history of chess. The starting position of the stones on the board, the movements of the stones, moving the stones. Chess clock, illegal locations, game end. Record your moves and draw game. Quick finish (Guillotine), Scoring. Management of the players and the role of the referee, FIDE. Checkmate by bishop pair, checkmate by knight and bishop. The basic principles of pawn game and pawn endings. Seven evaluation principles in chess. Strategy and tactics in chess. Openings in chess.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK152	First Aid	2	0	0	3	2	2	Elective

Important first aid techniques (ABC) and applications. Respiratory obstruction and abdominal push. Circulatory system problems and loss of consciousness. Wounds, bleeding and foreign body stinging. Dressing and bandaging. Musculoskeletal injuries, spinal trauma. Poisoning, animal and insect bites. Burns. Heat injuries. Transport and transportation methods.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK154	Electrical Maintenance And Fault Finding	2	0	0	3	2	2	Elective

Maintenance processes and philosophy. Predictive maintenance. Periodic maintenance. Documentation of maintenance. Facility control. Use of measuring instruments in finding faults. Safe working methods in finding faults (hazards, work safety, electrical accidents, protection from electrical accidents, security measures and rescue). Fault finding techniques; Sequence tracking, Subdivision. Fault flow diagrams used in fault finding and troubleshooting. Fault detection and repair in electrical control and control systems. Fault detection and repair in electrical interior facilities and panels. Fault detection and repair in electric motors and industrial power plants. Fault detection and repair in medium voltage and distribution facilities. Fault detection and repair in distribution transformers. Fault detection and repair in electrical household appliances.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK156	Office Softwares	1	1	0	3	2	2	Elective

Document operations, formatting operations. Document control, print, table operations. Object operations, advanced properties. Macros, customization. Workspace, data entry, formatting operations. Formulas, functions. Graphics operations, data analysis. Printing, macros, customization. Workspace, slide operations, design. Slide objects, show settings. Printing, customization. Internet concepts, E-mail.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK158	Environmental Protection	2	0	0	3	2	2	Elective

Environmental protection concept. Legal development in nature and environmental protection, the role of governments and non-governmental organizations. Environmental adverse effects of urbanization. Causes, effects and mechanisms of air pollution. Certain types of water and air pollutants, ways of harming the environment and / or human health. Greenhouse effect. Global warming, climate change. Soil pollution problem. Legal and environmental framework in waste management; problems associated with recycling and development. Using fossil fuels, environmental discussions about nuclear power plants. Development of sustainable energy sources including hydroelectricity, wind power and sea wave. Nature conservation and protection of natural resources.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK160	Research Methods and Techniques	2	0	0	3	2	2	Elective

Science, research, scientific research concepts. Science and science ethics. Research ethics and research ethics violations, basic principles of research ethics. Scientific misconceptions, violations of publication ethics, problems of authorship rights. Types of scientific research, problem statement, hypothesis, theory. Scientific research report content, the formal structure of the research report and the use of language in scientific text. Interpretation and report writing. Principles of scientific publication ethics, scientific works and types. How to use the internet, library and documentation centers. Ethical standards, legal limitations and software. Presentation and evaluation of research reports prepared by student groups.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK162	Sensors and Transducers	2	0	0	3	2	2	Elective

Basic concepts of sensors and transducers. Temperature sensors. Humidity sensors. Speed sensors. Vibration sensors. Acceleration sensors. Location sensors. Proximity sensors. Pressure sensors. Flow sensors. Level sensors. Impact (Force) sensors.

III. Semester

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK201	Electric Energy Power Plants	2	0	0	3	2	2	Compulsory

Methods of obtaining electrical energy. Types and working principles of thermal power plants. Types and working principles of nuclear power plants. Types and working principles of hydroelectric power plants. Electric power generation from wind energy. Electric power generation systems from solar energy. Combined power generation, autoproducer application. Hybrid electric power generation systems.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK203	Computer Aided Project	2	1	0	3	3	3	Compulsory

Introduction of AutoCAD program. Introducing the AutoCAD interface. General settings in AutoCAD program, using the help menu. Command execution methods. Filing procedures. Coordinate systems. Use of function keys. Functions and use of mouse. Object selection methods. Cutting, copying and pasting processes. Image control commands (pan, zoom). Shadow and visualization (shade) settings. Object interlocking commands (endpoint, midpoint). Using grid, snap modes. Defining limits for the drawing area.

Geometric and dimensional constraints. Creating drawings with the help of coordinates. Drawing creation commands (point, line, ray, construction line, multiline, polyline, circle, arc, ellipse, ellipse arc, donut spline, hatch, boundary, region, wipeout, revision cloud, multiline text, table, rectangle). Drawing editing commands (erase, copy, move, rotate, mirror, explode, trim, extend, fillet, chamfer, stretch, array, offset, scale, break, break at point, join, divide, mesure, align, lengthen).

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK205	System Analysis and Design	3	1	0	4	4	4	Compulsory

Choosing the subject of study. To provide information on the subject of the study. To define the functions and variables of the system. Choosing the necessary materials. To prepare the flow chart of the system. To make the program or calculations of the system. To prepare the environment in which the system will operate. To set up the system. Testing the system. To present the system and system outputs in a report.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK207	Electromechanic Control Systems	3	1	0	4	4	4	Compulsory

Control elements, protection relays. Three-phase asynchronous motors cut and continuous operation. Starting three-phase asynchronous motors from two different locations (remote). Change of direction of rotation in three-phase asynchronous motors. Resistance to three-phase asynchronous motors. Starting the rotor wound asynchronous motors. Starting three phase asynchronous motors with reactance and auto transformer. Star-delta starting for three-phase asynchronous motors. Braking in three-phase asynchronous motors. Control in double speed motors. One-phase asynchronous motor control circuits. Changing direction of rotation in single-phase induction motors. Starting direct current motors. Change direction of rotation in direct current motors. Braking on DC motors.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK209	Project Design	0	2	0	2	1	2	Compulsory

Choosing the subject of study. To do a resource search. To evaluate the results of the research. Transforming research results into reports. Preparation for presentation. To make the presentation.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK211	Asynchronous and Synchronous Machines	3	1	0	4	4	4	Compulsory

Structure and working principle of three-phase induction machines. Development of equivalent circuit in three-phase induction motors, power distribution and moments. Idle operation, locked rotor experiment and load operation in three phase induction motors. Starting, speed control and braking in three phase induction motors. Single phase motors. Structure, properties, working methods and principles of synchronous generators and synchronous motors. Synchronous machines working as engines and generators. Parallel connection of synchronous generators. Starting synchronous motors. Phasor diagram in case of inductive, capacitive and ohmic operation of synchronous motors. Drawing of phasor diagram in case of inductive, capacitive and ohmic operation of round pole synchronous motors. Loading of the synchronous machine. Reactive power setting in synchronous generator. Protection of asynchronous and synchronous machines.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK213	Digital Electronics	3	1	0	4	4	4	Compulsory

Number systems. Logical gates. Logical gate circuits. Truth table. Boolean algebra. Karnough maps. Simplification of logic functions. Circuit drawing from logic functions. Obtaining the logic function of a drawn circuit. Obtaining and simplifying the logic function of a problem. Creating the time diagram of a problem. Installing and running the logic circuit of a problem. Integrated circuit families and their technical features.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK251	Renewable energy sources	2	0	0	3	2	2	Elective

Introduction to renewable energy. Nuclear energy. Solar thermal applications. Photovoltaic systems. Water power energy and systems. Wind energy and systems. Geothermal energy and systems. Biomass and biofuels. Wave energy. Tidal energy. Ocean thermal energy conversion. Energy systems, storage and transmission. Institutional and economic factors.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK253	Contract Discovery and Planning	2	0	0	3	2	2	Elective

Building legislation, discovery and regulations. Specifications, overhead line legislation. Overhead line specifications, topographic information. Underground cable installation, regulations, specifications. Security systems, facility and hardware information. Security system regulations, planning before installation. Planning before disassembly, project exploration summaries. Project exploration summaries, microcontroller program commands. To prepare tender specifications and files. Preparation of tender documents, Individual customers subscription procedures. Private customers subscription transaction, TUS contract. Contractor contract. Record preparation methods and procedures.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK255	Hydraulic And Pneumatic	2	0	0	3	2	2	Elective

Definition of hydraulics and basic principles. Hydraulic systems. Hydraulic systems used in machine tools and work machines. Hydraulic power supply and components. Hydraulic circuit elements and hydraulic

symbols. Creation of hydraulic circuits. Maintenance and malfunctions of hydraulic circuits. Definition of pneumatics and basic principles. Pneumatic systems. Pneumatic circuit elements and pneumatic symbols. Maintenance and malfunctions of pneumatic circuits.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK257	Vocational Foreign Language I	2	0	0	3	2	2	Elective

Review of basic grammar rules in a foreign language. Basic electrical units and definitions in foreign language. Measuring instruments and measurement methods in foreign language. DC circuit analysis in a foreign language. Concepts of installation technology in a foreign language. Special installation technology concepts in foreign language. Translation techniques and their application to professional texts.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK259	Professional Ethics	2	0	0	3	2	2	Elective

Ethics and morality. Basic ethical principles. Types of ethics: Individual ethics. Types of ethics: Business ethics. Ethical sources. Ethical standards. Professional ethics. Professional corruption and consequences of unethical behavior in professional life. The concept of social responsibility.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK261	Electronic Circuit Design	1	1	0	3	2	2	Elective

Soldering materials. Soldering. Printed circuit. Placement of materials on the plaque. Inserting the elements in the power supply box. Testing the power supply.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK263	Board Design and Installation	2	0	0	3	2	2	Elective

Preparing the board for assembly. Installing busbars, cables and insulators on the panels. Panel assembly and cable connections.

IV. Semester

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK202	High Voltage Techiques	2	0	0	3	2	2	Compulsory

High voltage types and related definitions. Errors in high voltage measurements. High voltage dividers. Classification of tension according to international standards. Parallel operation of transformers. Calculation of sagging and stretching, snow, ice and wind loads on the lines. Types of high voltage cables. Determination of the cable fault location. Switching elements used in transmission and distribution. Protection techniques and principles in high voltage facilities. "Safety Regulation in Electricity Facilities" for any work to be done in high voltage network facilities.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK204	Installation and Project	3	1	0	4	4	4	Compulsory

Choosing the architectural plan, examining the architectural plan. Learning the technical details about the architectural plan and furnishing plan. Determination of the quantity and quality of materials and equipment required for the project. Electrical Indoor Installations Regulation. Electricity Indoor Installations Project Preparation Regulation. Learning project drawing rules. Learning about proposal, preliminary and application projects. Scale drawing of the architectural plan on tracing paper in such a way that the electrical installation plan is drawn. Lighting calculations. Application of lighting calculations to the project. Drawing the basement floor electrical installation plan. Drawing the ground floor electrical installation plan. Drawing the floor electrical installation plan. Drawing the site plan. Preparation of the loading chart. Making voltage drop calculations. Section selection and checking. Arrangement of high current column diagram. Ladder automatics, weak current, telephone and television installations arrangement of column diagrams. Completion of other details of the project. Learning how to make cost analysis. Learning to prepare the project file. Learning the necessary procedure for making the project ready for approval. Presentation of the prepared project.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK206	Special Designed Machines	2	1	0	3	3	3	Compulsory

Components and working principles of step motors. Structures and drives of servo motors. Structure, operation and speed regulation of universal motors. Structure and working principles of linear motion motors. Shade pole motors structure and working principles.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK208	Electric Power Transmission and Distribution	2	0	0	3	2	2	Compulsory

General structure of electrical energy systems. Current, voltage and power concepts in electrical energy systems. Types and properties of electrical energy transmission networks. General features of electrical energy distribution networks. Transformer centers and equipment. Types and properties of overhead line conductors. Types and properties of underground cables. Types and features of electric poles. Types and properties of insulators. Types and properties of separators. Breaker types and features. Distribution of electrical energy and transformer selection. Protection systems in electrical energy transmission and distribution.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK210	Graduation project	0	2	0	3	1	2	Compulsory

Identifying a project advisor. Choosing the project topic. Source research. Evaluating research results. To inform his/her advisor about his/her work and to refer to his/her advisor's information and opinions. To practice to realize the project. Completing the project. Completing the report for the presentation. Submitting the project. Making presentation.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK212	Programmable Controllers	3	1	0	4	4	4	Compulsory

Structure of the programmable device and how it works. Using PLC software. Ladder diagram and programming commands. Basic PLC applications. Timers. Counters. Generating solutions using timers and counters. Writing and simulating PLC program with software. Comparison commands. Arithmetic operations. Industrial application with PLC.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK214	Power Electronics	3	1	0	4	4	4	Compulsory

Definition and scope of power electronics. Basic power circuits and power transformation logic. Diode, thyristor, triac, GTO, Darlington BJT, E-MOSFET, IGBT structures, working principles and usage areas. Basic stimulation elements UJT, PUT and diac structures, studies and usage areas. Pulse generating circuits and their operation compatible with the network. Structure and usage areas of PWM square wave generating circuits. Pulse and PWM driver circuits structure and usage areas. Types, structures and usage areas of AC-DC converter circuits. Types, structures and usage areas of AC-AC converter circuits. Types, structures and usage areas of DC-DC converter circuits. Types, structures and usage areas of DC-AC converter circuits. Power electronics circuit applications.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK250	Special Installation	2	0	0	3	2	2	Elective

Making compensation installations. Lightning rod installations. To make grounding installations. To install security systems.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK252	Lighting Technique	2	0	0	3	2	2	Elective

Lighting definitions, types of lighting. Photometric magnitudes, space angle, luminous flux, amount of light, luminous intensity, luminous intensity, luster. Glow, luminance or luminosity. Surface characters, reflection factor. Reflection factor, reflection factors of some surfaces. Passing factor, absorption factor. Transparent objects, translucent objects and non-transparent objects. Some photometric laws, cosine law. The law of inverse proportion to the square of distances, Lambert's law. Plane, sphere, cylinder, hemisphere. Lighting calculation problems. Light and light sources, lighting calculation, room lighting efficiency calculation problems and solutions.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK254	Quality Assurance and Standards	2	0	0	3	2	2	Elective

Development process and definition of standardization. The subject, objectives and principles of standardization. Benefits of standardization to the manufacturer, consumer and economy. Turkish Standards Institute and its duties. Regional and international standardization organizations. National and international metrology, calibration studies and organizations. Definition of quality and concepts related to quality. Quality approaches. The benefits of quality and assurance. The concept of quality control and total quality management. Quality management system and ISO 9000 standards. Professional standards, other standards.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK256	Wiring Techniques	2	0	0	3	2	2	Elective

Winding direct current machines. Hand winding of alternating current machines. Making half mold winding of alternating current machines. Making full mold winding of alternating current machines.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK258	SCADA Systems	2	0	0	3	2	2	Elective

Installing SCADA programs. Controller connection with SCADA program. SCADA interface design. Using OPC server. Tag logging. To do alarm handling. Registration in the database. Visual programming program. Visual programming objects. Computer ports with visual programming.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK260	Business Administration	2	0	0	3	2	2	Elective

Basic concepts of business. Business objectives and basic principles of business administration. Environmental relations and responsibilities of the business. Classification of businesses. Feasibility studies. Establishment location selection, establishment location objectives and factors. Growth and capacity in businesses. Management and organization function. Financing function. Production function. Marketing function. Human resources function. Accounting, public relations and R&D functions.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK262	Vocational Foreign Language II	2	0	0	3	2	2	Elective

Written and oral presentation on professional issues. Verbal and written communication in professional matters. Basic concepts of direct current dynamos in a foreign language. Basic concepts of direct current

motors in foreign language. Basic concepts of one-phase transformers in foreign language. Basic concepts of three phase transformers in foreign language. Basic concepts of electronic circuits in a foreign language. Basic concepts of hydraulic systems in a foreign language.

Course Code	Course Name	T	P	L	ECTS	C	Hours	Type
ELK264	Control Systems	2	0	0	3	2	2	Elective

Open loop control system and automated production. Implementation of the open loop control system. Speed control methods of direct current motor. Control of DC motor by open loop control system. Closed loop control system. Feedback. To create a simple mathematical model in closed loop control systems. Open-closed control system. Proportional-integral control system. Proportional-derivative control system. Proportional-integral-derivative control system. Differences between proportional-integral and proportional-derivative control systems. Proportional-integral-derivative control system controllers, their properties and uses.