OLD CURRICULUM



**1.Semester Course Contents**

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| **Direct Current Circuits** | Basic concepts. Introduction of electrical circuit and its components. Work and power. DC circuit theorems (Thevenin, Norton, Maximum power transfer, node method, superposition method), magnetism. |
| **Measurement Technique** | What is Measurement, How to do, The importance and definition of measurement, Measurement Tools and Measurement Errors, Length, Area, Volume and Weight, Fluidity and Temperature Measurements, Slope, Cross Section and Diameter, Speed ​​and Rotation, Sound, Pressure, Units of Measurement and Conversions, Tension Current, Power and Energy Measurement |
| **Fundamental of Electronics** | Short atomic information, semiconductor technology, diodes and types, Straightening circuits. 2 structure of transistors. Polarity calculations amplifier types in BJT transistors, Field effect transistors (FET), MOSFET transistors. |
| **Mathematics-I** | Numbers, Algebra, Equations and Inequalities, Functions, Trigonometry, linear and exponential equations, Complex Numbers, Logarithm, statistics and reliability. |
| **Computer-I** | Computer hardware knowledge, operating system, use of Office package programs |
| **Foreign Language - I** | Speaking, Listening-Understanding, Writing, Reading-Understanding |
| **Turkish Language - I** | Language, Languages ​​and Turkish Language, Grammar, Word and Sentence, Types of Words, Elements of Expression and Types of Expression, Basic Principles of Proper and Effective Speaking |
| **Ataturk's Principles And History Of Turkish Revolution-I** | Republic History, Fundamental Properties of the Republic, Ataturk's Principles and Revolutions |
| **Elective Courses** |  |
| **Energy Conversion Systems** | Energy Conversion and Efficiency Concept, Combustion Based Technologies (Internal Combustion Engines, Gas Tribunes, Steam Tribunes, Catalytic Reactors), Non-Combustion Based Technologies (Fuel Cells, Biological Reactor, Solar Eyes, Water Tribunes, Wind Tribunes) |
| **Electronic Circuit Design** | Soldering materials, Soldering, Printed circuit board, Placing materials on the plate, Placing the elements in the power supply box, Testing the power supply. |
| **Scientific Principles of Technology** | Physical Quantities and Unit Systems, Exponential Number Operations, Coordinate System and Reading, Displaying Trigonometric Values ​​and Theorems, Vectors, Operations Related to Vectors, Three Dimensional Coordinate Systems, Force, Combined Forces, Difference of Two Forces, Moment Rules, Mass and Weight Concept, Location Concepts of Displacement, Motion, Velocity and Acceleration, Work, Power, Energy, Electricity and Magnetism, Electricity and Electric Charge, Relationships Between Charged Bodies, Sources of Electric Current, Electric Current and Electrical Power, Magnetic Poles, Magnetic Flux, Permeability, Magnetic of Current Effect, Magnetic Circuits, Magnetic Circuits. |
| **Contact** | Communication and Interpersonal Communication, Perception of Person, Verbal Messages, Nonverbal Messages, Listening, Interpersonal Communication and Ethical Principles, Relationship / Interaction Process, Interaction Contexts, Changing Relationships, Communication with Family and Friends, Communication in Close Relationships, Barriers to Communication, Conflict and Reconciliation, Cultural Differences and Communication |
| **Occupational Health and Safety** | Occupational Health and Safety Historical Development of Occupational Health and Business Purpose and Importance of Safety Health and Concepts of Health in Turkey in the Safety Area and Safety of Overview of Job Accidents Occupational Diseases Occupational Accidents and Occupational Be Taken Against Disease Precautions Work Accidents and Occupational Diseases of nature costs |
| **Life Skills and Social Activity** | Self-realization, self-knowledge, communication, factors that hinder communication, social skills, saying no, problem solving, self-revealing, anger, stress, excitement, anxiety and fear, etc. coping with challenging emotions, healthy decision making, public speaking, self-concept, career and career planning, cv preparation, efficient studying, aggressive and entrepreneurial behavior development, emotional intelligence. |
| **University and Career Success** | 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. |

**2. Semester Course Contents**

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| **Alternating Current Circuits** | Alternating current and voltage, behavior of circuit elements in AC and circuit solution methods, power and energy in AC, three-phase AC systems. |
| **Introduction To Installation** | Basic concepts of electrical networks and facilities, network types and protection measures, electrical installation technology and applications (interior installation materials, definitions, applications, light sources, weak current facilities, connecting conductors, adding, soldering and ending), voltage drop calculations (in DC, in 1 phase AC circuits, 3-phase AC 'circuits), Examination and implementation of electrical interior installation regulations. |
| **Computer Aided Design** | Establishment of electrical and electronic circuit drawing program and introduction of the program interface, Electric and electronic circuit symbols, Analog circuit symbols and circuit drawing, Digital circuit symbols and circuit drawing, Using visual measurement tools for analog circuits and using graphic (analysis) menu, For digital circuits Using visual measurement tools and using the graphic (analysis) menu, Setting up the printed circuit drawing program, Introduction of the printed circuit drawing program interface, Automatic printed circuit drawing, Printing. |
| **Transformer and Direct Current Machines** | working principles, structure and parts of the machines, D.C. voltage and moment induction calculations, D.C. feeding types and armature reaction in the machines, basic behaviors (characteristics) of DC generators (dynamo), Starting, speed control and braking in DC motors, Structure and working principles of single-phase and three-phase transformers, Working of transformers at idle, short circuit and load, Equivalent of transformers circuit and efficiency in transformers. Different connection groups of three phase transformers. |
| **Mathematics-II** | Linear Equation Systems and Matrices, Limits and Continuity, Derivatives and Applications, Integrals and Applications, Differential Equations, Statistics |
| **Turkish Language - II** | Types of Written and Oral Expression, Punctuation and Spelling Rules, Expression Disorders |
| **Ataturk's Principles And History of Turkish Revolution-II** | Republic History, Fundamental Properties of the Republic, Ataturk's Principles and Revolutions |
| **Foreign Language - II** | Speaking, Listening Comprehension, Writing, Reading Comprehension |
| **Elective Courses** |  |
| **Electric Power Plants** | Knowing the methods of obtaining electrical energy, Knowing the operation of thermal power plants, Knowing the operation of nuclear power plants, Knowing the operation of hydroelectric power plants, Knowing the operation of renewable energy power plants, Knowing the failures occurring in Power Plants, choosing and assembling protection roles, Installing Parafure, Insurance, Installing the curator. |
| **Cooling Technique** | To gain knowledge and skills to solve the cooling system malfunctions of the home type coolers, To change the cooling system elements, to make gas exchange. |
| **Basic Statistics** | Basic Concepts, Data Processing (Classification-Grouping), Statistics Tables, Graphs, Time Series- Space Series, Division Series, Aggregation Series, Averages-Analytical Averages (Arithmetic Mean-Squared Average), Averages-Non-Analytical Averages (Median-Mode) , Variability Measures (Standard Deviation-Variance-Coefficient of Variation), Indices (Space and Time Indices), Indices (Fixed and Variable Based Indices) |
| **Entrepreneurship** | Entrepreneurship Concept and Its Emergence, Small Business Types, Small Business Establishment Processes, Small Business Problems and Solutions, Business idea development Methods of creating business ideas, mind maps, organizing and ordering ideas Decision in a business idea, market research, surveys and analysis, competitor analysis SWOT analysis Cost analysis and marketing for entrepreneurs Preparing business plan Business organization and grant-making organizations Application form and application guide reading techniques, Entrepreneurship Approaches, Entrepreneurship Culture, Entrepreneurship Types, Entrepreneurship Functions, Entrepreneurship Areas, Entrepreneurship Process, Business Ideas and Resources, Business Idea Development, Business Plan and Elements, Business Plan Preparation, Local, National and International Context of Entrepreneurship, |
| **Quality Assurance and Standards** | Concept of Quality, Standard and Standardization, The Importance of Standard in Production and Service Sector, Management Quality and Standards, Environmental Standards, Quality Management System Models, Strategic Management, Participation in Management, Process Management System, Resource Management System, Quality Control in Production, Inspection and Sampling, Total Quality Control, Control Diagrams, Statistical Distributions |
| **Environmental Protection** | Environmental Definitions, Environmental Problems, Environmental Protection Measures, Nature Pollution, Noise, Environmental Regulation Information, Risk Analysis, Waste Storage, Personal Protection Measures International Health and Safety Alerts |
| **Professional Ethics** | Ethical and moral concepts, Factors that play a role in the formation of morality, Ethical systems, Professional ethics, Professional corruption and consequences of unethical behavior in professional life, Social responsibility |

**3. Semester Course Contents**

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| **Digital Electronics** | Digital concepts, Number systems, Logic circuits, Boolean expressions, Compound circuits, Logic families |
| **Electromechanical Control Systems** | Control elements, protection relays, Three-phase asynchronous motors cut and continuous operation, two different (remote) start, change direction of rotation, three-phase asynchronous motors, braking in three-phase asynchronous motors, control in double-speed motors, one-phase asynchronous motor control changing circuits and direction of rotation, starting direct current motors and changing direction of rotation, braking in direct current motors. |
| **Asynchronous and Synchronous Machines** | Structure, properties and working principle of three-phase asynchronous motors, Equivalent circuits of three-phase asynchronous motors, Idle operation in three-phase asynchronous motors, short circuit and load operation, Starting speed control and braking in asynchronous motors, Single-phase motors, Synchronous generators and structure of synchronous motors working methods and principles, phasor diagram for inductive and capacitive loads in synchronous generators, parallel connection of synchronous generators, starting in synchronous motors, phase diagram in case of inductive capacitive and ohmic operation of synchronous motors, loading of synchronous machine. |
| **Computer Aided Project-1** | Basic drawing methods, Drawing of a given object, Viewing and sectioning from a perspective picture, layers, colors and lines, Installation drawing on architectural plan, Basic drawing commands, Basic installation drawing, Program features, drawing screen, dimensioning, basic drawing commands. |
| **Power Electronics - 1** | In this lesson; It is aimed to gain knowledge and skills for semiconductor switching elements, rectifier and chopper circuit applications. |
| **Elective Courses** |  |
| **Special Installation** | Hazardous and comfortable working environments, Agricultural livestock and gardening applications, Temporary construction site, Protection of buildings and facilities against lightning strikes, Cathodic protection, Auto electricity, Security systems |
| **Winding Technique** | Material technology in electric machines, DC winding machines and windings of universal motors, Winding alternating current machines. Application of one and three phase asynchronous motor windings. |
| **Electric Energy Transmission and Distribution** | In this course, it is aimed to introduce the materials of all kinds of high voltage networks and to gain competencies for the processes of their assembly. |
| **Energy Conversion Systems** | Energy Conversion and Efficiency Concept, Combustion Based Technologies (Internal Combustion Engines, Gas Tribunes, Steam Tribunes, Catalytic Reactors), Non-Combustion Based Technologies (Fuel Cells, Biological Reactor, Solar Eyes, Water Tribunes, Wind Tribunes) |
| **Boron Technology** | General information about inorganic boron compounds, sodium borates, dehydration and drying of Borax, Borax Production, Tincal from Borax Production in Turkey, anhydrous borax production, Boric Use and Features of Acid Production Methods, colemanite from Sulfate Acid With Boric Acid Production of Boron Compounds and Pipe Biological Properties, Environmental Pollution of Boron, Usage of Boron in Energy Field (Boron Solid Fuels, Sodium Borohydride Applications, Storage of Solar Energy, Solar Cell Protector |

**4. Semester Course Contents**

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| **System Analysis and Design** | Feasibility study (To be able to prepare the foreseen project), Project process (To be able to implement the projected project), Presentation (To be able to present the projected project) |
| **Computer Aided Project-2** | Reading and transfering architectural, electrical and mechanical projects to computer environment, planning a project, drawing weak current installation projects in computer environment, drawing lighting projects in computer environment, making project calculations, drawing power projects in computer environment, drawing facility projects in computer environment. |
| **Panel Design and Installation** | It is aimed to select the materials in accordance with the project and standards and to install them on the panel, to make the cable and busbar connections between the devices in an error-free and in accordance with the standards, to make all kinds of tests of the panels and to assemble them in place. |
| **Power Electronics - 2** | In this lesson; It is aimed to gain knowledge and skills to establish an inverter and frequency converter circuit. |
| **Programmable Controllers** | Basic technology of PLC, PLC units, PLC interface program, Writing program with Ladder diagram, Writing sequential function blocks programs, Using operator panel / touch panel, Programing operator panel / touch panel, Running pneumatic circuit with PLC, Running hydraulic circuit with PLC Motor control with PLC. |
| **Elective Courses** |  |
| **Scada Systems** | In this course, it is aimed to gain competencies for Scada system setup and record keeping. |
| **Hydraulic Pneumatic** | Introduction of hydraulic component symbols, setting a pressure control valve, analyzing a pilot operated safety valve operation; Pascal law analysis, flow evaluations, velocity, work, energy and power calculations in fluids, power losses, industrial hydraulic circuits; meter analysis - meter output and flow control circuits bypass; hydraulic pumps, motors and evaluation of their properties; direction and control valves, basic hydraulic control valves introduction |
| **Specially Designed Engines** | Universal motors, Stepper motors, Servo motors. In this course, it is aimed to gain competencies for finding, connecting and operating the ends of all kinds of specially designed engines. |
| **Laser Application Techniques** | Principles of laser theory, CO2 gas and fiber lasers, two and three dimensional laser benches, laser cutting, welding, coating, alloying, bending, heat treatment, laser cleaning and etching, direct metal laser sintering, laser beam shaping, laser prototyping , laser machine maintenance, mirror and lens cleaning, optical settings, CAD-CAM programs used in laser machines, laser applications on ceramic, polymer and textile materials, femtosecond laser machines and applications |
| **Electric Power Transmission and Distribution** | Basis of Electrical Power System Theory, Electrical Power Transfer, Electric Power Transfer Model, Distribution Systems and Planning, Lightning Protection, Grounding and Safety, Production at Distribution Level |