T.C. MARMARA ÜNİVERSİTESİ
TEKNİK EĞİTİM FAKÜLTESİ
ELECTRONICS AND COMPUTER EDUCATION DEPARTMENT
COMPUTER AND CONTROL EDUCATION PROGRAM

COURSE DESCRIPTIONS

1ST TERM

ATA121 ATATURK'S PRINCIPLES AND THE HISTORY OF TURKISH RENEVATION I (2+0)2
General information about Turkish Republic between 1900 – 1940

CCM101 USING FUNDEMENTALS OF INFORMATION TECHNOLOGIES (2+2)3
Introduction to Computers: What is computer systems, Elements of computer systems , Classification of computers. . System Software: Operating systems, operating system concepts, single tasking, multi-tasking, multi-user, time sharing virtual memory, multiprogramming ,, programming languages, assemblers, compilers, linkers, interpreters, utility programs. Application Software: word processing, and desktop publishing, Spreadsheet programs, Database programs, multimedia, Computer's Hardware: CPU Section; .microprocessors, primary storage EPROM, RAM, cache memory, main board, parallel and serial ports USB, Fire Wire, Input Devices, Output Devices, Secondary Storage Devices. Computer communication systems: Data communication, LAN and Networking, Internet applications.

CHEM125 CHEMISTRY (2+0)2
Introduction to atomic theory, stoichiometry, electronic structure, molecular orbital properties of solutions, equilibrium chemical kinetics, thermodynamics and electrochemistry.

EDU183 INTRODUCTION TO TEACHING PROFESSION (3+0)3
Properties and Principle of Teaching Occupation, School and Clasroom environment. Social, phlosophic, psychologic and historical base of Education. Education System of Turkey

MATH141 MATHEMATICS I (4+0)4
Limits and derivatives. The Mean Value Theorem. Definite and indefinite integral. The logarithmic, exponential, inverse trigonometric and hyperbolic functions. L'Hospital rule. Techniques of integration. Numerical methods of integration. Applications to geometry and physics. Area in polar coordinates. Improper integrals. Sequences. Infinite series, power series and Taylor's series.

MECH105 TECHNICAL DRAWING (1+2)
Professional drawing tools, writing types, point, straight line, drawing three dimension objects and their projection, drawing three appereance of object which is given as perspective Picture, appereance types, intersection appereance drawing perspectives, drawing the isometric-dimetric-trimetric perspectives, drawing the electronic components, drawing the circuit diagram and drawing the printed circuit, drawing underside and upperside view on a page

PHYS131 PHYSICS I (3+0)3
Vectors; kinematics; particle dynamics work and energy; conservation of energy; system of particles; collisions; rotational motion; oscillations

TRD121 TURKISH LANGUAGE I(2+0)2
Language and culture connection, Turkish language in world languages, Development of Turkish language, Turkish language, Sound classification, Rules of Turkish language, Syllable, Spelling rules, Punctuation , Appendix, Verbs, Adverbs and prepositions

YDI131 ADVANCED ENGLISH I(3+0)3
Numbers, letters, verb to be in present tense, Subjective-objective-possessive pronouns, this-that-these-those, adjectives, there is-there are, some propositions (on, in, under), ordinal numbers; Would like, Which?, Whose?, emphatic pronouns, instructions, What make?, can, have got-has got; How much-How many?, What?, one-ones, Which one?, Which ones?, letter format, name, address; What is it like?, present continuous tense; Who?, days of the week, too-either

2ND TERM

ATA122 ATATURK'S PRINCIPLES AND THE HISTORY OF TURKISH RENEVATION II (2+0)2
General information about Turkish Republic between 1940 – 1960

CCM106 INTRODUCTION TO OBJECT ORIENTED PROGRAMMING(2+2)3
Structural and modular program logic, problem analysis methods. Basic algorithm terms, module separation and sorting techniques. The flow chart symbols, symbols, inter-connectivity, input, output, decision, and the reference symbols. Variable and fixed types, numeric variables, alphanumeric variables, variable selection criteria. Assignment, decision and loop structures, graphical programming input

EDU184 SCHOOL EXPERIENCE I(1+4)3
Define technical and vocational education, describe the historical context of technical and vocational education, describe the foundations and organization of technical and vocational education, understand the legal basis of technical and vocational

education, describe the current provision and characteristics of technical and vocational education, understand some of the problems and trends in technical and vocational education.

ETE104 INTRODUCTION TO ELECTRONICS TECHNOLOGY (2+2)3

The basic electrical concepts, current, voltage, power, energy, labor, electric field, the basic laws of electricity, Ohm's Law, Kirchoff's laws. Electrical / electronic circuit elements, resistors, capacitors, inductors, transistors, diodes, zener diodes, transformers, fuses, LED. Analog and digital ammeter, voltmeter, ohmmeter and oscilloscope, operating principles and use of current, voltage, resistance, dB, frequency, period, phase difference, inductance, capacity, power, beta current gain measurement and control of semiconductor component. Signal generators; use of sine, square, triangle, sawtooth signals, frequency tuning, amplitude adjustment. Electrical / electronic devices, tests, resistance, diodes, capacitors, LEDs, transistors, inductors, fuses, zener diode, transformer, lamp, cable, electric switch tests. Electronic circuit scheme, serial, parallel, serial-parallel and mixed, resistor, inductor and capacitor circuits, rectifier circuits, passive filters and regulators, printed circuit board drawing, remove the top and bottom view, print circuit transfer methods plaque, plaque drilling , soldering iron and solder properties, solder pump, soldering techniques

MATH142 MATHEMATICS II (4+0)4

Complex numbers. Vectors, lines and planes in space, scalar and vector products. Vector valued functions. Space curves. Functions of several variables: Limit, continuity, partial derivative, directional derivative. Tangent plane. Extreme values. Method of Lagrange multipliers. Multiple integrals. Cylindrical and spherical coordinates. Line, surface integrals. Green's Theorem. Gauss' and Stokes' Theorems.

PHYS132 PHYSICS II (3+0)3

Electric charge; electric field; Gauss' law, electric potential; capacitance; current and resistance; circuits; magnetic field; Ampere's law; Faraday's law of induction; electro-magnetic oscillations; alternating currents.

TEFE172 WORK HEALTH AND SAFETY (2+0)2

Descrition and importance of work safety,work safety,company safety,production safety,description of "work on accident" and its elements,description of"profession disease" and its elements,accident frequency ratio and its calculation,accident weight ratio and its calculating, midterm,work safety activity and activity ratio,basics reason of accident(accident chain),work health and safety system(TS-OHSAS 18001-18002)basic principles of work safety method risc matrices,ergonomy,discipline,risc evulation,organization of work safety.Law,regulations and procedures related work safety,study week,final

TRD122 TURKISH LANGUAGE II (2+0)2

General information about composition, Planning and practice in composition, Forms of compositions, Elements of sentences, Literarily anxiety world, Composition types, Expression and sentence trouble, Articles and bulletins

YDI132 ADVANCED ENGLISH II (3+0)3

Time, be going to, simple present tense and frequency adverbs, s of manner, verb to be in past tense, When?, monthlies, What was it like?, there is was-there were, simple past tense, a little-a few, past continuous tense must-mustn't-needn't, too-enough, present perfect tense, present perfect continuous tense, past perfect tense, past perfect continuous tense, prepositions (out side, into, out of, up, from, between, in front of, behind, across, along, near, round). Why?... Because

3RD TERM

CCM205 COMPUTER PROGRAMMING I(3+2)4

Java development program, codification, compiling, error handling,objects, Java class structures, applett projects, arrays, one dimensional and multidimensional arrays, inheritance, text and binary files, GUIs

CCM261 COMPUTER HARDWARE(2+2)3

Computer equipment: chassis, motherboard, processor, RAM, harddisk, video card, sound card, fax / modem card, CD-ROM, floppy disk types, technical features, standards and usage of computer software, types, characteristics, standards, usage areas , strengths and weaknesses to Chassis mount preparation, the main card in the safe placement, the drive units to the safe placement, peripheral cards master card slots nickname, safe inside the cable installing, safe to shutdown the monitor connection, keyboard, connect the mouse connect the printer, connect the speaker connection BIOS settings Making the operating system installation, drivers, application software installation and install the operating system to test the card belongs to the properties of the drivers and software testing, operation of peripheral units for testing on a sample

EDU285 DEVELOPMENT AND LEARNING (3+0)3

Describe the relationships between education and the processes of socialization, account for social mobility, describe the role of the school as a social institution, be aware of the effect of group dynamics in the school, understand the role of the teacher.

ETE203 LOGIC CIRCUITS I(3+0)3

Introduction to digita systems, number systems and codes, logic gates, boolean algebra, combinational logic ciecuits, SOP and POS form, karnaugh map, multiplexer demultiplexer, ALU, code converter

ETE291 CIRCUIT ANALYSIS I(3+2)4

Definitions And Circuit Parameters(charge,current,current density,potential,power,enery Dc current, Accurrent, Resistor ,inductor,capacitor)Kirchoff's Laws, Series and paralel circuits,Active and passive circuit elements,Current sources,Voltage sources Delta wye transformation Circuit topology Matrices, Techniques of circuit analysis Mash current network analysis,Node voltage network analysis Superposition Thevenin and Northon Theorems Maximum power transfer, RL, RC, RLC Circuits Fırst order differential equations First order circuits, normal and step response of RL and RC circuits Laplace transform Second order circuits Normal and step response of RLC circuits

MATH245 DIFFERENTIAL EQUATIONS(3+0)3
definition of differential equations and elementary functions. Solutions of first order differential equations, linear dif. equ., homogen dif. equ., bernoulli dif. equ. Applications of first order differential equations. Solutions of second order differential euations and various forms. Indefinite coefficient methods. Differential equation systems and solution techniques.

STAT227 STATISTICS AND PROBABILITY(2+0)2
Descriptive statistics (the collection of data, standardizing, graphics are drawn, with the help of the table is a summary, arithmetic mean, variance, kovaryans, correlation coefficient). Central tendency (mean, median, mode, geometric and harmonic mean) and spread (range of change, the average absolute deviation, variance, interquartile) measurements. Skewness and kurtosis. Basic probability concepts. Prediction techniques (method of least squares, maximum similarity method). Regression and correlation (simple regression, multiple regression, correlation, partial correlation). Curve fitting. Hypothesis tests (average of the tests, variance tests, tests of parameters estimated).

4TH TERM
CCM206 COMPUTER PROGRAMMING II (2+2)3
introduction to .NET concept, .NET platform, .NET programming languages, :NET services(ASP.NET, ADO.NET,XML), C#.NET aplications variables, statements,operators, fuctions, decision stataments, loops, error handling, creating class and objects,referances, arrays, inheritance, operators over loading, windows foms, dialog toolbox, MDI and SDI conceps

CCM208 PROFESSIONAL SOFTWARE APPLICATIONS (2+2)3
Computer Analysis and Simulation of Circuits, DC Sweep Analysis - DC Circuits, AC Analysis – AC Circuits, Transient Analysis, Diode Circuits, Transistor Circuits, Operational Amplifier Circuits, Special Solid State Circuits, Logic Circuits, Data Communication Modular Design and Application, Harmonic Distortion, Noise Analysis, Monte Carlo Analysis, Worst Case Analysis, Optimization, Printed Circuit Board Design

CCM264 MULTIMEDIA APPLICATIONS (2+2)3
Multi-media applications, planning, while blind, analysis, design, priority setting. Graphics, images, audio software, software type, software selection, to merge graphics, video and audio recording. Images, graphics, audio formats and converting operations. Image partition, merge, add sound, add effects. Animating graphics or text, software selection, implementation effects. Graphics, images, sound and text objects to combine, to provide integrity, color harmony.

EDU286 PLANNING AND EVALUATION IN EDUCATION(3+2)4
Describe the principles of program development, describe the main types of programs, describe the role and purpose of learning outcomes in education, carry out job task and skill analysis, prepare the content of a program, select and arrange an appropriate teaching/learning situation, evaluate a program.

ETE282 ELECTRONIC CIRCUITS (3+2)4
Semiconductor theory: PN junction, diode equation, equivalent diode circuits, forward and reverse biased characteristics. Special diodes: zener diodes, LEDs, Schottky's diode, PIN diodes, Varicap diodes, Tunnel diodes. Diode applications: Half and full wave rectifiers, clampers, clippers, voltage doublers, voltage regulators by using zener diodes. BJT and JFET type Transistors. BJT type transistors: PNP and NPN types, configurations, biasing circuits, load line and Q point, BJT Amplifiers, Input and output resistances according to teh configuration type, voltage gain and phase relations.JFET and MOSFET type transistors: structure, input-output characteristics for different configurations, biasing circuits, stability analysis. Multistage amplifiers: gain and phase relations, loading effects. Differential amplifiers and introduction to operational amplifiers, OPAMP application: inverting and non-inverting amplifiers, summation, substruction, differentiation and integration etc.

ETE204 LOGIC CIRCUITS II (2+2)3
Memory circuits, ROM, PLA, RAM, DRAM, Flip-Flops: RS, JK, D, T,Master slave FF's, registers, synchronous-asynchronous up/down counters. Interfacing with the analog world;DAC-ADC converters.

ETE292 CIRCUIT ANALYSIS II(3+2)4
AA Wave Forms, İnstanteneous,Average,Effective Value and Form Factor, Sinusodial Current and Voltage,Series and Parallel Circuits (RL,RC,RLC), Complex Numbers,Complex Impedance and Phasor Notations, Analysis of AC Circuits using

Phasor Notations, Power and Power Factor Correction, Series and parallel Resonance, Circuit Analysis using Mesh Current Method, Circuit Analysis using Node Voltage Method, Circuit Analysis using Thevenin and Norton Theorems, Circuit Analysis using Superposition Theorem, Polyphase Systems Circuit Analysis using Laplace Transform Techniques, Circuit Analysis using Fourier Transform Techniques, Transient Analysis

MATH206 PROFESSIONAL MATHEMATICS (3+0)3
Definition of laplace transformation. Transformation of simple functions, important theorems and features of laplace transformation. Inverse laplace transformation. Laplace solution of differential equations and electric circuits. Z - transformation of basic functions. Important theorems and features of z- transformation. Z-tranform solution of differential equations and electric circuits. Trigonometric fourier series, fourier integrals, fourier transforms, inverse fourier transforms. Fourier tranform solution of differential equations and electric circuits.

5TH TERM
CCM301 MICROPROCESSORS (2+2)3
General computer architecture, microprocessor architectures, 16-32bit microprocessors, Memory access and microprocessor, pipeline structure, The programming model, register functions, Command execution, The Instruction set, data movement instructions, Addressing modes, Aritmetic-Logic instructions, Program control instructions, subroutine handling and return, String instructions, multitasking operation, Programming the microprocessor, modular programming, Interrupt processing, expanding the interrupt structure, Writing assembly program, Microprocessor hardware specifications, Bus timing,buffering and latching, Memory Interface, memory map and its construction, Input/Output Interface, Port structures, Microprocessor peripherals, Parallel Input/Output controller, Timer/Counter, Microprocessor peripherals: Interrupt controller, UART, Direct memory access.

CCT371 CONRTOL SYSTEMS I (3+2)4
Introduction, Basic definitions, Open-Loop and Closed Loop control systems. The compenents of a closed loop control system, History of control systems, Flyball regulator. Poles, Zeros, s plane, Initial value and Final value theorems. Transfer functions, Block diagrams, Rules and block diagram reduction methods. Signal-flow graphs, Mason's gain formula. Transfer functions and block diagrams of liquid-level systems, mechanical systems. Steady-state and transient response of first order and second order systems. Maximum overshoot, Peak time, Rise time, Delay time and Settling time. Stability of linear control systems, Routh-Hurwitz stability criterion. Steady-state errors. Analog Controller, ON-OFF controller; algorithm, applications, thermostat . P type controllers, transfer curve and designing P controller with OPAMPs. PID Controller, transfer function, theori and algorithm of PID. Finding PID coefficients by using Ziegler-Nichols method.

CCT373 PNEUMATIC CONTROL (2+2)3
phsical principles in pneumatics,directional control valves, linear and rotary acuators, servopneumatic systems, PLC controlled elctropneumatic systems.

CCT391 ELECTRIC MACHINES (2+2)
Classification and history of electrical machines. DC electrical machines, constraction details, principles, classification, connection diagrams, Power, power losses, efficiency, torque and basic equations.Speed characteristics of DC motors for load and no-load conditions, speed regulation and applications of DC motors.Principles of DC generators, classification, connection diagrams, voltage characteristics, voltage regulation and applications of DC generators. Stepper motors; theory, classification, definitions, basic constraction and applications.Drive methods of stepper motors, determining of winding connection terminals.AC electrical machines, induction motors, rotating magnetic field, slip, equivalent circuits, determination of equivalent circuit parameters. Brushless DC motors. Transformers, constraction, principles, classification, autotransformers, instrument transformers, equivalent circuits, determination of equivalent circuit parameters. Synchronous machines, principles of operations, applications.

EDU385 EDUCATION TECHNICS AND MATERIAL DEVELOPMENT(2+2)3
Describe the history and development of technology of education, describe the relation between communication and learning, describe a range of traditional teaching/learning resources with their typical uses advantages etc, describe modern developments in technology of education, justify the use of any particular teaching/learning resources, apply a range of teaching/learning resources to maximize student involvement and learning, develop teaching/learning resources as and when required

ETE303 MEASUREMENT AND INSTRUMENTATION (2+2)3
Basic measurement system components: Sensing elements, signal conditioner circuits, signal processing block, display units. Definition and classifications of sensors and transducers, Contact and non-contact sensors or resistive, electomagnetic, thermal sensors etc. Characteristics of a measurement system: Dynamic, static and statistical characteristics. Dynamic characteristics: transfer function, Static characteristics: Input Range, Output range, Span, Nonlinearity, Sensitivity, Histeresis, Resolution, Output Impedance, Statistical characteristics: Repeatibility tests, tolerance Enviromental effects on linear transfer function: Modifiying effect, interfering effect. Error reduction methods: Compensating

nonlinear elements, isolation, zero enviromental sensitivity, opposite enviromental input, differantial system , high gain negative feedback. Temperature measurement: Thermocouples and types, cold junction compensation(cjc) Resistance Temperature Detectors (RTDs, PT100) and 2, 3 or 4 wired RTD connections, Signal Conditioner circuit example: Wheatstone or deflection bridge, Thermistors (NTC, PTC), IC temperature sensors (LM35 etc) and Circuit design. Pressure measurement: Absolute pressure, gage pressure, differential pressure

Displacement and pressure measurement by Capacitive method (paralel plate capacitors), Resistive sensing elements, strain gauge and loadcell, Gauge factor, pressure and weight measurement by using strain gauges. Signal processing basic concepts: sampling, quantisation, encoding. ADC and DAC, DAC design: binary weighted resistor network and R-2R ladder network.

6TH.TERM

CCM302 MICROCONTROLLERS (2+2)3

Introduction to microcontrollers, microcontroller architectures, Organization of microcontroller based embedded systems, 8051 family microcontrollers, PIC microcontrollers, Software model, internal/external memory maps, Special function registers, I/O port specifications, addressing modes, Instruction set, data movement instructions, aritmetic and logic instructions,Shif-rotate, bit manipulation instructions, Program control instructions,   Programming microcontrollers in assembly language, Interrupt events and polling, interrupt programming, Internal Timer/Counter system, generating PWM signals, Serial port interfacing, programming UART, Analog/digital hardware interfacing (switches, transistor, stepper motor, relays, led, sensors etc.), Display, keyboard interface and driving techniques, A/D and D/A interfacing system, basic control system implementation.

CCT372 CONTROL SYSTEMS II (3+2)4

State-space representation of the control systems and canonical form.Converting a transfer function to state-space.Converting from state-space to a transfer function.Converting a block diagram to state-space. Laplace transformation solution of state equations.Eigenvalues, Controllability and Observability.Signal-flow graphs of state equations.Root Locus analysis, definitions and plotting rules of Root Locus.Root Locus plots (with Matlab) and stability analysis.Bode diagrams, plotting bode diagrams with Matlab and stability analysis.Polar plots, drawing Nyquist Plots with Matlab, phase margin and gain margin, Nyquist stability criterion.

CCT374 PROGRAMMABLE LOGIC CONTROLLERS (2+2)3

Fundamentals of control systems. Components of control systems; contactors, relays, timers, protective relays and basic standarts of control circuits. Programmable logic controllers (PLC); CPU, input and outputs, memory structure. Operating system of PLC and running of user program. Programming languages; statement list, ladder diagram and function block diagram. Basic instruction list, timers, counters, arithmetic and comparing instrucions. Communication protocols. Selection critearies of PLC and industrial applications of PLC.

CCT376 ELECTRIC CONTROL TECHNICS (2+2)3

The components of electrical control circuits, Buttons, Switches.Drum switches, Position-contact diagram and basic application circuits.Contactors, Time relays, Proximity and Limit switches, design procedure of drawing of control and motor circuit,Basic command circuits for electrical motors, Reversing, Continuous and Peace-wice run.Control of two speed one-winding (Dahlender) induction motor. Automation of a garage gate, Barrier type gate.Starting methods, Primary resistor type and Reactance type starters, Calculation of starting resistor.Autotransformer starters, Star-Delta starters, Current, power and torque during star-delta starting .Braking, Mechanical braking, Dynamic and Regenerative braking, Dynamic braking of DC motors.Dynamic braking of induction motors, Calculations of braking voltage.Protection devices, Overload relays.Thermic overload relays, circuit layout and an example circuit.Protection relay with thermistor, Phase sequence relay.

EDU386 SPECIAL INSTRUCTION METHODS I (2+2)3

Describe and apply a range of teaching methods and techniques, prepare students for learning, plan teaching and learning activities, apply research-analysis and assignments.

EDU388 CLASSROOM MANAGEMENT (2+2)3

Understand the reasons for prating the skill elements of teaching via micro-teaching, prepare implementation plans micro-teaching and practice lesson sessions, practice and development competence in the basic skill aspects of teaching, practice combining these basic elements together during a longer lesson, gain confidence in teaching to a group of learners, development skills of communication, be aware of need to very activities in a lesson, became aware of feedback from student behaviors about effectiveness of teaching and evaluate their own performance via play back of video in both micro-teaching and practice lesson sessions, be able to re plan future lessons in the light of feedback from micro-teaching sessions.

ETE304 POWER ELECTRONICS (2+2)3

Power Electronics Systems, Power Semiconductor Switches, Snubber Circuits, Gate and Base Drive Circuits, Power Dissipation , Thermal Control and Heat Sink, Diode Rectifiers, phase controlled rectifiers, Linear Regulators, DC-DC
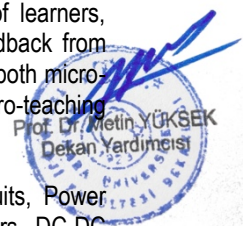
converters, DC-AC converters, Computer Simulation of Power Electronic Converters, Power Conditioners and Uninterruptible Power Supplies, Motor Drive Applications.

7TH TERM

ETT401 GRADUATE PROJECT I (0+2)1

project, research, experiment, report concepts

CCT471 DIGITAL CONTROL SYSTEM (3+2)4

Overview Digital Control System, Linear, Linear-Time Varying Systems, Open Loop Systems, Closed Loop Systems, Sampling Process, A Sampler and Zero – Order Hold, Unit Step, Unit Ramp, Exponential Functions, Inversion Integral Method (Residue Theorem), Z Transform Method for Solving Difference Equations, Data Hold Circuit, Reconstructing Original Signals From Sampled Signals, Pulse Transfer Function, Convolution Summation, Starred Laplace Transform Of The Signal Involving Both Ordinary And Starred Laplace Transforms, Pulse Transfer Function Of Cascaded Elements, Pulse Transfer Function Of Closed – Loop Systems, Pulse Transfer Function Of Closed – Loop Systems, Pulse Transfer Function Of Digital PID Controller, Design of Discrete – Time Control Systems, Mapping Between S Plane And Z Plane, Stability Analysis Of Closed Loop Systems in the Z Plane, Characteristic Equation, Jury Stability Test, Bilinear Transformation and Routh Stability Criterian, Transient and Steady – State Response Analysis, Steady – State Error Analysis, Response to Disturbances, Root Locus, General Procedure for Constructing Root Loci, General review and problem solutions

CCT473 INTRODUCTION TO ARTIFICIAL INTELLIGENCE (2+2)3

Fundamental properties of artificial intelligence. Search algorithms. Questing, learning theory and styles, artificial neural networks, semanthic circuits, uncertainty, probability, planning, markov desicion process, natural language processing, and classification. Applications of advanced artificial intelligence, perception of vision, learning, and questioning.

CCT475 CONTROL SYSTEM SOFTWARE (2+2)3

Main structure of Matlab program software, Folder operations, Matrice operations, Matrice functions, Matlab variables and rules, Basic mathematical functions, Graphical operations, Data evaluations, data processing and analysis, Equation groups ve solutions of mathematical functions , Solutions of Diferantial equations , Control Systems design using Matlab-Simulink, Formation of Transfer Functions, Time domain analalysis, Root loci, Bode diagram and Nyquist diagram plot, State space analysis, ON-OFF, P, PID and Fuzyy controller designs

EDU483 SCHOOL EXPERIENCE II(1+4)3

Describe and apply a range of teaching methods and techniques, prepare students for learning, plan teaching and learning activities, apply research-analysis and assignments

EDU487 SPECIAL INSTRUCTION METHODS II(2+2)3

Define technical and vocational education, describe the historical context of technical and vocational education, describe the foundations and organization of technical and vocational education, understand the legal basis of technical and vocational education, describe the current provision and characteristics of technical and vocational education, understand some of the problems and trends in technical and vocational education.

8TH TERM

ETT402 GRADUATE PROJECT II(0+2)1

Hardware and software design of project writing and presenting project

CCT472 DIGITAL CONTROL SYSTEMS II (3+2)4

Controller Design Based on Root Locus , Drawing Bode Diagram, Phase and Gain margin, Controller Design Based onFrequency Response,Phase-Lag Compensator Design, Phase-Lead Compensator Design, State Space Representations of Discrete-time Control Systems, Pulse Transfer Function Matrix, Controllability , Observability, Design via Pole Placement, Liapunov Stability Analysis, General review and problem solutions

CCT474 INTODUCTION TO ROBOTICS (2+2)

Fundemental components of robotic systems. Freedom degree of actuators and features of structures. End effectors, drivers, driver systems, and sensors. Kinematics of actuators, selection of coordinate limits, forward and inverse kinematics, jacobian matrix, soution of kinematic equations. Velocities, forces and moments of bodies and joints. Dynamic modeling; Equations of Lagrange energy and movement. Trajectory planning. Actuator control; system and controller design.

EDU424 GUIDANCE (3+0)3

Identify the differences between individual students in relation to a number of psychological factors, use a variety of measures to identify quantitatively the differences between students, understand the differences between adolescent and adults and the transition from one to the other, be aware of the different developmental stgesw as they occur within the individual, describe some of the basic principles that relate the human learning precesses, plan and prepare lessons that take into account and understanding of human learning processes.

EDU486 TEACHING PRACTICE (2+6)5
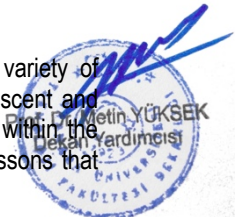
Demonstrate knowledge of the concept, factor and procedures involve determining the required teaching/learning resources, demonstrate a knowledge of techniques and procedures for organizing various types of feeling systems, demonstrates a knowledge of the national legal requirements occupational health and safety, plan a tool and equipment inventory control system for a practical activities area in your specials.

CCM365 WEB DESIGN(2+2)3

Internet, intranet, internet services and protocols (FTP, e-mail, Telnet, WWW, SMTP, POP3, TCP / IP, http, etc..) Concepts. Pictures, graphics, animation, sound, image enhancement software. Hierarchical organization of Web pages, forms, page transitions, determination of target audience, scope, nature, colors, alignment, layout, interaction, document preparation, moving text and pictures. Web editor, frames, tables, lists, forms, placement of visual elements, the script (script) and the applet layout, links, text and line types, buttons and menus. Web space selection; domain name, quality, capacity, Internet service providers (ISP), data base and support for web programming, e-mail limit and cost. File transfer protocol (FTP), and software, Internet service provider connection, a web page to download and update, HTML, XHTML, XML, XSL.

CCM405 COMPUTER PROGRAMMING III(2+2)3

Visual Basic.NET aplications variables, operators,statements, fuctions, decision stataments, loops, error handling, creating class and objects,referances, arrays, inheritance, operators over loading, windows foms, dialog toolbox, MDI and SDI conceps

CCM44 COMPUTER NETWORKS (2+2)3

Using computer networks, Network hardware and software, Reference models(OSI,TCP/IP), Example networks, Network standards, transmission media,copper, fiber optic , wireless communication, Data link layer, framing, error detection and correction, The Medium Access Control Sublayer. Channal allocation, Ethernet protocols and standarts, Swiching technologies Network Layer, IP addressing, IP packet, routing algorithms, congesion controls, TCP and UDP protocols, error recovery, Application Presentation, session layers, WAN technologies

CCT453 INTRODUCTION TO ARTIFICIAL NEURAL NETWORKS (2+2)3

Specifications and structures of artificial neural networks. Various ANN structures. Network training algorithms. Applicaitons of ANN.

CCT477 INTRODUCTION TO OPTIMAL CONTROL (2+2)3

Optimization definition and basic concepts, optimization problem, calculation of minimum maximum points, multi-variable parameter optimization, Variational estimation, Dynamik optimization in control systems , Application of optimization theory to control problems, Linear regulator, Linear servomechanism.

CCT479 SYSTEM MODELLING AND SIMULATING (2+2)3

Introduction to modeling and simulation. Introducing of modeling and simulation softwares. Block diagram representations and reduction. Signal flow graphs. Dynamical system models: mechanics, electrical, thermal, flow and mixed systems. Dynamical response analysis. time and s-domain analysis. Frequency response; time domain response; engineering application: system design and component selection. Experimental methods for system modellings in t and w domains. Modelling of nonlinear systems and linearisation.

ETT453 DIGITAL SIGNAL PROCESSING (2+2)3

Discrete time signals and systems. Sampling and reconstruction. Linear time-invariant systems. The Z transformation. Structures for discrete time systems. The discrete Fourier transform. Fourier analysis of signal using discrete Fourier transformation. Digital filter design techniques. Fast Fourier transformation methods. Optimal filtering and linear prediction.

CCM366 WEB PROGRAMMING (2+2)3

 Interactive web pages, information query on Internet, chat, shopping and membership recording. Installing a web server and installing required programs on web server. Form and script connection, text box, control box, radio button, buttons and menus. Internet programming languages (php, asp, cgi, java, xml etc.), structured differences, comparison, assignment, loops and arrays, java applets, variables and constants. Databases and database query (SQL,MYSQL), database connections (ODBC, JDBC). Managing interactive web pages, data recording, updating, indexing and publishing maintenance.

CCT476 FUZZY CONTROL SYSTEMS (2+2)3

Fuzzy system design, fuzzy set theory, the basic inference algorithm, fuzzy variable design, membersheep fonction, composing fuzzy rules, inference systems, fuzzyfication, defuzzyficatipon, aplication design.

CCT478 DATA COMMUNICATION IN CONTROL SYSTEMS (2+2)3

Introduction to data communication, Communication systems, Telecommunication data utilities, Modemler, Data communication protocols, GSM- based data communication tabanlı veri iletimi and control, Data communication through the radio frequency, Data communication and control applications using GSM AT commands.

CCT484 INDUSTRIAL AUTOMATION (2+2)3

Controller definition, Analog and digital controllers, controller design parameters, controller design algorithms, Real-time controller design, Embedded controller design , PC and PLC based controllers, internet based controller, industrial automation systems.

CCT486 INTRODUCTION TO ADAPTIVE CONTROL SYSTEMS (2+2)3

Definitions and classifications related with Adaptive Control systems, Model reference adaptive systems, Continious time model reference adaptive control systems design, Parameter identification using model reference adaptive strategies, Self tuning control systems and other adaptive control techniques and industrial applications.

ETE432 IMAGE PROCESSING (2+2)3

Fundamentals of an image, image formats, image coding, image capture units, basic structure of a camera, Computer vision systems, correcting image defects, image process methods, image enhancement, gray level image, brightness and contrast adjust, b inary image processing, image filters, image segmentation and thresholding, global image measurements, image features (texture, shape), shape features, processing image in frequency space, image transformations.

Prof. Dr. Metin YÜKSEK
Dekan Yardımcısı