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

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.

ETE201 ELECTRONIC CIRCUITS I(3+2)4

Insulators, Conductors, and semiconductors concepts: atomic structure, electrons and holes, conduction theory in semiconductors, energy levels. PN junction, depletion region, semiconductor diode structure, operation principles, 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, logic gates design, voltage regulators by using zener diodes. BJT transsitors: PNP and NPN types of BJT, theory of operation, BJT configurations. BJT Biasing:Choosing of Q point, stability. BJT Amplifiers: Input and output resistances, αand b current gains, re and hybrid small signal analysis, voltage gain and phase relations.

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,Ac current,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 Rewision
RL, RC, RLC Circuits Fırst order dif 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

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

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.

ETE202 ELECTRONIC CIRCUITS II (3+2)4

JFET and MOSFET transistors:structure, theory of operation. JFET Configurations: Input and Output Characteristics, biasing methods, stability analysis and comparison between them. JFET amplifiers: Small signal models, voltage gain and phase relations. Multistage Amplifiers: Small signal model, voltage gain and phase relations, loading effect. Frequency responce of the amplifiers: Midband, low and high frequency regions, bandwidth, dB, decade and octave concepts, effects of the internal and external capacitances on gain, Bode plots for gain and phase relations, low and high frequency small signal models of the amplifiers, calculations of the lower and higher cutoff frequencies, Miller effect on hihger cutoff frequency. Differential amplifiers: Differential and common mode gains, Common Mode Rejection Ratio.

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.

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

ETE301 ELECTRONIC CIRCUITS III (2+2)3

Integrated circuits, differential amplifier specifications, Introduction to operational amplifier, Operational amplifier basic specifications and analysis methods, Basic specifications of an ideal and practic opamp, opamp equivalent models, Negative & positive feedback, Opamp circuit analysis methods, Inverting-noninverting amplifiers, coupling between multiple inputs, Combining inverting-noninverting inputs, designing multistage opamp circuits, Designing amplifiers using multiple opamps, Summing, subtracting, differentiator, integrator opamp circuits, Practical opamp and specifications, Stability of feedback amplifier, Opamp frequency response, Nonlinear opamp circuits, Analog to digital- digital to analog converters, Designing active filters using opamp, Designing opamp circuits for specified problems

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, 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.

ETE393 ELECTROMAGNETIC FIELD THEORY (2+0)2

Coordinate Systems , Vector Analysis, Coulomb's Law and Electric Field İntensity, Electric Flux Density, Gauss Law,Divergence Theorem, Energy and Potential, Conductors, Dielectrics and Capacitance, Poisson's and Laplace's Equation, Magnetic Field ,Biot-Savart Law, Magnetic Flux and Magnetic Flux Density, Magnetic Forces and Torque on Materials, İnductors, Magnetic Circuits, Potential Energy and Forces on magnetic Materials, Magnetization and Permiability,

ETT341 COMMUNICATION SYSTEMS I (3+2)4

Modulation process,modulation types,AM,PM,FM ,RF,SF modulation envelopes,,modulation index, modulator circuits, DSB,SSB, frequency spectrum,antennas,AM transmitter circuits,Receiver circuitsresonance circuits,superheterodyn IF circuits,automatic frequency ang gain control, FM modulator demodulator structure , Comparasion of AM-, FM tehniques

ETT351 SIGNALS AND SYSTEMS (2+0)2

Continous and Discrete Time Signal concepts, properties and types: Sine, step, pulse, ramp functions, sampling theorem. Continous and Discrete Time system concepts, input-output definition, State variables, zero-state, zero-input response, linearity and time-invariant concepts. Convolution theorem, discrete convolusion, difference equations and formulations, Laplace and Z-transform, Fouries series and transformation. Discrete time Fourier series, and transformation, Solving Difference Eqns. using the z-transform.

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.

CCT 306 CONTROL SYSTEMS (2+2)3

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. Transfer functions and block diagrams of liquid-level systems and 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.

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, 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.

ETT342 COMMUNICATION SYSTEMS II(3+2)4

Sampling process,Nyquist teorem, ideal, flat natural sampling,quantizing process, compression, expension techniques,ADC, PAM,Pulse time modulation (PDM, PPM)PCM, DM,Differantial PCM,Baseband data transmisssion, intersymbol interference, transciever structure, multi level data transmission,error performance,FDM, TDM methods, ASK,PSK,FSK

ETT348 IMAGE SYSTEMS (2+2)3

TV broadcasting systems, channel allocation, transformation of picture to image, TV working principles, PAL SECAM NTSC systems, tuner, scanning and picture part, voice, picture, power sections, teleteks, remote control systems, CRT, LCD, HDTV video working principles, TV distribution systems, closed circuit tv systems, camera security systems.

7TH TERM

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.

ETT401 GRADUATE PROJECT I (0+2)1

project, research, experiment, report concepts

ETE437 INDUSTRIAL ELECTRONICS (2+2)3

Industrial Logic Circuits, Solid State Relays, Power Control Devices and Circuits, Firing and Triggering Circuits, Operational Amplifier Circuits, Sensors, Transducers, Optoelectronic Components and Circuits, Lasers and Fiber Optics, , Open Loop and Closed ontrol, Feedback Systems, Valves, Relays, Pneumatic , and Hidrolic Systems, AC and DC Motors, Stepper Motors, Servo Motors and Drives, Motor Control Devices and Circuits, Robotics, Industrial Electronics Application, Industrial Power Supplies, Inverters.

ETT441 DATACOMMUNICATION SYSTEMS (2+2)3

Data transmission, data coding, communication channels, asynchronous and synchronous transmission digital data communication technics,   data compression, data encryption, multiplexing, noise and attenuation

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.

ETTxxx TECHNICAL ELECTIVE I (2+2)3
ETTxxx TECHNICAL ELECTIVE II (2+2)3

8TH TERM

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.

ETT402 GRADUATE PROJECT II(0+2)1

Hardware and software designs, writing and presenting project

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.

ETT442 MICRWAVE TECHNIQUES (2+2)3

Introduction (Microwave Frequencies,Components,Devices,Systems), Electromagnetic Planewaves , Maxwell's Equations, Electric and Magnetic Wave Equations, Solution of the wave equation, Propagation constant,Attenuation constant,phase constant, Planewaves in good conductors,poor conductors,lossy Dielectics, Reflection of Microwaves , Radars, Microwave waveguides ,Rectangular and circular waveguides, Microwave Cavities,Circulators,Tees,Couplers, Microwave Generation and Amplification, Travelling wave tubes , Klaystrons, Magnetrons, Gunn diyotes ,İMPATS, TRAPATS Microwave Strip lines, Monolitic Microwave Integrated Circuits

ETTxxx TECHNICAL ELECTIVE III (2+2)3
ETTxxx TECHNICAL ELECTIVE IV (2+2)3

TE 1.2:7TH TERM

CCT473 INTODUCTION 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.

ETE431 OPTO ELECTRONICS (2+2)3

Theory of Light, Optic Components, Modulation of Light, Display Devices, Light Sources(Lazer and , LEDs), Photodedectors(Thermal Dedectors, Photoresistors, Photodiodes, Phototranzistors) Optocouplers, Optoelectronic Systems, ,Infrared Night Vision systems, Infrared Telecomunication Optoelectronic Displacement and Velocity Measurement System, Colour Sensing Systems, Optoelectronic Comunication Systems, Light Lazer Listener

ETE433 DIGITAL ELECTRONICS (2+2)3

Properties of digital circuits, definitions of noise margin, speed, power consumption, propagation delay time, fan-out, Integrated circuit fabrication technology, diode models and Ebers-Moll Model of Bipolar Junction Transistors, BJT inverters, Logic Families, TTL gates, ECL, Integrated injection logic gates, MOSFETs, MOSFET inverters, CMOS gates BiCMOS gates, Galium Arsenide gates, interface circuits Regenerative circuits Schmitt trigger circuits, multivibrators and 555 IC timer Semiconductor memories, Computer simulations of various digital electronics circuits using PSPICE.

ETE435 BIOMEDICAL ELECTRONICS (2+2)3

Generations and natures of bioelectric: Physiological and biological signal processing. Basic sensing elements and transducers: resistive, inductive, capacitive, piezoelectric, electromagnetics transducers. Biopotensial electrodes, types and applications, equivalent electrical models of biopotensial electrodes. Biomedical Insrumentation, measurement schemes of ENG, EMG, EEG, EKG, and cardiovascular and   respiratory systems. X-ray computer tomography, ultrasound imaging, magnetic resonance imaging, reconstruction of the images. Fizyolojik; time-domain and frequency-domain analysis of Physiological system, stability analysis.

ETT447 COMPUTER AIDED COMMUNICATION SYSTEMS ANALYSIS (2+2)3

Network monitoring and security software for the Internet and Local Area Networks, standards, protocols, software, QoS and hardware and software for both wired and wireless networks open source softwares

ETE443 SATELLITE COMMUNICATION (2+2)3

Satellite architecture, satellite antenna structure and types, LNA, LNC,LNB transponder foot print concept, TV,GPS, special satellites, satellite orbits, satellite earth stations Circuit switching services, packet switcing services, modulation technics, satellite distribution exchances, Diseq-C VSAT mobile communication systems

ETT451 INDUSTRIAL COMMUNICATION SYSTEMS (2+2)3

An introductory course in data communication as used in the industrial environment. Topics will include the theoretical aspects of data communication such as bandwidth, channel capacities, error detection/correction, etc., setting up and configuring different types of networks, RS-232, RS485, Ethernet, fiber optics, wireless networks, and several proprietary industrial networks. Network access methods (Profibus, S-bus, intrbus, I2C, CAN) environment structure synchronization types

TE 3.4: 8TH 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

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.

CCM444 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

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.

ETE434 VEHICLE ELECTRONICS (2+2)3

Electrical and Electronic System components: Power Sources, Circuit-Protection Devices, Controlling Devices, Load Devices, Sensor Devices, Wiring and Schematic Diagram. Automotive Instrumentation: Microcomputers, Sensors and transducers: (airflow meters, temperature sensors, lambda sensor, crash sensors, acceloremeters), Actuators and Displays. Diagnosis and Testing, Self-Diagnosis Systems. Ignition Systems, Computerized Engine-Control Systems: Fuel Injection Systems. Automotive Electronic Systems: Climate Control Systems, Cruise Control, Antilock Braking Systems etc.

ETT452 FIBER OPTICS AND APPLICATIONS (2+2)3

History of Fiber Optic Communication and Adventages to Other Syestems, Electromagnetic Waves and The Theory of Light, Types of Fiber Optic Cables, Fiber Optic Materials and Fiber Optic Cable Manufacturing Techniques, Wave Propogation Characteristics of Fiber Optic Cables, Components used in Optical Communication Systems, Analog and Digital Modulation Techniques of Light, Transportation of Voice by Fiber Optic Cables, Transportation of Data by Fiber Optic Cables, Active and Passive Fiber Optic Sensors, Fiber Optic Gyroscope and Faraday Current Sensor, Mach-Zender Interforometer, Fiber Optic Temperature Sensor, Fiber Optic Pressure Sensor