3rd Year Even Semester

EEE 3200 Electrical & Electronic Circuit Simulation Sessional
Contact hours/week: 3 Credits:1.5
Verification of theories and concepts learned in electrical and electronic circuit theory courses using simulation software(s). Solution of electrical (DC and AC) and electronic circuits by simulation.

EEE 3203 Power Electronics
Contact hours/week: 3 Credits:3
Power semiconductor switches and triggering devices: BJT, MOSFET, SCR, IGBT, GTO, TRIAC, UJT and DIAC. Rectifiers: Uncontrolled and controlled single phase and three phase. Regulated power supplies: Linear-series and shunt, switching buck, buckboost, boost and cuk regulators. AC voltage controllers, single and three phase. Choppers. DC motor control. Single phase cycloconverter. Inverters: single phase and three phase current and voltage source. AC motor control. Stepper motor control. Resonance inverters. Pulse width modulation control of static converters.

EEE 3204 Power Electronics Sessional
Contact hours/week: 3 Credits:3
Sessional based on the theory of course EEE 3203.

EEE 3205 Power Plant Engineering and Economy
Contact hours/week: 3 Credits: 3
Introduction to thermal, hydro and nuclear power stations. Nuclear reactor, reactor construction and control. Power reactors. Central station reactors. Nuclear hazards. Variable load problems, plotting and analysis of load curves, chronological load curves and load duration curve. Energy load curve and its use. Load factor, capacity factor, demand factor, utilization factor, diversity factor etc. and there impact over the cost analysis of power generation and utilization. Load forecasting, selection of units and plant location. Load shearing: Base load and peak load plants. Use of chronological load curves to distribute load among units. Power plant Economics: Economic operation of power plants. Input output curve, heat rate curve, incremental rate curve. Use of incremental rate curve for optimum load scheduling. Transmission line loss, determination of loss coefficient. Economic conductor selection, Kelvin's law. Graphical method for location of distribution systems. Tariff and tariff design. Bus system. Importance of power control. Current limiting reactors. Different types of bus system layout. Forces on bus section in case of short circuit.

EEE 3209 Microprocessor, Interfacing and System design
Contact hours/week: 3 Credits:3
Fundamental Concepts: Microprocessor: A programmable device; microcomputer components and support ICs, building blocks of MPU based systems, microprocessor buses, programming principles using MASM, microprocessor instructions.
16-bit Architecture: Pin diagram and functions, memory organization, bus activities, register layout, internal processing blocks.
Instruction Set: Classifications of instructions, addressing modes, address computing chart.
I/O Controller Programming: Port definition and read/write instructions, parallel I/O programming using 8255,serial I/O programming using 8251, display programming using 8279 and LCD, keyboard programming using 8279
and discrete components, generation of timing functions using 8254 Timer/Counter.
Interrupt Structure: Interrupt terminologies, hardware and software interrupt, multiple interrupt management, 8259 interrupt controller.
Data Conversion Algorithm: BCD2BIN conversion, BIN2BCD conversion, binary multiplication, binary division.
System Design (8086 based digital weighing machine: DWM) Topdown/Bottomup design concept, hardware block diagram, control program flow chart, weight/rate acquisition and processing and display, cost computation and processing and display.
Advanced Microprocessors and Microcontrollers: History of the evolution of MPU/MCU, multitasking systems,
PVAM operation of Intel high performance architecture, overview of 80286 architecture, instruction and programming; overview of 80386 architecture, instruction and programming; CISC and RISC microcontrollers, instruction and programming.

EEE 3210 Microprocessor, Interfacing and System design Sessional
Contact hours/week: 3 Credits:1.5
Sessional based on the theory of course EEE 3209.

EEE 3211 Power System I
Contact hours/week: 3 Credits:3
Inductance and Capacitance of overhead power line. Line representation : equivalent circuit of short, medium and long line. Network representation: single line and reactance diagram of power system and per unit representation. Load flow studies : Gauss – seidel and Newton-Raphson method. Control of voltage, real power and reactive power. Reactive power compensation. Fault analysis: Symmetrical fault calculation, symmetrical components, sequence impedance and sequence networks, different unsymmetrical fault calculation. Introduction to different kinds of relays and circuit breakers. Typical layout of substation equipment.

EEE 3212 Power System I Sessional
Contact hours/week: 3 Credits:1.5
Sessional based on the theory of course EEE 3211**.**

EEE 3217 Communication Engineering II
Contact hours/week: 3 Credits:3
Overview of communication system: Basic principles, fundamental elements, system limitations, message source,bandwidth requirements, transmission media types, bandwidth and transmission capacity. Noise: Source, characteristics of various types of noise and signal to noise ratio. Communication systems: Analog and digital. Continuous wave modulation: Transmission types- base-band transmission, carrier transmission; Amplitude and Angle Modulations & Demodulations, Sampling and Pulse Modulations; line coding- formats and bandwidths. Binary Modulated Bandpass Signaling: OOK, BPSK, DPSK, FSK, MSK bandwidth requirements, detection and
noise performance, Multilevel Modulated Bandpass Signaling, Multiplexing: TDM principle, receiver synchronization, frame synchronization, TDM of multiple bit rate systems; FDM- principle, de-multiplexing; wavelength-division multiplexing multiple-access network- time-division multiple-access, frequency-division multiple access, code-division multiple-access - spread spectrum multiplexing, coding techniques and constraints of CDMA. Communication system design: design parameters, channel selection criteria and performance simulation.

EEE 3218 Communication Engineering II Sessional
Contact hours/week: 3/2 Credits:0.75
Sessional based on the theory of course EEE 3217.