3nd year

EEE-408 ELECTRICAL POWER SYSTEM-II

Department	Electrical and Electronics Engineering
Course name	Electrical power systems-II
Course coordinator	Shanti Taring
Designation as a required or elective course	Required/compulsory course
Pre-requisites	-
Contact hours	Contact hours: 45; 5credits(L-T-P): 3-0-0
Course assessment methods(both continuos and semester end assessment)	i) assignment/class test: It is part of the continuous evaluation that keep the students in touch with the topics covered ii) End semester exam: It evaluates the students level of understanding of the subject matter and reflect on their individual grades
Course outcomes	1: Explain basic transmission and distribution system, their components, construction, characteristics and applications. 2: solve problems on voltage drops ond.c and a.c distributers. 3: Understand mechanical and electrical aspects of OH lines. 4: Understand performance of transmission lines 5: Explain construction and types of underground cables. 6: Explain basic concept of HVDC transmission system and know the IE rules.
Topics covered	
Unit 1	Principles of Transmission & Distribution
Unit 2	Materials of Overhead line
Unit 3	Mechanical Design of Overhead line
Unit 4	Electrical Design of Overhead line
Unit 5	Performance of Transmission line
Unit 6	Underground Cables
Unit 7	HVDC Transmission line
Unit 8	IE Rules 1956
Text books and /or reference materials	1. A course in electrical power by M.L. Soni, P.V. Gupta, U.S. Bhatnagar 2. Power installation by S.R.Chakravorty 3. Principles of Power System by V.K.Mehta 4. IE Rules 5. Relevant B.I.S.Specification 6. Electrical design estimating and costing by S.K. Bhattacharya and K.B. Raina

	7. Transmission and distribution U.A. Bakshi and M.V. Bakshi

3rd Year

EEE 509: Technical Seminar

Department	ELECTRICAL &ELECTRONICS ENGINEERING
Course Code and Title	EEE 509: Technical Seminar
Course Coordinator	Shanti taring
Designation as required or elective course	Required or compulsory course
Pre-requisites	NIL
Contact hours and type of course (Lecture, Tutorial, Practical, Seminar, Project etc)	L-T-P = 0-0-6; Credits: 3 Total contact hours: 90 hrs Lecture: 0; Tutorial: 0; Practical: 90
Course assessment methods (both continuous and semester end assessment)	Progressive Assessment (PA): It is a part of continuous evaluation and is conducted through class test, assignments and class performance with 40%, 40 % and 20 % Weightage respectively. It helps the student to keep in pace with academic activities and know and improve his/her performance on continuous basis during the semester period. No End Term (ET) evaluation scheme exists for this course as per the curriculum.
Course Outcomes	CO1: Understand basics of Technical seminar presentation.
	CO2: Improve presentation and communication skills.
	CO3: Develop self-confidence and self-esteem.
	C04: Better understanding of various of technical fields.
	C05: Improve technical report writing.
Text books and /or reference materials	1. Principles of Power System by V.K.Mehta 2. House wiring by Arora,B.D.,R.B.Publication 3. Electrical appliances by R.B.Publication

	4. Basic electronics by S.K.Mandal

3rd Year

EEE 510: Project

Department	ELECTRICAL & ELECTRONICS ENGINEERING
Course Code and Title	EEE 510: Project
Course Coordinator	SHANTI TARING
Designation as required or elective course	Compulsory course
Pre-requisites	NIL
Contact hours and type of course (Lecture, Tutorial, Practical, Seminar, Project etc)	L-T-P = 0-0-8; Credits: 4 Total contact hours: 120 hrs Lecture: 0; Tutorial: 0; Practical: 120
Course assessment methods (both continuous and semester end assessment)	Progressive Assessment (PA): It is a part of continuous evaluation and is evaluated based on completion of selected project work and involvement of the students in team. It helps the student to keep in pace with academic activities and know and improve his/her performance on continuous basis during the semester period. No End Term (ET) evaluation scheme exists for this course as per the curriculum.

Course Outcomes	C01: Ability to apply electrical and electronics core concepts to real life experience. C02: Ability to design/ develop project as per the curriculum. C03: Ability to write reports. C04: Ability to give guidance on project on small scale.
Text books and /or reference materials	1. Principles of Power System by V.K.Mehta 2. House wiring by Arora,B.D.,R.B.Publication 3. Electrical appliances by R.B.Publication 4. Basic electronics by S.K.Mandal 5. Electrical appliances by R.B.Publication

Course code: EEE-501 (SAR-Course code: C211)

Course Outcomes:

C211.1	Define ICs, types, merits, demerit and basics of opamp and its characteristics.
C211.2	Apply the basic knowledge of opamp in developing linear applications of opamp.
C211.3	Understand the working and applications of instrumentation amplifier, Voltage comparator, PLL IC 565
C211.4	Understand the basic difference, necessity, classification & applications of active & passive filters.
C211.5	Understanding the working and applications of opamp as waveform generator, electronic timer and voltage regulator.

Course code: EEE-402 (SAR-Course code: C203)

Course Outcomes:

C203.1	Understand & analyze the circuit parameters.
C203.2	Understand the operation & construction of various types of measuring instruments.
C203.3	Gain knowledge on the measurement of Voltage, current, power, energy, power factor, frequency, phase, synchroscope, megger, resistance, inductance, capacitance.
C203	Understand the various concepts of electronic instruments.

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C203 .5	Understand the operation & construction of Digital multimeter, CRO.

Course code: EEE-403 (SAR-Course code: C208)

Course Outcomes:

C208. 1	Understand the basic principles & laws applicable in DC Machine and its working. .
C208. 2	Understand the construction, working, characteristics & applications of DC machines.
C208. 3	Understand the basic principles & laws applicable in single phase transformer.
C208. 4	Solve problems on DC machines & Transformer.
C208. 5	Understand the storage batteries, different types of charging, methods of testing, fault diagnosis and repair

Course code: EEE-407 (SAR-Course code: C301)

Course Outcomes:

C301.1	Understand the principle, construction, working, classifications, characteristics and applications of 1 phase & 3 phase induction motor.
C301.2	Understand the different types of speed control methods and starters used for 3 phase induction motor.
C301.3	Understand the principle, working, construction, characteristics and applications of 3 phase alternator and synchronous motor.
C301.4	Understand the construction, working and applications of special purpose motors.
C301.5	Solve problems on 1 phase motor, 3 phase motor, 3 phase alternator and synchronous motor.

Course code: EEE-409 (SAR-Course code: C303)

Course Outcomes:

C303.1	To illustrate the construction, characteristics of thyristor family and understand the basic principle and operation of SCR in particular.
C303.2	Understand the importance of Commutation in power electronics and the various types of commutation circuits.
C303.3	Understand, analyze and design single phase controlled rectifier with RL load and freewheeling diode.
C303.4	Understand the different types & analyze DC/AC inverter, DC/DC chopper, AC/AC cycloconverter.
C303.5	Examine the different industrial applications of power electronics in speed control of DC motor, electronic heating and power regulation.

Course code: EEE-603 (SAR-Course code: C313)

Course Outcomes:

C313.1	Understand the various aspects involving the economics of electric power utilization.
C313.2	Understand the different types of electric heating & electric welding system.
C313.3	Students will be able to identify a heating/welding scheme for a given application.
C313.4	Students will be able to figure out the different schemes of traction systems and its main components.
C313.5	Understand the different laws, terminologies and different schemes of illuminations.

EEE-504: Microprocessor, Microcontroller and its Applications

Department	Electrical and Electronics Engineering
Course name	Electronic Devices and Circuits
Course coordinator	Lipi Karso Ete
Designation as a required or elective course	Required/compulsory course
Pre-requisites	Basic concept of number systems and memory
Contact hours and type of course(lecture,tutorial and Seminar,project etc..)	Contact hours: 70; 5 credits(L-T-P): 3-1-2
Course assessment methods(both continuos and semester end assessment)	i) assignment/class test: It is part of the continuous evaluation that keep the students in touch with the topics covered ii) End semester exam: It evaluates the students level of understanding of the subject matter and reflect on their individual grades
Course outcomes	i) acquire knowledge about microprocessor and its need ii) identify basic architechture of 8085

	iii) able to write assembly language programs using 8085 instructions iv) able to understand the internal architecture and interfacing of different peripheral devices with 8085 v) acquire basic knowledge of Microcontrollers, its architechture and instructions

EEE-506: Consumer Electronics

Department	Electrical and Electronics Engineering
Course name	Consumer Electronics
Course coordinator	Lipi Karso Ete
Designation as a required or elective course	Required/compulsory course
Pre-requisites	-
Contact hours and type of course(lecture,tutorial and Seminar,project etc..)	Contact hours: 70; 5credits(L-T-P): 3-1-2
Course assessment methods(both continuos and semester end assessment)	i) assignment/class test: It is part of the continuous evaluation that keep the students in touch with the topics covered ii) End semester exam: It evaluates the students level of understanding of the subject matter and reflect on their individual grades
Course outcomes	i) acquire knowledge about different types of microphones, loudspeakers,tape recorders and their working principle ii) acquire knowledge about different house hold appliances, understand their operating principle iii) acquire knowledge about different types of televisions like black and white, colur, LED, LCD etc and identify basic faults and their trouble shooting
Topics covered	
Unit 1	Microphones: construction, working principle and frequency response of different microphones
Unit 2	Loudspeakers: construction of working principle of

	moving coil loudspeaker, woofer, tweeter, squawker
Unit 3	Tape recorders: principle of magnetic recording and playback, working principle of tape recorder system
Unit 4	Black and white TV: working principle, transmitter and receiver system, automatic Gain Control
Unit 5	Colour TV: working Principle
Unit 6	CD player: working principle of CD recording and playing
Unit 7	Cable TV system: working principle
Unit 8	Video cassette recorder: principle of operation, tape transport mechanism
Unit 9	Home appliances: principle of operation of washing machine, electronic oven, electronic heater with block diagram
Text books and /or reference materials	i)Consumer electronics by

EEE505 : INSTRUMENTATION & CONTROL

Department	Electrical & Electronics Engineering
Course code & Title of Course	EEE505 : Instrumentation & Control
Course Coordinator	Bengia Taday
Designation as a required or elective course	Compulsory (Applied Technology Course)
Pre-requisites	Basic concepts of instrumentation & analog & digital system.

Contact hours & type of course (Lecture, tutorial, seminar, project etc.)	Contact hours: 70 ; 5 Credits (L-T-P) : 3-1-2
Course assessment methods (both continuous & semester-end assessment)	i Assignment/ Class test: It is a part of continuous evaluation. It helps students in their academic activities & enables them to understand better. ii End semester exam: It evaluates the students' level of understanding of the subject which is reflected as marks/ grades.
Course outcomes*	CO1: Will be able identify to various electrical equipments. CO2: Design analog & digital systems. CO3: Recognize suitable sensors & its characteristics for various applications. CO4: Familiar with the data acquisition system. CO5: Design & develop automatic system for industries.

Topics covered	
Unit I	Basic concepts of instrumentation.
Unit II	Displacement, strain, load & torque measurement.
Unit III	Temperature measurement.
Unit IV	Pressure measurement.
Unit V	Flow & level measurement.
Unit VI	Signal conditioning.
Unit VII	Basic concepts of control systems.
Textbooks and/ or reference materials	1 Intelligent instrumentation by George C. Barney 2 Electronics instrumentation by H.S. Kalsi 3 Modern control engineering by K. Ogata 4 Control systems engineering by L. J. Nagrath, M. Gopal

EEE507 : MAINTENANCE OF ELECTRICAL & ELECTRONIC EQUIPMENT

Department	Electrical & Electronics Engineering
Course code & Title of Course	EEE507 : Maintenance of Electrical & Electronic Equipment
Course Coordinator	Bengia Taday
Designation as a required or elective course	Compulsory (Applied Technology Course)
Pre-requisites	Routine maintenance, preventive maintenance, breakdown maintenance & corrective maintenance.
Contact hours & type of course (Lecture, tutorial, seminar, project etc.)	Contact hours: 56 ; 4 Credits (L-T-P) : 3-1-0
Course assessment methods (both continuous & semester-end assessment)	iii Assignment/ Class test: It is a part of continuous evaluation. It helps students in their academic activities & enables them to understand better. iv End semester exam: It evaluates the students' level of understanding of the subject which is reflected as marks/ grades.
Course outcomes*	CO1: Can explain the importance of types of maintenance with respect to electrical & electronic equipments. CO2: Can do the maintenance of various types of electrical & electronic equipments. CO3: Can do testing as well as maintenance of insulation. CO4: Able to identify the problems & correct it.

	CO5. Able to mplement the safety regulations under IE Act.

Topics covered	
Unit I	Types of maintenance
Unit II	Principles of testing of electrical & electronics equipment
Unit III	Maintenance of power supply units
Unit IV	Insulation testing
Unit V	Maintenance of insulation
Unit VI	Troubleshooting in case of breakdown
Unit VII	Safety regulations
Textbooks and/ or reference materials	5 Operation & maintenance of electrical equipments, Vol I & II by B.V.S. Rao, Wheeler Publishing. 6 I.S. Code on IS-1271-1958; Bureau of Indian Standards, New Delhi. 7 Indian Electricity Rules by Central Law Agency, Allahabad. 8 Modern Electronic Equipment-troubleshooting, repair & maintenance by Khandpur R.S., Tata McGraw-Hill 9 Testing, commissioning, operation, & maintenance of electrical equipments by Rao, S. Khanna Publishers.

EEE607 : RENEWAL ENERGY SOURCES

Department	Electrical & Electronics Engineering

Course code & Title of Course	EEE607 : Renewal Energy Sources
Course Coordinator	Bengia Taday
Designation as a required or elective course	Required (Elective Course)
Pre-requisites	Knowledge of limitations of fossil fuels & alternative energy sources.
Contact hours & type of course (Lecture, tutorial, seminar, project etc.)	Contact hours: 56 ; 4 Credits (L-T-P) : 3-1-0
Course assessment methods (both continuous & semester-end assessment)	(i) Assignment/ Class test: It is a part of continuous evaluation. It helps students in their academic activities & enables them to understand better. (ii) End semester exam: It evaluates the students' level of understanding of the subject which is reflected as marks/ grades.
Course outcomes*	CO1: Can explain the importance of renewal energy. CO2: Learn the concept & principle of renewal energy sources. CO3: Able to identify the technologies used for harnessing various renewal energies. CO4: Acquire knowledge of installation, operation & maintenance of plants involved.

Topics covered	
Unit I	Introduction
Unit II	Wind energy systems
Unit III	Solar energy
Unit IV	Biomass energy
Unit V	Overview of other renewal energy sources
Textbooks and/ or reference materials	1. Solar energy fundamentals & applications by H.P. Garg & J. Prakash, Tata Mcgraw Hill, New Delhi. 2. Solar energy system utilization by G.D. Rai, R.K. Khanna Publishers, New Delhi. 3. Renewal energy: Environment & development by Dayal M, Konark Publisher Pvt. Ltd., New Delhi. 4. Renewal energy: power for a sustainable future by Boyle G, Oxford University Press, New Delhi.

EEE503 : SWITCHGEAR & PROTECTION

Department	Electrical & Electronics Engineering
Course code & Title of Course	EEE503 : Switchgear & Protection
Course Coordinator	Bengia Taday
Designation as a required or elective course	Compulsory (Applied Technology Course)
Pre-requisites	Basic concepts of generation, transmission & distribution in electrical power system.

Contact hours & type of course (Lecture, tutorial, seminar, project etc.)	Contact hours: 42 ; 3 Credits (L-T-P) : 3-0-0
Course assessment methods (both continuous & semester-end assessment)	v Assignment/ Class test: It is a part of continuous evaluation. It helps students in their academic activities & enables them to understand better. vi End semester exam: It evaluates the students' level of understanding of the subject which is reflected as marks/ grades.
Course outcomes*	CO1: Develop skills in operating various controls & switchgears used in power systems. CO2: Minimize normal & abnormal faults. CO3: Able to use diagnostic devices. CO4: Enable the jobs of operation maintenance & repair work. CO5: Identify remedial measures for faults/ abnormalities in machines/ equipments in power systems.

Topics covered	
Unit I	Protective relays: Causes of faults, relay protection, zones of protections, primary & back up protection.
Unit II	Relay applications & characteristics: Over current relays, instantaneous over current relay, directional relays, directional over current relays & their connections, distance relays, impedance relays & differential relays.
Unit III	Feeder protection: Protection & their selection. Principle of over current protection. Principle of distance protection. Pilot protection. Apparatus protection.
Unit IV	Generator protection
Unit V	Motor protection
Unit VI	Bus zone protection
Unit VII	Lightning arrestors
Unit VIII	Static relays

Unit IX	Circuit breakers
Unit X	Fuse: Types of fuse, construction & working principle of different types of fuses.
Textbooks and/ or reference materials	10 Power system protection & switchgear by Ravindranath 11 Switchgear & Protection by Sawhney 12 Switchgear & Protection by Dr. R. S. Jha