SCHEMEOFCOURSEWORK

CourseDetails:

CourseTitle:	**ElectricalSafetyManagement**		
CourseCode:	**15EE1149**	**L T P C**	**400 3**
Program:	**B.Tech.**		
Specialization:	**InformationTechnology**		
Semester:	**VIIISEM**		
Prerequisites:	**BasicElectricalEngineering**		
Coursestowhichitisaprerequisite:	**SafetyManagement**		

CourseOutcomes(COs):

Attheendofthecoursestudentswillbeable to:

1	Explaintheobjectivesandprecautionsof Electricalsafety,effectsofshocksandtheirprevention.
2	Summarizethesafetyaspectsduringinstallationofplantandequipment.
3	Describetheelectricalsafetyinresidential,commercialandagriculturalinstallations.
4	DescribethevariousElectricalsafetyinhazardousareas,Equipmentearthingandsystemneutr alearthing.
5	Statetheelectricalsystemssafetymanagementand IErules.

ProgramOutcomes(POs):

ThestudentofElectricalandElectronicsEngineeringattheendoftheprogramwillbeableto:

1	Applytheknowledgeofbasicsciencesandelectricalandelectronicsengineeringfundamentalstosolvetheproble msofpowersystemsanddrives.
2	Analyzepowersystemsthatefficientlygenerate,transmitanddistributeelectricalpowerinthecontextofresen tInformationandCommunicationsTechnology.
3	Designanddevelopelectricalmachinesandassociatedcontrolswithdueconsiderationstosocietalandenvironme ntalissues.
4	Designandconductexperiments,analyzeandinterpretexperimentaldataforperformanceanalysis.
5	Applyappropriatesimulationtoolsformodelingandevaluationofelectricalsystems.
6	Applytheelectricalengineeringknowledgetoassessthehealthandsafetyissuesandtheirconsequenc es.
7	Demonstrateelectricalengineeringprinciplesforcreatingsolutionsforsustainabledevelopment.
8	Developa technoethicalpersonalitythathelptoservethepeoplein generalandElectricalandElectronicsEngineeringinparticular.
9	Developleadershipskillsandworkeffectivelyinateamtoachieveprojectobjectives.
10	Communicateeffectivelyinbothverbalandwrittenform.
11	Understandtheprinciplesofmanagementandfinance tomanage project inmultidisciplinaryenvironments.
12	Pursuelife-longlearningasameansofenhancingtheknowledgeandskills.

CourseOutcomesvsProgramOutcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO-1	3	2	3	2	2	3	2	2	2	3	2	3
CO-2	3	3	3	2	2	3	3	2	2	3	2	3
CO-3	3	3	3	2	2	3	2	2	2	3	2	3
CO-4	3	3	3	2	2	3	3	2	2	3	2	3
CO-5	3	2	2	2	2	3	2	2	2	3	3	2

S-STRONGLYCORRELATED,M-MODERATELYCORRELATED,BLANK-NOCORRELATION

AssessmentMethods:	Assignment/Quiz/Seminar/CaseStudy/Mid-Test/EndExam

Teaching-LearningandEvaluation

Week	TOPIC/CONTENTS	CO	Samplequestions	Teaching-Learningstrategy	Assessment Method&Schedule
1	**UNIT-I: Introduction to ElectricalSafety,ShocksandtheirPrevention**Termsand definitions,objectivesofsafetyandsecurity measures,Hazardsassociatedwithelectric current,andvoltage,whoisexposed.	CO1	• List the various hazards ofelectricity • ExplaintheObjectivesofElectricalsafety	ChalkandTalk,Seminar	Mid-TestISeminar-IAssignment-IWeek(1-8)
2	PrinciplesofelectricalsafetyApproachestopreventAccidents,scopeofsubjectelectricalsafety,Primaryandsecondaryelectricalshocks,possibilitiesofgettingelectricalshockanditsseverity.	CO1	• Explaintheprimaryandsecondaryelectricalshockswiththeireffects.	ChalkandTalk,Seminar	Mid-TestISeminar-IAssignment-IWeek(1-8)
3	Medicalanalysisofelectricshocksanditseffects,shocksdue to flash/Sparkover's,preventionofshocks,safetyprecautionsagainstcontactshocks,flashshocks,burns,residentialbuildingsandsho	CO1	• Writesomepreventivemeasurestopreventelectricshocksinasub-station. • Explainhowearthingisusefulinpreventingshocks.	ChalkandTalk,Seminar	Mid-TestISeminar-IAssignment-IWeek(1-8)
4	**UNIT-II: Safety duringInstallationofPlantandEquipment** Introduction,preliminarypreparations,preconditionsforstartofinstallationwork,risksduringinstallationofelectricalplantande	CO2	• Mentiontherisksduringinstallationofelectricalplantandequipment.	ChalkandTalk,Seminar	Mid-TestISeminar-IAssignment-IWeek(1-8)
5	Safetyaspectsduringinstallation,fieldqualityandsafetyduringerection,personalprotectiveequipmentforerectionpersonnel,installationofalargeoilimmersedpowertransformer	CO2	• Explaintheinstallationoflargeoil-immersedpowertransformer.	ChalkandTalk,Seminar	Mid-TestISeminar-IAssignment-IWeek(1-8)
6	Installationofoutdoor switchyardequipment,safetyduringinstallationofelectricalrotatingmachines,dryingoutandinsulationresistancemeasurementofrotatingmachines.	CO2	• Whatarethedifferentsafetymeasuresduringinstallationofelectricalrotatingmachines?	ChalkandTalk,Seminar	Mid-TestISeminar-IAssignment-IWeek(1-8)
7	**MID-TESTI**				
8	**UNIT-III:ElectricalSafetyinResidential,CommercialandAgriculturalInstallations** Wiringandfitting–Domesticappliances –watertapgivingshock– shockfromwetwall–fanfiringshock–multi-storiedbuilding	CO3	• ClassifyelectricalappliancesasperIS: 302-1977givinganexampleforeach. • Explainthecaseofwatertapgivingshockandwaystopreventit.	ChalkandTalk,Seminar	Mid-TestIISeminar-IIAssignment-IIWeek(9-16)
9	Temporaryinstallations– Agriculturalpumpinstallation– Do'sandDont'sforsafetyintheuseofdomesticelectricalappliances.	CO3	• MentiontheDo'sandDont'sforsafetyintheuseofdomesticelectricalappliances. • Explainthesafeinstallationprocedureofagriculturalpumps.	ChalkandTalk,Seminar	Mid-TestIISeminar-IIAssignment-IIWeek(9-16)
10	**UNIT-IV:ElectricalSafetyinHazardousAreas** Hazardouszones–class0,1and2– spark,flashoversandcoronadischargeandfunctionalrequirements– Specificationsofelectricalplants,equipmentsforhazardouslocations	CO4	• DistinguishbetweenZone-0,Zone-1andZone-2ofhazardousareas. • Mentionaboutthevariouspossiblehazardlocations.	ChalkandTalk,Seminar	Mid-TestIISeminar-IIAssignment-IIWeek(9-16)

11	Classificationofequipmentenclosureforvarioushazardousgasesandvapours–classificationofequipment/enclosureforhazardouslocations. **EquipmentEarthingandSystemNeutralEarthing** Introduction,Distinctionbetweensystemgroundingand EquipmentGrounding	CO4	• Explaintheclassificationofequipment/enclosures forhazardouslocations.	ChalkandTalk,Seminar	Mid-TestIISeminar-IIAssignment-IIWeek(9-16)
12	EquipmentEarthing,FunctionalRequirementofearthingsystem,descriptionofaearthingsystem,neutralgrounding(System Grounding),TypesofGrounding,MethodsofEarthingGeneratorNeutrals.	CO4	• Explainthemethodsof earthinggeneratorneutrals • Mention the functionalrequirementsofearthingsystem	ChalkandTalk,Seminar	Mid-TestIISeminar-IIAssignment-IIWeek(9-16)
13	**UNIT-V:SafetyManagementofElectricalSystems** PrinciplesofSafetyManagement,ManagementSafety Policy,Safetyorganization,safetyauditing,	CO5	• Explaintheroleofmanagementinreducing/preventingaccidentandensuringsafety. • Explainthesafetyaudit,itstypesandcoverages.	ChalkandTalk,Seminar	Mid-TestIISeminar-IIAssignment-IIWeek(9-16)
14	**ReviewofIERulesandActsandTheirSignificance** Objectiveandscope–groundclearancesandsectionclearances–standardsonelectricalsafety-safelimitsofcurrent,voltage	CO5	• Mentionthelimitsofsafetyforgroundclearancesandsectionclearances.	ChalkandTalk,Seminar	Mid-TestIISeminar-IIAssignment-IIWeek(9-16)
15	Rulesregardingfirstaidandfirefightingfacility,TheElectricityAct,2003,(Part1,2,3,4&5)	CO5	• Mentionthe rulesinforce for firefighting.	ChalkandTalk,Seminar	Mid-TestIISeminar-IIAssignment-IIWeek(9-16)
16	**MID-TESTII**				
17	**PREPARATIONANDPRACTICALEXAMINATION**				
18	**ENDSEMESTEREXAMINATIONS**				
19	**ASSESSMENTWILLBEDONEASSOONASTHECOURSEISCOMPLETEDINALLRESPECTS**				