

**HIGHER INTERNATIONAL DIPLOMA
IN
ELECTRICAL AND ELECTRONICS ENGINEERING**

**CURRICULUM FOR ELECTRICAL AND ELECTRONICS
BASED ON CREDIT SYSTEM**

PROGRAMME OUTCOMES:

- I. Apply the Knowledge of Technical Science, Applied Mathematics, Electrical Fundamentals and Principles to solve Engineering problems.
- II. Possess applied Knowledge of Design, Manufacture, Safety and Maintenance of Electrical Systems, Subsystem and Components.
- III. Identify, Formulate, Analyze and solve Engineering and Industrial complex problems using applied Engineering Mathematics, Science and Engineering Principles.
- IV. An ability to develop a component, Product and Process to encounter desired needs by considering various factor such as Health and Safety, Economic, manufacture and Sustainability.
- V. Understand the Impact and Safety Practices of Engineering Solutions in Societal, Environmental, Global and Economic contexts.
- VI. Apply the knowledge of Basic Principles, Tools and Techniques to Perform Repair, Maintenance and Service Operation in Electrical System.
- VII. Apply the appropriate IT skills, modern Engineering tools and Techniques for engineering practice.
- VIII. Effective communication by reading Electronic circuit designs and drawing, resource and material requirement according to Electrical components and manufacturing needs.
- IX. Engage themselves in life-long learning by recognizing the need and technological changes.
- X. Apply engineering and management principles to manage projects in multidisciplinary environments.

HID IN ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE STRUCTURE

YEAR	SCHEDULE	UNIT SPECIFICATION	NO. OF UNITS	UNIT CREDIT	CREDIT/YEAR
I	SCHEDULE 1	Common unit	3	36	120
		Essential unit	2	24	
		Elective (or) Open unit	-	-	
	SCHEDULE 2	Common unit	-	-	
		Essential unit	3	36	
		Elective (or) Open unit	2	24	
II	SCHEDULE 3	Common unit	-	-	120
		Essential unit	2	30	
		Elective (or) Open unit	2	30	
	SCHEDULE 4	Common unit	-	-	
		Essential unit	1	15	
		Special Unit (Essential)*	1	30	
		Elective (or) Open unit	1	15	

Total learning hour 2400 Hours

1 Credit = 10 hours of effort (10 hours of learning time which includes everything a learner has to do to achieve the outcomes in a qualification including the assessment procedures and practical's).

Guided Learning Hour for first year is 480 Hours and second year is 480 Hours.

Total Guided Learning Hours for Higher International Diploma in ELECTRICAL AND ELECTRONICS Engineering is 960 Hours.

FIRST YEAR	Common unit carries	12 credit
	Essential unit carries	12 credit
	Elective unit carries	12 credit
SECOND YEAR	Common unit carries	15 credit
	Essential unit carries	15 credit
	Elective unit carries	15 credit
	Special unit (Essential)* carries	30 credit

LIST OF UNITS

S. No.	SUBJECT CODE	UNIT	UNIT SPECIFICATION	CREDIT
1	CUP001	Technical Drawings with Engineering Graphics	Common unit	12
2	CUP002	Workshop and General Safety	Common unit	12
3	CUP003	IT Application for Engineers	Common unit	12
4	EEP001	Electronic Devices & Circuits	Essential unit	12
5	EEP002	Microprocessor and Micro controller	Essential unit	12
6	EEP003	Design of Electrical Machines	Essential unit	12
7	EEP004	Control Systems	Essential unit	12
8	EEP005	Linear Integrated Circuits	Essential unit	12
9	EEP006	Applied Mathematics for Electrical Engineering	Essential unit	15
10	EEP007	Digital Logic Circuits	Essential unit	15
11	EEP008	Principles of Communication	Essential unit	15
12	SU001	Project	Special unit (Essential)*	30
I YEAR ELECTIVE UNITS				
13	EEP009	Transmission and Distribution	Elective (or) Open unit	12
14	EEP010	Power Electronics	Elective (or) Open unit	12
15	EEP011	Embedded System Design	Elective (or) Open unit	12
16	EEP012	Signal and systems	Elective (or) Open unit	12
17	GU001	Professional Ethics and Human values	Elective (or) Open unit	12
II YEAR ELECTIVE UNITS				
18	EEP013	Programmable logic controllers and Industrial automation.	Elective (or) Open unit	15
19	EEP014	Measurements & Instrumentation	Elective (or) Open unit	15
20	EEP015	Special Electrical Machines	Elective (or) Open unit	15
21	EEP016	AI Application to Power systems	Elective (or) Open unit	15
22	EEP017	Digital Signal Processing	Elective (or) Open unit	15
23	EEP018	Power System Analysis	Elective (or) Open unit	15
24	EEP019	Protection and Switch gear	Elective (or) Open unit	15
25	GU002	Environmental Engineering	Elective (or) Open unit	15
26	GU003	Numerical Methods	Elective (or) Open unit	15

Schedule : **I**
Year : 1
Credit : 60

UNIT CODE	UNIT	UNIT SPECIFICATION	CREDIT
CUP001	Technical Drawings with Engineering Graphics	Common unit	12
CUP002	Workshop and General Safety	Common unit	12
CUP003	IT Application for Engineers	Common unit	12
EEP001	Electronic Devices & Circuits	Essential unit	12
EEP002	Microprocessor and Micro controller	Essential unit	12

Schedule : **II**
Year : 1
Credit : 60

UNIT CODE	UNIT	UNIT SPECIFICATION	CREDIT
EEP003	Design of Electrical Machines	Essential unit	12
EEP004	Control Systems	Essential unit	12
EEP005	Linear Integrated Circuits	Essential unit	12
EEP010	Power Electronics	Elective (or) Open unit	12
EEP011	Embedded System Design	Elective (or) Open unit	12

Schedule : **III**
Year : 2
Credit : 60

UNIT CODE	UNIT	UNIT SPECIFICATION	CREDIT
EEP006	Applied Mathematics for Electrical Engineering	Essential unit	15
EEP007	Digital Logic Circuits	Essential unit	15
EEP015	Special Electrical Machines	Elective (or) Open unit	15
EEP019	Protection and Switchgear	Elective (or) Open unit	15

Schedule : **IV**
Year : 2
Credit : 60

UNIT CODE	UNIT	UNIT SPECIFICATION	CREDIT
EEP008	Principles of Communication	Essential unit	15
GU002	Environmental Engineering	Elective (or) Open unit	15
SU001	Project	Special unit (Essential)*	30

UNIT CODE : CUP001
 UNIT TITLE : Technical drawings with Engineering Graphics
 CREDIT : 12
 SPECIFICATION : Common Unit

UNIT DESCRIPTION

This unit develops students to understand technical drawing and importance. This unit teaches the vital role of technical drawings in engineering documents and communication. This unit covers angle of projection, multi-view, section, detail drawing and symbol.

UNIT LEARNING OUTCOMES

ULO1 - Use appropriate tool to develop technical drawings

ULO2 - Ability to understand and interpret technical drawings.

ULO3 - Ability to provide required information in technical drawing according to process and operation.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1		M		M			M	M		M
ULO2				M			M	M		
ULO3		M		M			M	M	M	

UNIT CODE : CUP002
 UNIT TITLE : Workshop and General Safety
 CREDIT : 12
 SPECIFICATION : Common Unit

UNIT DESCRIPTION

This unit helps to know about tools used for diverse application in engineering workshop. This unit helps to learn skill-oriented experience in manufacturing process and production technology. This unit teaches safety procedure and workshop safety in various workshop practice.

UNIT LEARNING OUTCOME

ULO1 – Ability to select appropriate tool and process for required application

ULO2 – Ability to understand basic operation in manufacturing and production

ULO3 - Ability to maintain safety procedure and use safety tools and equipment in engineering practice.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1		M		M		M	M			
ULO2		M		M				M		
ULO3	M	M		M	M	M				M

UNIT CODE : CUP003
 UNIT TITLE : IT Application for Engineers
 CREDIT : 12
 SPECIFICATION : Common Unit

UNIT DESCRIPTION

This unit covers foundation concept in Information technology and develop usage IT skills in engineering practices. This unit guide to simplify complex data work using IT software tools and helps in synthesis of information for engineering needs.

UNIT LEARNING OUTCOME

ULO1 - Ability to create, select or apply appropriate software tool to improve the performance.

ULO2 - Develop documents and report preparation skill for various engineering activity such as approval, quotation, design and estimation.

ULO3 - Ability to performance analytical calculation, synthesis and interpret the data.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1		M	M	M			M			
ULO2	M		M	M			M	M		
ULO3	M		M				M			

UNIT CODE : EEP001
 UNIT TITLE : Electronic Devices & Circuits
 CREDIT : 12
 SPECIFICATION : Essential Unit

UNIT DESCRIPTION

This unit covers the theory and characteristics of electronic devices. It includes p-n junction diode, BJT, LED and LCD devices further it covers the electrical circuit analysis with its basic electrical laws and network theorems.

UNIT LEARNING OUTCOME

ULO1 – Comprehend the characteristics of electronic devices.

ULO2 – Working and operation of BJT , FET and LEDs.

ULO3 – To understand the analysis of laws and network theorems in electrical circuits.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1		M	M	M		M		M		
ULO2			M							M
ULO3	M	M		M	M				M	M

UNIT CODE : EEP002
 UNIT TITLE : Microprocessor and Micro controller
 CREDIT : 12
 SPECIFICATION : Essential Unit

UNIT DESCRIPTION

This unit primarily covers the architecture of Microprocessor 8086 and Microcontroller 8051. It introduces the peripheral ICs and helps to develop the knowledge in typical applications.

UNIT LEARNING OUTCOME

ULO1 - Comprehend the flow of architecture.

ULO2 - Ability to deal with peripherals ICs that involves in Processor and controller.

ULO3 - Ability to handle with the various applications of microcontroller.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1		M					M	M		
ULO2			M					M		
ULO3	M	M			M	M	M		M	M

UNIT CODE : EEP003
 UNIT TITLE : Design of Electrical Machines
 CREDIT : 12
 SPECIFICATION : Essential Unit

UNIT DESCRIPTION

This unit covers the construction and working principles and electro-mechanical conversion of DC machines. Also deals with steady state behavior of DC machines and Transformers.

UNIT LEARNING OUTCOME

ULO1- Comprehend the principles of electro-mechanical conversion

ULO2 - Understand and analyses the behavior of DC machines

ULO3 - Understand and analyses the steady state behavior of transformers.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M	M	M							
ULO2				M	M				M	
ULO3	M	M	M			M				

UNIT CODE : EEP004
 UNIT TITLE : Control Systems
 CREDIT : 12
 SPECIFICATION : Essential Unit

UNIT DESCRIPTION

This unit covers the design and analysis of linear continuous time system. It introduces mathematical models from physical laws, concepts of poles, zeros and movement of poles under feedback, analyze and asses' systems in frequency domain

UNIT LEARNING OUTCOME

ULO1 - Understand the analysis of linear continuous time system.

ULO2 – To introduce with poles and zeros for mathematical models.

ULO3 – To assess the system with graphical analysis in frequency domain.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M	M		M	M		M			
ULO2		M	M							M
ULO3			M	M		M			M	

UNIT CODE : EEP005
 UNIT TITLE : Linear Integrated Circuits
 CREDIT : 12
 SPECIFICATION : Essential Unit

UNIT DESCRIPTION

This unit covers the fabrication procedure of Integrated Circuits also analyses the basic circuit characteristics and signal analysis using Op-Amp. The study involves in the application circuits like Timers,PLL and ADCs

UNIT LEARNING OUTCOME

ULO1 - Comprehend the various IC fabrication process.

ULO2 - Ability to deal with analog linear IC.

ULO3 - Ability to handle special function IC for design and development of electrical and electronics circuits.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M	M	M							
ULO2				M		M	M		M	
ULO3	M	M	M				M			M

UNIT CODE : EEP006
 UNIT TITLE : Applied Mathematics for Electrical Engineering
 CREDIT : 15
 SPECIFICATION : Essential Unit

UNIT DESCRIPTION

This unit aims to develop various analytical skills in applied mathematics and extensive experience with the tactics of problem solving and logical thinking applicable for the students of electrical engineering covers matrix theory, calculus of variations, probability, linear programming and Fourier series.

UNIT LEARNING OUTCOME

ULO1 – Develop problem solving skills.

ULO2 – To deal with matrix theory and calculus of variations

ULO3 – To deal with linear programming and Fourier series.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M	M	M				M	M		
ULO2				M				M	M	
ULO3							M			M

UNIT CODE : EEP007
 UNIT TITLE : Digital Logic Circuits
 CREDIT : 15
 SPECIFICATION : Essential Unit

UNIT DESCRIPTION

This unit introduces various number system to simplify the mathematical expressions using Boolean functions. Also, it introduces the combinational and sequential circuits. To expose the students to various memory devices.

UNIT LEARNING OUTCOME

- ULO1 – Ability to simplify the mathematical expressions using Boolean functions.
- ULO2 – Understand principles of combinational and sequential circuits.
- ULO3 – Understand various types of memory devices.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M	M	M	M						
ULO2	M		M			M		M		
ULO3		M		M		M	M	M		M

UNIT CODE : EEP008
UNIT TITLE : Principles of Communication
CREDIT : 15
SPECIFICATION : Essential Unit

UNIT DESCRIPTION

This unit covers concepts of communication systems engineering using wire and wireless medium. primarily analog communication and their significance, Digital Communication techniques, concepts of optical and cellular communication.

UNIT LEARNING OUTCOME

ULO1 – To understand communication using wire and wireless medium

ULO2 – To interpret with Digital Communication techniques

ULO3 – To understand concepts of optical and cellular communication

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1		M		M			M			
ULO2	M	M				M		M		
ULO3		M	M	M			M		M	M

UNIT CODE : SU001
 UNIT TITLE : Project
 CREDIT : 30
 SPECIFICATION : Special unit (Essential)*

UNIT DESCRIPTION

This unit support students to identify, formulate, organize, develop and implement a successful project by applying the skills and knowledge that they acquired through various units finished in previous and current SCHEDULE.

UNIT LEARNING OUTCOME

ULO1 - Ability to define, plan, organize and implement a project.

ULO2 - Ability to formulate a project to find out problem solution.

ULO3 - Ability to perform a plan of work in stipulated time period.

ULO4 - Ability to communicate idea, result and outcomes in both written and oral mode

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M	M	M	M	M	M			M	M
ULO2	M	M	M	M						M
ULO3				M			M	M		M
ULO4							M	M		M

UNIT CODE : EEP009
UNIT TITLE : Transmission and Distribution
CREDIT : 12
SPECIFICATION : Elective (or) Open unit

UNIT DESCRIPTION

This unit helps to understand the functions of different components used in Transmission and Distribution of electrical energy and its parameters.

UNIT LEARNING OUTCOME

ULO1 - Ability to understand computation of fundamental parameters of lines

ULO2 - Ability to separate the lines into different classes.

ULO3 - Ability to analyze the voltage distribution in insulator strings and cables

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1		M	M	M			M		M	
ULO2		M				M		M		
ULO3	M			M		M	M			M

UNIT CODE : EEP010
 UNIT TITLE : Power Electronics
 CREDIT : 12
 SPECIFICATION : Elective (or) Open unit

UNIT DESCRIPTION

This unit analyzes various applications of electronic devices for conversion, control and conditioning of the electrical power. To have an overview of power semiconductor devices and its switching characteristics.

UNIT LEARNING OUTCOME

ULO1 - Ability to analyze electronic devices for conversion, control and conditioning of the electrical power

ULO2 – To learn about pulse width modulated inverters and to understand harmonic reduction methods.

ULO3 – To understand the different types of power semiconductor devices and their switching characteristics.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M	M	M		M					
ULO2	M		M				M			
ULO3		M				M	M		M	

UNIT CODE : EEP011
UNIT TITLE : Embedded System Design
CREDIT : 12
SPECIFICATION : Elective (or) Open unit

UNIT DESCRIPTION

This unit covers several Building Blocks of Embedded System and discuss about embedded software tools. Also, it deals with communication protocols and basics of real time operating systems.

UNIT LEARNING OUTCOMES

ULO1 – Ability to understand various Building Blocks of Embedded System

ULO2 - Ability to interpret different communication protocols and

ULO3 - Ability to understand the basics of real time operating systems

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M	M	M	M						
ULO2		M						M		M
ULO3				M	M	M		M	M	

UNIT CODE : EEP012
 UNIT TITLE : Signal and systems
 CREDIT : 12
 SPECIFICATION : Elective (or) Open unit

UNIT DESCRIPTION

This unit covers the basics of continuous time and discrete time signals and systems. To understand application of various transforms for analysis of signals and systems both continuous time and discrete time.

UNIT LEARNING OUTCOME

ULO1 - Understand the basics concepts of continuous time and discrete time signals and systems.

ULO2 - Ability to analyze various transforms for analysis of signals and systems in Continuous time.

ULO3 - Ability to analyze various transforms for analysis of signals and systems in Discrete time.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M	M	M	M			M			
ULO2				M		M	M	M		M
ULO3	M		M						M	

UNIT CODE : GU001
 UNIT TITLE : Professional Ethics and Human values
 CREDIT : 12
 SPECIFICATION : Elective (or) Open unit

UNIT DESCRIPTION

This unit aims to create an awareness on Engineering Ethics and Human Values to impart Moral and Social Values and Loyalty and to appreciate the rights of others.

UNIT LEARNING OUTCOME

ULO1 - Ability to create an awareness on Engineering Ethics and Human Values.

ULO2 - Ability to create an awareness on Human Values.

ULO3 - Ability to follow Social Values and Loyalty and to appreciate the rights of others

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M	M	M							M
ULO2			M						M	
ULO3	M	M		M					M	M

UNIT CODE : EEP013
 UNIT TITLE : Programmable logic controllers and Industrial automation.
 CREDIT : 15
 SPECIFICATION : Elective (or) Open unit

UNIT DESCRIPTION

This unit covers the design and architecture of Programmable logic controllers also it demonstrates a program for a programmable logic controller device. Study of components used in data acquisition systems interface techniques.

UNIT LEARNING OUTCOME

ULO1 - Ability to understand the design and architecture of Programmable logic controllers also to demonstrate a program for a programmable logic controller device

ULO2 – To Understand the components used in data acquisition systems interface techniques.

ULO3 - Understand the concepts of communication buses.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M	M	M					M		
ULO2			M	M			M			
ULO3		M		M				M	M	M

UNIT CODE : EEP014
 UNIT TITLE : Measurements & instrumentation
 CREDIT : 15
 SPECIFICATION : Elective (or) Open unit

UNIT DESCRIPTION

This unit covers the basic laws governing the Operation of the instruments, relevant circuits and to explain the techniques for measurement of voltage and current. Also, to discuss the comparison methods of measurement.

UNIT LEARNING OUTCOME

ULO1 - Ability to understand the basic laws governing the Operation of the instruments, relevant circuits

ULO2 - To explain the techniques for measurement of voltage and current.

ULO3 - Ability to understand the various comparison methods of measurement.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M	M	M							
ULO2		M				M	M	M		M
ULO3				M		M	M			M

UNIT CODE : EEP015
 UNIT TITLE : Special Electrical Machines
 CREDIT : 15
 SPECIFICATION : Elective (or) Open unit

UNIT DESCRIPTION

This unit covers the theory and applications of special machines. To review the fundamental concepts of permanent magnets and the operation of brushless DC motors. To introduce the concepts of stepper motors, servo motors and its applications.

UNIT LEARNING OUTCOME

ULO1 – Understand the theory and applications of special machines

ULO2 - Ability to Understand the fundamental concepts of permanent magnets and the operation of brushless DC motors.

ULO3 - To Understand introduce the concepts of stepper motors, servo motors and its applications.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1							M		M	M
ULO2				M	M					M
ULO3	M	M	M	M			M			M

UNIT CODE : EEP016
 UNIT TITLE : AI Application to Power systems
 CREDIT : 15
 SPECIFICATION : Elective (or) Open unit

UNIT DESCRIPTION

To unit helps to learn various Artificial Intelligence Techniques and their application to Power Systems and to study about Artificial Neural Networks, Genetic Algorithm and Fuzzy Logic System.

UNIT LEARNING OUTCOME

ULO1 - Understand various AI applications, used in to Power Systems

ULO2 - Understand principle of Artificial Neural Networks

ULO3 - Understand principle of Genetic Algorithm and Fuzzy Logic System.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M	M								M
ULO2		M	M						M	
ULO3						M	M			

UNIT CODE : EEP017
 UNIT TITLE : Digital Signal Processing
 CREDIT : 15
 SPECIFICATION : Elective (or) Open unit

UNIT DESCRIPTION

This unit covers concept of analyzing discrete time signals & systems in the time domain and Frequency domain. It also includes discrete time systems and design of digital filter implementation and the architecture of Digital signal processors.

UNIT LEARNING OUTCOME

ULO1 - Ability to analyzing discrete time signals & systems

ULO2 - Ability to design digital filters.

ULO3 – To interpret a digital signal processor.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M		M				M			
ULO2	M	M								M
ULO3	M		M		M		M		M	

UNIT CODE : EEP018
 UNIT TITLE : Power System Analysis
 CREDIT : 15
 SPECIFICATION : Elective (or) Open unit

UNIT DESCRIPTION

This unit analyze the power system under steady state operating condition. To model and analyze the systems under balanced and unbalanced conditions and to analyze the stability of power system when it is subjected to a fault.

UNIT LEARNING OUTCOME

- ULO1 - Understand steady state operating condition.
- ULO2 - Ability to model and analyze the system under balanced and unbalanced conditions and stability analysis.
- ULO3 - To analyze the stability of power system when it is subjected to a fault.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1				M	M					M
ULO2	M	M		M		M				M
ULO3	M		M		M				M	M

UNIT CODE : EEP019
 UNIT TITLE : Protection and Switch gear
 CREDIT : 15
 SPECIFICATION : Elective (or) Open unit

UNIT DESCRIPTION

This unit covers the nature, types and causes of faults in transformer protection generator protection and motor protection Construction and operating principle of protective components.

UNIT LEARNING OUTCOME

ULO1 - Acquire the knowledge about the faults in transformer protection

ULO2 - Analyze the design of protective scheme with suitable selection of protective components.

ULO3 - Ability to understand and compare of different circuit breakers

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1				M				M		
ULO2		M						M	M	
ULO3	M	M	M			M				M

UNIT CODE : GU002
 UNIT TITLE : Environmental Engineering
 CREDIT : 15
 SPECIFICATION : Elective (or) Open unit

UNIT DESCRIPTION

This unit covers ecosystems and biodiversity, roles of an individual in conservation of natural resources, social issues and the environment. This unit also explains environmental pollution causes, effects, impact assessment and control measures.

UNIT LEARNING OUTCOME

ULO1 – Inspect the impact of engineering solutions in global, societal and environmental context.

ULO2 – Understand the important of health environment and conservation of resources

ULO3 – Ability to examine sustainable development and environmental issues in professional undertakings

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1					M	M				M
ULO2			M						M	
ULO3	M				M	M				M

UNIT CODE : GU003
UNIT TITLE : Numerical Methods
CREDIT : 15
SPECIFICATION : Elective (or) Open unit

UNIT DESCRIPTION

The aim of this unit is to solve numerical Differentiation and integration in various engineering discipline.

UNIT LEARNING OUTCOME

ULO1 – To introduce solutions of equations and Eigen values.

ULO2 – To acquaint knowledge of finite differences and interpolation

ULO3 – To introduce numerical differentiation and integration.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1					M	M				M
ULO2			M						M	
ULO3	M				M	M				M

ASSESSMENT METHODS AND TECHNIQUES FOR HID IN ELECTRICAL ENGINEERING

Assessment technique	Type of Assessment	Description	Formative or Summative
Case studies	Oral/ Problem based/ Practical	Students are required to work through a case study to identify the problem(s) and to offer potential solutions; useful for assessing students' understanding and for encouraging students to see links between theory and practice. Case studies could be provided in advance of a time-constrained assessment.	Formative
Concept maps	Written/ Oral	Students map out their understanding of a particular concept. This is a useful (and potentially quick) exercise to provide feedback to staff on students' understanding.	Formative
'Doing it' exam	Written	An exam which requires students to do something, like read an article, analyze and interpret data etc.	Formative / Summative
Field report	Written/ Oral	Students are required to produce a written/ oral report relating to a field/ site visit.	Formative
Laboratory books / Reports	Practical/ Written	Students are required to write a report for all (or a designated sample) of practical's in a single lab book. A sample of lab books will be collected each week to mark any reports of labs done in previous weeks; this encourages students to keep their lab books up to date. Each student should be sampled the same number of times throughout the module with a designated number contributing to the assessment mark.	Summative
Multiple choice questions (MCQs)	Written	Can be useful for diagnostic, formative assessment, in addition to summative assessment. Well-designed questions can assess more than factual recall of information, but do take time to design.	Formative / Summative
Online discussion boards	Written	Students are assessed on the basis of their contributions to an online discussion for example, with their peers; this could be hosted on a virtual learning environment (VLE).	Formative
Open book exams	Written	Students have the opportunity to use any or specified resources to help them answer set questions under time constraints. This method removes the over-reliance on memory and recall and models the way that professionals manage information.	Summative

Oral presentations	Oral / Written	Students are asked to give an oral presentation on a particular topic for a specified length of time and could also be asked to prepare associated handout(s). Can usefully be combined with self- and peer-assessment.	Summative
Problem sheets	Written	Students complete problem sheets, e.g. on a weekly basis. This can be a useful way of providing students with regular formative feedback on their work and/or involving elements of self- and peer assessment.	Formative
Research projects / Group projects	Written/ Practical/ Oral/ Performance/ Problem based/ Work placement	Potential for sampling wide range of practical, analytical and interpretative skills. Can assess wide application of knowledge, understanding and skills.	Formative / Summative
Short answer questions	Written	Useful to assess a wide range of knowledge/skills across a module.	Summative
Simulations	Practical/ Written/ Oral/ Problem-based	Text or virtual computer-based simulations are provided for students, who are then required to answer questions, resolve problems, perform tasks and take actions etc. according to changing circumstances within the simulation. Useful for assessing a wide range of skills, knowledge and competencies.	Formative
Viva voce	Oral	Often used for assessing 'borderline' degree classifications but also useful to explore students' understanding of a wide range of topics. Depending on class size however, they can be time consuming for staff.	Summative