

PR-1- DIGITAL ELECTRONICS AND MICROPROCESSOR LABORATORY							Course Code: C306		
CO1:	Design Logic circuits using basic concepts of Boolean algebra								
CO2:	Design any Logic circuit using basic concepts of PLDs.								
CO3:	Develop applications using 8085 Microprocessor.								
CO4:	Develop 8085 interface using programmable I/O device								

ACADEMIC LESSON PLAN OF SUMMER 2026

Discipline: Electrical	Semester: 3 rd	Name of the Teaching Faculty: Abhipsa Dutta							
Subject: Digital Electronics And Microprocessor Laboratory	No. of days/per week class allotted: 4p/week	Semester from: 1.07.2026 to 05.11.2026 No. of weeks: 15 weeks							
Week	Class/week	Theory Topics							
1 st	1 st	Verification of the truth tables of TTL gates (Contd..).							
	2 nd	Verification of the truth tables of TTL gates.							
2 nd	1 st	Verify the NAND and NOR gates as universal logic gates.(Contd..).							
	2 nd	Verify the NAND and NOR gates as universal logic gates.							
3 rd	1 st	Design and verification of the truth tables of Half and Full adder circuits.(Contd..).							
	2 nd	Design and verification of the truth tables of Half and Full adder circuits.							
4 th	1 st	Design and verification of the truth tables of Half and Full subtractor circuits.(Contd..).							
	2 nd	Design and verification of the truth tables of Half and Full subtractor circuits.							
5 th	1 st	Verification of the truth table of the Multiplexer 74150(Contd..).							
	2 nd	Verification of the truth table of the Multiplexer 74150							
6 th	1 st	Verification of the truth table of the De-Multiplexer 74154(Contd..).							
	2 nd	Verification of the truth table of the De-Multiplexer 74154							
7 th	1 st	Verify the truth table of a J-K flip-flop (7476)(Contd..).							
	2 nd	Verify the truth table of a J-K flip-flop (7476)							
8 th	1 st	Familiarization of assembly level programming for 8085 microprocessor(Contd..).							
	2 nd	Familiarization of assembly level programming for 8085 microprocessor							
9 th	1 st	Write a program using 8085 Microprocessor for Decimal, Hexadecimal addition of two Numbers.(Contd..).							
	2 nd	Write a program using 8085 Microprocessor for Decimal, Hexadecimal addition of two Numbers							
10 th	1 st	Write a program using 8085 Microprocessor for Decimal, Hexadecimal subtraction of two Numbers.(Contd..).							
	2 nd	Write a program using 8085 Microprocessor for Decimal, Hexadecimal subtraction of two Numbers							
11 th	1 st	Write a program using 8085 Microprocessor for addition and subtraction of two BCD numbers.(Contd..).							
	2 nd	Write a program using 8085 Microprocessor for addition and subtraction of two BCD numbers.							
12 th	1 st	Write a program using 8085 Microprocessor for subtraction of two BCD numbers.(Contd..).							
	2 nd	Write a program using 8085 Microprocessor for subtraction of two BCD numbers.							
13 th	1 st	Convert given Hexadecimal number into its equivalent ASCII number and vice versa using 8085 instruction set.(Contd..).							
	2 nd	Convert given Hexadecimal number into its equivalent ASCII number and vice versa using 8085 instruction set.							
14 th	1 st	Write a program to arrange an array of data in ascending and descending order(Contd..).							
	2 nd	Write a program to arrange an array of data in ascending and descending order.							
15 th	1 st	Revision and practice lab							
	2 nd	Revision and practice lab							

Abhipsa Dutta.

Signature of Teaching Faculty

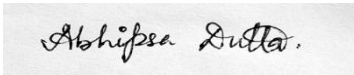
Course: PR:3- ELECTRICAL & ELECTRONIC MEASUREMENTS LABORATORY

CO1:	Identify and understand the functions of various electrical measuring instruments based on symbols, type, accuracy, class, and scale.
CO2:	Accurately measure power and energy in single-phase and three-phase balanced circuits using different wattmeter methods and calibrate energy meters.
CO3:	Determine resistances (low, medium, insulation, earth) and analyze power parameters of a power line using appropriate measurement techniques .
CO4:	Analyze the resolution and sensitivity of digital instruments and apply CRO techniques to measure unknown frequency and phase angle.

ACADEMIC LESSON PLAN OF WINTER 2026

Discipline: Electrical	Semester: 3 rd	Name of the Teaching Faculty: ABHIPSA DUTTA , BISWANITA SAHOO
Subject: ELECTRICAL & ELECTRONICS MEASUREMENTS LAB	No. of days/per week class allotted: 2p(2 hour each)/week	Semester from: 01.07.2026 to 05.11.2026 No. of weeks: 15 weeks
Week	Class/week	LAB Topics
1 st	1 st	Identify measuring instruments on the basis of symbols on dial, type, accuracy, class position and scale (Contd.)
	2 nd	Identify measuring instruments on the basis of symbols on dial, type, accuracy, class position and scale
2 nd	1 st	Identify the components of PMMC and MI instruments (Contd.)
	2 nd	Identify the components of PMMC and MI instruments
3 rd	1 st	Use electro-dynamic watt-meter for measurement of power in a single phase circuit (Contd.)
	2 nd	Use electro-dynamic watt-meter for measurement of power in a single phase circuit
4 th	1 st	Use single three phase wattmeter for measurement of active and reactive power of three phase-balanced load (contd.)
	2 nd	Use single three phase wattmeter for measurement of active and reactive power of three phase-balanced load (Contd)
5 th	1 st	Use single three phase wattmeter for measurement of active and reactive power of three phase-balanced load
	2 nd	Use two wattmeters for measuring active power of three-phase balanced load (Contd.)
6 th	1 st	Use two wattmeters for measuring active power of three-phase balanced load (Contd.).
	2 nd	Use two wattmeters for measuring active power of three-phase balanced load.
7 th	1 st	Calibrate single-phase electronic energy meter by direct loading (Contd.).
	2 nd	Calibrate single-phase electronic energy meter by direct loading.
8 th	1 st	Use Kelvin's double bridge for measurement of low resistance (Contd.)
	2 nd	Use Kelvin's double bridge for measurement of low resistance
	1 st	Use voltmeter and ammeter method for measurement of medium resistance (Contd.).

9 th	2 nd	Use voltmeter and ammeter method for measurement of medium resistance (Contd.)
10 th	1 st	Use voltmeter and ammeter method for measurement of medium resistance
	2 nd	Use Megger for insulation resistance measurements (Contd.).
11 th	1 st	Use Megger for insulation resistance measurements (Contd.).
	2 nd	Use Megger for insulation resistance measurements
12 th	1 st	Measure the unknown frequency and phase angle, using CRO by Lissajous figure (Contd.).
	2 nd	Measure the unknown frequency and phase angle, using CRO by Lissajous figure (Contd.).
13 th	1 st	Measure the unknown frequency and phase angle, using CRO by Lissajous figure (Contd.).
	2 nd	Revision Class
14 th	1 st	Revision Class
	2 nd	Revision Class
15 th	1 st	Revision Class
	2 nd	Revision Class



Signature of Teaching Faculty

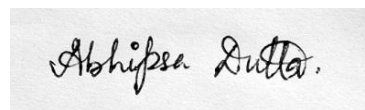
Course Name: Th.1 INTRODUCTION TO ELECTRIC GENERATION SYSTEMS		Course Code: C201
CO1:	Explain the optimized working of the thermal power plant .	
CO2:	Describe the efficient operation of large hydropower plants.	
CO3:	Describe the efficient operation micro hydropower plants.	
CO4:	Select the adequate mix of power generation based on economic operation.	

ACADEMIC LESSON PLAN OF SUMMER 2026

Discipline: Electrical Engg.	Semester: 3 rd	Name of the Teaching Faculty : Abhipsa Dutta
Subject: INTRODUCTION TO ELECTRIC GENERATION SYSTEMS	No. of Days/per week class allotted:3	Semester from date: 01.07.2026 To Date: 05.11.2026 No. of Weeks:15
Week	Class Day	Theory
1st	1st	1. Thermal Power Plants: Coal, Gas/Diesel and Nuclear-based 1.1 Layout and working of a typical thermal power plant with steam turbines and electric generators
	2nd	1.2 Properties of conventional fuels used in the energy conversion equipment used in thermal power plants: Coal,
	3rd	1.2 Properties of conventional fuels used in the energy conversion equipment used in thermal power plants: Gas,
2nd	1st	1.2 Properties of conventional fuels used in the energy conversion equipment used in thermal power plants: Diesel,
	2nd	1.2 Properties of conventional fuels used in the energy conversion equipment used in thermal power plants: Nuclear fuels-fusion .
	3rd	1.2 Properties of conventional fuels used in the energy conversion equipment used in thermal power plants: fission action.
3rd	1st	1.3 Safe Practices and working of various thermal power plants: coal based,
	2nd	1.3 Safe Practices and working of various thermal power plants: gas- based,
	3rd	1.3 Safe Practices and working of various thermal power plants:, diesel-based,

4 th	1 st	1.3 Safe Practices and working of various thermal power nuclear-based
	2 nd	1.4 Functions of the following types of thermal power plants and their major auxiliaries 1.4.1 Coal fired boilers: fire tube
	3 rd	1.4 Functions of the following types of thermal power plants and their major auxiliaries 1.4.1 Coal fired boilers: water tube
5 th	1 st	1.4 Functions of the following types of thermal power plants and their major auxiliaries 1.4.2 Gas based combustion engines
	2 nd	1.4 Functions of the following types of thermal power plants and their major auxiliaries 1.4.2 diesel based combustion engines
	3 rd	1.4.3 Types of nuclear reactors :Disposal of nuclear waste
6 th	1 st	1.4.3 Types of nuclear reactors : nuclear shielding
	2 nd	2. Large Hydropower Plants 2.1 Energy conversion process of hydro power plant
	3 rd	2.2 Classification of hydro power plant: High head
7 th	1 st	2.2 Classification of hydro power plant: , medium head
	2 nd	2.2 Classification of hydro power plant: low head
	3 rd	2.3 Construction and working of hydro turbines used in different types of hydro power plant 2.3.1 High head-Pelton turbine
8 th	1 st	2.3 Construction and working of hydro turbines used in different types of hydro power plant 2.3.2 Medium head-Francis turbine
	2 nd	2.3 Construction and working of hydro turbines used in different types of hydro power plant 2.3.3 Low head-Kaplan turbine
	3 rd	2.4 Safe Practices for hydro power plants
9 th	1 st	2.5 Locations of these different types of large hydro power plants in India
	2 nd	3. Micro-Hydropower Plants 3.1 Lay out of micro hydro power plants

	3 rd	3.1 Lay out of micro hydro power plants (Contd..)
10 th	1 st	3.2 Different types of micro-hydro turbines for different heads: 3.2.1 Pelton turbines
	2 nd	3.2 Different types of micro-hydro turbines for different heads: 3.2.2 Francis turbines
	3 rd	3.2 Different types of micro-hydro turbines for different heads: 3.2.3 Kaplan turbines
11 th	1 st	3.3 Locations of these different types of micro-hydro power plants in India
	2 nd	3.3 Locations of these different types of micro-hydro power plants in India
	3 rd	3.3 Locations of these different types of micro-hydro power plants in India.
12 th	1 st	4. Economics of Power Generation and Interconnected Power System
		4.1 Related terms: connected load, firm power
	2 nd	4.1 Related terms:, cold reserve, hot reserve,
	3 rd	4.1 Related terms: spinning reserve. Base load
13 th	1 st	4.1 Related terms: peak load plants; Load curve
	2 nd	4.1 Related terms: load duration curve, integrated duration curve
	3 rd	4.2 Cost of generation: Average demand, maximum demand,
14 th	1 st	4.2 Cost of generation: demand factor, plant capacity factor,
	2 nd	4.2 Cost of generation:, plant use factor, diversity factor
	3 rd	4.2 Cost of generation:, load factor and plant load factor
15 th	1 st	4.3 Choice of size and number of generator units
	2 nd	4.4 Combined operation of power station Causes, Impact and reasons of Grid system fault: State grid, national grid,.
	3 rd	4.4 Brownout and blackout; sample blackouts at national and international level.

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Signature of the faculty

LESSON PLAN

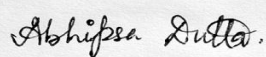
DIGITAL ELECTRONICS AND MICROPROCESSOR

Course Code- **EEPC301**

TH:3- 5th semester

NAME: ABHIPSA DUTTA , LECT.ELECT., W.E.F:01.07.2026 TO 05.11.2026		
SUB: DIGITAL ELECTRONICS AND MICROPROCESSOR		
BRANCH: ELECTRICAL ENGG.		
NO OF PERIODS /WEEK: 3	TOPICS TO BE COVERED	REMARK
WEEK-1	1st Digital Fundamentals Number Systems – Decimal, Binary, Octal, Hexadecimal	
	2nd 1's and 2's complements, Codes – Binary, BCD, Excess 3, Gray, Alphanumeric codes, Boolean theorems	
	3rd Logic gates and truth tables, Universal gates	
WEEK-2	1st Sum of products and product of sums	
	2nd Minterms and Maxterms, Karnaugh map Minimization	
	QuineMcCluskey method of minimization	
WEEK-3	1st Combinational & Synchronous Sequential Circuits Design of Half and Full Adders	
	2nd Design of Half and Full Subtractors	
	3rd Design of Binary Parallel Adder	
WEEK-4	1st Design of Multiplexer	
	2nd Demultiplexers, Decoders	
	3rd and Priority Encoder	
WEEK-5	1st Flip flops – SR, JK, T, D	
	2nd Design of clocked sequential circuits –	
	3rd Design of Counters- Shift registers, Universal Shift Register.	
WEEK-6	1st Asynchronous Sequential Circuits And Memory Devices Stable and Unstable states, output specifications, cycles and races	
	2nd State reduction, race free assignments, Hazards, Essential Hazards,	
	3rd Pulse mode sequential circuits	
WEEK-7	1st Design of Hazard free circuits. Basic memory structure – ROM -PROM –, RAM – Static and dynamic RAM	
	2nd Design of EPROM – EEPROM –EAPROM	
	3rd Design of RAM – Static and dynamic RAM	
WEEK-8	1st Programmable Logic Devices –	
	2nd Programmable Logic Array (PLA) –Programmable Array Logic (PAL)	
	3rd Field Programmable Gate Arrays (FPGA).	
WEEK-9	1st 8085 Microprocessor Hardware Architecture	
	2nd 8085 Processor	

		Hardware Architecture	
	3rd	8085 Processor pin diagram	
WEEK-10	1st	Functional Building Blocks of Processor	
	2nd	Memory organization – I/O ports	
	3rd	Data transfer concepts	
WEEK-11	1st	8085 Processor Timing Diagram (CONTD..)	
	2nd	8085 Processor Timing Diagram	
	3rd	8085 Processor Interrupts.	
WEEK-12	1st	Programming Processor Instruction – format and addressing modes – Assembly language format –	
	2nd	Data transfer, data manipulation & control instructions – Programming: Loop structure with counting & Indexing – Look up table	
	3rd	Subroutine instructions –stack -8255 architecture and operating modes	
WEEK-13	1st	Programming Processor Instruction – format and addressing modes –	
	2nd	Programming Processor Assembly language format – Data transfer,	
	3rd	Programming Processor data manipulation & control instructions	
WEEK-14	1st	Programming: Loop structure with counting & Indexing	
	2nd	Programming: Loop structure with counting & Indexing	
	3rd	Programming: Loop structure with counting & Indexing	
WEEK-15	1st	Look up table	
	2nd	Subroutine instructions –stack	
	3rd	8255 architecture and operating modes	



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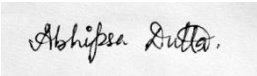
Course Name: Th.5 RENEWABLE ENERGY POWER PLANTS							Course Code: C205			
CO1:	Explain the construction and working principle of Solar PV and Concentrated Solar Power Plants.									
CO2:	Describe the components and working principles of large and small Wind Power Plants									
CO3:	Explain the construction and working principle of Micro-hydro Power Plants									
CO4:	Maintain the optimised working of biomass-based power plants									

ACADEMIC LESSON PLAN OF SUMMER 2026

Discipline: Electrical Engg.	Semester: 3 rd	Name of the Teaching Faculty : Abhipsa Dutta
Subject: Renewable Energy Power Plants	No. of Days/per week class allotted:3	Semester from date: 01.07.2026 To Date: 05.11.2026 No. of Weeks:15
Week	Class Day	Theory
1 st	1 st	Solar PV and Concentrated Solar Power Plants Solar Map of India: Global solar power radiation
	2 nd	Solar PV Concentrated Solar Power (CSP) plants
	3 rd	Construction and working of: Power Tower, Parabolic Trough
2 nd	1 st	Construction and working of Parabolic Dish
	2 nd	Construction and working of Fresnel Reflectors
	3 rd	Solar Photovoltaic (PV) power plant components
3 rd	1 st	Solar Photovoltaic (PV) power plant layout
	2 nd	Solar Photovoltaic (PV) power plant construction
	3 rd	Solar Photovoltaic (PV) power plant construction
4 th	1 st	Solar Photovoltaic (PV) power plant working.
	2 nd	Roof top solar PV power system
	3 rd	Roof top solar PV power system
	1 st	Large Wind Power Plants Wind Map of India: Wind power density in watts per square meter

5 th	2 nd	Lift and drag principle; long path theory.
	3 rd	Geared type windpower plants: components,layout and working.
6 th	1 st	Direct drive type wind power plants: components,layout and working
	2 nd	Constant Speed ElectricGenerators: Squirrel Cage Induction Generators(SCIG),
	3 rd	Wound Rotor Induction Generator (WRIG)
7 th	1 st	Variable Speed Electric Generators
	2 nd	Doubly-fed induction generator(DFIG)
	3 rd	Wound rotor synchronous generator(WRSG)
8 th	1 st	Wound rotor synchronous generator(WRSG)
	2 nd	Permanent magnet synchronous generator(PMSG).
	3 rd	Permanent magnet synchronous generator(PMSG).
9 th	1 st	Small WindTurbines Horizon axis small wind turbine
	2 nd	Direct drive type, components and working
	3 rd	Horizontal axis small wind turbine
10 th	1 st	Geared type, components and working
	2 nd	Vertical axis small wind turbine
	3 rd	direct drive and geared, components and Working
11 th	1 st	Working Types of towers and installation of small wind Turbines on roof tops and open fields.

	2 nd	Working Types of towers and installation of small wind Turbines on roof tops and open fields.
	3 rd	Electric generators used in small wind power plants
12 th	1 st	Biomass-based Power Plants Properties of solid fuel for biomass power plants
	2 nd	bagasse, woodchips, rice husk, municipal waste
	3 rd	Properties of liquid and gaseous fuel for biomass power plants : Jatropha
13 th	1 st	bio- diesel gohar gas
	2 nd	Layout of a Bio-chemical based (e.g. biogas) power plant:
	3 rd	Lay out of a Bio-chemical based (e.g. biogas) power plant:
14 th	1 st	Lay out of a Thermo-chemical based (e.g. Municipal waste) power plant
	2 nd	Lay out of a Thermo-chemical based (e.g. Municipal waste) power plant
	3 rd	Lay out of a Thermo-chemical based (e.g. Municipal waste) power plant
15 th	1 st	Lay out of a Agro Agro-chemical based (e.g. bio-diesel) power plant
	2 nd	Lay out of a Agro Agro-chemical based (e.g. bio-diesel) power plant
	3 rd	Lay out of Agro-chemical based (e.g. bio-diesel) power plant



Signature of the faculty