

DEPARTMENT OF ELECTRICAL ENGINEERING
GOVERNMENT POLYTECHNIC, BARGARH



LESSON PLAN

DIGITAL ELECTRONICS & MICROPROCESSOR (TH 3)

5th SEMESTER

ELECTRICAL ENGINEERING

PREPARED BY

NITESH KUMAR ACHARYA

LECTURER STAGE II (ELECTRICAL)

DEPARTMENT OF ELECTRICAL ENGINEERING

VISION:

To produce Electrical Engineer professionals who can contribute for socio-economic and technological development to meet global needs.

MISSION:

M1 - To strengthen academic infrastructure leading to quality professional by using modern technical tools and technologies.

M2 - To impart innovative knowledge among the students and make more industry-institution programs to make them successful professionals for serving the society.

M3 - To provide a learning environment to improve problem solving abilities, leadership abilities, ethical responsibilities and lifelong learning.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO1: Apply electrical engineering knowledge and practical skills to solve well-defined engineering problems using modern tools and techniques.

PEO2: Perform effectively in industry and society as competent junior engineer, supervisors, or entrepreneurs with ethical and sustainable engineering practices.

PEO3: Demonstrate teamwork, communication, leadership, and project management skills in professional engineering activities.

PEO4: Engage in lifelong learning and adapt to emerging technologies for career growth and higher education.

PROGRAM SPECIFIC OUTCOMES

The electrical diploma engineers will be able to:

PSO1:-Apply the fundamentals of mathematics, science and engineering knowledge to identify, formulate, design and investigate engineering problems of electric circuits, analog and digital electronics, control system, electrical machines and power system.

PSO2:- Apply the appropriate techniques and modern engineering hardware and software tools in electrical engineering to engage in life-long learning and to successfully adapt in multidisciplinary environments.

PSO3:-Work professionally in power systems engineering, Electrical machinery and electrical circuit.

GOVERNMENT POLYTECHNIC, BARGARH

DEPARTMENT OF ELECTRICAL ENGINEERING

Semester: 5th

Subject: Digital Electronics & Microprocessor

Branch: Electrical Engineering

Season: Winter - 2025

No. of period: 75 (5p/week)

Name of Faculty: Nitesh Ku. Acharya

Class No.	Topics to be Covered
1	Introduction to Digital Electronics and Number Systems
2	Decimal, Binary, Octal and Hexadecimal Number Systems
3	Number System Conversions
4	Binary Addition
5	Binary Subtraction
6	Binary Multiplication
7	Binary Division
8	1's Complement and 2's Complement
9	Binary Subtraction using 2's Complement
10	Weighted and Unweighted Codes
11	Binary Equivalent Codes and Practice
12	Basic Logic Gates and Truth Tables
13	Universal Gates (NAND & NOR)
14	Realization using NAND Gates
15	Realization using NOR Gates
16	Boolean Algebra Postulates
17	De Morgan's Theorems
18	Boolean Expression Simplification
19	K-Map (SOP)
20	K-Map (POS)
21	Tutorial/Problem Solving on Unit-I
22	Combinational Logic Circuits
23	Half Adder
24	Full Adder
25	Half Subtractor
26	Full Subtractor
27	Multiplexer
28	Demultiplexer
29	Encoder
30	Decoder
31	Magnitude Comparator
32	Sequential Logic Circuits
33	SR Flip-Flop
34	Clocked SR Flip-Flop

35	JK Flip-Flop
36	Race Around Condition
37	Master-Slave JK Flip-Flop
38	D Flip-Flop
39	T Flip-Flop
40	Applications of Flip-Flops
41	Asynchronous Counter
42	Decade Counter
43	Synchronous Counter
44	Shift Registers (SISO, SIPO, PISO, PIPO)
45	Tutorial/Problem Solving on Unit-II
46	Introduction to Microprocessor & Microcomputer
47	Evolution and Features of 8085
48	Architecture of 8085
49	Functional Blocks of 8085
50	Pin Diagram of 8085
51	Stack, Stack Pointer and Stack Top
52	Interrupts
53	Opcode and Operand
54	One-, Two- and Three-Byte Instructions
55	Instruction Set of 8085
56	Fetch Cycle, Machine Cycle, Instruction Cycle and T-State
57	Timing Diagram: Memory Read & Write
58	Timing Diagram: I/O Read & Write
59	Counters and Time Delay
60	Tutorial/Problem Solving on Unit-III
61	Assembly Language Programming Fundamentals
62	Programming: Addition
63	Programming: Subtraction
64	Programming: 1's Complement
65	Programming: 2's Complement
66	Programming Exercises
67	Interfacing Concepts
68	Memory Mapping & I/O Mapping
69	Intel 8255 Architecture
70	Functional Blocks of Intel 8255
71	Application: Seven Segment Display
72	Application: Square Wave Generator
73	Application: Traffic Light Controller
74	Programming & Interfacing Revision
75	Comprehensive Revision and Question Discussion

Faculty Signature

HOD Signature