

LABORATORY ASSIGNMENT /SHEET /JOB /PROJECT ACTIVITY PLANNING (LP)

Academic Year: 2025-26 (EVEN)

Date: 15/12/2025

Institute Name: K. K. Wagh Polytechnic, Nashik

MSBTE Code: 0078

Program and Code: Electrical Engineering (EE)

Course Code & Abbr.: 314324 (DEM)

Course Name: Digital Electronics and Microcontroller Applications (DEM)**Name of Faculty:** Ms. S.L. Sangle

Ms.A.R.Pawar

Class: SYEE-Tesla **Semester:** 4th

Scheme: K

Course Index: 404

Learning Hrs. 48

● Teaching-Learning & Assessment Scheme:

Course Code	Course Title & Abbr	Course Category	Learning Scheme						Credits	Paper Duration (Hrs.)	Assessment Scheme										Total Marks
			Actual Contact Hrs/Week			SLH	NLH	Theory				Based on LL & TSL Practical				Based on SL					
								FA TH			SA TH	Total		FA-PR		SA-PR		SLA			
			CL	TL	LL			Max			Max	Max	Min	Max	Min	Max	Min	Max	Min		
314324	Digital Electronics and Microcontroller Applications (DEM)	SEC	3	-	4	1	8	4	3	30	70	100	40	25	10	25@	10	25	10	175	

Abbreviations: CL- Class Room Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA - Summative assessment, IKS – Indian Knowledge System, SLA - Self Learning Assessment
Legends: @ Internal Assessment, # External Assessment, ** On Line Examination, @\$ Internal Online Examination

● COURSE LEVEL LEARNING OUTCOMES (COS)

By learning course Fundamentals of Power Electronics (DEM-314324) Second Year students will be able to achieve & demonstrate the following COs on completion of course based learning.

- CO1 - Apply knowledge of number system and logic circuits in working of digital system.
- CO2 - Build simple combinational and sequential circuits.
- CO3 - Access various registers in 8051 microcontrollers.
- CO4 - Develop and execute programs in assembly language for microcontroller
- CO5 - Use microcontroller in various applications.

● COs, Practical Laboratory Learning Outcome (LLOs) and Mapping:

Pr. No	COs	LLO	Name of Experiments/Assignment/ Sheet/ Job/ Project Activity	Planned Date A/B/C		Actual date of Performance	Remark
				From	To		
1	CO1	LLO 1.1	* Verification of truth table of AND, OR, NOT gates using ICs .	A-16/12/2025 B-17/12/2025 C-15/12/2025	A-19/12/2025 B-20/12/2025 C-18/12/2025	A- B- C-	
2	CO1	LLO 2.1	Building of AND, OR, NOT gates using NAND gate.	A-19/12/2025 B-20/12/2025 C-18/12/2025	A-23/12/2025 B-24/12/2025 C-22/12/2025	A- B- C-	
3	CO1	LLO 3.1	* Building of AND, OR, NOT gates using NOR gate.	A-23/12/2025 B-24/12/2025 C-22/12/2025	A-26/12/2025 B-27/12/2025 C-29/12/2025	A- B- C-	
4	CO1	LLO 4.1	* Building of Half adder and Half subtractor using Boolean expressions.	A-26/12/2025 B-27/12/2025 C-29/12/2025	A-30/12/2025 B-31/12/2025 C-01/01/2026	A- B- C-	
5	CO1	LLO 5.1	* Building of Full adder and full subtractor using Boolean expressions.	A-30/12/2025 B-31/12/2025 C-01/01/2026	A-02/01/2026 B-03/01/2026 C-05/01/2026	A- B- C-	
6	CO2	LLO 6.1	* Verification of operation of Multiplexer IC 74151	A-02/01/2026 B-03/01/2026 C-05/01/2026	A-06/01/2026 B-07/01/2026 C-08/01/2026	A- B- C-	

7	CO2	LLO 7.1	Verification of operation of Demultiplexer IC 74155	A-06/01/2026 B-07/01/2026 C-08/01/2026	A-09/01/2026 B-10/01/2026 C-12/01/2026	A- B- C-	
8	CO2	LLO 8.1	Testing the function of RS flip flop using NAND Gate.	A-09/01/2026 B-10/01/2026 C-12/01/2026	A-13/01/2026 B-14/01/2026 C-15/01/2026	A- B- C-	
9	CO2	LLO 9.1	Testing the function of JK flip flop using 7476.	A-13/01/2026 B-14/01/2026 C-15/01/2026	A-16/01/2026 B-17/01/2026 C-19/01/2026	A- B- C-	
10	CO2	LLO 10..1	* Construction and testing the functionality of D flip flop using IC 7476.	A-16/01/2026 B-17/01/2026 C-19/01/2026	A-20/01/2026 B-21/01/2026 C-22/01/2026	A- B- C-	
11	CO2	LLO 11..1	* Construction and testing the functionality of T flip flop using IC 7476.	A-20/01/2026 B-21/01/2026 C-22/01/2026	A-23/01/2026 B-24/01/2026 C-29/01/2026	A- B- C-	
12	CO2	LLO 12.1	Implementation of 4 bit ripple counter using 7476.	A-23/01/2026 B-24/01/2026 C-29/01/2026	A-30/01/2026 B-31/01/2026 C-02/02/2026	A- B- C-	
13	CO3 CO4	LLO 13.1	* Assembly language program (ALP) to perform addition of 8-bit data using various addressing modes.	A-30/01/2026 B-31/01/2026 C-02/02/2026	A-03/02/2026 B-04/02/2026 C-05/02/2026	A- B- C-	
14	CO3 CO4	LLO 14.1	* Assembly language program (ALP) to perform subtraction of 8-bit data using addressing modes.	A-03/02/2026 B-04/02/2026 C-05/02/2026	A-06/02/2026 B-07/02/2026 C-09/02/2026	A- B- C-	
15	CO3 CO4	LLO 15.1	*Assembly language program (ALP) to perform multiplication of 8-bit data , take the input data from port1 and display the output data on port 2	A-06/02/2026 B-07/02/2026 C-09/02/2026	A-10/02/2026 B-11/02/2026 C-12/02/2026	A- B- C-	
16	CO3 CO4	LLO 16.1	* Assembly language program (ALP) to perform division of 8-bit data , take the input data from port 2 & display the output data on port 0	A-10/02/2026 B-11/02/2026 C-12/02/2026	A-13/02/2026 B-14/02/2026 C-16/02/2026	A- B- C-	
17	CO3 CO4	LLO 17.1	* Assembly language program to transfer data from source to destination location of internal data memory.	A-13/02/2026 B-14/02/2026 C-16/02/2026	A-17/02/2026 B-18/02/2026 C-23/02/2026	A- B- C-	
18	CO3 CO4	LLO 19.1	* Assembly language program to exchange data from source to destination memory location.	A-17/02/2026 B-18/02/2026 C-23/02/2026	A-20/02/2026 B-21/02/2026 C-26/02/2026	A- B- C-	
19	CO3 CO4	LLO 21.1	* Assembly language program to find largest number from the given data bytes stored in internal / external data memory locations.	A-20/02/2026 B-21/02/2026 C-26/02/2026	A-24/02/2026 B-25/02/2026 C-02/03/2026	A- B- C-	
20	CO3 CO4	LLO 22.1	* Assembly language program for arranging numbers in ascending order stored in external memory locations.	A-24/02/2026 B-25/02/2026 C-02/03/2026	A-27/02/2026 B-28/02/2026 C-05/03/2026	A- B- C-	
21	CO3 CO4	LLO 24.1	* Assembly language program MASK and SET particular bit of given register using 1) bit addressable instructions 2) Logical instructions.	A-27/02/2026 B-28/02/2026 C-05/03/2026	A-06/03/2026 B-04/03/2026 C-09/03/2026	A- B- C-	

22	CO3 CO4	LLO 25.1	* Assembly language program to get a rolling display on port 2.	A-10/03/2026 B-07/03/2026 C-09/03/2026	A-13/03/2026 B-11/03/2026 C-12/03/2026	A- B- C-	
23	CO5	LLO 26.1	* Interfacing of LED and switch with 8051 to turn ON / OFF the LED.	A-17/03/2026 B-14/03/2026 C-12/03/2026	A-20/03/2026 B-18/03/2026 C-16/03/2026	A- B- C-	
24	CO5	LLO 27.1	* Interfacing of RELAY with 8051 to turn ON / OFF the LED.	A-24/03/2026 B-25/03/2026 C-16/03/2026	A-27/03/2026 B-28/03/2026 C-23/03/2026	A- B- C-	

ASSESSMENT METHODOLOGIES/TOOLS

A. Formative assessment (Assessment for Learning) (FA-TH)

- Continuous assessment based on process and product related performance indicators. Each practical will be assessed considering
 - 60% weightage is to process
 - 40% weightage to product

B. Summative Assessment (Assessment of Learning) (SA-TH)

- Continuous Assessment based on Process and Product related performance indicators. Each practical will be assessed considering
 - 60% weightage to Process
 - 40% weightage to Product

SUGGESTED MICRO PROJECT / ASSIGNMENT/ ACTIVITIES FOR SPECIFIC LEARNING /SKILLS DEVELOPMENT (SELF LEARNING)

Assignment

- Prepare a chart of various logic gates & their truth table.
- Prepare power point presentation on digital circuit microcontroller applications.
- Give seminar on relevant topic.
- Undertake a market survey of different microcontroller ICs and collect information regarding- Number of pins, number of bit, clock frequency of operation etc.

Micro project

- Build a circuit of ALU using IC 74181.
- Build a circuit for decade counter using IC 7490.
- Build a water level controller to indicate overflow & under level of water in a tank.
- Build a dc motor speed controller using 8051.
- Prepare a chart of various features using data sheets of 8051 microcontrollers and its derivatives.
- Build a circuit to turn the buzzer ON after 10 seconds.

SLA marks shall be awarded as per the continuous assessment record.

Ms. S.L.Sangle
(Name & Signature of Staff)

Mr. S. B. Pawar
(Name & Signature of HOD)