



# Maharashtra State Board of Technical Education

## K-1

### Teaching Plan (TP)

**Academic Year:** 2025-26

**Institute Code:** 0078

**Program:** EE (Tesla)

**Course Code:** 314324

**Course:** Digital Electronics and Microcontroller Applications (DEM) **Semester:** Fourth (EE-4K)

**Name of faculty:** Ms.S.L.Sangle

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Chap No. (Allot ed Hrs.)	CO Menti on only Numb er	TLO Mention only Number	Unit Name and Learning Content Title/ Details	No. of Lec tur e	Plan (From -To)	Actual Executi on (From-To)	Teachin g method/ Media	Re ma rk
1 (8)	CO-1	TLO 1.1, TLO 1.2, TLO 1.3, TLO 1.4.	<b>Unit - I Number System and Logic Gates</b> 1.1 Number System : Decimal, Binary, octal, hexadecimal, BCD. Conversion of one system into other. 1.2 Binary Arithmetic: - Addition, Subtraction (1's and 2's complement) Multiplication, Division. BCD addition. 1.3 Logic Gates: Symbol, switch circuit, logical expression, truth table of basic logic gates (AND, OR, NOT), Universal gates (NAND and NOR) and Special purpose gates (EX-OR, EX-NOR). 1.4 Arithmetic Circuits: Half and full Adder, Half and full subtractor with its truth table, boolean expression and circuits using logic gates.	08	15/12/ 2025 To 02/01/ 2026		Lecture Using Chalk-Board Presentations Video Demonstrations Flipped Classroom	
2(12)	CO-2	TLO 2.1, TLO 2.2, TLO 2.3.	<b>Unit - II Digital Logic Circuits</b> 2.1 Multiplexer and Demultiplexer: working , truth table and applications of Multiplexers and Demultiplexers. 2.2 SR Flip Flops: SR-flip flop, clocked SR flip flop with preset and clear, drawbacks of SR flip flop. JK Flip Flops: Clocked JK Flip flop with preset and clear, D and T type flip flop, Excitation table of flip flops. 2.3 Counters: Types (Asynchronous, Synchronous) and their applications.,4 bit asynchronous counter – Circuit diagram and truth table.	12	05/01/ 2026 To 02/02/ 2026		Lecture Using Chalk-Board Presentations Video Demonstrations Flipped Classroom	
3(12)	CO-3	TLO 3.1, TLO 3.2, TLO 3.3, TLO 3.4.	<b>Unit - III 8051 Microcontroller Architecture</b> 3.1 Microcomputers and microcontrollers (basic introduction and comparison). 3.2 Types of buses, address bus, data bus and control bus. Harvard and Von-Neumann architecture. 3.3 8051 Microcontroller Architecture: - Pin configuration, Register banks, bit	12	03/02/ 2026 To 24/02/ 2026		Lecture Using Chalk-Board Presentations Video Demonstrations Flipped	

			and byte addressable area, Registers: PC, DPTR, A&B, PSW and other Special function registers(SFR), I/O ports, Timers (pins and associated SFRs). 3.4 Stack and stack pointer , memory organization (RAM , ROM).				Classroom	
4(8)	CO-4	TLO 4.1, TLO 4.2, TLO 4.3.	<b>Unit - IV 8051 Instruction Set and Programming</b> 4.1 Addressing Modes: Immediate, register, direct, indirect, indexed, relative, absolute, bit inherent, bit direct. 4.2 Instruction Set (with appropriate example) : Data transfer, Logical, Arithmetic, Branching, Machine control, Stack operation, Boolean. 4.3 Assembler Directives: ORG, DB, EQU, END, CODE, DATA .	8	26/02/2026 To 13/03/2026		Lecture Using Chalk-Board Presentations Video Demonstrations Flipped Classroom	
5(5)	CO-5	TLO 5.1, TLO 5.2.	<b>Unit - V 8051 Interfacing and Application</b> 5.1 Memory interfacing - Program and Data memory 5.2 I/O Interfacing ( Diagram and Flowchart) for following applications - LED, Relays, Switch, LCD, Stepper motor.	5	16/03/2026 To 04/03/2026		Lecture Using Chalk-Board Presentations Video Demonstrations Flipped Classroom	

## 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 LEARNING MATERIALS / BOOKS

Sr.No	Author	Title	Publisher with ISBN Number
1	R.P. Jain	Modern Digital Electronics	McGraw-Hill Publishing, New Delhi, 2009; ISBN: 9780070669116
2	V.K.Puri	Digital Electronics	McGraw Hill Education (1 July 2017); ISBN-13 : 978-0074633175
3	Salivahanan S.; Arivazhagan S.	Digital Circuits and Design	Oxford University Press India; 5th edition ; ISBN13- 978-0199488681
4	Malvino, A.P.; Leach, D.P.; Saha G.	Digital Principles and Applications	McGraw Hill Education, New Delhi, 2014, ISBN : 9789339203405

Sr.No	Author	Title	Publisher with ISBN Number
5	V. Udayashankara M. S. Mallikarjuna Swamy	8051 Microcontroller: Hardware, Software and application.	McGraw Hill Education; 1st edition; ISBN-13 : 978-0070086814
6	Kenneth Ayala	8051 Microcontroller Architecture Programming and Application	Cengage Learning India; 3rd edition ; ISBN-13 : 978-8131502006
7	Mazidi, Mohmad Ali; Mazidi, Janice Gelispe; Mckinlay Roline D.	The 8051 Microcontroller and Embedded system	Pearson Education India; 2nd edition; ISBN-13 : 978-0199681273
8	Ajay Deshmukh	Microcontroller Theory and Application	Mc Graw Hill., New Delhi, 2011, ISBN-9780070585959

### LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	<a href="https://www.keil.com/download/">https://www.keil.com/download/</a>	Simulation software
2	<a href="https://archive.nptel.ac.in/courses/108/105/108105102/">https://archive.nptel.ac.in/courses/108/105/108105102/</a>	NPTEL course on-Microprocessors and Microcontrollrs
3	<a href="https://nptel.ac.in/courses/117104072">https://nptel.ac.in/courses/117104072</a>	NPTEL Course-Microcontrollers and Applications, IIT Kanpur by Dr. S.P. Das
4	<a href="https://play.google.com/store/apps/details?id=com.coderbro.t">https://play.google.com/store/apps/details?id=com.coderbro.t</a>	Android App for Microcontroller 8051

**Note :**

- Teachers are requested to check the creative common license status/financial implications of the suggested online educational resources before use by the students

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(Name & Signature of Staff)

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(Name & Signature of HOD)