

Maharashtra State Board of Technical Education, Mumbai

TEACHING PLAN (TP)

K-1

Academic Year: 2025-26

Date: 12/12/2025

Institute Name: K. K. Wagh Polytechnic, Nashik

MSBTE Code: 0078

Program & Code: Artificial Intelligence & Machine Learning (AN) **Course Code & Abbr.:** 314321 (MIC)

Course Name: Microprocessors Programming (MIC)

Name of Faculty: Ms.V.N.Lawand

Class: SYAN

Semester: 4th **Scheme:** K

Course Index:CO405

LearningHrs:45

• Teaching-Learning & Assessment Scheme:

Course Title	Course Code / Abbr	Course Category	Learning Scheme					Credits	TH Paper Duration (Hrs.)	Assessment Scheme										Total Marks
			Actual Contact Hrs/Week			SLH	NLH			Theory				Based on LL & TSL Practical				Based on SL		
			CL	TL	LL					FA TH	SA TH	Total		FA-PR		SA-PR		SLA		
												Max	Min	Max	Min	Max	Min	Max	Min	
Microprocessor Programming	314321/MIC	DSC	3	-	2	1	6	3	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 Outcomes (COs): Theory & Practical

By learning course Microprocessor Programming (MIC-314321), the Second Year students will be able to:

CO No.	TLO No.	Course Outcomes (COs) / Theory Learning Outcomes (TLOs)
CO405.1 (CO1)	Analyze the functional block of 8086 microprocessor.0	
	TLO 1.1	Describe the function of the given pin of 8086.
	TLO 1.2	Explain function of Bus Interface Unit and Execution Unit in 8086 Micro
	TLO 1.3	State functions of the given Register of 8086 Microprocessor
	TLO 1.4	Calculate the physical address for the given segmentation of 8086 Micro.
CO405.2 (CO2)	Use program development tools and assembler directives.	
	TLO 2.1	Describe the given steps of program development and execution
	TLO 2.2	Write steps to develop a code for the given problem using assembly lang.
	TLO 2.3	Use relevant CMD of debugger to correct specified programming error.
	TLO 2.4	Describe function of the given assembler directives with example.
CO405.3 (CO3)	Use instructions in different addressing modes.	
	TLO 3.1	Determine the length of the given instruction.
	TLO 3.2	Describe the given addressing modes with examples
	TLO 3.3	Explain operation performed by given instruction during its execution.
	TLO 3.4	Identify the addressing mode of the given instruction.
CO405.4 (CO4)	Develop an assembly language program for a given task using assembler.	
	TLO 4.1	Use given model of assembly language program for the given problem.
	TLO 4.2	Develop ALP for the given problem.
	TLO 4.3	Apply relevant control loops in the program for the given problem.
	TLO 4.4	Use string instruction to manipulate elements of the given block of data.
CO405.5 (CO5)	Use procedures and macros to develop an assembly language program for a given problem Procedure and Macro	
	TLO 5.1	Apply the relevant 'parameter- passing' method in the given situation.
	TLO 5.2	Develop an assembly language program using the relevant procedure for the given problem.
	TLO 5.3	Develop an assembly language program using macros for the given problem.
	TLO 5.4	Compare procedures and macros on the basis of the given parameter.

• **Teaching Plan:**

Unit No. (Allotted Hrs.& Marks)	COs & TLOs	Unit Title with Topic Details/Contents	Plan Dates (From-To & No. of Lectures)	Actual Execution (From-To & No. of Lectures)	Pedagogy used Teaching Method/ Media	Remark
01 (06) (14)	CO1 TLO-1.1, 1.2, 1.3, 1.4	Unit - I 8086-16 Bit Microprocessor 1.1 8086 Microprocessor: Salient features, pin descriptions 1.2 Architecture of 8086: Functional block diagram, register organization	15/12/25 To 17/12/25 (03)		Chalk-Board, LCD+PPTs, Notes, Ref. Book, MKCL ERA, Online Web Reference	
		1.3 Concept of pipelining 1.4 Memory segmentation, Physical memory addresses generation	22/12/25 To 24/12/25 (03)			
02. (06) (08)	CO2 TLO- 2.1 2.2 2.3 2.4	Unit - II The Art of Assembly Language Programming 2.1 Program development steps: Problem definition, Algorithm, Flowchart, Initialization checklist, Choosing instructions, Converting algorithm into assembly language program	30/12/25 To 05/01/26 (03)		Chalk-Board, LCD+PPTs, MKCL ERA, Online Web Reference	
		2.2 Assembly Language Programming Tools: Editor Assembler Linker Debugger	06/01/26 To 06/01/26 (01)			
		2.3 Assembler directives	07/01/26 To 12/01/26 (02)			
03. (12) (18)	CO3 TLO- 3.1 3.2 3.3 3.4	Unit - III Instruction Set of 8086 Microprocessor 3.1 Machine language instruction format 3.2 Addressing modes	13/01/26 To 21/01/26 (05)		Chalk-Board, LCD+PPTs, MKCL ERA	
		3.3 Instruction set: <ul style="list-style-type: none"> Arithmetic instructions Logical Instructions Data transfer instructions Flag manipulation instructions String operation instructions Program control transfer or branching instructions Process control instructions 	27/01/26 To 10/02/26 (07)			
04. (15) (20)	CO4TLO- 4.1 4.2 4.3 4.4	Unit - IV Assembly Language Programming 4.1 Models of 8086 assembly language program	11/02/26 To 23/02/26 (05)		Chalk-Board, LCD+PPTs, MKCL ERA	

		4.2 Programming using assembler: <ul style="list-style-type: none"> Arithmetic operations on hexadecimal and BCD numbers Sum of series Smallest and largest numbers from array Sorting numbers in ascending and descending order Check whether given number is odd or even Check whether given number is positive or negative 	24/02/26 To 09/03/26 (05)		Chalk-Board, LCD+PPTs, MKCL ERA	
		4.3 Block transfer String Operations Length, Reverse, Compare, Concatenation, Copy 4.4 Count numbers of 'I' and 'O' in 16 bit number	10/03/26 To 18/03/26 (05)		Chalk-Board, LCD+PPTs, MKCL ERA	
05. (06) (10)	CO5TLO- 5.1 5.2 5.3 5.4	Unit - V Procedure and Macro 5.1 Procedure: Defining and calling procedure - PROC, ENDP, FAR and NEAR Directives; CALL and RET instructions; Parameter passing methods, Assembly language programs using procedure	23/03/26 To 25/03/26 (03)		Chalk-Board, LCD+PPTs, YouTube Videos	
		5.2 Macro: Defining macro, MACRO and ENDM Directives, Macro with parameters, Assembly language programs using macro	30/03/26 To 01/04/26 (03)		Chalk-Board, LCD+PPTs	
		Total	45 Hrs.			

• Chapter wise CO-PO Mapping:

Course Outcomes (COs)	Programme Outcomes (POs)							PSOs	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability & Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2
CO405.1	2	-	-	-	-	1	1	2	2
CO405.2	2	1	1	2	-	1	1	2	2
CO405.3	3	2	2	2	-	1	1	2	2
CO405.4	3	3	3	2	-	1	1	2	2
CO405.5	3	3	3	2	-	1	1	2	2

- **Legends:-** High:03, Medium:02, Low:01, --:No Mapping

PSO1: Apply fundamental concepts of Computer Engineering and Artificial Intelligence and machine learning to solve technical problems.

PSO2: Implement the domain knowledge to achieve successful career as an engineering professional.

- **Formative & Summative Assessment Criteria:**

- **Theory Assessment:**

- a) **Formative assessment (TH-FA) :**

- Two offline class tests each of 30 marks will be conducted as per MSBTE guidelines. The average of two class test marks will be Consider for final TH-FA(Average) out of 30 marks.

- b) **Summative Assessment (TH- SA) :**

- The comprehensive End semester assessment will be done by MSBTE by a Theory written Examination for 70 marks. Question Paper and Assessment is performed by MSBTE.
 - Final Theory Score out of 100 Marks will be derived as the total score as below:
TH-SA [out of 70] + TH-FA [Average out of 30] =100 Marks

- **References:**

- 1. Suggested Books for Reference:**

Sr. No	Author	Title of the Book	Publisher
1.	Douglas V. Hall	Microprocessor and Interfacing (Programming and Hardware)	McGraw Hill Education, New Delhi ISBN-13: 978-0070257429
2.	Walter A. Triebel, Avtar Singh	The 8088 and 8086 Microprocessors: Programming, Interfacing, Software, Hardware, and Applications	Pearson Publications, New Delhi ISBN-13: 978-0131228047
3.	Sunil Mathur	Microprocessor 8086: Architecture, Programming and Interfacing	PHI, New Delhi ISBN-13: 978- 8120340879
4.	K. R. Venugopal and Raj Kumar	Microprocessor X86 Programming	BPB Publications, Delhi ISBN-13: 978- 8170294580

- 2.Learning Websites & Portals:**

Sr. No	Website /Portal Link/URL	Description
1	https://www.tutorialspoint.com/microprocessor/microprocessor_8086_overview.htm	Architecture of 8086
2	https://www.geeksforgeeks.org/architecture-of-8086/	Architecture of 8086
3	https://www.javatpoint.com/8086-microprocessor	Pin description
4	https://electronicsdesk.com/assembler-directives.html	Assembler directives
5	https://www.geeksforgeeks.org/addressing-modes-8086-microprocessor/	Addressing modes of 8086
6	https://www.tutorialspoint.com/microprocessor/microprocessor_8086_addressing_modes.htm	Addressing modes of 8086
7	https://www.tutorialspoint.com/microprocessor/microprocessor_8086_instruction_sets.htm	Instruction set of 8086
8	https://www.javatpoint.com/instruction-set-of-8086	Instruction set of 8086
9	https://nptel.ac.in/courses/108103157	NPTEL Course on Microprocessors and Interfacing

2. **Tools to Use for Teaching-Learning, Assessment and Evaluation:**

- Google Classroom –As a digital learning platform, Google Classroom makes the educational process for student and staff more efficient, interactive and accessible.
- MKCL LMS Era – Used for Performing Quizzes and short test for Student..

Ms. V.N.Lawand
(Faculty Name & signature)

Prof. R.Y.Thombare
(HOD-AN Dept.)

CC-

- a. MIC-314321Course File