NIRMA UNIVERSITY

Institute:	Institute of Technology
Name of Programme:	Integrated B.Tech.(CSE)-MBA
Course Code:	CSI0912
Course Title:	Microprocessor and Interfacing
Course Type:	(• Core/ • Value Added Course / √ **Department Elective** / • Institute Elective/ • University Elective/ • Open Elective / • Any other)
Year of Introduction:	2022-23

L	T	Practical Component				C
		LPW	PW	W	S	
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Course Learning Outcomes (CLOs):
At the end of the course, the student will be able to –
1. illustrate basic architecture of microprocessors (BL2)
2. utilize microcontrollers for interfacing of industrial applications (BL3)
3. develop logic for programs in assembly language (BL3)
4. design microprocessor-based systems for interfacing peripherals (BL6)

Syllabus: **Total Teaching hours: 30**

Unit	Syllabus	Teaching hours
Unit-I	**Microprocessor Architecture:** architectural details of 8085, 8086 and 80x86 processors, pin functions, read/write machine cycles, memory organization (linear, segmentation, paging), interrupts	08
Unit-II	**Microprocessor Programming:** instruction set of 8086 microprocessor, programming model, modular programming (procedures and macros), BIOS/DOS interrupts and programming of interrupt service routines.	09
Unit-III	**Interfacing:** Architecture and interfacing of Intel 8255 Programmable Peripheral Interface, Serial interfacing, SPI, I2C, USB, Programmable Interrupt Controller, Programmable timer	10
Unit-IV	Analog to Digital Converter and Digital to Analog Converter, Microcontrollers, interfacing and industrial applications in process control	03

Self-Study:	The self-study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study contents

Suggested Readings/ References:	1. Barry B. Brey, The Intel microprocessors, Prentice Hall publisher 2. Douglas V Hall, Microprocessors and Interfacing: Programming and Hardware, McGraw Hill publisher 3. Ramesh S. Gaonkar, Microprocessor Architecture, Programming, and Applications with the 8085, Prentice Hall

4. John E. Uffenbeck, Microcomputers and Microprocessors: The 8080, 8085 and Z-80 Programming, Interfacing and Troubleshooting, Prentice Hall
5. Peter Abel, IBM PC Assembly language and programming, Pearson publisher

Suggested List of Experiments:	Sr. No.	Title	Hours
	1.	Write an assembly program to perform addition of two numbers. Run a sample assembly program and explore different options of debug commands.	02
	2.	Perform binary arithmetic operations on two 16-bit numbers and two 32-bit numbers. Write a program using 'C' to perform inline assembly	02
	3.	(a) Find maximum and minimum of numbers in an array.	02
		(b) Add ten numbers and find their average.	
	4.	Arrange numbers in ascending order.	02
	5.	Write a program to handle DOS interrupts for user input and output.	02
	6.	Reverse a string entered by the user using near procedure. Use stack for parameter passing.	02
	7.	Find the occurrences of a character from the entered string using far procedure.	02
	8.	Write a program to communicate with the peripheral device using an I2C interface.	02
	9.	Write a program to communicate serial devices with a USB interface.	02
	10.	Design an ISR to handle divide overflow error.	02
Suggested Case List:	-NA-		