SECOND SEMESTER 2020-21 COURSE HANDOUT

Date: 16.01.2021

In addition to part I (General Handout for all courses appended to the Time table) this portion gives further specific details regarding the course.

Course No : CS/EEE/INSTR F241

Course Title : Microprocessors Programming and Interfacing

Instructor-in-Charge : Dr. Nitin Chaturvedi : Dr. GSS Chalapathi

Tutorial Instructors : Devesh, Vinay, Pawan, Satendra, Chalapathi, Nitin, Rahul

Practical Instructors : Puneet, Ziyaur, Ritesh, Suraj, Radha, Abheek, Kanika, Poonam,

: Prannay, Praveen, Sankalp, Nishant

- **1. Course Description:** Programmers model of processor, processor architecture; Instruction set, modular assembly programming using subroutines, macros etc.; Timing diagrams; Concept of interrupts: hardware & software interrupts, Interrupt handling techniques, Interrupt controllers; Types of Memory & memory interfacing; Programmable Peripheral devices and I/O Interfacing; DMA controller and its interfacing: Design of processor based system. This course will have laboratory component.
- **2. Scope and Objective of the Course:** This course is a basic introduction to processor ISA, Assembly programming, Computer & Embedded Architecture. Intel 80x86 is used as a platform through the course. 8086 80486 Programmers model of processor, processor architecture; Instruction set, modular assembly programming using subroutines, macros etc.; Timing diagrams; Concept of interrupts: hardware & software interrupts, Interrupt handling techniques, Interrupt controllers. Types of Memory & memory interfacing. Programmable Peripheral devices and I/O Interfacing, DMA controller and its interfacing. Design of processor based system.
- **3. Text Books**: Barry B Brey, The Intel Microprocessors .Pearson, Eight Ed. 2009.
- **4. Reference Books:** Douglas V Hall, Microprocessor and Interfacing, TMH, Second Edition.

5. Course Plan:

Module			Reference (Text book)	Learning outcomes
No.	Session	Session		
1	1 Compute Architecture, Memory & I/O organization, CISC/RISC processors		Chapter 1	Learn: Introduction to
				Microprocessor and
				Microcomputers
1	2-3	Programmer's Model	Chapter 2	Learn:Microprocessor & its architecture
1	1 4-6 Addressing Modes		Chapter 3	Learn: Assembly
			_	Programming
1	7-16	Instruction Set & ALP	Chapter 4-6, 8	Learn: Assembly
				Programming



1 17-19 Pin Out, Modes of operation, Clocking, Buses Chapter 9 Learn:8086/8088 Hardware Specifications 1 20-23 Memory Devices, Address Decoding- Memory Interface 8086- 80386 2 24 Basic I/O interfacing (I/O mapped I/O and Memory mapped I/O) I/O port address decoding, Protected Mode 2 25-27 8255 Chapter 11.3 Learn:Programmable Peripheral Devices 2 28-29 Types of interrupts, Vector tables, Priority Schemes 2 28-29 Chapter 12.1, 12.2, Chapter 12.1, 12.2, Learn:Interrupts 3 30-31 8259 Chapter 12.4 Learn:Interrupt Controller 3 32-34 8253/8254 Chapter 11.4 Learn:Programmable Timer 3 35-36 ADC, DAC, DMA Chapter 11.6 Learn:Converters 4 37-39 Basic Operation, 8237, Shared Bus, Disk Memory Systems, Video Displays 4 40-41 Processor based system design Chapter 15 Learn:System Design		1	17.10	Pin O + Malanda madia Chali P	C10	I
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6. Evaluation Scheme:

Component	Duration	Weightage	Date & Time	Nature of component
		(%)		(Close Book/ Open Book)
Mid-Semester Test	90 min.	105 (35%)	March, 2021	CB/OB
Lab (Regular)	120 min.	75 (25%)	Regular	Open Book
Comprehensive	120 min.	120 (40%)	May, 2021	CB/OB
Examination				
Total		300 (100%)		

- **7. Chamber Consultation Hour**: To be announced in the class
- 8. Notices: Will be displayed on Nalanda Notice board
- **9. Make-up Policy:**Make up will be allowed for genuine cases. No make up for Lab.
- 10. Note (if any): A student who scores less than 20% marks will be awarded NC.

Instructor-in-charge Course No. CS/EEE/INSTR F241