Birla Institute of Technology & Science,
Pilani Hyderabad Campus
Second Semester 2021-2022
Course Handout

15-01-2022

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/ECE/EEE/INSTR F241
Course Title : Microprocessor Programming & Interfacing
Instructor-in-charge : Prashant Wali
Team of Instructors : Gopal Krishna Kamath, Chetan Kumar, Subradeep Pal, Runa Kumari, Anil Kumar U, Battina Sindhu, Gowtham Polumati, Jayapiriya U S, K Victor Sam Moses Babu, Karumbaiah Chappanda Nanaiah, Kurakula Anudeep, Manish Laxminarayan Bhaiyya, Mrunali Dnyaneshwar Wagh, Naveen Bokka, Priyanka B G, Ramakant, S K Sahoo, Sarda Sharma, Soumya J, Sourav Nandi, Swapna Challagundla.

1. Scope and Objective:

The objective of this course is to become familiar with the processor internal architecture and its operation within the area of manufacturing and performance.This course will provide the instruction set of an Intel microprocessor8086– 80486,programmers model of processor, demonstration of the modular assembly programming using the various addressing modes, data transfer instructions, 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 coursefamiliarizes the students with the programming and interfacing of microprocessors, which will help in solving basic binary math operations using the microprocessor and provide a strong foundation for designing real world applications using microprocessors.

2. Text Book:

T1: Lyla B Das, The x86 Microprocessors: 8086 to Pentium, Multicores, Atom and the 8051 Microcontroller: Architecture, Programming and Interfacing, Second Edition

3. Reference books:

R1: Douglas V Hall, Microprocessor and Interfacing, TMH, Second Edition.

R2. Barry B Brey, The Intel Microprocessors .Pearson, Eight Ed. 2009.

4. Detailed Course Plan:

Lect. No.	Learning Objectives	Topics to be covered	Chapter in the Text Book
1-4	Microprocessor & its architecture	Basics of Computer Architecture, Computer Arithmetic, Number System and 8086 Microprocessor System	Chapter 0 (T1), Chapter 1 (T1), Chapter 2 (R1)
5-20	Assembly Programming	Instruction Set, ALPand Addressing Modes	Chapter 2(T1), Chapter 3(T1) and Chapter 4 (T1), Chapter 4 (R1), Chapter 5 (R1) and Chapter 6 (R1)

21-24	Hardware Structure of 8086	Pin Configuration, Clock, Maximum Mode	Chapter 6 (T1)
25-30	Memory and I/O Interfacing	Memory Device Pins, Memory Address, Memory Banks, I/O Address Decoding	Chapter 7 (T1)
31-34	Interrupts	Interrupts of 8086, Vector tables, Priority Schemes.	Chapter 8 (T1), Chapter 8 (R1)
35-39	Programmable Peripheral Devices	8255,8254,ADC,DAC, 8259	Chapter 9 (T1), Chapter 10 (T1), Chapter 9 (R1), Chapter 10 (R1)
40-41	DMA controller	Basic Operation, 8237, Mode of operation, types of transfer.	Chapter 11 (T1), Chapter 11 (R1)
42	Advanced Processors	80186-80486, Pentium	Chapter 14 (T1), Chapter 15 (T1), Chapter 16 (T1)

5. Evaluation Scheme:

EC No	Evaluation Component	Duration	Weightage	Marks	Date & Time	Nature of Component
1.	Mid sem	90 min	30%	90	10/03 9.00am to10.30am	Open/Closed Book*
2.	Quizzes	TBA	10%	30	TBA	Open/Closed Book*
3.	Lab (Weekly evaluation)	2hrs/week	20%	60	No separate Lab Exam	Open book
4.	Comprehensive examination	120 min	40%	120	06/05 FN	Open/Closed Book*
	Totals		100%	300		

*** indicates the evaluation component will be closed book for offline exams, and the evaluation component will be open book for online exams.**

6. Chamber Consultation Hour: Will be announced in the class.

7. Notices:All the notices will be displayed in CMS. Besides this, students are advised to visit CMS (institute's web based course management system) regularlyfor latest updates**.**

8. Make-up policy: Make-up shall be given only to the genuine cases with prior intimation for Midsem and Comprehensive Exam.

9. Academic Honesty and Integrity Policy: Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

Prashant Wali
Instructor-in-Charge