Faculty of Engineering and Technology

Bachelor of Technology

Effective from Academic Year: 2018-19

Branch Name:	Information and Technology
Semester/Year:	Semester V / Third Year
Subject Title:	Interfacing and Application
Subject Code:	1ET1050502
Pre-requisite:	Digital Logic & Basic Electronics

Course Objective:

- To familiar with the architecture and instruction set of typical microprocessor
- To learn Assembly Language Programming using a macro-assembler
- To study Input-output techniques for interfacing

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
				Theory (Marks)		Practical (Marks)		
Lecture (L)	Tutorial (T)	Practical (P)	Credit	University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	Total (Marks)
02	00	02	03	70	30	30	20	150

Subject Contents			
Sr. No	**Topic**	**Total Hours**	**Weightage (%)**
1.	**Architecture of Microprocessors**: General definitions of mini computers, microprocessors, micro controllers and digital signal processors. Overview of 8085 microprocessor. Overview of 8086 microprocessor. Signals and pins of 8086 microprocessor	6	10%
2.	**Assembly language of 8086**: Description of Instructions. Assembly directives. Assembly software programs with algorithms	6	10%
3.	**Interfacing with 8086**: Interfacing with RAMs, ROMs along with the explanation of timing diagrams. Interfacing with peripheral ICs like 8255, 8254, 8279, 8259, 8259 etc. Interfacing with key boards, LEDs, LCDs, ADCs, and DACs etc.	8	15%
4.	**Coprocessor 8087**: Architecture of 8087, interfacing with 8086. Data types, instructions and programming.	4	10%
5.	**Architecture of Micro controllers**: Overview of the architecture of 8051 microcontroller. Overview of the architecture of 8096 16 bit microcontroller.	4	15%
6.	**Assembly language of 8051**: Description of Instructions. Assembly directives. Assembly software programs with Algorithms.	4	15%
7.	**Interfacing with 8051**: Interfacing with keyboards, LEDs, 7 segment LEDs, LCDs, Interfacing with ADCs. Interfacing with DACs, etc.	5	15%
8.	**High end processors**: Introduction to 80386 and 80486.	2	10%

Course Outcome:

After learning the course, the students will be able to understand the working of Microprocessor interfacing program. The student will be able to develop programming applications on Microprocessor, IDE as well as on simulation tools. They would be able to analyze the operation of different interface for communication with Microprocessor. The student will be able to compare the various Microprocessors architecture & evolution of processors.

List of Reference Books:

1. Microprocessor Architecture, Programming, and Applications with the 8085, By Romesh Gaonkar, Penram International Publishing (India) LTD.
2. Microprocessor and Interfacing-Programming and Hardware, By Douglas V. Hall, Tata McGraw-Hill Publishing Company Limited.
3. Microprocessor Systems- Hardware, Software and Programming, By Stewart J, Prentice Hall International Edition.
4. Microprocessors and Programmed Logic, By Short K. L., Pearson Education
5. The 8051 Microcontroller and Embedded Systems Using Assembly and C, By Muhammad Ali Mazidi, Janice Gillispie Mazidi and Rolin McKinlay, Pearson Education
6. The 8051 Microcontroller & Embedded Systems using Assembly and C, By K. J. Ayala, D. V. Gadre, Cengage Learning , India Edition.
7. Programming and Customizing the 8051 Microcontroller, By Myke Predko Tata Mcgraw Hill.

List of Suggested titles of Experiments (If Any):

1. Introduction to IDE and Assembler directives.
2. 8051 Assembly language programming for addition, subtraction, multiplication and division of two 8-bit numbers.
3. 8051 Assembly language programming for block data transfer between internal and external memory including overlapping blocks.
4. 8051 Assembly language programming using Arithmetic instructions.
5. 8051 Assembly language programming using Logical Instructions.
6. 8051 Assembly language programming for code conversions.
7. 8051 Assembly language programming for Timers in different modes.
8. I/O port programming in embedded C.
9. Timers and Counters programming in embedded C for time delay and frequency measurement using ISRs.
10. Digital clock programming using 7- segment display in embedded C.
11. Programming of LCD in embedded C.
12. Programming of keyboard in embedded C.
13. Serial communication and UART programming in Embedded C.
14. Programming of parallel ADC and DAC in embedded C.

e-Resources (If any):

1. http://nptel.ac.in/courses/106108100/
2. http://nptel.ac.in/courses/108107029/
3. http://scanftree.com/microprocessor/Advantages-&-Disadvantages