

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

Department of Instrumentation and Control Engineering

COURSE OUTLINE TEMPLATE			
Course Title	Microprocessors and Micro-controllers		
Course Code	IC208	Course credits	3
Department	ICE	Faculty	Ms. V.SRIDEVI
Pre-requisites Course Code	None		
Course Coordinator(s) (if, applicable)	N.A.		
Other Course Teacher(s)/Tutor(s) E-mail	sridevi@nitt.edu	Telephone No.	0431-250 3361
Course Type	Core course		

COURSE OVERVIEW	
<ol style="list-style-type: none">1. This course is to provide better understanding of architecture and functions of microprocessor and microcontrollers and their usage in application development2. This course teaches the students about design and development of microprocessor and controller based systems and programming them in assembly and C language.	
COURSE OBJECTIVES	
<ol style="list-style-type: none">1. To teach the students about architecture and functions of 8085 microprocessor2. To teach the students about architecture and functions of 8-bit microcontroller3. To develop knowledge to design and develop a microprocessor or microcontroller based standalone system	
COURSE OUTCOMES (CO)	
Course Outcomes	Aligned Programme Outcomes (PO)
After successfully completing this course, the students will be able	1, 2, 3

1. To understand the architecture and functions of internal blocks in 8085 processor	5
2. To write assembly language programs for 8085 processor	1,2
3. To understand the architecture and functions of 8051 basic 8-bit microcontroller.	1,2,3
4. To develop standalone embedded systems using C and Assembly language	

COURSE TEACHING AND LEARNING ACTIVITIES			
S.No.	Week	Topic	Mode of Delivery
1.	1 and 2 (6 contact hours)	Introduction to Computer architecture and organization, Review of basic gates and flip-flops, number format, architecture of 8085 microprocessor	Chalk and Black board
2.	3 (4 contact hours)	Different operation of microprocessors, control signals and flow sequence, Pin details of 8085 processor	Chalk and Black board
3.	4(4 contact hours)	Bus configuration, Data-address bus demultiplexing, control signal generation for memory and IO devices	Chalk and Black board
4.	5 (4 contact hours)	memory interfacing, Instruction sets, Assembly language programming exercises, 8085 simulator DEMO	Chalk and Black board
5.	6(1 contact hour)	Written Exam	----
6.	6 (3 contact hours)	subroutines and stacks, timing diagram, delay programs, programmable peripheral interfaces	Chalk and Black board
7.	7 (3 contact hours)	Configure and Program the PPI IC, Interrupt controller,	Chalk and Black board

8.	8(3 contact hours)	Program the timer-counter IC Serial peripheral Interface, Program the DMA controller, Introduction to 8051 microcontroller, architecture, memory organization, Instruction set	Chalk and Black board
9.	9(4 contact hours)	Written Exam	---
10.	10 (4 contact hours)	Design of clock circuit, Assembly language programming- IO ports, Timer, counter	Chalk and Black board
11.	11 (1 hour)	Interrupt controller programming,	Chalk and Board
12.	11(1 contact hour)	LCD interface	Chalk and Board
13.	11 (2 contact hour)	ADC interface, DAC interface	
14.	12(4 contact hours)	C-language programming- 8051 microcontroller, data types, header file, and directives	Chalk and Black board
15.	13(4 contact hours)	Programming practices, and introduction to the design of soft real-time embedded systems	Chalk and Black board
16.	14(1 contact hour)	General discussion	---

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1.	Assignment	After 12 lectures (out-of-class)	---	5%
2.	Quiz -I	After 14 lectures	1 hour	20%
3.	Assignment	After 12 lectures(out-of-class)	---	5%
			1 hour	

4.	Quiz II	After 14 lectures		20%
5.	Semester Exam	End of semester	3 hour	50%

ESSENTIAL READINGS : Textbooks, reference books Website addresses, journals, etc

Textbooks:

1. Ramesh Goankar, *Microprocessor Architecture, Programming and applications* with the 8085/8080A, 3rd Edition, Penram International Publishing house, 2002.
2. Kenneth J.Ayala, *The 8051 Micro controller*, Thomson Delmar Learning, 3rd Edition, 2004.

Reference Books:

1. Ram.B, *Fundamentals of Microprocessors and Microcontrollers*, 4thEdition, Dhanpatrai and sons, 1994.
2. Myke Predko, *Programming and Customizing the 8051 micro controller*, Tata-McGraw Hill, 3rd reprint 2007.
3. Frank Vahid/Tony Givargis, *Embedded System Design – A Unified Hardware/Software Introduction*, John Wiley & Sons, Inc, 2005 ISBN 9971-51-405-2.
4. Prasad K.V.K.K., *Embedded/Real-Time Systems: Concepts, Design & Programming*, Dreamtech Press, 2005.

COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)

1. Anonymous feedback through questionnaire.
2. Direct feedback from the students by having face-to-face meeting individually and as the class as a whole.
3. Feedback from the students during the class committee meetings.

COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)

Attendance:

The students are encouraged to attend all the classes without absence or at least to maintain the sufficient attendance i.e. 75% to be eligible to write the End-semester examination. In circumstances with reasonable cause for non-attendance, the students should inform the faculty within one week after their absence or feasibly in a week prior. When there is excused attendance, the students will be given the opportunity to make-up missed classes or quiz or assignment.

Academic honesty:

The students have the freedom to do their work meanwhile; they have to obey the institute academic rules. Apart from this a major significant issue is classroom decorum and behavior and the students should have the decorum inside the classroom with the presence of faculty and the students by-passing this will be sent-out by faculty before the closing time and the attendance for that is denied.

The students should not be involved plagiarizing other student's assignment work, neighboring peer's examination answer sheet and any mode of copying other's work. The students involved in these activities are penalized and their name list will be sent to the office of Dean (Academic) for legal action.

ADDITIONAL COURSE INFORMATION

The students are advised to clarify their doubts can discuss during the lecture. Other than, for out-of-class discussion, the prior permission must be required.

FOR SENATE'S CONSIDERATION

Course Faculty

Indira
(V.SRINIVAS)

CC-Chairperson

Goldini R. Bennet

HOD

[Signature]

Date: 12.2.2016

