

## TCET **DEPARTMENT OF INFORMATION TECHNOLOGY (IT)** Credit Based Grading Scheme(Revised - 2012) - University of Mumbai CBGS-2012(R)



TCET/FRM/IP-02/09

Semester: V

Subject: ITC- 503: Microcontroller and Embedded System

**Duration** (Week Prerequisite/ Bridge course: S.No. /Hrs) Modes of Learning **Recommended Sources** Textbooks: 1. Computer Fundamentals by P. K. Sinha Fundamentals of Computers, Digital Logic Circuits, Self Learning/ 2. Digital Logic Circuits by A. P. Godse 1 6 hours Computer Organization & Architecture 3. Computer Organization & Architecture Revision by stalling

Semester Plan

(Theory)

## **Class Room Teaching**

Sr. No	Module No.	Lesson No	Topics Planned (Technology to be used)	Teaching Aids Required	Planned /Completion Date	Resource Book Reference	Remarks
1		L1.1	SOP-Theory Introductio to Embedded System	Power point presentation, Chalk & Board	10/7/2017		
2		L1.2	SOP-OBE	Power point presentation, Chalk & Board	12/7/2017		
3		L1.3	SOP-Practical Introduction to List of Practicals	Power point presentation, Chalk & Board	13/07/2017		
4	Module 1	L2.1	Introduction to Embedded System:Overview of Embedded System Architecture	Power point presentation, Chalk & Board	17/07/2017		
						1.7.1	
5	Module 1	L2.2	Introduction to Embedded System:Application areas, Categories of embedded systems	Power point presentation, Chalk & Board	17/07/2017	1.7.2	
6	Module 1	L2.3	<b>Introduction to Embedded</b> <b>System:</b> Specialties of embedded systems, Recent trends in embedded systems.	Power point presentation, Chalk & Board	20/07/2017	1.7.3	



Class: TE IT -B

7	Module 1	L3.1	Introduction to Embedded System:Brief introduction to embedded microcontroller cores CISC, RISC	Power point presentation, Chalk & Board	26/07/2017	1.7.4	
8	Module 1	L3.2	Introduction to Embedded System:Brief introduction to embedded microcontroller cores ARM	Power point presentation, Chalk & Board	28/07/2017	1.7.4	
9	Module 1	L4.1	Introduction to Embedded System:Brief introduction to embedded microcontroller cores DSP and SoC.	Power point presentation, Chalk & Board	2/8/2017	1.7.4	
10	Module 5	L5.1	Embedded /Real Time Operating System: Architecture of kernel	Power point presentation, Chalk & Board	9/8/2017		
11	Module 5	L5.2	Embedded /Real Time Operating System: Task and Task scheduler, Interrupt service Routines	Power point presentation, Chalk & Board	11/8/2017		
12	Module 5	L6.1	Embedded /Real Time Operating System: Semaphores, Mutex, Mailboxes, Message queues	Power point presentation, Chalk & Board	16/8/2017		
13	Module 5	L6.2	Embedded /Real Time Operating System: Event registers, Pipes, Signals, Timers	Power point presentation, Chalk & Board	18/8/2017		
14	Module 5	L7.1	Embedded /Real Time Operating System: Memory management, Priority inversion problem	Power point presentation, Chalk & Board	30/8/2017		
15	Module 5	L7.2	Embedded /Real Time Operating System: Off-the- Shelf Operating Systems, Embedded Operating Systems	Power point presentation, Chalk & Board	1/9/2017		
16	Module 5	L8.1	Embedded /Real Time Operating System: Real Time Operating System (RTOS)	Power point presentation, Chalk & Board	6/9/2017		

17	Module	5	L8.2	Embedded /Real Time Operating System: Handheld Operating Systems	Power point presentation, Chalk & Board	8/9/2017	-	
18	Module	6	L9.1	Embedded System Design: Application of Embedded Systems: Digital clock	Power point presentation, Chalk & Board	19/9/2017	-	
19	Module	6	L9.2	Embedded System Design: Battery operated smart card reader	Power point presentation, Chalk & Board	15/9/2017		
20	Module	6	L10.1	Embedded System Design: Automated meter reading system,	Power point presentation, Chalk & Board	20/9/2017		
21	Module	6	L10.2	Embedded System Design: Digital camera	Power point presentation, Chalk & Board	22/9/2017	-	
22	Modul 1,5,6	e	L11.1	Doubt Clearing Session	Power point presentation, Chalk & Board	4/10/2017		
23	Modul 1,5,6	e	L11.2	Revison / Practice Session	Power point presentation, Chalk & Board	6/10/2017		
24	Modul 1,5,6	e	L12.1	Revison / Practice Session	Power point presentation, Chalk & Board	13/10/2017		
Remark: Course:	Remark:				Practice Session: 2		<b>Content Beyond Syllabus:</b> Case Study on application of embedded system Stepper motor controllers for a robotics system	
No. of (lectures planned)/(lecture taken): 24								
Advanced course: Microcontroller and Applications				ntroller and Applications	20 Hours	Online NPTEL videos with Hands on Training in Laboratory	Web sources: 1. NPTEL- http://nptel.ac.in/courses/117104072/ 2. www.tutorialpoint.com1. Instructor's study material, Textbook reference: 1. The 8051 microcontroller & Embedded systems, M. A. Mazidi, J. G. Mazidi, R. D. McKinlay, Pearson	

Text Books:

Introduction to embedded systems, Shibu K. V., McGraw Hill
 Internet and the systems, M. A. Mazidi, J. G. Mazidi, R. D. McKinlay, Pearson
 The 8051 microcontroller & Embedded systems, Kenneth J. Ayala, Dhananjay V.Gadre, Cengage Learning

## Reference Books:

2.1. ARM system developer"s guide, Andrew N. Sloss, Dominic Symes, Chris Wright, Morgan Kaufmann Publishers 2.2. Embedded systems an integrated approach, Laya B. Das, Pearson, Third impression,2013

2.3. Embedded system design A Unified hardware/software Introduction, Frank Vahid, Tony Givargis, Wiely

Ms. Shital H. More

Name & Signature of Faculty

Signature of HOD

Signature of Principal /Dean (Academics)

Date:

Date:

## Note:

1. Plan date and completion date should be in compliance

2. Courses are required to be taught with emphasis on resource book, course file, text books, reference books, digital references etc.

3. Planning is to be done for 15 weeks where 1<sup>st</sup> week will be AOP, 2<sup>nd</sup> -13<sup>th</sup> for effective teaching and 14<sup>th</sup> -15<sup>th</sup> week for effective university examination oriented teaching, mock practice session and semester consolidation.

4. According to university syllabus where lecture of 4 hrs/per week is mentioned minimum 55 hrs and in case of 3 lectures per week minimum 45 lectures are to be engaged are required to be engaged during the semester and therefore accordingly semester planning for delivery of theory lectures shall be planned.

5. In order to improve score in NBA, faculty members are also required to focus course teaching beyond university prescribed syllabus and measuring the outcomes w.r.t learning course and programme objectives.

6. Text books and reference books are available in syllabus. Here only additional references w.r.t. non -digital/ digital sources can be written (if applicable)

7. Technology to be used in class room during lecture shall be written below the topic planned within the bracket.