Semester Plan
(Theory)

TCET/FRM/IP-02/09

Semester: V

Revision: A

Course: IT

Subject: ITC- 503: Microcontroller and Embedded System

Class: TE IT -A

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

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	7/11/2017		
2	----	L1.2	SOP-Practical Introduction to List of Practicals	Power point presentation, Chalk & Board	7/14/2017		
3	Module 1	L2.1	**Introduction to Embedded System:**Overview of Embedded System Architecture	Power point presentation, Chalk & Board	7/18/2017		
4	Module 1	L2.2	**Introduction to Embedded System:**Application areas, Categories of embedded systems	Power point presentation, Chalk & Board	7/20/2017		
5	Module 1		**Introduction to Embedded System:**Specialties of embedded systems, Recent trends in embedded systems.	Power point presentation, Chalk & Board			
6	Module 1		**Introduction to Embedded System:**Brief introduction to embedded microcontroller cores CISC, RISC	Power point presentation, Chalk & Board			
7	Module 1		**Introduction to Embedded System:**Brief introduction to embedded microcontroller cores ARM	Power point presentation, Chalk & Board			
8	Module 1		**Introduction to Embedded System:**Brief introduction to embedded microcontroller cores DSP and SoC.	Power point presentation, Chalk & Board			

9	Module 5		**Embedded /Real Time Operating System:** Architecture of kernel	Power point presentation, Chalk & Board		
10	Module 5		**Embedded /Real Time Operating System:** Task and Task scheduler, Interrupt service	Power point presentation, Chalk & Board		
11	Module 5		**Embedded /Real Time Operating System:** Semaphores, Mutex, Mailboxes, Message queues	Power point presentation, Chalk & Board		
12	Module 5		**Embedded /Real Time Operating System:** Event registers, Pipes, Signals, Timers	Power point presentation, Chalk & Board		
13	Module 5		**Embedded /Real Time Operating System:** Memory management, Priority inversion problem	Power point presentation, Chalk & Board		
14	Module 5		**Embedded /Real Time Operating System:** Off-the-Shelf Operating Systems, Embedded Operating Systems	Power point presentation, Chalk & Board		
15	Module 5		**Embedded /Real Time Operating System:** Real Time Operating System (RTOS)	Power point presentation, Chalk & Board		
16	Module 5		**Embedded /Real Time Operating System:** Handheld Operating Systems	Power point presentation, Chalk & Board		
17	Module 6		**Embedded System Design:** Application of Embedded Systems: Digital clock	Power point presentation, Chalk & Board		
18	Module 6		**Embedded System Design:** Application of Embedded Systems: Digital clock	Power point presentation, Chalk & Board		
19	Module 6		**Embedded System Design:** Battery operated smart card reader	Power point presentation, Chalk & Board		
20	Module 6		**Embedded System Design:** Automated meter reading system,	Power point presentation, Chalk & Board		
21	Module 6		**Embedded System Design:** Digital camera	Power point presentation, Chalk & Board		
22	Module 1,5,6		Doubt Clearing Session	Power point presentation, Chalk & Board	----	
23	Module 1,5,6		Revison / Practice Session	Power point presentation, Chalk & Board	----	
24	Module 1,5,6		Revison / Practice Session	Power point presentation, Chalk & Board	----	
Remark:					**Content Beyond Syllabus:** Case Study on	

Course:	Syllabus Coverage:	Practice Session: 2	Content Beyond Syllabus: 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	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:
1.1. Introduction to embedded systems, Shibu K. V., McGraw Hill
1.2. The 8051 microcontroller & Embedded systems, M. A. Mazidi, J. G. Mazidi, R. D. McKinlay, Pearson
1.3. 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

Digital Reference:
3.1 www.nptel.ac.in
3.2 www.tutorialpoint.com

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Name & Signature of Faculty   Signature of HOD   Signature of Principal   /Dean (Academics)
Ms. Nishtha Mathur

Date: 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 1st week will be AOP, 2nd -13th for effective teaching and 14th -15th 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.