K. J. SOMAIYA COLLEGE OF SCIENCE AND COMMERCE , AUTONOMOUS

CERTIFICATE COURSE IN EMBEDDED SYSTEMS

Course Details

Department of Physics
2019-2020

This document contains the structure of course, details of syllabus and evaluation pattern.

Course Details

- **Course type** : Certificate
- **Course Title** : CERTIFICATE COURSE IN EMBEDDED SYSTEMS
- **Preamble** :

An embedded system is the combination of computer hardware and software, designed for specific functions. Industrial machines, automobiles, medical equipment, cameras, household appliances, airplanes, vending machines and toys as well as mobile devices are all possible locations for an embedded system. In our day-to-day life the frequently used electrical and electronic gadgets like ATM machine, bar-code reader, ice-cream vending machine etc. are designed using embedded systems. Learning embedded systems is the art of choosing and designing the proper combination of hardware and software components to achieve goals like speed and efficiency.

- **Objectives of course** :

1. To make students familiar with the basic concepts and terminology of the embedded systems.
2. Impart the knowledge of programming for an embedded system.
3. Explain how to design, run and test the embedded systems.
4. To give the hands-on experiences for the development of prototype circuit on breadboard including interfacing to microcontroller.

- **Learning Outcomes :**

At the end of the course student will be able to

1. Understand basic concepts and terminology in the embedded computing systems.
2. Comprehend the optimal composition and characteristics of an embedded system.
3. Develop the skills to design an optimal embedded system.
4. Acquire the knowledge of Hardware design techniques for microcontroller-based embedded systems.

❖ **Prerequisites / Eligibility Criteria :**

Basic knowledge of electronics and programming languages will be preferred.

❖ **Intake Capacity : 20**

❖ **Duration** : Three months

❖ **Course Coordinator** : Dr. RUCHA A NAIK.

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❖ **Career opportunities**: Embedded System is the future. Every industry needs some artificial intelligence into it and artificial intelligence can be given by embedded systems only. No electronic product is without embedded systems in the market. Hence Embedded learning is a must for those who is going to develop future embedded systems.

❖ **Syllabus :**

Sr.No.	Content	No Of Lecs	No Of Credits
1	Module I: Introduction to Embedded Systems	5(L)	1
2	Module II: Memory and Interfaces	5(L)	
3	Module III: Introduction to Microcontrollers	5(L)	
4	Module IV: Microcontroller 8051 based experiments	5(P)	1
5	Project based on Microcontroller	__	1

❖ **Evaluation Pattern :**

- ❖ Theory : 50 marks
- ❖ Practical : 50 marks

❖ **Reference Books :**

1. Introduction to embedded system by SHIBU K.V., TMH Publication
2. Embedded Systems – Architecture , Programming and Design – by RAJKAMAL , TMH Publication
3. The 8051 Microcontroller and Embedded Systems: Using Assembly and C by Mazidi, Pearson publications.
4. Microcontrollers: Theory and Applications By Ajay V. Deshmukh , TMH
5. The 8051 Microcontroller by Kenneth J. Ayala , Cengage Learning, 2004