

**Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal**  
**Syllabus VII Semester**  
**Bachelor of Engineering (Information Technology)**  
**Credit based Grading System (CBGS)**

**IT 7005 (C) Elective –IV Embedded System**

**Unit I:** Introduction to Embedded System, Categories, Requirements, Applications, Challenges and Issues. Core of Embedded system, Memory, Sensors and Actuators, communication interface, Embedded firmware, system components.

**Unit II:** Fundamental issues of hardware software co-design, computational models in embedded design data flow graph, control flow graph, state machine model, sequential programmed model, concurrent model, unified modeling language.

**Unit III:** Architecture of 8085 microcontroller, memory organization, registers, interrupts, addressing modes, instruction sets.

**Unit IV:** Embedded firmware design approaches- OS based, Super loop based. Embedded firmware development languages- Assembly language based, high level language based, mixed. Programming in embedded C.

**Unit V:** Types of Operating system, Task, process and threads, Multi processing and multi task, Task scheduling, Task communication, Task synchronization.

**References:-**

- 1 Shibu K V, “Introduction to Embedded System”, TMH.
- 2 David E Simon, “An Embedded Software Primer”, Pearson education Asia, 2001.
- 3 Steven F. Barrett, Daniel J. Pack, “Embedded Systems” Pearson education, First Impression 2008.
- 4 Vahid Frank, Tony Givargis, “Embedded System Design”, John Wiley and Sons, Inc.
- 5 Dream Tech Software Team, “Programming for Embedded Systems” Wiley Publishing house Inc.
- 6 Sriram V Iyer, Pankaj Gupta, “Embedded Real time Systems Programming”, TMH.
- 7 Raj Kamal, “Embedded Systems”, TMH.