MANGALORE UNIVERSITY

Department of Electronics

MSc Electronics

ELS 454 - EMBEDDED SYSTEM DESIGN

Course Outcome:-

1. Describes the difference between the general computing system and embedded system.
2. Details classification of embedded system
3. Make aware of the architecture and its programming aspects
4. Makes aware of interrupts, hyper threads and software optimization.
5. Ability to describe real time embedded system using RTOS.

Unit I

A Systems Engineering Approach to Embedded Systems Design, Embedded Hardware: Embedded Hardware Building Blocks and the Embedded Board- The Embedded Board and the von Neumann Model, Embedded Processors- Introduction, Internal Processor Design, Board Memory, Board I/O (Input/Output), Bus Arbitration and Timing.

12 Hours

Unit II

Embedded Software Introduction: Device Driver Code Layers, Embedded Operating Systems- Process, Multitasking and Process management, Memory management, I/O and file system management, Memory Management, I/O and File System Management, OS Performance Guidelines Middleware and Application Software- Middleware, Application, Middleware Examples, Application Layer Software Examples.

12 Hours

Unit III

Putting It All Together: Design and Development: Defining the System—Creating the Architecture and Documenting the Design, the Final Phases of Embedded Design: Implementation and Testing. Hardware software co-design, Hardware software partitioning.

12 Hours

Books:

1) “Embedded Systems Architecture A Comprehensive Guide for Engineers and Programmers”, Tammy Noergaard, Elsevier, 2005

2) “Hardware/Software Co-Design: Principles and Practice”, Jorgen Staunstrup and Wayne Wolf, Springer-Science+Business Media

3) “Embedded Systems: A Contemporary Design Tool – James K. Peckol”, John Wiley India Pvt. Ltd, 2008.

4) “Embedded system architecture, Programming and design”, Raj Kamal, 2nd End, Tata Mc’Graw Hill.