CS 512

REAL TIME SYSTEMS

UNIT-I

Introduction: Definition, Applications and Types of Real Time Systems, Typical Case Studies of Real Time Systems, Time Constraints.

A Reference Model for Real Time Systems: Processors and Resources, Periodic Task Model, Precedence and Data Dependency, Temporal, Foundational and Resource Parameters, Scheduling Hierarchy.

UNIT-II

Real Time Scheduling: Different Approaches- Clock Driven, Priority Driven, Scheduling of Periodic and Sporadic Jobs in Priority- Driven Systems.

UNIT-III

Resource Management: Resources and Resource Access Control, Critical Section, Priority-Ceiling Protocols, concurrent Access to Data Objects.

UNIT-IV

Implementation Aspects: Timing Services and Scheduling Mechanisms, Other Basic Operating System Functions, Processor Reserves and Resource Kernel, Open System Architecture, Capabilities of Commercial Real Time Operating Systems, Predictability of General Purpose Operating Systems.

UNIT-V

Case Studies: Vx – Works, RT Linux.

Suggested Reading:

1. Jane W.S. Liu, "*Real Time Systems*", Pearson Education, 2001.

2. C.M. Krishna and Kang G. Shin, " *Real Time Systems*", Mc-Graw Hill Companies Inc., 1997.

3. Raymond J.A. Buhr, Donald L. Bailey, "*An Introduction to Real Time Systems*", Prentice Hall International, 1999.

4. K.V.K.K. Prasad, "*Embedded Real Time Systems, Concepts, Design and Programming*", Dream Teach, 2003.