



E0246 Jan 3:1

Real Time Systems

Instructor

Rathna G N

Email: rathna@iisc.ac.in

Teaching Assistant

Email:

Department: Department of Electrical Engineering

Course Time: tue., thu., 11.30AM-1PM

Lecture venue: B 304

Detailed Course Page: http://www.ee.iisc.ac.in/SOI_2017.pdf

Announcements

first class will start on 4th Jan 2018

Brief description of the course

The course discusses

1. Different scheduling, resource allocation on single processor
2. RTOS
3. Fault Tolerance strategies and
4. Multiprocessor scheduling and resource allocation

Prerequisites

none

Syllabus

Hard and soft real-time systems, deadlines and timing constraints, workload parameters, periodic task model, precedence constraints and data dependency, real time scheduling techniques, static and dynamic systems, optimality of EDF and LST algorithms, off-line and on-line scheduling, clock driven scheduling, cyclic executives, scheduling of aperiodic and static jobs, priority driven scheduling, fixed and dynamic priority algorithms, schedulable utilization, RM and DM algorithms,

priority scheduling of aperiodic and sporadic jobs, deferrable and sporadic servers, resource access control, priority inversion, priority inheritance and priority ceiling protocols, real-time communication, operating systems.

Course outcomes

students should be able to schedule the jobs in RTOS

how to handle allocation of resources.

Grading policy

20% mid term test

15% assignments

25% mini project

40% final exam

Assignments

RMA Scheduling, EDF scheduling with and without resources.

priority inheritance protocol, and priority ceiling protocol

Resource allocation policies

The above will be implemented using MATLAB and problems will be worked out using paper before implementing on the platform

Resources

References: Jane, Liu W S, Real-Time Systems, Pearson Education, New Delhi, 2001., Krishna C M and Kang G Shin, Realtime Systems, Tata McGraw-Hill, 2010.

current literature