

Real Time Programming



Component

École Nationale
Supérieure
d'Électrotechnique
d'Électronique
d'Informatique
d'Hydraulique
et des
Télécommunications

In brief

- **plugin.odf-inp:PLUGINS_ODF_COURSE_NBHOURS_TXT:** 10
- **Code:** NDG10C

Presentation

Objectives

Introduction to the basic concepts and architecture of real-time kernels (notion of thread and scheduling, critical sections and synchronisation). Illustration of fixed priority based scheduling algorithms, basic principles of scheduling analysis.

Description

This module includes a lecture (10h) and a personal work as practical classes (10h). The lecture addresses the following topics

- Introduction to basic concepts of real-time kernels (memory management, threads and scheduling, synchronisation, time management)
- Main characteristics of synchronisation mechanisms and basic primitives (critical sections, mutual exclusion, semaphores, models)
- Principles of scheduling and deadlines (fixed priority based scheduling algorithms, Rate Monotonic Scheduling, introduction to schedulability analysis and Worst Case Execution Time evaluation)

– Examples and use of real-time kernels.

The practical work is done in groups of students and focuses on the analysis and the use of real-time kernels in industrial applications.

Pre-requisites

Operating systems principles, C / C++ programming

Useful info

Place

➤ Toulouse