Year : 2018/19

30212 - Concurrent and Distributed Systems Programming

Syllabus Information

Academic Year: 2018/19

Subject: 30212 - Concurrent and Distributed Systems Programming

Faculty / School: 110 -
326 -

Degree: 443 - Bachelor's Degree in Informatics Engineering
439 - Bachelor's Degree in Informatics Engineering

ECTS: 6.0

Year: 443 - Bachelor's Degree in Informatics Engineering: 2
439 - Bachelor's Degree in Informatics Engineering: 2

Semester: First semester

Subject Type: Compulsory

Module: ---

General information

Aims of the course

Context and importance of this course in the degree

Recommendations to take this course

Learning goals

Competences

Learning goals

Importance of learning goals

Assessment (1st and 2nd call)

Assessment tasks (description of tasks, marking system and assessment criteria)

Methodology, learning tasks, syllabus and resources

Methodological overview

The learning process for this subject is based on the following aspects:

- students must work on the subject since the beginning of the semester.
- lectures for the presentation of the main concepts and methodologies for the development of concurrent and distributed systems. The teacher will make the lectures as interactive as possible, so that students should also participate.
- the use of the presented methodologies in practical problem sessions, where students should have a participative attitude.
- the laboratory sessions, where students will learn the necessary technologies for the development of programming projects where different entities should have to cooperate. For that, the studied synchronization mechanisms should have to be used.
- some teamwork programming projects, which should be conveniently designed, developed, documented and demonstrated.

Learning tasks

The subject program proposed to students in order to reach the defined learning objectives includes the following activities:

- about 60 hours of face-to-face activities, including lectures, problem sessions and laboratory sessions
- about 30 hours of teamwork
- about 55 hours of student individual work
- about 5 hours for evaluation

Syllabus

The main topics the subject will concentrate on are the following:

- Introduction to concurrency (4h aprox.)
- Modelling of concurrent systems (6h aprox.)
- The critical section problem (5h aprox.)
- Semaphores (8h aprox.)
- Monitors (6h aprox.)
- Introduction to distributed systems (3h aprox.)
- Coordination by means of tuple spaces (3h aprox.)
- Distributed algorithms (7h aprox.)
- Introduction to real time systems (1.5h aprox.)
- Introduction to event-based systems (1.5h aprox.)
- The laboratory sessions will cover following topics:
- Threads and shared data (2h)
- Solutions to the critical section problem: the Peterson algorithm (2h)
- Synchronization by means of semaphores (2h)
- Synchronization by means of monitors (2h)
- Synchronization of distributed systems by means of sockets (2h)
- Analysis of the teamwork project (2h)

Course planning and calendar

The concrete schedule of the proposed activities will be established according to the faculty organization.

Bibliography and recommended resources