

Academic Year: ( 2020 / 2021 )

Review date: 27-01-2021

Department assigned to the subject: Systems Engineering and Automation Department

Coordinating teacher: CASTILLO MONTOYA, JOSE CARLOS

Type: Electives ECTS Credits : 6.0

Year : 3 Semester : 2

Branch of knowledge: Engineering and Architecture

**DESCRIPTION OF CONTENTS: PROGRAMME**

The program is composed by the following items:

1. Introduction to computation in parallel. Concept of parallelism and historic evolution.
2. General organization of a computer.
3. Conditions for the parallelism and analysis of the abilities. Analysis of dependencies. Levels of parallelism process and size of the grain. Characteristics of the performance. Theory performance models.
4. Segmentation fundamentals. Basic concepts about segmentation. Structures for controlling functional segmented units.
5. Segmented processors. Basic stages of a segmented processor with a static instructions planning. Types of risks and their possible solutions. Multicycle performance. Dynamic instructions planning. Dynamic jumps prediction.
6. Superscalar structures, supersegmented and VLIW. Superscalar and supersegmented processor concept. Uses of a superscalar processor and of supersegmented ones. VLIW processors.

**LEARNING ACTIVITIES AND METHODOLOGY**

1. Theory classes. Presentation of the main concepts. Discussion and clarification of doubts about the concepts. We will work on transparencies that will be given to students to facilitate learning, in addition to a text or basic reference texts required in the course.
2. Classes of practical exercises. Sessions in which problems are posed and students are left in groups to present their solutions.
3. Laboratories. Students (in small teams) will be offered practical case studies, they should study them and then take the simulation data and analyze it. Knowledge of the topics covered in master classes and practical classes in the subject will be used. A preliminary study will be carried out, work will be carried out in the laboratory, and a written report will be delivered with the results and proposed solutions.

Addendum COVID-19:

Due to the situation caused by COVID-19, if necessary, both theory classes and practical exercises classes will be carried out online, the practices will be attempted in the laboratories, unless it is impossible, in which case they would also be adapted to do them. on line.

**ASSESSMENT SYSTEM**

The course evaluation is based on a continuous model. The student mark will take into consideration the activities in the course. The course have a theoretical and a practical part.

The continuous evaluation of the theoretical and practical parts will be done through two partial exams.

\* If the student pass both exams and the practical parts are done the course will be passed. If any of the practical parts are not done for any reason the student will contact with his/her professor to recover it.

\* If one of the exams is not passed the student will have a recovery exam for the failed part.

The mark in the course will be the media between the passed exams (if both are passed) or between the passed and recovery exams. If the mark is gret or equal 5 the student will pass the course.

The practical sessions are required to pass the course.

Addendum COVID 19

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Due to the situation with COVID 19, the continuous evaluation will be carried out through personal work that will be worth 20% of the continuous evaluation and a single partial exam (with problems on both parts) that will be carried out online that will be worth 80% of continuous evaluation. The grade of the continuous evaluation will be the sum of both parts and will be considered approved when said sum is greater than or equal to 5.

If the pass is achieved, it will not be necessary to take the final recovery exam, you can go to the final exam if you have not passed the partial exam.

<b>% end-of-term-examination:</b>	0
<b>% of continuous assessment (assignments, laboratory, practicals...):</b>	100