

ADDENDUM TO THE COURSE DESCRIPTION

As a consequence of the State of Health Emergency due to the COVID-19 global pandemic and as instructed in the document "General Orientations for information gathering and documental registry of teaching adaptations and contingency plans derived from COVID-19 pandemic", issued by the Accreditation and Evaluation Director of the Andalusian Agency for Knowledge (DEVA-AAC), it is required that second semester and yearlong courses (2019-2020) are adapted to distance-learning mode.

COURSE DETAILS

Title (of the course): SISTEMAS EN TIEMPO REAL (REAL-TIME SYSTEMS)

Code: 101415

Degree/Master: GRADO EN INGENIERÍA INFORMÁTICA

Year: 3º

Character: MANDATORY (Engineering of Computers)

Duration: SECOND TERM

ECTS Credits: 6.0

Online platform: <http://moodle.uco.es/moodlemap/>

COORDINATOR INFORMATION

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THEORY AND PRACTICAL CONTENTS ADAPTATION

All the theoretical contents are kept. The practices that were going to be done using Lego robots, not being available to students, have been changed by the development of equivalent algorithms using C / C ++ with Pthreads, OpenMP and MPI. An advanced planning simulator will also be used.

General clarifications on the methodology:

The course is virtualized on the Moodle platform of the Universidad de Córdoba. The general and specific clarifications on the methodological adaptation to the distance modality will be published in the virtual classroom of the Universidad de Córdoba.

All the lessons have been translated to English. The professor is available at the chat in the Moodle course during the official teaching hours of the subject. The resolution of problems and practices are available in specific documents, slides, and videos. Videoconferences are available on request.

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| Distance teaching activities | |
|------------------------------|--|
| Large group | Teaching lessons in slides. Online chat. Videoconferences on request. |
| Medium group | Documents, slides, and videos. Online chat. Videoconferences on request. |
| Small group | Documents, slides, and videos. Online chat. Videoconferences on request. |
| Tutoring | Email, forum and online chat in Moodle. Videoconferences on request. |

EVALUATION ADAPTATION

| Instrument for evaluation | Moodle Tool | Percentage |
|---------------------------|----------------|--------------|
| Exam – Theory part | Questionnaires | 30% |
| Exam – Problem part | Task | 30% |
| Lab practices | Task | 30% |
| Portfolio | Task | 10% |
| Total (100%) | | 100 % |

General clarifications on instruments for evaluation:

Exam – Theory part: There will be 6 questionnaires, one per lesson, of 4-option random test questions with penalty for error. Each student will have a different questionnaire based on a bank of questions selected randomly by the Moodle questionnaire generation system. Each questionnaire will be available for at least 1 day for a single attempt. Students will have a limited time (indicated in each questionnaire) to answer the questionnaire. It is part of the continuous evaluation.

Exam – Problem part: Exercises will be proposed using the Moodle task mechanism. Each task will be opened during the official teaching hours of the subject and the students must solve the exercises and answer them by uploading a photograph or a scan of the solution. The late delivery of exercises will be penalized. Specific delivery conditions will be provided for each task. It is part of the continuous evaluation.

Laboratory Practices: Students must implement a series of algorithms in C / C ++ with Pthreads, OpenMP and/or MPI for concurrency issues and real-time operating systems. Students will also make use of an advanced real-time planning simulator with which they must be able to propose and analyze the feasibility of tasks with different planning mechanisms. The evaluation will be carried out by delivering reports and practice reports using the Moodle Task as an evaluation tool. It is part of the continuous evaluation.

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Portfolio: The cognitive evolution of the concepts of Real Time will be valued. The Moodle Task will be used as a monitoring mechanism for this evolution. It is part of the continuous evaluation.

Final score:

$(\text{Questionnaire1} + \text{Questionnaire2} + \text{Questionnaire3}) \cdot 0.025 + (\text{Questionnaire4} + \text{Questionnaire5} + \text{Questionnaire6}) \cdot 0.075 + (\text{Average score for Problems}) \cdot 0.3 + (\text{Average Score for Practices}) \cdot 0.3 + (\text{Portfolio}) \cdot 0.1 = \text{FINAL_SCORE}$

CLARIFICATION ON THE CLASSIFICATION OF "NOT PRESENTED"

The grade of "Not presented" will correspond to the student who has not taken part in a number of evaluable activities whose weights on the final grade amount to more than 50% (Art. 80.4 of the Regulations for the Academic Regime of Degree Studies).

For the student who has participated in assessment activities other than the final exam whose accumulated weight on the final grade exceeds 50% and has not attended the final exam of the subject, the professor will record "Not presented" in the provisional publication of the grades.

If during the review process, the student does not express his disagreement with that grade, it will be consolidated into the final grade for the course. Otherwise, you must notify the professor and the final grade would be the weighted sum of the scores achieved in all the evaluation methods to which it has participated according to the criteria established in this addendum.

RESOURCES AND INFRASTRUCTURE

Those provided by the Vicerectorate for Digital University and Strategic Planning (<https://www.gestion.uco.es/continuidad/>).

ADDITIONAL INFORMATION

Students cannot do face-to-face practices with Lego robots. However, the use of these robots was a mere support for the development of real-time systems, nevertheless, those concepts can be acquired through the development of algorithms in C/C++ with different tools for concurrency and access to Operating Systems. To cover the scheduling functionalities, which would be more difficult to achieve through C/C++, an advanced simulator is used for Real-Time scheduling. With these methodological adaptations, similar knowledge and skills are acquired.

Repeating students do not have any specific adaptation. They must take the same evaluation procedure described above.

BIBLIOGRAPHY ADAPTATION. NEW RECOMMENDED ONLINE RESOURCES

A new Real-Time scheduling simulator has been included:

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Singhoff, F. "Cheddar: an open-source real-time scheduling tool/simulator" URL: <http://beru.univ-brest.fr/~singhoff/cheddar/> Last update: June 20th, 2019.

The methodological strategies and the evaluation system contemplated in this Course Description will be adapted according to the needs presented by students with disabilities and special educational needs in the cases that are required.