Computer Networks

Academic Year: (2021 / 2022)   **Review date: 04-06-2021**

Department assigned to the subject: Telematic Engineering Department

Coordinating teacher: VALERA PINTOR, FRANCISCO

Type: Compulsory ECTS Credits : 6.0

Year : 4 Semester : 1

OBJECTIVES

Learning outcomes:

R1 Knowledge and understanding: have basic knowledge and understanding of the scientific and technological foundations of Computer Engineering, as well as a specific knowledge of computer science, computer engineering and information systems.

R2 Engineering Analysis: To be able to identify Computer Engineering problems, recognize their specifications, establish different resolution methods and select the most appropriate methods of resolution and select the most appropriate for its solution, taking into account the social, human health, environmental, and commercial constraints applicable in each case.

R3 Engineering Design: Be able to perform engineering designs according to their level of knowledge and understanding that comply with the required specifications, collaborating with other engineers required specifications in collaboration with other engineers and graduates. Design encompasses devices, processes, methods and objects, and specifications broader than strictly technical, which includes social awareness, health and safety, and environmental and commercial considerations

Core and general competencies:

CGB3 - Ability to understand and master the basic concepts of discrete mathematics, logic, algorithmic, and computational complexity, and their application to complexity, and their application to the resolution of engineering problems.

CGO3 - Ability to design, develop, evaluate and ensure the accessibility, ergonomics, usability and security of systems, services and computer applications, as well as the information they manage.

CGO6 - Ability to conceive and develop centralized or distributed computer systems or architectures integrating hardware, software and networks in accordance with hardware, software and networks according to the knowledge acquired.

CB1 - That the students have demonstrated to possess and understand knowledge in an area of study that starts from the base of general secondary education, and is usually general secondary education, and is usually found at a level that, while relying on advanced textbooks, also includes some aspects that involve knowledge from some aspects that involve knowledge from the cutting edge of their field of study.

Specific competencies:

CECRI1 - Ability to design, develop, select and evaluate computer applications and systems, ensuring their reliability, security and quality, in accordance with ethical principles and current legislation and regulations.

CECRI11 - Knowledge and application of the characteristics, functionalities and structure of Distributed Systems, Computer Networks and the Internet.

and the Internet and design and implement applications based on them.

DESCRIPTION OF CONTENTS: PROGRAMME

· Packet networks.

· Link levels.

· Internet network level.

· Level of transport on the Internet.

· Level of application on the Internet.

· Study of specific application level protocols

LEARNING ACTIVITIES AND METHODOLOGY

- Theoretical-practical classes: 1.8 ECTS. In them, the knowledge to be acquired by the students will be presented. They will receive the class notes and will have basic reference texts to facilitate the follow-up of the classes and the development of the subsequent work. Exercises will be solved by the student that will serve as self-evaluation and to acquire the necessary skills. Classes of problems, in which the problems proposed to the students will be developed and discussed.
- Laboratory practices: 0,25 ECTS.
- Final exam: 0,17 ECTS. The knowledge, skills and abilities acquired throughout the course will be globally assessed.
- Individual or group work of the student: 3,1 ECTS.
- Tutorials: 0,6 ECTS Individualized assistance (individual tutorials) or in group (group tutorials) to the students by the professor.

ASSESSMENT SYSTEM

The course is scored 70% following the continuous evaluation (70 points) approach and 30% final exam (30 points). It is NOT necessary to get any minimum score in the exam or in any other part of the course to calculate the final global score that must be of at least 50 points. If a student does not follow the continuous evaluation procedure, i.e. has no points in this procedure, the final exam can be done according to the continuous evaluation rules defined by the University (the maximum score that can be obtained in this exam is stated by the university in this rule).

For the continuous evaluation activities, the score is as follows:

- Theoretical-practical evaluation (50 points):
  o 4 knowledge tests (PC1, PC2, PC3, PC4): 10 points each. Every test will last 1.5 hours.
  o 4 concept tests (tc1, tc2, tc3, tc4): 2.5 points each. Every test will have an estimated duration of 5-10 minutes. The will be done as homework outside the normal class time schedule (the tests will remain active for around a week).
- Labs evaluation (30 points):
  o IP addressing design (Ld, it will be done as homework): 5 points
  o Lab practice (routers Lr): 25 points.

According to the university rules, the points obtained in the continuous evaluation part are also valid for the extraordinary call, but are not valid for the following academic year.

The exact score obtained in all the different evaluations will be provided before the final exam, following the University rules. It will also be able to review all the evaluations (continuous evaluation and final exam) in the final review after the final exam. However, the score obtained in the different parts of the continuous evaluation will be progressively published as soon as it is ready.

In order to pass the course it is required to obtain 50 points. The maximum score that can be obtained is 100 points. In the continuous evaluation part 80 points are possible (for a total official score of 70). This has been considered in order to promote a flexible approach to the continuous evaluation concept. For this reason if a student misses any activity of the continuous evaluation set, it will not be possible to repeat it since these extra points have been design so as to cope with these unexpected problems (in any case it will be possible for the students, with a previous notification to the course coordinator, to attend to any other group that still has to do the missing test in order to do it there).

The students may deliver the different problems included in Aula Global before the different sessions programmed to solve them (using the corresponding delivery activity configured in Aula Global) or the Wireshark lab (Lw). These problems and practice will not be evaluated during the course (obviously the students may benefit from asking about them in the different mentoring sessions or problem solving sessions) and will only be considered in case the final mark of the student stays between 4.5 and 5 points, 5.5 and 6 points, 6.5 and 7, 7.5 and 8 points, 8.5 and 9 or over 9. In case some of the problems/practices have been delivered and were properly solved and at least 1 out of 10 points have been obtained in the final exam, it would be considered to upgrade the final score to 5, 6, 7, 8, 9 or Matricula de Honor.

This course specifically supports the Guide for Good Performing for Students written by the university: https://www.uc3m.es/ss/Satellite/Grado/en/TextoMixta/1371214036111/Best_practices_guide.
In particular, according to section G in the Recommendation to make exams or evaluate knowledge and to the general clause about irregular situations, any fraud committed by any student will automatically imply to fail the course and to communicate this situation to the Director of the Program so that potential administrative sanctions can considered.

% end-of-term-examination:	30
% of continuous assessment (assigments, laboratory, practicals…):	70

BASIC BIBLIOGRAPHY

 - KUROSE, JAMES F. Keith W. Ross Computer Networking, a top-down approach. Seventh Edition, Pearson, 2017

BASIC ELECTRONIC RESOURCES

 - Jame Kurose . Redes de Computadores (accesible desde dentro de la universidad): <a
href="http://www.ingebook.com/ib/NPcd/IB_Escritorio_Visualizar?cod_primaria=1000193&libro=6752"
target="_blank">http://www.ingebook.com/ib/NPcd/IB_Escritorio_Visualizar?cod_primaria=1000193&libro=6752