Web Applications

Academic Year: (2022 / 2023) **Review date: 09/05/2022 15:41:45**

Department assigned to the subject: Telematic Engineering Department

Coordinating teacher: ARIAS FISTEUS, JESUS

Type: Compulsory ECTS Credits : 6.0

Year : 3 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

- Programming
- Data structures and algorithms
- Computer Networks
- Data bases
- Data protection & cybersecurity

OBJECTIVES

CB1: That students have shown that they have and understand knowledge in an area of ¿¿study that starts from the base of secondary education, and is usually found at a level that, although supported by advanced textbooks, also includes some aspects that imply knowledge coming from the vanguard of the field of study.
CB2: That students know how to apply their knowledge to their work or vocation in a professional way and have the skills that are usually shown through the elaboration and defense of arguments and the resolution of problems within their area of ¿¿study.
CE17: Ability to know the security requirements (with emphasis on privacy) of big data environments and the associated protection measures: technical, organizational and legal, as well as knowing and managing encryption techniques and their use to ensure data security.
CE19: Ability to develop Web and mobile applications and use them to capture data.
CG3: Ability to solve problems with initiative, decision making, creativity, and to communicate and transmit knowledge, skills and abilities, understanding the ethical, social and professional responsibility of the data processing activity. Ability for leadership, innovation and entrepreneurial spirit.
CG4: Ability to solve technological, computer-related, mathematical and statistical problems that may arise in engineering and data science.
CT1: Ability to communicate knowledge orally and in writing, in front of a specialized or non-specialized public.

RA1: Having acquired advanced knowledge and shown an understanding of the theoretical, practical and methodological aspects in the field of science and data engineering, reaching the vanguard of the field.
RA2: Being able, through elaborated and self-sustained arguments or procedures, to apply their knowledge, understand it and solve problems in complex and specilized work or professional environments that require the use of creative and innovative ideas.
RA6: Being able to identify their own training needs in their field of study and work or professional environment, and to organize their own learning with a high degree of autonomy in all types of contexts (structured or not).

DESCRIPTION OF CONTENTS: PROGRAMME

1.- The World Wide Web and related protocols
- Transport Layer Security (TLS)
- Hypertext Transfer Protocol (HTTP)
- Introduction to Web applications

2.- Client-side
- Content presentation languages (HTML and CSS)

- Client-side programming languages
3.- Server-side
- The Model-View-Controller pattern
- The model layer (access to relational and non-relational databases, object-relational mapping systems)
- The controller layer
- The view layer
4.- Other aspects in the development of Web applications
- Security
- Scalability
- Advanced technologies

LEARNING ACTIVITIES AND METHODOLOGY

Learning activities:

THEORETICAL-PRACTICAL CLASSES: In them, the knowledge that students should acquire is presented. Students receive class notes and basic references to help them to follow classes and do subsequent work. Practical exercises and problems will be solved by the students, and tests will be held to assess they have acquired the necessary skills.
TUTORING: Individualized assistance to students by the teacher.
INDIVIDUAL OR GROUP STUDENT WORK.
LABORATORIES: Practical computer exercises.
FINAL EXAM. The knowledge, skills and abilities acquired throughout the course will be assessed globally.

Methodology:

LECTURES: The teacher presents contents with support of computer and audiovisual media. The main concepts of the subject are developed and materials and bibliography are provided to complement students' learning.
PRACTICES: Resolution of practical cases, problems, etc. proposed by the teacher, individually or in groups.
TUTORING: Individualized assistance to students by the teacher.
LABORATORY PRACTICES: Applied / experimental teaching in laboratories under the supervision of a tutor.

ASSESSMENT SYSTEM

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

FINAL EXAM: the knowledge, skills and abilities acquired throughout the course will be assessed globally. A minimum grade of 3.5 points out of 10 in the final exam is required in order to pass this course.

CONTINUOUS EVALUATION: there will be two partial exams (10% each) and a programming project of a complete web application with database (50%).

BASIC BIBLIOGRAPHY

- Dafydd Sttutard, Marcus Pinto The Web Application Hacker's Handbook, 2nd ed., John Wiley & Sons, 2011

- David Flanagan Javascript: The Definitive Guide, 6th Edition, O'Reilly Media Inc., 2011

- Marty Hall Core Servlets and JavaServer Pages, Prentice Hall, 2000

- Rob Larsen Beginning HTML and CSS, Wrox, 2013

ADDITIONAL BIBLIOGRAPHY

- David Flanagan jQuery Pocket Reference, O'Reilly Media, Inv., 2010

- Douglas Crockford JavaScript: The Good Parts, O'Reilly Media, Inc., 2008

- Martin L. Abbott, Michael T. Fisher Scalability Rules: 50 Principles for Scaling Web Sites, Addison-Wesley Professional; 1 edition , 2011

- Simon Harris HTML5 Unleashed, Sams, 2013