

Academic Year: ( 2022 / 2023 )

Review date: 31-05-2022

Department assigned to the subject: Telematic Engineering Department

Coordinating teacher: ALMENARES MENDOZA, FLORINA

Type: Compulsory ECTS Credits : 6.0

Year : 3 Semester : 2

**REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)**

Programming  
Systems Programming  
Systems Architecture

**OBJECTIVES**

The main objective of this course is providing the student with the knowledge, skills and competences required to design and develop multimedia applications. The course thus aims at the objective of providing the student with the required knowledge and skills for creating multimedia applications and web sites using appropriate technologies (Web technologies, multimedia libraries and frameworks, IDE).

To achieve this goal, the student must acquire the following competences:

**1. Specific competences (ECRT13, ETEGISA1, ETEGISA5)****1.1. Cognitive:** at the end of the course the student must be able to:

- Know the HTML5 language for representing structured and multiplatform (multimedia) web content
- Know the CSS language for formatting web pages
- Know the Javascript language for introducing interaction and processing in web sites
- Understand languages for description and animation of multimedia information, as well as their adaptation to Web environments
- Know the structure of a multimedia application
- Know specific libraries for programming multimedia applications

**1.2. Instrumental and practical:** at the end of the course, the student is expected to be able to:

- Design and develop interactive and multimedia web pages
- Insert and define the interaction with components in multiplatform, interactive applications
- Create (design and program) multimedia applications.
- Use existing frameworks for creating multimedia solutions.

**1.3. Attitude:** at the end of the course, the student should attain:

- A proactive attitude for contributing solutions for the design of multimedia applications
- An attitude of collaboration as a mean for solving complex problems
- A creative attitude for the analysis and design of multimedia applications and interfaces
- A cooperative attitude for the software project management at team

**2. General competences (CG1, CB1, CB2)**

- Capacity to apply theoretical concepts
- Collaborative work
- Ability to organize and plan the work for solving problems and fulfilling a given task
- Ability to search and discriminate the information relevant for solving a given problem
- Ability to create a system according to given requirements (analyze the requirements, design, develop and test the system) [This competence is particularly critical for the course]

**DESCRIPTION OF CONTENTS: PROGRAMME**

This course tackles the development of multimedia applications, considering both Web and standalone environments.

The syllabus is thus divided into two parts:

## PART 1: Multimedia web technologies:

- 1.1.- (Multiplatform) Representation of structured and multimedia contents: HTML5
- 1.2.- Format and appearance: CSS
- 1.3.- Processing: Javascript
- 1.4.- Other technologies

## PART 2: Development of multimedia applications

(Development of multimedia applications based on an open-source multimedia framework)

- 2.1 Basic concepts and architecture
- 2.2 Basic functionalities: capture, processing, presentation and storage of multimedia information
- 2.3 Communication and transmission of multimedia information: RTP

## LEARNING ACTIVITIES AND METHODOLOGY

The learning methodology will include:

### THEORY - lectures and exercises:

- Lectures for introducing the key concepts and knowledge that the students must attain. Lectures will also provide a space for discussion and solution of doubts that may rise during self-learning. Theoretical explanations will be complemented with appropriate examples. The students will be provided with class notes and references for completing and deepening topics of particular interest.
- Exercises solved by the student that will allow self-assessment and achieving the required learning outcomes. Self-study for correct assimilation of the information.
- Problem classes guided by the instructor with active participation by the students, in order to consolidate concepts and develop abilities.

### PRACTICE - Lab sessions and Projects:

- Lab sessions in teams for developing collaborative abilities, team work and problem solving, applying the theoretical background related to the course.
- Course project as an integrated mean for consolidating the learning outcomes of the course. The students are required to work in teams to design and develop a multimedia application that fulfills a given set of requirements, applying the appropriate technologies. Students must document properly their deliverables and do a short final presentation of their project. They are also expected to organize a work-plan to fulfill the schedule and to search for additional information and browse technical documentation.

Group tutoring sessions will be organized depending on the students' needs and requests

## ASSESSMENT SYSTEM

Course assessment is based on the principles of continuous evaluation:

- \* Continuous evaluation: 50%.
- \* Final exam: 50%.

Minimum score in the final exam: 4 points (out of 10)

In any case, the University regulations for continuous evaluation in bachelor studies applies as well as the best practices guideline for students.

<b>% end-of-term-examination:</b>	50
<b>% of continuous assessment (assignments, laboratory, practicals...):</b>	50

## BASIC BIBLIOGRAPHY

- Adam Freeman The Definitive Guide to HTML5, Apress, 2011
- Armando Fox & David Patterson Engineering Software as a Service: An Agile Approach Using Cloud Computing, Strawberry Canyon LLC, 2013
- Douglas Crockford JavaScript: The Good Parts, O'Reilly, 2008
- Marijn Haverbeke Eloquent JavaScript, No Starch Press, 2014

## ADDITIONAL BIBLIOGRAPHY

- David Flanagan JavaScript: The Definitive Guide, O'Reilly Media, 2011
- Mark J. Collins Pro HTML5 with CSS, JavaScript, and Multimedia: Complete Website Development and Best Practices, Apress, 2017

## BASIC ELECTRONIC RESOURCES

- . GStreamer open source multimedia framework: <https://gstreamer.freedesktop.org/>
- Marijn Haverbeke . Eloquent JavaScript: <http://eloquentjavascript.net/>
- Mozilla Developer Network and individual contributors . Mozilla Developer Network: <https://developer.mozilla.org/en-US/>
- W3C . HTML5. A vocabulary and associated APIs for HTML and XHTML. W3C Recommendation 28 October 2014: <http://www.w3.org/TR/html5/>
- W3C . Cascading Style Sheets (CSS) Snapshot 2010. W3C Working Group Note 12 May 2011: <http://www.w3.org/TR/CSS/>
- Wim Taymans, Steve Baker, Andy Wingo, Ronald S. Bultje, Stefan Kost . GStreamer Application Development Manual: <https://gstreamer.freedesktop.org/data/doc/gstreamer/head/manual/html/index.html>