COURSE DATA

DATA SUBJECT

Code: 34857
Name: Web programming
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
1407 - Degree in Multimedia Engineering	Escola Tècnica Superior d'Enginyeria	2	Second quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1407 - Degree in Multimedia Engineering	Programación Multimedia	COMPULSORY

COORDINATION

PEÑA ORTIZ RAÚL

SUMMARY

The course \\\\\\"***Hypermedia Programming***\\\\\\" belongs to the second year of the Degree of Multimedia Engineering, which covers part of the compulsory subject *Multimedia Programming*.

This course constitutes a natural evolution of the knowledge and skills acquired in the course \\\\\\" *Human-Computer Interaction*\\\\\\" concerning the development of desktop applications. The course is thus devoted to more complex systems related to distributed environments and the client-server architecture. The basic lines of the course is structured around hypermedia systems and programming of dynamic Web environments and a brief introduction to the SOA architecture.

The aim is to provide a broad overview of the many development solutions for Web applications. Specifically, through this course we will address the programming languages used on both the client side (HTML5, CSS, Javascript) and server side (servlets, JSP, PHP).

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

It is recommended to have taken and passed the previous programming subjects: Informatics (34831), Programming (34852) and Algorithms and data structures (36483).

COMPETENCES / LEARNING OUTCOMES

1405 -

B4 - Have basic skills in the use and programming of computers, operating systems, databases and computer software for use in engineering.

B5- Know the structure, organisation, operation and interconnection of computer systems, the fundamentals of their programming and their application to solve engineering problems.

I10 - e able to design and evaluate human-computer interfaces that ensure accessibility and usability of computer systems, services and applications.

I1- Know and be able to apply basic computer algorithmic procedures to design solutions to problems, by analysing the suitability and complexity of the proposed algorithms.

I2 - Know, design and make an efficient use of the data types and data structures that are most suited to solving a problem.

MM15 - Be able to respond professionally to the requirements at each step of a multimedia production process: show skills for preparing and understanding scripts and communication, graphic design for communication, management of streaming technology, web design and production and post-production processes.

MM26 - Be able to conceive, develop and maintain multimedia systems, services and applications using the methods of software engineering as a tool for quality assurance, according to the knowledge acquired as described in the specific competences.

MM28 - Be able to solve problems with initiative, decision-making and creativity and to communicate and transmit the knowledge, abilities and skills of a multimedia engineer.

MM2 - Be able to understand and manage the different technologies involved in multimedia systems, both from the point of view of hardware and electronics and of software.

MM3 - Be able to implement methodologies, technologies, processes and tools for the professional development of multimedia products in a real context of use by applying the appropriate solutions for each environment.

MM8 - Integrate knowledge of different multimedia technologies to create products that offer global solutions that are appropriate to each context.

MM9 - Program correctly in the different specific languages of multimedia systems taking into account time and cost restrictions.

DESCRIPTION OF CONTENTS

1. Introduction to hypermedia systems

The context of hypermedia.
Hypermedia systems.
Media: text, audio and image.

2. Fundamentals of Web

Web components: Using the standards URI, HTML, HTTP.
Web Container vs Aplications Container
Web applications. N-tier models.
HTTP protocol.

3. Hypermedia systems development on the client side

HTML5
CSS: Cascading Style Sheets.
Javascript.

4. Web application development on server side (I)

Introduction to distributed programming. Differences regarding the desktop applications (sessions, persistence...)
Models based on programming: CGIs and Servlets.

5. Web application development on the server side (II)

Models based on templates: PHP and JSP..
Model View Controller (MVC). Frameworks.
Brief introduction to the SOA architecture

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours

Theory	30,00
Laboratory	20,00
Classroom practices	10,00
Total hours	**60,00**

NON PRESENCIAL ACTIVITIES

Activity	**Hours**
Attendance at other activities	0,00
Individual or group project	20,00
Independent study and work	0,00
Preparation of lessons	55,00
Preparation for assessment activities	15,00
Resolution of case studies	0,00
Total hours	**90,00**

TEACHING METHODOLOGY

During the on-site basis theoretical activities, the main topics of the course will be shown by providing a global and inclusive vision, analyzing in detail the key and more complex issues, encouraging at all times the students participation. These activities are complemented by practical activities in order to apply the basic concepts and to expand the knowledge and experience that is acquired during the performance of the proposed work. The on-site activities comprise the following:

• Problem-based lectures and questions in the classroom

• Sessions devoted to moderated discussions, and the resolution of problems and exercises that the students have previously worked

• Laboratory-based practical exercises

In addition to on-site activities, students must perform personal tasks (outside the classroom), including: monographs, guided literature research, questions and problems as well as the preparation of classes and exams (study). These tasks will be primarily conducted on an individual basis, thus enabling to enhance self-employment. Additionally, works requiring the participation of small groups of students (2-4) will be proposed to promote the students capacity for integration into working groups.

The University of Valencia e-learning platform (*Aula Virtual*) will be used to support the communication with students. Through this platform the studens will have access to course materials used in class as well as the problems and exercises to solve.

EVALUATION

The evaluation of the course will be carried out by:

(C) Continuous assessment, taking into account regular, full class attendance and based on participation and level of involvement in the teaching-learning process, considering the planned activities and the resolution of questions, problems, and proposed assignments. This grade cannot be recovered in second call.

(E) Individual objective tests, consisting of one or more exams or knowledge tests, which will include both theoretical and practical questions and problems. Each of these tests or exams must be passed to pass the course.

(L) Assessment of practical activities based on the achievement of objectives in laboratory sessions and the preparation of assignments, reports, and projects. Laboratory sessions will be conducted in pairs, but individual oral presentations will be given to defend and explain the projects completed, assessing the student's ability to transmit knowledge. Attendance at laboratory sessions is mandatory. Students who do not attend at least 80% of the laboratory sessions will fail the lab sessions for the first sitting.

The final grade for the course, for the first and second sittings, will be calculated as:

$$NF = 0.1*C + 0.6*E + 0.3*L$$

To pass the subject, students must achieve a minimum grade of 5 in NF, as well as a minimum grade of 5 in both E and L.

Copying or plagiarism of any activity that is part of the evaluation will result in the impossibility of passing the course, and the student will then be subject to the appropriate disciplinary procedures indicated in the ACTION PROTOCOL FOR FRAUDULENT PRACTICES AT THE UNIVERSITY OF VALENCIA (ACGUV 123/2020).

In both evaluation systems, the evaluation of the course will be done in accordance with the Regulation of evaluation and qualification of the University of Valencia for the undergraduate and master degrees approved by the Governing Council of May 30, 2017 (ACGUV 108/2017).

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REFERENCES

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- Carr, David, Beginning PHP. ISBN: 1-78953-590-5, 978-1-78953-590-7, 2018.
- HTML5 and JavaScript Projects, Meyer, Jeanine. ISBN: 1-4842-3863-X, 978-1-4842-3863-9, 2018
- Pro HTML5 Games, Shankar, Aditya Ravi, ISBN: 1-4842-2909-6, 978-1-4842-2909-5, 2017