COURSE DATA

Data Subject

Code	44831
Name	Multimedia Content Management and Distribution
Cycle	Master's degree
ECTS Credits	4.0
Academic year	2023 - 2024

Study (s)

Degree	Center	Acad. year	Period
2234 - M.D. in Web Technology, Cloud Computing and Mobile Apps	School of Engineering	1	First term

Subject-matter

Degree	Subject-matter	Character
2234 - M.D. in Web Technology, Cloud Computing and Mobile Apps	4 - Information and Content Management and Processing	Obligatory

Coordination

Name	Department
GARCIA PINEDA, MIGUEL	240 - Computer Science

SUMMARY

The subject of "Management and distribution of multimedia content" aims to cover the most important aspects related to the streaming of multimedia content in IP networks, from its capture, coding, diffusion to reception and decoding by the client. In order to give a broad view of the technologies that make up multimedia systems, the most current video and audio compression systems will be studied, as well as the protocols used to transport multimedia content and the various solutions available for the distribution of multimedia content over IP networks. Finally, some QoS techniques will be studied, as well as the concept of QoE and some methods of objective and subjective evaluation to analyze the quality of multimedia content received.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

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

Other requirements

Basic knowledge of analog and digital signals: definition, digitization process
Basic Mathematics: Algebra of vectors and matrixes.
Knowledge of networks and the TCP / IP model.

OUTCOMES

2234 - M.D. in Web Technology, Cloud Computing and Mobile Apps

- Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.
- Students should be able to integrate knowledge and address the complexity of making informed judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities associated with the application of their knowledge and judgments.
- Students should communicate conclusions and underlying knowledge clearly and unambiguously to both specialized and non-specialized audiences.
- Students should demonstrate self-directed learning skills for continued academic growth.
- Students should possess and understand foundational knowledge that enables original thinking and research in the field.
- Ability to apply acquired knowledge and solve problems in new or little-known environments within broader and multidisciplinary contexts, being able to integrate this knowledge.
- To foster, in academic and professional contexts, technological, social or cultural advancement within a society based on In knowledge and respect for: a) fundamental rights and equal opportunities between men and women; b) principles of equal opportunities and universal accessibility of persons with disabilities; and, c) the values of a culture of peace and democratic values.
- Ability to model, design, define the architecture, implement, manage, operate, and maintain applications, systems, services, networks and content in the field of Web technologies, cloud computing and mobile applications.
- Ability to analyze the storage needs that arise in an environment and to carry out the implantation of a solution in the fields of Web technologies, cloud computing and mobile applications.

- Ability to design and evaluate servers, applications and systems based on distributed computing.
- Ability to process, distribute and evaluate the quality of multimedia content.

LEARNING OUTCOMES

- Specify and complete computer tasks that are complex, incompletely defined or unfamiliar
- Describe and explain techniques and methods applicable to their particular area of study and identify their limitations
- Organize your own work independently, demonstrating initiative and exercising personal responsibility
- Perform bibliographic searches and reviews using databases and other sources of information
- Learning and improving personal performance as the basis for lifelong learning and professional development
- Communicate effectively both verbally and through other media to a variety of audiences and preferably in a second language
- Evaluate the need to create tools and web portals based on multimedia content.
- Know the functionality of the main protocols for transporting multimedia content in real time and video on demand.
- To know the operation of the coding algorithms and to identify their most important characteristics for their adaptation to the communications networks.
- Manage software tools for encoding videos and audio.
- To know the structure and the elements that form the architecture of the diverse solutions of distribution of contents.
- Know and use the software tools to prepare the multimedia content for later distribution using various transmission techniques over HTTP.
- Explain and know the necessary requirements at the server / network level to implement multimedia content transmissions.
- Develop web applications for the visualization of multimedia content using various transmission techniques.
- Describe the concept of quality of service and existing techniques to ensure adequate delivery of multimedia content.
- Describe the concept of quality of experience and objective and subjective metrics to evaluate multimedia content.

DESCRIPTION OF CONTENTS

1. Multimedia systems

2. Video and audio compression and encapsulation formats

3. Video Transmission Protocols

4. Multimedia Content Distribution Solutions

5. Preparation of multimedia contents for distribution over HTTP

6. Web tools for viewing, interacting and retrieving multimedia content

7. Quality of Service and Quality of Experience

WORKLOAD

ACTIVITY	Hours	% To be attended
Theoretical and practical classes	40,00	100
Development of group work	6,00	0
Study and independent work	35,00	0
Preparation of practical classes and problem	16,00	0
Resolution of online questionnaires	3,00	0
TOTAL	**100,00**	

TEACHING METHODOLOGY

- Theory class
- Problem resolution
- Project-oriented learning

EVALUATION

The assesment modalities used in this subject are:

SE1: Online assessment and/or degree of participation

SE2: Assessment of problems, works, reports and/or memories

SE4: Exam or face-to-face assessment

SE6: Assessment of laboratory

The evaluation of the subject will be carried out through:

- SE1 Evaluation (10%)
  - Based on participation and degree of involvement in the teaching-learning process, taking into account the regular attendance to the planned activities.
- SE2 Evaluation (10%)
  - Report / research of an advanced topic of the subject (5%).
  - Oral presentation of the previous report (5%).
- SE6 Evaluation (30%)
  - Reports from laboratories (30%).
- SE4 assessment (50%):
  - Partial 1, written exam (20%). A minimum score of 5 over 10 is required to remove curriculum on Partial 2.
  - Partial 2, written exam (30%). A minimum score of 4 over 10 is required.
  - If a grade of 5 or higher is not obtained in Partial 1, this part must be recovered in Partial 2, which will have a weight of 50% of the grade of the course.

Note: In the case of 2nd call, the SE4 evaluation will be a single written exam and a minimum grade of 4 over 10 will be required. The remaining grades will come from SE1, SE2 and SE6.

The grading system is specified in the following link:

http://www.uv.es/uvweb/universidad/es/estudios-postgrado/informacion-administrativa-postgrado/permanencia-calificaciones/calificaciones-1285897761928.html

The applicable regulations can be found at the following link:

http://www.uv.es/uvweb/universidad/es/estudios-grado/informacion-academica-administrativa/normativas/normativas-universidad-valencia-1285850677111.html

REFERENCES

Basic

- Next-generation video coding and streaming. Benny Bing. Hoboken, New Jersey: John Wiley and Sons, Inc., [2015]. Disponible online en http://trobes.uv.es desde la red interna de la UV.
- Learning WebRTC : develop interactive real-time communication applications with WebRTC. Dan Ristic. Birmingham, UK: Packt Publishing, 2015. Disponible online en http://trobes.uv.es desde la red interna de la UV.
- Multimedia signals and systems. Srdjan Stankovi, Irena Orovi, Ervin Sejdi. New York: Springer, 2012. Disponible online en http://trobes.uv.es desde la red interna de la UV.