340360 - XAMU-C9X44 - Multimedia Networks

Coordinating unit: 340 - EPSEVG - Vilanova i la Geltrú School of Engineering
Teaching unit: 744 - ENTEL - Department of Network Engineering
Academic year: 2019
Degree: BACHELOR'S DEGREE IN INFORMATICS ENGINEERING (Syllabus 2018). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN INFORMATICS ENGINEERING (Syllabus 2010). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN ELECTRONIC SYSTEMS ENGINEERING (Syllabus 2010). (Teaching unit Optional)
ECTS credits: 6 Teaching languages: Catalan, Spanish, English

Teaching staff
Coordinator: Rafael Morillas Varón
Others: Rafael Morillas Varón

Prior skills
It is recommended to have attended previous courses Computer Networks (Q4) and Internet (Q5).

Degree competences to which the subject contributes

Specific:
1. CETI1. Ability to understand the environment of an organization and its needs in the field of information technology and communications.
2. CETI2. Ability to select, design, develop, integrate, value, construct, manage, exploit and maintain technologies of machines, programming and nets, keeping suitable costs and quality parameters.
3. CETI4. Ability to select, design, deploy, integrate and manage network and communications infrastructure in an organization.
4. CETI6. Ability to design systems, applications and services based on network technologies, including internet, website, e-commerce, multimedia, interactive services and mobile computing.

Transversal:
5. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.
6. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.
7. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.

Teaching methodology
The course has been designed following a methodology adapted to the new EEES, and focuses the learning on the student. The method will be PBL, this method increases the implication of the student and helps then be continuously evaluated, helping them to improve the basis learned in the theoretical lessons.

is designed to Siguiendo a methodology adapted to the new European Space for Higher Education Area (EHEA), and ye focused on estudiante Learning. Methods will be applied to the Problem Based Learning (PBL), the implications of this Método mejora estudiante y su ayuda in Assessment continuously reforzando and complementando them conocimientos adquiridos in las clases theoretical.
The objectives of the course are distributed in a descending pattern. After an introduction / presentation of the subject, the multimedia applications are defined and their requirements to the network architecture for an efficient transport. After that, a general introduction to the techniques of data compression. Once we've got that basis, transport protocols are studied due to its common use in Internet. Afterwards, techniques related with video transportation are shown, as congestion control, error protection, etc. Finally, the most common network technologies for transporting multimedia data will be shown.

### Study load

**Total learning time:** 150h

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hours</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Large group</td>
<td>45h</td>
<td>30.00%</td>
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<tr>
<td>Medium group</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td>Small group</td>
<td>15h</td>
<td>10.00%</td>
</tr>
<tr>
<td>Guided activities</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td>Self study</td>
<td>90h</td>
<td>60.00%</td>
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</tbody>
</table>
## Content

<table>
<thead>
<tr>
<th>Topic</th>
<th>Learning time:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>16h</td>
</tr>
<tr>
<td>Theory classes: 8h</td>
<td></td>
</tr>
<tr>
<td>Self study: 8h</td>
<td></td>
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<tr>
<td>Multimedia Applications</td>
<td>16h</td>
</tr>
<tr>
<td>Theory classes: 8h</td>
<td></td>
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<tr>
<td>Self study: 8h</td>
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<tr>
<td>Multimedia Transport Protocols</td>
<td>12h</td>
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<tr>
<td>Theory classes: 6h</td>
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<tr>
<td>Self study: 6h</td>
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<tr>
<td>Planning and monitoring mechanisms</td>
<td>16h</td>
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<tr>
<td>Theory classes: 8h</td>
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<tr>
<td>Self study: 8h</td>
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<tr>
<td>Integrated Services</td>
<td>9h</td>
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<tr>
<td>Theory classes: 4h</td>
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<tr>
<td>Self study: 5h</td>
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<tr>
<td>RSVP</td>
<td>9h</td>
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<tr>
<td>Theory classes: 4h</td>
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<tr>
<td>Self study: 5h</td>
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<tr>
<td>Differentiated Services</td>
<td>9h</td>
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<tr>
<td>Theory classes: 4h</td>
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<tr>
<td>Self study: 5h</td>
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</tbody>
</table>
### Activity 1

**Learning time:** 10h  
Guided activities: 2h  
Self study: 8h

**Description:**  
Classroom presentation on a topic of interest

### Activity 2

**Learning time:** 10h  
Guided activities: 2h  
Self study: 8h

**Description:**  
Study, presentations and demonstrations of a multimedia product or service

### Practice 1

**Learning time:** 8h  
Laboratory classes: 4h  
Self study: 4h

**Description:**  
Multimedia protocols: Analysis and Operation

### Practice 2

**Learning time:** 12h  
Laboratory classes: 4h  
Self study: 8h

**Description:**  
Multimedia data compression: algorithms and products

### Practice 3

**Learning time:** 8h  
Laboratory classes: 4h  
Self study: 4h

**Description:**  
Multimedia data compression: tools and products
The evaluation of the subject is divided in theory/problems (60%) and practice/activities (40%). The theory grade / problems will be determined through two exams that are the continuous evaluation of the subject, those exams count about 40% and 60% each one.

\[
N_{\text{Theory}} = \max \left[ 0.4 \text{ (Midterm ex.)} + 0.6 \text{ (Final ex.)}, \text{ Final ex.} \right]
\]

\[
N_{\text{Subject}} = 0.6 \times \text{N}_{\text{Theory}} + 0.3 \times \text{N}_{\text{Practice}} + 0.1 \times \text{N}_{\text{Activities}}
\]

### Bibliography

**Basic:**


**Complementary:**