270638 - IAS - Internet Applications and Security

Coordinating unit: 270 - FIB - Barcelona School of Informatics
Teaching unit: 701 - DAC - Department of Computer Architecture
Academic year: 2019
Degree: MASTER'S DEGREE IN INNOVATION AND RESEARCH IN INFORMATICS (Syllabus 2012). (Teaching unit Optional)
ECTS credits: 6
Teaching languages: English

Teaching methodology

The course is very interactive with some introductory topics from the Professor and a few assignments in which students present papers and discuss conclusions.

In particular, students prepare two assignments for analysis and discussion on topics of recent research and standards, and another one more on research.

In the first two assignments, students present the results of their analysis and lead a discussion on this with rest of students.

In the last one, students make a small research project led by the Professor (on a specific topic: what is done? what is not solved? ideas to solve it). They write a short paper and make a presentation where they answer questions and criticisms from the Professor and the other students.

Learning objectives of the subject

1. Standards
2. Internet multimedia applications
3. Internet security

Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group: 24h 16.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group: 12h 8.00%</td>
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<tr>
<td></td>
<td>Hours small group: 12h 8.00%</td>
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<tr>
<td></td>
<td>Guided activities: 6h 4.00%</td>
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<tr>
<td></td>
<td>Self study: 96h 64.00%</td>
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</table>
## Introduction

### Degree competences to which the content contributes:

**Description:**
- Subject introduction
- Application layer
- Web: HTTP
- XML (eXtensible Markup Language)
- Standardization

## Security in applications

### Degree competences to which the content contributes:

**Description:**
- Threads and mechanisms
- Cryptography
- PKI (Public Key Infrastructure)
- Security in application protocols
- XML and security: Encryption, Signature
- Specific security protocols: SAML, OAuth
- Internet applications privacy
- Intellectual rights for multimedia content
- Security and privacy in eHealth
- New approaches: Blockchain, Quantum security, ...

## Multimedia content

### Degree competences to which the content contributes:

**Description:**
- Market aspects.
- Life cycle.
- Content architectures.
- Content types: Characters, Audio, Images, Video.
- Metadata.

## Multimedia content transmission

### Degree competences to which the content contributes:

**Description:**
- HTML5 support to multimedia transmission.
- Streaming protocols.
- Streaming with HTTP.
- DASH.
- Content Delivery Networks (CDN).
## Planning of activities

<table>
<thead>
<tr>
<th>Development of topic 1</th>
<th>Hours: 12h</th>
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<tbody>
<tr>
<td></td>
<td>Theory classes: 6h</td>
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<tr>
<td></td>
<td>Practical classes: 0h</td>
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<tr>
<td></td>
<td>Laboratory classes: 0h</td>
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<td></td>
<td>Guided activities: 0h</td>
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<tr>
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<td>Self study: 6h</td>
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**Specific objectives:**
1, 2

<table>
<thead>
<tr>
<th>Development of topic 2</th>
<th>Hours: 20h</th>
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<tbody>
<tr>
<td></td>
<td>Theory classes: 10h</td>
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<tr>
<td></td>
<td>Practical classes: 0h</td>
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<td>Laboratory classes: 0h</td>
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<td></td>
<td>Guided activities: 0h</td>
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<tr>
<td></td>
<td>Self study: 10h</td>
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</table>

**Specific objectives:**
1, 3

<table>
<thead>
<tr>
<th>Development of topic 3</th>
<th>Hours: 8h</th>
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<tbody>
<tr>
<td></td>
<td>Theory classes: 4h</td>
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<tr>
<td></td>
<td>Practical classes: 0h</td>
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<td>Laboratory classes: 0h</td>
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<td></td>
<td>Guided activities: 0h</td>
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<tr>
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<td>Self study: 4h</td>
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**Specific objectives:**
1, 2

<table>
<thead>
<tr>
<th>Development of topic 4</th>
<th>Hours: 8h</th>
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<tbody>
<tr>
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<td>Theory classes: 4h</td>
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<td>Practical classes: 0h</td>
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<tr>
<td></td>
<td>Guided activities: 0h</td>
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<tr>
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<td>Self study: 4h</td>
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**Specific objectives:**
1, 2
Presentations and discussion students' assignments

Hours: 102h
Theory classes: 24h 36m
Practical classes: 0h
Laboratory classes: 0h
Guided activities: 0h
Self study: 77h 24m

Specific objectives:
1, 2, 3

Qualification system

Tests on the topics developed by the Professor (T1 and T2).
An assignment on analysis and discussion (A) and an assignment on research (R).

(A) Analysis & Discussion of a document or topic. Students provide documentation + short presentation and lead class discussion. Students not presenting should make questions showing their understanding of the topic.

(R) Research work. Students provide documentation + "long" presentation + interview (if needed).

Final mark: (T1 * 0,2) + (A * 0,3) + (R * 0,3) + (T2 * 0,2)

Assessment of A includes:
- Content (35%), Presentation (30%), Lead discussion (20%), Others' discussion (15%).

Assessment of R includes:
- Content (35%), Presentation (25%), Questions (15%), Report (25%).

T1 and T2 marks could be increased (factor F) with the evaluation of n (number to define) "dairy short tests" (mark D for every dairy test):

Increase factor (F) = 0,25 * ( Σn Di )/ n

The increased Ti mark would be: Ti * (1+F). 0 <= F <= 0,25.

Bibliography

Basic:
