Course guide
230156 - GI - Internet Management

Unit in charge: Barcelona School of Telecommunications Engineering
Teaching unit: 744 - ENTEL - Department of Network Engineering.
Degree: BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Optional subject).
BACHELOR'S DEGREE IN ELECTRONIC ENGINEERING AND TELECOMMUNICATION (Syllabus 2018). (Optional subject).
Academic year: 2022 ECTS Credits: 6.0 Languages: English

LECTURER
Coordinating lecturer: Consultar aquí / See here: https://telecos.upc.edu/ca/estudis/curs-actual/professorat-responsables-coordinadors/responsables-assignatura
Others: Consultar aquí / See here: https://telecos.upc.edu/ca/estudis/curs-actual/professorat-responsables-coordinadors/professorat-assignat-idioma

PRIOR SKILLS
ETSETB Academic regulations.

TEACHING METHODOLOGY
NO classes.
- Practices remote optional.
- Group work (distance learning).
- Individual work (distance learning).
- Exercises.
- Testing short answer.
- Testing llarga response.
- Other activities.

LEARNING OBJECTIVES OF THE SUBJECT
Learning of the basic techniques, protocols and standards to manage and administer the Internet. Vision of the useful tools to manage the internet.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Self study</td>
<td>98.0</td>
<td>65.33</td>
</tr>
<tr>
<td>Hours large group</td>
<td>52.0</td>
<td>34.67</td>
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Total learning time: 150 h
### Internet Management

**Description:**
- Internet Monitoring Introduction
- Management Information Base
- Internet Management Protocols
- Web based services, Policy based internet management, Configuration Management

**Specific objectives:**
- To distinguish between internet monitoring and internet management
- To know different internet management databases
- To distinguish among the current internet management protocols
- To understand the new internet management systems

**Related activities:**
- Virtual laboratory practise
- Specific homeworking
- Debate forum

<table>
<thead>
<tr>
<th>Full-or-part-time</th>
<th>13h</th>
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<tbody>
<tr>
<td>Self study</td>
<td>13h</td>
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### 2. Structure of Management Information (SMI)

**Description:**
- Description, notation and definition of the management information
- Tree structure
- Object identifier, naming, registration

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<thead>
<tr>
<th>Full-or-part-time</th>
<th>9h</th>
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<tbody>
<tr>
<td>Practical classes</td>
<td>4h</td>
</tr>
<tr>
<td>Self study</td>
<td>5h</td>
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### 3. MIB, Management Information Base

**Description:**
- The management information is defined and implemented by means of MIBs
- MIB structure
- MIB examples
- Practical use

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<thead>
<tr>
<th>Full-or-part-time</th>
<th>20h</th>
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<tbody>
<tr>
<td>Practical classes</td>
<td>8h</td>
</tr>
<tr>
<td>Self study</td>
<td>12h</td>
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4. SNMP versions 1 & 2 protocols

Description:
Primitives definition. Architecture aspects. Performance evaluation, compatibility, tools, management procedures
- SNMP evolution
- Primitive definitions
- Architectures
- Tools and practical cases

Full-or-part-time: 24h
Practical classes: 8h
Self study: 16h

5. SNMP version 3 protocol

Description:
Primitive description of the protocol. Comparative analysis with previous versions, performance, functionalities
- Primitives and administration
- Architecture
- Tools

Full-or-part-time: 15h
Practical classes: 4h
Self study: 11h

6. RMON Remote Monitoring

Description:
Structure description. Architecture, functionality and procedures
- Remote monitoring architecture
- RMONv1 and RMONv2
- Practical cases

Full-or-part-time: 10h
Practical classes: 4h
Self study: 6h

7. Monitoring applications

Description:
Applications architecture. Practical use of free software tools
- Functionalities and architecture of the applications
- Vendor tools
- Free software tools

Full-or-part-time: 17h
Practical classes: 4h
Self study: 13h
### 8. Policy based management. COPS protocol

**Description:**
A new management paradigm to apply to multimedia services and quality of service
- Definition and architecture
- COPS protocol

**Full-or-part-time:** 14h  
Practical classes: 4h  
Self study: 10h

### 9. Configuration management using NetConf and YANG

**Description:**
New configuration systems using files
- NetConf  
- YANG

**Full-or-part-time:** 10h  
Practical classes: 4h  
Self study: 6h

### 10. Web services based on management

**Description:**
The use of web servers requires a new system management based on web services
- Java management, JMAPI, JMX  
- WBM and XML/DTD/Schema representation

**Full-or-part-time:** 18h  
Practical classes: 8h  
Self study: 10h

### ACTIVITIES

**(ENG) EJERCICIOS: (AL MENOS UNO EN CADA TEMA)**

**Description:**
Realization of exercises, works or practical cases based on the main concepts of each subject.

**Full-or-part-time:** 92h  
Self study: 92h

**(ENG) CONTROLES DE RESPUESTA CORTA: 10**

**(ENG) EXAMEN DE RESPUESTAS LARGAS: A MITAD DEL CURSO Y AL FINAL**
GRADING SYSTEM

Final mark of the course will be obtained: either from the continuous assessment score (proposed by the professor throughout the course work and laboratory practice) or final exam, according to the following criteria:

Final exam: 100%
Continuous Assessment: Two partial tests: 30% + 30%
  - Exercises + Practices optionals: 40%

BIBLIOGRAPHY

Basic:

Complementary:

RESOURCES

Other resources:
Slides, exercises, notes, videos on the Atenea website.
Transparencies and other materials from the University of Twente.