230156 - GI - Internet Management

**Coordinating unit:** 230 - ETSETB - Barcelona School of Telecommunications Engineering  
**Teaching unit:** 744 - ENTEL - Department of Network Engineering  
**Academic year:** 2019  
**Degree:**  
- BACHELOR'S DEGREE IN NETWORK ENGINEERING (Syllabus 2010). (Teaching unit Optional)  
- BACHELOR'S DEGREE IN TELECOMMUNICATIONS SCIENCE AND TECHNOLOGY (Syllabus 2010). (Teaching unit Optional)  
- BACHELOR'S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Teaching unit Optional)  
- BACHELOR'S DEGREE IN ELECTRONIC SYSTEMS ENGINEERING (Syllabus 2009). (Teaching unit Optional)  
- BACHELOR'S DEGREE IN TELECOMMUNICATIONS SYSTEMS ENGINEERING (Syllabus 2010). (Teaching unit Optional)  
- BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Teaching unit Optional)  
**ECTS credits:** 6  
**Teaching languages:** Spanish

**Teaching staff**  
**Coordinator:** ANTONIO BARBA  
**Others:** ANTONIO BARBA

**Prior skills**  
ETSETB Academic regulations.

**Teaching methodology**  
NO classes.  
- Practices (local or remote).  
- Group work (distance learning).  
- Individual work (distance learning).  
- Exercises.  
- Testing short answer.  
- Testing llarga response.  
- Other activities.

**Learning objectives of the subject**

**Study load**  
<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group:</th>
<th>52h</th>
<th>34.67%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Self study:</td>
<td>98h</td>
<td>65.33%</td>
</tr>
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</table>
### Content

#### Internet Management

<table>
<thead>
<tr>
<th>Description:</th>
<th>Learning time: 13h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet Monitoring Introduction</td>
<td>Self study: 13h</td>
</tr>
<tr>
<td>Management Information Base</td>
<td></td>
</tr>
<tr>
<td>Internet Management Protocols</td>
<td></td>
</tr>
<tr>
<td>Web based services, Policy based internet management, Configuration Management</td>
<td></td>
</tr>
</tbody>
</table>

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

**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

#### 2. Structure of Management Information (SMI)

<table>
<thead>
<tr>
<th>Description:</th>
<th>Learning time: 9h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description, notation and definition of the management information</td>
<td>Practical classes: 4h</td>
</tr>
<tr>
<td>- Tree structure</td>
<td>Self study: 5h</td>
</tr>
<tr>
<td>- Object identifier, naming, registration</td>
<td></td>
</tr>
</tbody>
</table>

#### 3. MIB, Management Information Base

<table>
<thead>
<tr>
<th>Description:</th>
<th>Learning time: 20h</th>
</tr>
</thead>
<tbody>
<tr>
<td>The management information is defined and implemented by means of MIBs</td>
<td>Practical classes: 8h</td>
</tr>
<tr>
<td>- MIB structure</td>
<td>Self study: 12h</td>
</tr>
<tr>
<td>- MIB examples</td>
<td></td>
</tr>
<tr>
<td>- Practical use</td>
<td></td>
</tr>
</tbody>
</table>
### 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

**Learning 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

**Learning 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

**Learning time:** 10h
- Practical classes: 4h
- Self study: 6h
## 7. Monitoring applications

**Learning time:** 17h  
Practical classes: 4h  
Self study: 13h

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

## 8. Policy based management. COPS protocol

**Learning time:** 14h  
Practical classes: 4h  
Self study: 10h

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

## 9. Configuration management using NetConf and YANG

**Learning time:** 10h  
Practical classes: 4h  
Self study: 6h

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

## 10. Web services based on management

**Learning time:** 18h  
Practical classes: 8h  
Self study: 10h

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

(ENG) PRÁCTICAS (AL MENOS UNA EN CADA TEMA)

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

(ENG) CONTROLES DE RESPUESTA CORTA: 10

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

Qualification 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: 20%
- Practices: 20%

Bibliography

Basic:

Complementary:

Others resources: