230156 - GI - Internet Management

Coordinating unit: 230 - ETSETB - Barcelona School of Telecommunications Engineering
Teaching unit: 744 - ENTEL - Department of Network Engineering
Academic year: 2018
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>
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</tbody>
</table>
## Content

### Internet Management

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

**Related activities:**
- Virtual laboratory practise
- 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

**Learning time:**
- Self study: 13h

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

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

**Learning time:**
- Practical classes: 4h
- Self study: 5h

### 3. MIB, Management Information Base

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

**Learning time:**
- Practical classes: 8h
- Self study: 12h
### 4. SNMP versions 1 & 2 protocols

<table>
<thead>
<tr>
<th>Learning time: 24h</th>
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<tbody>
<tr>
<td>Practical classes: 8h</td>
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<tr>
<td>Self study: 16h</td>
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</table>

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

### 5. SNMP version 3 protocol

<table>
<thead>
<tr>
<th>Learning time: 15h</th>
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<tr>
<td>Practical classes: 4h</td>
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<td>Self study: 11h</td>
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</table>

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

### 6. RMON Remote Monitoring

<table>
<thead>
<tr>
<th>Learning time: 10h</th>
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<tbody>
<tr>
<td>Practical classes: 4h</td>
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<td>Self study: 6h</td>
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</table>

**Description:**
- Structure description.
- Architecture, functionality and procedures
- Remote monitoring architecture
- RMONv1 and RMONv2
- Practical cases
<table>
<thead>
<tr>
<th>Topic</th>
<th>Learning time:</th>
<th>Practical classes:</th>
<th>Self study:</th>
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<tbody>
<tr>
<td>7. Monitoring applications</td>
<td>17h</td>
<td>4h</td>
<td>13h</td>
</tr>
<tr>
<td>Description:</td>
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<tr>
<td>Applications architecture. Practical use of free software</td>
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<tr>
<td>tools</td>
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<tr>
<td>- Functionalities and architecture of the applications</td>
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<tr>
<td>- Vendor tools</td>
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<tr>
<td>- Free software tools</td>
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<tr>
<td>8. Policy based management. COPS protocol</td>
<td>14h</td>
<td>4h</td>
<td>10h</td>
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<td>Description:</td>
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<tr>
<td>A new management paradigm to apply to multimedia services</td>
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<tr>
<td>and quality of service</td>
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<td></td>
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<tr>
<td>- Definition and architecture</td>
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<tr>
<td>- COPS protocol</td>
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<tr>
<td>9. Configuration management using NetConf and YANG</td>
<td>10h</td>
<td>4h</td>
<td>6h</td>
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<tr>
<td>Description:</td>
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<tr>
<td>New configuration systems using files</td>
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<tr>
<td>- NetConf</td>
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<tr>
<td>- YANG</td>
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<td>10. Web services based on management</td>
<td>18h</td>
<td>8h</td>
<td>10h</td>
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<tr>
<td>Description:</td>
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<tr>
<td>The use of web servers requires a new system management</td>
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<tr>
<td>based on web services</td>
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<tr>
<td>- Java management, JMAPI, JMX</td>
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<tr>
<td>- WBM and XML/DTD/Schema representation</td>
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Planning of activities

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

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

- **(ENG) CONTROLES DE RESPUESTA CORITA: 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:**