820029 - SHB - Safety in Hospitals

Coordinating unit: 295 - EEBE - Barcelona East School of Engineering  
Teaching unit: 460 - INTE - Institute of Energy Technologies  
710 - EEL - Department of Electronic Engineering  
Academic year: 2017  
Degree: BACHELOR'S DEGREE IN BIOMEDICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)  
BACHELOR'S DEGREE IN BIOMEDICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)  
ECTS credits: 6  
Teaching languages: Catalan, Spanish

Teaching staff

Coordinator: P - PERE JOAN RIU COSTA  
Others: P - MERCE GINJAUME EGIDO - MIREYA FERNANDEZ CHIMENO  
Nescolarde Selva, Lexa Digna

Requirements

820025 - EMDTB - Monitoring, Diagnostic and Therapeutic Equipment

Degree competences to which the subject contributes

Specific:
2. Manage health and safety in hospitals.

Transversal:
1. EFFECTIVE USE OF INFORMATION RESOURCES - Level 3. Planning and using the information necessary for an academic assignment (a final thesis, for example) based on a critical appraisal of the information resources used.

Teaching methodology

Expositive Classes, cooperative learnig and project based learning

Learning objectives of the subject

Understand the concept of risk and acquire knowledge of the methodologies used to assess risk. Understand the origin of dangers in hospital environments. Understand the relationship between safety and functionality in a medical device. Apply the concept of safety to medical devices and facilities. Identify the applicable standards and legislation. Understand the responsibility of the manufacturer, the installer and the end user with respect to safety in a hospital environment.

Study load

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<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group:</th>
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<th>Hours small group:</th>
<th>Guided activities:</th>
<th>Self study:</th>
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### Content

<table>
<thead>
<tr>
<th>Risk Assessment</th>
<th>Learning time: 10h</th>
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<tbody>
<tr>
<td><strong>Description:</strong></td>
<td></td>
</tr>
<tr>
<td>Risk identification. Assessment of potential damage.</td>
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<td>Risk assessment. risk analysis and evaluation.</td>
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<td><strong>Specific objectives:</strong></td>
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<td>Understand the concept of risk and the methodologies used to assess it.</td>
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<tr>
<th>Sources of risk in hospital environments</th>
<th>Learning time: 28h</th>
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<td><strong>Description:</strong></td>
<td></td>
</tr>
<tr>
<td>Electric shock. Effects of DC, AC and pulsed electrical discharges.</td>
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<tr>
<td>Mechanical and thermal risks. Esterilization.</td>
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<tr>
<td>Explosive athmospheres. Non-ionizing radiation effects and exposure guidelines.</td>
<td></td>
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<tr>
<td>Ionizing radiation fundamentals, biological effects and measurement techniques.</td>
<td></td>
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<tr>
<td><strong>Specific objectives:</strong></td>
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<tr>
<td>Understand the relationship between safety and functionality in medical devices. Gain knowledge of the biological basis associated to dangers in hospitals and the different sources of risk.</td>
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<th>Safety of medical devices</th>
<th>Learning time: 26h</th>
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<td><strong>Description:</strong></td>
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<tr>
<td>Electromedical equipment. Classification of equipment with respect to risk. Diagnostic and therapeutic equipment.</td>
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<tr>
<td><strong>Specific objectives:</strong></td>
<td></td>
</tr>
<tr>
<td>Apply the risk concepts to different medical devices</td>
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</table>
### Safety of installations

**Learning time:** 30h  
- Theory classes: 10h  
- Laboratory classes: 4h  
- Self study: 16h

**Description:**  

**Specific objectives:**  
Apply the concept of risk to different medical facilities

### Safety Standards

**Learning time:** 10h  
- Theory classes: 4h  
- Self study: 6h

**Description:**  

**Specific objectives:**  
Be able to identify the relevant standards related to safety of medical devices and facilities

### Project on risk analysis and safety design of a medical device/facility

**Learning time:** 46h  
- Theory classes: 7h  
- Laboratory classes: 5h  
- Self study: 34h

**Description:**  
Project based learning activity on the analysis of the risk associated with a particular medical device or facility, the design of the safety aspects and the identification of the applicable safety standards

**Related activities:**  
Public presentation of the work performed

**Specific objectives:**  
To be able to synthesize all the aspects related to safety of a medical device or facility
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**Qualification system**

Individual and group work will be assessed by means of tests, assignments and work presentations.

- Final exam: 30%
- Project: 30%
- Lab activities/reports: 20%
- Half-term test: 20%

There is NO re-testing in this subject

**Bibliography**

**Basic:**
