310007 - Health and Safety at Work

Coordinating unit: 310 - EPSEB - Barcelona School of Building Construction
Teaching unit: 732 - OE - Department of Management
Academic year: 2017
Degree: BACHELOR'S DEGREE IN ARCHITECTURAL TECHNOLOGY AND BUILDING CONSTRUCTION (Syllabus 2015). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN BUILDING CONSTRUCTION SCIENCE AND TECHNOLOGY (Syllabus 2009). (Teaching unit Compulsory)
ECTS credits: 6
Teaching languages: Catalan, Spanish

Teaching staff
Coordinator: JAUME GUIXÀ MORA
Others: Jaume Guixà Mora - MIGUEL ANGEL SAEZ LOZANO - VICTOR HUGO TAMAYO TELLO - CARMEN OTERO SIERRA.

Degree competences to which the subject contributes

Specific:
1. FE-18 Knowledge of the law of the construction and the contractual relations which occur in the different phases of the construction process, as well as the specific legislation, rules and regulations of the prevention and coordination in matters of safety and occupational health in construction.
2. FE-22 Knowledges of the organisation of the professional work and studies, offices and professional societies, the regulations and rules related with the functions which the Building Engineer develops and the responsibility framework associated to the activity.
3. FE-31 Knowledge of the functions and responsibilities of the agents which intervene in the construction and their professional or managerial organisation, as well as the administrative, managerial and processing procedures.
4. FE-32 Knowledge of the professional organisation and the basic procedures in the construction field and the promotion.

Transversal:
5. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 1. Planning oral communication, answering questions properly and writing straightforward texts that are spelt correctly and are grammatically coherent.
6. SELF-DIRECTED LEARNING - Level 1. Completing set tasks within established deadlines. Working with recommended information sources according to the guidelines set by lecturers.

Teaching methodology

In the theoretical classes there will be explained the basic concepts of the different topics with specific educational material for each one of the 11 topics. The practical classes will alternate at the ending of the theoretical classes, and will consist on the resolution and idea-sharing of concrete cases for encourage the teamwork.

. Theoretical method / master class: Oral exposition by the faculty of the subject contents.
. Participatory class: The students can take part in the class by means of short length activities.
. Resolution of problems and exercises: The students must carry out the suitable solutions by the implementation of information transformation procedures and the interpretation of the results.
. Case study: Intensive analysis of an incident, problem or real event with the purpose of undrandt it, interpret it, solve it, generate hypothesis, corroborate data, reflect on it, complete the knowledge, diagnose it and sometimes rehearse the possible alternative solution methods.

Learning objectives of the subject
The subject pretends to establish the necessary scientific bases to the Building Engineering student in order to initiate him/her in the field of health and safety at work, and to bring his/her knowledge to a minimum level in order to be able to face the professional activity with aptitude, controlling the current labour law, which is applied to the different construction phases, in the aspects of theoretical understanding and its later practical application. In this direction, the subject is organised in eleven units, which belong to the phases of the constructive process, learning from the emerging technology, and valuing the environmental management.

<table>
<thead>
<tr>
<th>Study load</th>
<th>Hours large group: 30h</th>
<th>20.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total learning time: 150h</td>
<td>Hours medium group: 30h</td>
<td>20.00%</td>
</tr>
<tr>
<td></td>
<td>Hours small group: 0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Self study: 90h</td>
<td>60.00%</td>
</tr>
</tbody>
</table>
### Content

<table>
<thead>
<tr>
<th>C1: LOSS RATE MANAGEMENT AND ORGANISATION</th>
<th>Learning time: 12h</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td></td>
</tr>
<tr>
<td>Content in this term:</td>
<td></td>
</tr>
<tr>
<td>1.2 Prevention in Spain. Organizations.</td>
<td></td>
</tr>
<tr>
<td>1.3 Accidents. Accident survey.</td>
<td></td>
</tr>
<tr>
<td>1.4 Calculation of accident rates.</td>
<td></td>
</tr>
<tr>
<td>1.5 The work and health: Occupational hazards. Damages from work.</td>
<td></td>
</tr>
<tr>
<td>1.6 Work conditions, risk factors and preventive techniques.</td>
<td></td>
</tr>
</tbody>
</table>

**Related activities:**
- Activities during the term:
  1. Practice exercises in class
  2. Visit the construction, production, oral presentation and defense of group work in class.
  3. Final Exam.

<table>
<thead>
<tr>
<th>C2: OCCUPATION HAZARD PREVENTION MANAGEMENT</th>
<th>Learning time: 12h</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td></td>
</tr>
<tr>
<td>Content in this term:</td>
<td></td>
</tr>
<tr>
<td>2.1 Occupation hazard prevention in legal framework. Rights and duties.</td>
<td></td>
</tr>
<tr>
<td>2.2 Occupation hazard prevention law 31/1995.</td>
<td></td>
</tr>
<tr>
<td>2.3 Application of Prevention Services regulations 1997.</td>
<td></td>
</tr>
<tr>
<td>2.4 Sentences.</td>
<td></td>
</tr>
</tbody>
</table>

**Related activities:**
- Activities during the term:
  1. Practice exercises in class
  2. Visit the construction, production, oral presentation and defense of group work in class.
  3. Final Exam.
## C3: GENERAL TECHNIQUES OF ANALYSIS, EVALUATION AND RISK-MANAGEMENT

### Description:
Content in this term:
3.1. Risk concept.
   - A) Personal.
   - B) Collective.
3.2. Analysis of accidents.
3.3. Control list (Check-list).
3.4. Introduction to risk assessment.

### Related activities:
Activities during the term:
1. Practice exercises in class
2. Visit the construction, production, oral presentation and defense of group work in class.
3. Final Exam.

### Learning time:
12h

- Theory classes: 3h
- Practical classes: 2h
- Self study: 7h

## C4: HEALTH AND SECURITY MEASURES

### Description:
Content in this term:
4.1. Risks and preventive measures related to safety at construction works.
4.3. Personal and collective protection. EPI?s.
4.4. Professional diseases.
4.5. Sign posts.
4.6. Risks and preventive measures related to work environment at constructions works. Industrial hygiene.

### Related activities:
Activities during the term:
1. Practice exercises in class
2. Visit the construction, production, oral presentation and defense of group work in class.
3. Final Exam.

### Learning time:
12h

- Theory classes: 3h
- Practical classes: 2h
- Self study: 7h
## 310007 - Health and Safety at Work

### C5: WORKS PREVIOUS ACTIONS

<table>
<thead>
<tr>
<th><strong>Learning time:</strong> 12h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory classes: 3h</td>
</tr>
<tr>
<td>Practical classes: 2h</td>
</tr>
<tr>
<td>Self study: 7h</td>
</tr>
</tbody>
</table>

**Description:**
- Content in this term:
  - 5.1. Demolitions
  - 5.2. Systems and demolition phases
  - 5.4. Temporary construction system
  - 5.5. Hygiene and wellness installations.

**Related activities:**
- Activities during the term:
  1. Practice exercises in class
  2. Visit the construction, production, oral presentation and defense of group work in class.
  3. Final Exam.

### C6: SOIL CONDITIONING

<table>
<thead>
<tr>
<th><strong>Learning time:</strong> 12h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory classes: 3h</td>
</tr>
<tr>
<td>Practical classes: 2h</td>
</tr>
<tr>
<td>Self study: 7h</td>
</tr>
</tbody>
</table>

**Description:**
- Content in this term:
  - 6.1. Previous information.
  - 6.2. Leveling
  - 6.3. Emptying
  - 6.4. Diaphragm walls
  - 6.5. Trenches and pits service. Excavations.
  - 6.6. Common risks.
  - 6.7. Preventive measures.

**Related activities:**
- Activities during the term:
  1. Practice exercises in class
  2. Visit the construction, production, oral presentation and defense of group work in class.
  3. Final Exam.
310007 - Health and Safety at Work

C7: STRUCTURES. HEIGHT WORKS

<table>
<thead>
<tr>
<th>Description:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content in this term:</td>
</tr>
<tr>
<td>A) CONCRETE WORKS</td>
</tr>
<tr>
<td>7.1 Concrete manufacturing</td>
</tr>
<tr>
<td>B) STRUCTURE. HEIGHT WORKS</td>
</tr>
<tr>
<td>7.2. Shuttering. Scrap.</td>
</tr>
<tr>
<td>7.3. Concrete works</td>
</tr>
<tr>
<td>7.4. Nets.</td>
</tr>
<tr>
<td>7.5. Common risks</td>
</tr>
<tr>
<td>7.6. Preventive measures</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related activities:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities during the term:</td>
</tr>
<tr>
<td>1.- Exercises in class</td>
</tr>
<tr>
<td>2.- Visit a construction, production, oral presentation and defense of group work in class.</td>
</tr>
<tr>
<td>3.- Final Exam.</td>
</tr>
</tbody>
</table>

Learning time: 12h
- Theory classes: 3h
- Practical classes: 2h
- Self study: 7h

C8: ELECTRIC HAZARD

<table>
<thead>
<tr>
<th>Description:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content in this term:</td>
</tr>
<tr>
<td>8.2. Protection against direct contact</td>
</tr>
<tr>
<td>8.3. Protection against indirect contact</td>
</tr>
<tr>
<td>8.4. Different schemes</td>
</tr>
<tr>
<td>8.5. Works near power lines.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related activities:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities during the term:</td>
</tr>
<tr>
<td>1.- Practice exercises in class</td>
</tr>
<tr>
<td>2.- Visit the construction, production, oral presentation and defense of group work in class.</td>
</tr>
<tr>
<td>3.- Final Exam.</td>
</tr>
</tbody>
</table>

Learning time: 12h
- Theory classes: 3h
- Practical classes: 2h
- Self study: 7h
### C9: VERTICAL AND HORIZONTAL CLOSINGS

**Description:**
Content in this term:
- 9.1. Masonry wall
- 9.2. Interior walls
- 9.3. External walls
- 9.4. Coverts and roofs
- 9.5. Common risks
- 9.6. Preventive measures.

**Related activities:**
Activities during the term:
1. Exercises in class
2. Visit a construction, production, oral presentation and defense of group work in class.
3. Final Exam.

**Learning time:** 12h
- Theory classes: 3h
- Practical classes: 2h
- Self study: 7h

### C10: WORKS MACHINERY

**Description:**
Content in this term:
- 10.2. Machinery as a means of lifting.
  - a) Tower crane
  - b) Forklifts
- 10.3. Earthmoving machinery.
- 10.4. Small machinery.

**Related activities:**
Activities during the term:
1. Exercises in class
2. Visit a construction, production, oral presentation and defense of group work in class.
3. Final Exam.

**Learning time:** 12h
- Theory classes: 3h
- Practical classes: 2h
- Self study: 7h
310007 - Health and Safety at Work

### C11: OTHER PREVENTIVE ASPECTS RELATED TO SECURITY

**Learning time:** 30h  
- Theory classes: 6h  
- Practical classes: 4h  
- Guided activities: 6h  
- Self study: 14h

**Description:**
Content in this term:
- 11.1. Ergonomics  
- 11.2. Psychology  
- 11.3. Application RD 1627/97  
- 11.4. Apply robotics to construction

**Related activities:**
Activities during the term:
1. Exercises in class  
2. Visit a construction, production, oral presentation and defense of group work in class.  
3. Final Exam.

---

**Qualification system**

For example:
The final mark is the addition of these partial marks:
1. Resolution of the in-person practices at the end of each topic, 20% of the final mark.  
2. Elaboration, presentation and oral defense, group work, 30% of the final mark.  
3. Final exam, 50% of the final mark.

**Regulations for carrying out activities**

The final exam will be done individually and by hand. Depending on the different practices, it will be required the presence of the students for the resolution.
Bibliography

Basic:


Nou llibre.

Complementary:


Others resources:

Safety laboratory

www.apabcn.cat
www.gencat.cat/treball
www.focus.com
www.mtas.es