

# Course guide

## 310007 - 310007 - Health and Safety at Work

Last modified: 24/06/2020

**Unit in charge:** Barcelona School of Building Construction  
**Teaching unit:** 732 - OE - Department of Management.

**Degree:** **Academic year:** 2020 **ECTS Credits:** 6.0  
**Languages:** Catalan, Spanish

### LECTURER

---

**Coordinating lecturer:** JAIME GUIXA MORA

**Others:** Jaume Guixà Mora - \* Miguel Angel Sáez Lozano. (\* pendientes implementación nuevo Plan Estudios 2019).

### PRIOR SKILLS

---

This subject is focused on establishing the necessary scientific bases to initiate the students on the knowledge of occupational health and safety, the minimum needed to confront the professional field sufficiently, on the current legal regulation framework, which can be applied during the different construction phases, in its theoretical comprehension aspects and its later practical application. On that direction, the subject is structured in eleven units, which correspond to the phases of the construction process, learning from the emerging technology and valuing the management with the environment.

### 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 understand 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-Technical Architect, 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.

## STUDY LOAD

Type	Hours	Percentage
Hours medium group	30,0	20.00
Hours large group	30,0	20.00
Self study	90,0	60.00

**Total learning time:** 150 h

## CONTENTS

### C1: LOSS RATE MANAGEMENT AND ORGANISATION

#### Description:

Content in this term:

- 1.1 Presentation. Introduction. Bibliography.
- 1.2 Prevention in Spain. Organizations.
- 1.3 Accidents. Accident survey.
- 1.4 Calculation of accident rates.
- 1.5 The work and health: Occupational hazards. Damages from work.
- 1.6 Work conditions, risk factors and preventive techniques.

#### 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.

#### Full-or-part-time: 12h

Theory classes: 3h

Practical classes: 2h

Self study : 7h



## C2: OCCUPATION HAZARD PREVENTION MANAGEMENT

### Description:

Content in this term:

- 2.1 Occupation hazard prevention in legal framework. Rights and duties.
- 2.2 Occupation hazard prevention law 31/1995.
- 2.3 Application of Prevention Services regulations 1997.
- 2.4 Sentences.

### 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.

### Full-or-part-time: 12h

Theory classes: 3h

Practical classes: 2h

Self study : 7h

## 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.

### Full-or-part-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.
- 4.2. Criteria for health monitoring. Organization of first aid and evacuation measures.
- 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.

**Full-or-part-time:** 12h

Theory classes: 3h

Practical classes: 2h

Self study : 7h

#### C5: WORKS PREVIOUS ACTIONS

**Description:**

Content in this term:

- 5.1. Demolitions
- 5.2. Systems and demolition phases
- 5.3. Services affected. Electricity. Water. Gas.
- 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.

**Full-or-part-time:** 12h

Theory classes: 3h

Practical classes: 2h

Self study : 7h



## C6: SOIL CONDITIONING

### 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.

**Full-or-part-time:** 12h

Theory classes: 3h

Practical classes: 2h

Self study : 7h

## C7: STRUCTURES. HEIGHT WORKS

### Description:

Content in this term:

- A) CONCRETE WORKS
- 7.1 Concrete manufacturing
- B) STRUCTURE. HEIGHT WORKS
- 7.2. Shuttering. Scrap.
  - 7.3. Concrete works
  - 7.4. Nets.
  - 7.5. Common risks
  - 7.6. 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.

**Full-or-part-time:** 12h

Theory classes: 3h

Practical classes: 2h

Self study : 7h



## C8: ELECTRIC HAZARD

### Description:

Content in this term:

- 8.1. Introduction. Concepts. Environment conditions.
- 8.2. Protection against direct contact
- 8.3. Protection against indirect contact
- 8.4. Different schemes
- 8.5. Works near power lines.
- 8.6. Electric current effects in human bodies.

### 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.

### Full-or-part-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.

### Full-or-part-time: 12h

Theory classes: 3h

Practical classes: 2h

Self study : 7h



### C10: WORKS MACHINERY

**Description:**

Content in this term:

- 10.1. Concepts.
- 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.

**Full-or-part-time:** 12h

Theory classes: 3h

Practical classes: 2h

Self study : 7h

### C11: OTHER PREVENTIVE ASPECTS RELATED TO SECURITY

**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.

**Full-or-part-time:** 30h

Theory classes: 6h

Practical classes: 4h

Guided activities: 6h

Self study : 14h

## GRADING SYSTEM

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.

## EXAMINATION RULES.

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:

- Guixà Mora, Jaume. Gestión y organización de la prevención. Siniestralidad.. Iniciativa Digital Politècnica. Barcelona: Edicions UPC, 2015. ISBN 8460721736.
- Guixà Mora, Jaume. Legislación. L.P.R.L. Barcelona: A.bís Edicions, 2001. ISBN 8460728439.
- Guixà Mora, Jaume. Investigación de accidentes, ergonomía, EPI'S, señalización de seguridad. Barcelona: A.bís EDICIONS, 2001. ISBN 8460728439.
- Pérez Sánchez, L.M. ; [et al.]. Curso de prevención de riesgos laborales en la construcción. 4a ed. Valladolid: Lex Nova, 2004.
- Nou llibre.

### Complementary:

- Mondelo, Pedro R. Ergonomía 2 : confort y estrés térmico [on line]. 3a ed.. Barcelona: Edicions UPC, 1999 [Consultation: 25/07/2014]. Available on: <http://upcommons.upc.edu/llobres/handle/2099.3/36527>.

## RESOURCES

---

### Other resources:

Safety laboratory

[www.apabcn.cat](http://www.apabcn.cat)

[www.gencat.cat/treball](http://www.gencat.cat/treball)

[www.focus.com](http://www.focus.com)

[www.mtas.es](http://www.mtas.es)