

## Course guide

### 240816 - 240816 - Workplace Ergonomics II

**Last modified:** 26/09/2025

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

**Degree:** MASTER'S DEGREE IN OCCUPATIONAL HEALTH AND SAFETY (Syllabus 2016). (Compulsory subject).

**Academic year:** 2025    **ECTS Credits:** 6.0    **Languages:** Spanish

#### LECTURER

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**Coordinating lecturer:** PEDRO MANUEL RODRIGUEZ MONDELO

**Others:**

#### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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**Specific:**

1. Identify and recognise detection techniques of psychosocial problems and develop intervention plans in front of ill organizations, and recognise the minimum required ergonomic requirements in manual tools.
2. Obtain the capacity to prevent and detect psicosocial problems, adapt the job and coordinate with the medical services to analyse these cases.
3. Know to develop emergency and security plans, make training and information plans assigned to workers, including the detection of needs and establish the evaluating systems and monitoring measures, lay out corrective measures in front of risks of chemical nature, physical or biological; carry out risk evaluations and set out corrective measures related to the physical and mental load at work; make the epidemiologic study design to identify risk factors of occupational nature, apply its basics and manipulation and applications of the main chemical analysis techniques in the hygienic world.
4. Be able to promote conducts, habits, consumption and health life styles, with the active participation of the workers as main role of the own health. Be able to promote the preventing culture within the company and the creation of health environments.
5. Be able to recognise action measures in front of emergencies and disasters. Recognise the specific problems in health security at work in sensitive workers such as young and elder workers, disabled people or pregnant women, and identify and recognise the main instrumentation techniques to assess the fatigue and not the comfort at work.

#### TEACHING METHODOLOGY

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A.- Face-to-face classes in the modalities of:

- Theoretical classes: They will be expository, explanatory and / or demonstrative sessions of the contents of the subject.
- Seminars-Workshops: Supervised monographic sessions with the participation of the professor and the students.
- Practical classes: Classroom practicals are carried out which will include case studies, diagnostic analysis, problem development, data search and Internet bibliography.
- Tutorials: Personalized help tutorials will be carried out to facilitate and guide students in the training process.

B.- Classes of autonomous work in the modalities of:

- Study and work in groups: Seminars, readings, research, papers will be prepared to deliver in writing.
- Study and individual work: Readings, investigations, bibliographic searches will be prepared to present in face-to-face classes or deliver in writing.

## LEARNING OBJECTIVES OF THE SUBJECT

The program is intended to train a professional with solid knowledge of Ergonomics, who through research and technology transfer, promote social economic development, based on the balance between the well-being of people and the demands of production processes and services .

The professional will have knowledge that allows them to guide the selection and design of tools, machines, jobs and systems, to achieve a technological innovation that makes good use of the potential of the workforce, while respecting its limitations.

## STUDY LOAD

Type	Hours	Percentage
Self study	96,0	64.00
Hours large group	54,0	36.00

**Total learning time:** 150 h

## CONTENTS

### -PRESENTATION

**Description:**

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**Full-or-part-time:** 1h

Theory classes: 1h

### -INTRODUCTION TO BIOMECHANICS

**Description:**

-

**Full-or-part-time:** 1h

Theory classes: 1h

### -BODY SEGMENTS AND MASS CENTROIDS

**Description:**

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**Full-or-part-time:** 1h

Theory classes: 1h

### -KINEMATICS AND KINETICS

**Description:**

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**Full-or-part-time:** 1h

Theory classes: 1h

#### **-MOMENT OF A FORCE**

**Description:**

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**Full-or-part-time:** 1h

Theory classes: 1h

#### **-JOINT BIOMECHANICS**

**Description:**

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**Full-or-part-time:** 1h

Theory classes: 1h

#### **-BIOMECHANICS OF TISSUES**

**Description:**

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**Full-or-part-time:** 1h

Theory classes: 1h

#### **-BIOMECHANICAL CALCULATION IN 2D**

**Description:**

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**Full-or-part-time:** 1h

Theory classes: 1h

#### **-MEASUREMENT SYSTEMS IN BIOMECHANICS**

**Description:**

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**Full-or-part-time:** 1h

Theory classes: 1h

#### **-PRACTICAL CASES**

**Description:**

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**Full-or-part-time:** 1h

Theory classes: 1h

#### -ELECTROMYOGRAPHY RECORDING AND INTERPRETATION

**Description:**

-

**Full-or-part-time:** 1h

Theory classes: 1h

#### -TUTORIAL FINAL WORK

**Description:**

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**Full-or-part-time:** 1h

Theory classes: 1h

### GRADING SYSTEM

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- Readings and evaluations in classes: 10%
- Subject work: 40%
- Final exam: 50%

### BIBLIOGRAPHY

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**Basic:**

- Barbany, Joan Ramon. Fundamentos de fisiología del ejercicio y del entrenamiento. Barcelona: Barcanova, 1990. ISBN 9788475335421.
- Chaffin, Don B.; Andersson, Gunnar; Martin, Bernard J.. Occupational biomechanics. 4a ed.. Hoboken, N.J.: Wiley-Interscience, 2006. ISBN 9780471723431.
- Nordin, Margareta; Frankel, Victor H.. Basic biomechanics of the musculoskeletal system. 4a ed.. Philadelphia: Lippincott Williams & Wilkins, cop. 2012. ISBN 9781451117097.
- Trew, Marion; Everett, Tony. Fundamentos del movimiento humano. Barcelona: Masson, cop. 2006. ISBN 8445816066.
- Gowitzke, Barbara A.; Milner, Morris; Iriarte, Eduardo. El Cuerpo y sus movimientos : bases científicas. Barcelona: Paidotribo, DL 1999. ISBN 8480194189.