

Course guide

240807 - 240807 - Industrial Hygiene I

Last modified: 09/05/2025

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:** 4.0 **Languages:** Spanish

LECTURER

Coordinating lecturer: XIALEI YOU CHEN

Others: XIALEI YOU CHEN

PRIOR SKILLS

Basic science knowledge is required, specially on chemistry and maths.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

1. Know the relation between occupational and health safeties.
2. Know the main investigation techniques in labour health. The toxicology basics applied to the contaminants in the occupational field and the technical solutions for the design and evaluation of the ventilation systems.
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 analyse the main health problems related to work.
5. Identify and distinguish the advanced evaluation techniques and noise control in the industry, the transmission mechanisms and ways of entry to biological agents.

TEACHING METHODOLOGY

The methodology is based on lectures with students participation and personalised sessions can be scheduled for particular doubts. A group work based on a risk assessment will be proposed for practice acquired knowledges

LEARNING OBJECTIVES OF THE SUBJECT

General objective:

The student will be able to identify, measure and evaluate occupational exposures to chemical agents potentially present in the most common industrial activities in our production environment (physical or biological agents are dealt with in the subject of Hygiene II).

The student will become familiar with the evaluation criteria in Industrial Hygiene and will know the systems and techniques for measuring and analyzing chemical agents and the exposure control methods.

The student will be able to assess the hygienic risk due to exposure to solid or liquid contaminants (vapour formation) through the use of NTPs.

STUDY LOAD

Type	Hours	Percentage
Self study	64,0	64.00
Hours large group	36,0	36.00

Total learning time: 100 h

CONTENTS

-INTRODUCTION TO THE WORLD OF HYGIENE

Description:

Introduction to Industrial Hygiene with basic definitions and basic theory necessary to understand the topics of the subject.

Full-or-part-time: 1h

Theory classes: 1h

-ASSESSMENT OF EXPOSURE TO CHEMICAL AGENTS

Description:

Theoretical classes on the evaluation of exposure to chemical agents where measurement instruments are explained, performance of the hygienic survey, degree of risk associated with contaminants based on environmental factors.

A series of quizzes will be held to help the student assimilate the information received from previous classes.

The knowledge acquired is complemented by carrying out an activity where the hygienic risk of a facility is evaluated using the COSH ESSENTIALS method.

Full-or-part-time: 1h

Theory classes: 1h

-CONTROL OF EXPOSURES TO CHEMICAL AGENTS

Description:

Theoretical classes on the control of exposure to chemical agents where generic control techniques are explained and special attention is paid to general ventilation, localized extraction and personal protection equipment.

A series of quizzes will be held to help the student assimilate the information received from previous classes.

The knowledge acquired is complemented by carrying out an activity where the hygienic risk of a facility is evaluated using the INRS method (NTP 937).

Full-or-part-time: 1h

Theory classes: 1h

GRADING SYSTEM

The final score will be calculated by taking into account the performance during the whole subject: exercises, group works and the final test.

BIBLIOGRAPHY

Basic:

- Bernal Domínguez, Félix. Higiene industrial. 5a ed.. Madrid: Instituto Nacional de Seguridad e Higiene en el Trabajo, DL. 2008. ISBN 9788474257571.
- Bernal Domínguez, Félix. Higiene industrial : problemas resueltos. Madrid: Instituto Nacional de Seguridad e Higiene en el Trabajo, DL. 2006. ISBN 8474257174.
- Límites de exposición profesional para agentes químicos en España : 2013. Madrid: Ministerio de Empleo y Seguridad Social Instituto Nacional de Seguridad e Higiene en el Trabajo, DL. 2013. ISBN 9788474258080.
- Ventilación industrial : manual de recomendaciones prácticas para la prevención de riesgos profesionales. Valencia: Generalitat Valenciana, 1992. ISBN 8478908188.
- Diedrichs, Eva. Maintenance, examination and testing of local exhaust ventilation [on line]. 2a ed.. Norwich: The Health and Safety Executive, 1998 [Consultation: 21/03/2014]. Available on : https://www.google.es/webhp?sourceid=chrome-instant&rlz=1C1KMZB_enES577ES577&ion=1&espv=2&ie=UTF-8#q=maintenance%2c%20examination%20and%20testing%20of%20local%20exhaust%20ventilation%20diedrichs. ISBN 0717614859.