

Course guide

330808 - GII - Management of Industrial Installations

Last modified: 07/07/2026

Unit in charge: Manresa School of Engineering

Teaching unit: 712 - EM - Department of Mechanical Engineering.

Degree: MASTER'S DEGREE IN INDUSTRIAL FACILITY DESIGN AND MANAGEMENT (Syllabus 2026). (Compulsory subject).

Academic year: 2026

ECTS Credits: 5.0

Languages: Catalan, Spanish, English

LECTURER

Coordinating lecturer: Héctor Sanz Fraile

Others:

PRIOR SKILLS

Students are recommended to have basic knowledge of industrial maintenance, production process organization, and industrial facilities. Familiarity with technical management software tools, technical documentation interpretation, and basic data analysis is also advisable.

TEACHING METHODOLOGY

Participatory lectures focused on real case analysis and problem solving.

Project-based learning applied to industrial facility management.

Practical sessions using specialized maintenance and facility management software (CMMS).

Analysis and interpretation of technical, energy, and economic data.

Technical seminars and oral presentations.

Individual and team autonomous work.

LEARNING OBJECTIVES OF THE SUBJECT

Knowledge

M4.K1: Describe the main failure modes in industrial installations, as well as the most common fault detection techniques.

M4.K2: Describe the basic principles of computer-aided maintenance management (CMMS) for industrial installations.

M4.K3: Classify the different types of signals that can be acquired from an industrial installation and the data acquisition mechanisms used for maintenance purposes.

M4.K4: Describe the basic principles and tools used in predictive maintenance based on data monitoring and real-time analysis.

Skills

M4.S2: Assess the condition of an industrial installation from a maintenance perspective.

STUDY LOAD

Type	Hours	Percentage
Hours large group	45,0	100.00

Total learning time: 45 h

CONTENTS

Asset and facility management using CMMS

Description:

Introduction to CMMS for the technical management of assets, work orders, and spare parts.

Specific objectives:

Configure and use CMMS tools for industrial facility management.

Related activities:

A1

Full-or-part-time: 20h

Theory classes: 6h

Laboratory classes: 4h

Self study : 10h

Maintenance indicators and planning

Description:

Analysis of maintenance indicators and planning of preventive and corrective tasks.

Specific objectives:

Interpret maintenance KPIs and define planning strategies.

Related activities:

A2

Full-or-part-time: 20h

Theory classes: 6h

Laboratory classes: 3h

Self study : 11h

Monitoring systems and predictive maintenance

Description:

Integration of data from sensors and industrial monitoring systems for predictive maintenance.

Specific objectives:

Analyze technical data for decision-making in advanced maintenance.

Related activities:

A3

Full-or-part-time: 25h

Theory classes: 6h

Laboratory classes: 3h

Self study : 16h

Economic and operational facility management

Description:

Analysis of costs, budgets, and operational closing of industrial facilities.

Specific objectives:

Evaluate the economic and operational performance of an industrial facility.

Related activities:

A4

Full-or-part-time: 25h

Theory classes: 6h

Laboratory classes: 3h

Self study : 16h

Integrative project on industrial facility management

Description:

Development of an applied project on the technical, economic, and operational management of an industrial facility.

Specific objectives:

Integrate technical and management knowledge in a real or simulated industrial context.

Related activities:

A5

Full-or-part-time: 35h

Theory classes: 6h

Laboratory classes: 2h

Self study : 27h

GRADING SYSTEM

Any academic fraud, plagiarism or use or possession of unauthorised means in an assessment activity leads to a mark of zero (0) for the affected test or assignment. Furthermore, in accordance with the University's regulations, if disciplinary proceedings are initiated the subject is recorded as "Pending Assessment" until a decision is reached. These incidents are managed in accordance with the [Action Framework for Academic Integrity in Assessment at the UPC](#).

Assessment will be continuous and evidence-based. Most of the final course grade will be based on individual and team assignments and activities. The final assessment may be replaced by a final presentation or course project. The different weightings are as follows:

Integrative facility management project: 40%

Individual exercises and practical assignments: 25%

Written exam or final presentation/project: 30%

Active participation and continuous follow-up: 5%

The integrative facility management project will be mandatory and non-recoverable.

To pass the course, students must obtain a grade equal to or higher than 5.



EXAMINATION RULES.

Assessment activities may include practical case studies, applied exercises, oral presentations, individual or team assignments, and written exams. All activities will assess not only the correct application of technical knowledge, but also analytical skills, interpretation of results, and technical communication abilities.

Attendance and active participation in practical sessions and seminars may be considered as part of the continuous assessment process. Fraudulent use of assignments, cheating, or total or partial plagiarism in any assessment activity will result in failing the course.

The use of artificial intelligence is strictly prohibited in written exams. Its use will be allowed in assignments and activities provided that it is clearly declared and identified.

BIBLIOGRAPHY

Complementary:

- Bloch, Heinz P; Geitner, Fred K. Machinery failure analysis and troubleshooting [on line]. 4th ed. Amsterdam: Elsevier, 2012
[Consultation : 28/05/2026]. Available on :
<https://www-sciencedirect-com.recursos.biblioteca.upc.edu/book/monograph/9780123860453/machinery-failure-analysis-and-trouble-shooting>. ISBN 9780123860460.