Course guide
820463 - MHTM - Hydraulic and Thermal Machinery

Last modified: 14/06/2023

Unit in charge: Barcelona East School of Engineering
Teaching unit: 729 - MF - Department of Fluid Mechanics.

Degree: BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR'S DEGREE IN MATERIALS ENGINEERING (Syllabus 2010). (Optional subject).

Academic year: 2023 **ECTS Credits:** 6.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: CARLOS RUIZ MOYA

Others: Segon quadrimestre:
ALFRED FONTANALS GARCIA - M10
CARLOS RUIZ MOYA - M10

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. Understand and apply the fundamentals of fluid mechanics systems and machines.
2. Understand the applications of thermal engineering.

Transversal:
3. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT

STUDY LOAD

Type	Hours	Percentage
Hours large group	60,0	40.00
Self study	90,0	60.00

Total learning time: 150 h

CONTENTS

(ENG) TEMA 1. GENERALITATS SOBRE TURBOMÀQUINES HIDRÀULIQUES

Full-or-part-time: 5h 20m
Theory classes: 2h
Self study : 3h 20m

(ENG) TEMA 2. BOMBES ROTODINÀMIQUES

Full-or-part-time: 15h 10m
Theory classes: 6h
Self study : 9h 10m

(ENG) TEMA 3. VENTILADORS

Full-or-part-time: 16h 50m
Theory classes: 6h
Self study : 10h 50m

(ENG) TEMA 4. TURBINES HIDRÀULIQUES

Full-or-part-time: 16h 50m
Theory classes: 6h
Self study : 10h 50m

(ENG) TEMA 5. LLEIS DE SEMBLANÇA I CORBES CARACTERÍSTIQUES DE LES TMH

Full-or-part-time: 15h 30m
Theory classes: 5h
Laboratory classes: 3h
Self study : 7h 30m

(ENG) TEMA 6. CENTRALS HIDRÀULIQUES

Full-or-part-time: 6h 20m
Theory classes: 3h
Self study : 3h 20m

(ENG) TEMA 7. AEROGENERADORS

Full-or-part-time: 14h 30m
Theory classes: 7h
Self study : 7h 30m

(ENG) TEMA 8. COMPRESSORS ALTERNATIUS

Full-or-part-time: 14h 10m
Theory classes: 5h
Self study : 9h 10m

(ENG) TEMA 9. TURBOCOMPRESSORS

Full-or-part-time: 12h 50m
Theory classes: 4h 30m
Self study : 8h 20m

(ENG) TEMA 10. FLUX EN TURBOMÀQUINES HIDRÀULIQUES

Full-or-part-time: 32h 30m
Theory classes: 8h
Laboratory classes: 4h 30m
Self study : 20h

GRADING SYSTEM

BIBLIOGRAPHY

Basic:
- Agüera Soriano, José. Mecánica de fluidos incompresibles y turbomáquinas hidráulicas. 5ª ed. act. Madrid: Ciencia 3, DL 2002. ISBN 8495391015.
- Mataix, Claudio. Turbomáquinas hidráulicas : turbinas hidráulicas, bombas, ventiladores. Madrid: Editorial ICAI, 1975. ISBN 8460066622.
- Sistemas eólicos de producción de energía eléctrica. Alcorcón: Rueda, 2003. ISBN 8472071391.

Complementary:
- Dixon, S. L. Fluid mechanics and thermodynamics of turbomachinery [on line]. 6th ed. Amsterdam [etc.]: Elsevier : Butterworth-Heinemann, cop. 2010 [Consultation: 04/06/2020]. Available on: https://www.sciencedirect.com/science/book/9781856177931. ISBN 9781856177931.
- Schobeiri, Meinhard T. Turbomachinery flow physics and dynamic performance [on line]. 2nd ed. Heidelberg: Springer, cop. 2012 [Consultation: 04/06/2020]. Available on: http://dx.doi.org/10.1007/978-3-642-24675-3. ISBN 9783642246753.
- Lakshminarayana, Budugur. Fluid dynamics and heat transfer of turbomachinery. New York [etc.]: John Wiley & Sons, cop. 1996. ISBN 0471855464.