

Course guides

820427 - ETM - Thermal Engineering

Last modified: 19/06/2020

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). (Compulsory subject).

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

LECTURER

Coordinating lecturer: JOAN GRAU BARCELÓ

Others:

Primer quadrimestre:
 JOSE ALEJANDRO CARRILLO CORTES - T13, T14
 DAIBEL DE ARMAS ORAMAS - T12
 JOSE IGNACIO ESEBERRI PIEDRA - T15
 JOAN GRAU BARCELÓ - M11, M12, M13, M14
 ALFREDO DE JESUS GUARDO ZABALETA - T11, T12, T13, T14, T15
 REYNA MERCEDES PEÑA AGUILAR - T11
 CARLOS RUIZ MOYA - M11, M12, M13, M14

Segon quadrimestre:
 JOSE IGNACIO ESEBERRI PIEDRA - M13, T13
 RAUL GARCÍA SANJURJO - M12
 JOAN GRAU BARCELÓ - M11, M12, M13
 ALFREDO DE JESUS GUARDO ZABALETA - T11, T12, T13
 ROGER MAYNOU GIL - T11, T12

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

2. Understand the applications of thermal engineering.

Transversal:

3. SELF-DIRECTED LEARNING - Level 2: Completing set tasks based on the guidelines set by lecturers. Devoting the time needed to complete each task, including personal contributions and expanding on the recommended information sources.

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT

STUDY LOAD

Type	Hours	Percentage
Hours large group	45,0	30.00
Hours small group	15,0	10.00
Self study	90,0	60.00



Total learning time: 150 h

CONTENTS

(ENG) -1 Generació tèrmica. Generadors de vapor i calderes. Aprofitament de l'energia solar tèrmica

Full-or-part-time: 36h
Theory classes: 12h
Laboratory classes: 2h 30m
Self study : 21h 30m

(ENG) -2: Equips de transferència de calor. Bescanviadors de calor. Torres de refrigeració. Psicrometria.

Full-or-part-time: 26h 30m
Theory classes: 6h
Laboratory classes: 4h 30m
Self study : 16h

(ENG) -3: Cicles de potència de gas. Compressors alternatius i turbomàquines. Turbines de gas. Motors de combustió.

Full-or-part-time: 20h
Theory classes: 6h
Laboratory classes: 2h
Self study : 12h

(ENG) -4: Cicles de potència de vapor. Turbines de vapor. Cogeneració.

Full-or-part-time: 25h
Theory classes: 6h
Laboratory classes: 4h
Self study : 15h

(ENG) -5: Sistemes de refrigeració i bombes de calor.

Full-or-part-time: 20h
Theory classes: 6h
Laboratory classes: 2h
Self study : 12h

(ENG) -6: Eficiència energètica. Recuperació de calor. Aïllament.

Full-or-part-time: 22h 30m
Theory classes: 9h
Self study : 13h 30m



GRADING SYSTEM

BIBLIOGRAPHY

Basic:

- Moran, Michael J.; Shapiro, Howard N. Fundamentos de termodinámica técnica. 2ª ed. Barcelona [etc.]: Reverté, cop. 2004. ISBN 8429143130.
- Çengel, Yunus A. Transferencia de calor y masa : un enfoque práctico. 3ª ed. México [etc.]: McGraw-Hill, cop. 2007. ISBN 9789701061732.
- Llorens, Martín; Miranda, Ángel Luis. Ingeniería térmica. Barcelona: Marcombo, cop. 2009. ISBN 9788426715319.

Complementary:

- Çengel, Yunus A.; Boles, Michael A. Termodinámica. 8ª ed. México, D.F: McGraw-Hill Interamericana, cop. 2015. ISBN 9786071512819.
- Mills, Anthony F. Transferencia de calor. México DF [etc.]: Irwin, 1995. ISBN 8480861940.

RESOURCES

Hyperlink:

- TEST, ¿The Expert System for Thermodynamics?. <http://www.thermofluids.net/>