Universitat de Lleida

DEGREE CURRICULUM

INSTAL.LACIONS II

Academic year 2013-14

ENERGY FACILITIES II 2013-14

Subject's general information

Subject name	INSTAL.LACIONS II
Code	102312
Semester	2n Q Continuous evaluation
Typology	Non-compulsory
ECTS credits	6
Theoretical credits	0
Practical credits	0
Department	Departament d'Informàtica i Enginyeria Industrial
Important information on data processing	Consult this link for more information.
Distribution of credits	Dr Ingrid Martorell (3.6) Dr Alvaro de Gracia (2.4)
Office and hour of attention	A concertar via email amb el professorat

ENERGY FACILITIES II 2013-14

, Dra Ingrid Martorell i Boada RESPONSIBLE TEACHER (imartore@diei.udl.cat)
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Subject contents

1.- COMBUSTION

-COMBUSTION MECHANISMS

-BURNERS

2.- REFRIGERATION

-COMPRESSION SYSTEMS

-ABSORPTION SYSTEMS

3.-CONVENTIONAL ENERGIES

-FOSSIL FUELS

-NATURAL GAS

-OIL

-NUCLEAR ENERGY

4.- COGENERATION

-ADVANTAGES AND DISADVANTAGES

-ENERGY SAVING

-THERMODYNAMICS: VAPOR TURBINS, GAS, COMBINED CYCLES, ALTERNATIVE MOTORS

5.- TURBINES AND HEAT ENGINES

-BASIC CYCLE STEAM TURBINES

–Introduction

–Carnot cycle with steam vapor

–Rankine cycle with steam vapor

–Improvement on the Rankine cycle

–Energetic balance in a real cycle

-BASIC CICLE OF GAS TURBINES

–Introduction

–Ideal Brayton cycle

–Real Brayton cycle

-ENERGY LOSSES, EFFICIENCY AND POWER OF TURBINES AND THERMAL ENGINES

–Introduction

–Internal losses

–External losses

–Energy efficiency

Methodology

The methodology of this course will consist of:

1.-Theoretical session where the theacher expose the theoretical concepts required for students' proper knowledge and for the right

performance in the practical sessions.

2.-Practical sessions where students will play an active rol and will work in group or individually.

Development plan

	DESCRIPTION
10 FEB	PRESENTATION
12 FEB	COMBUSTION
17 FEB	COMBUSTION
19 FEB	COMBUSTION
24 FEB	COMPRESSION REFRIGERATION
26 FEB	COMPRESSION REFRIGERATION PAPER SELECTION (email)
3 MARCH	COMPRESSION REFRIGERATION
5 MARCH	COMPRESSION REFRIGERATION
10 MARCH	COMPRESSION REFRIGERATION
12 MARCH	ABSORPTION REFRIGERATION
17 MARCH	ABSORPTION REFRIGERATION
19 MARCH	ABSORPTION REFRIGERATION
24 MARCH	CONVENTIONALS ENERGIES
26 MARCH	CONVENTIONALS ENERGIES
31 MARCH	CONVENTIONALS ENERGIES
2 APRIL	REVIEW
7-11 APRIL	EXAMS
14- 21 APRIL	SETMANA SANTA
23 APRIL	COGENERATION
28 APRIL	COGENERATION
30 APRIL	COGENERATION
5 MAY	TURBINES
7 MAY	TURBINES
12 MAY	HOLIDAY
14 MAY	TURBINES
19 MAY	HEAT ENGINES
21 MAY	HEAT ENGINES
26 MAY	HEAT ENGINES

28 MAY	INDIVIDUAL PAPER EXAMINATION
2-30 JUNE	EXAMS

Evaluation

-FIRST PARTIAL: 40%

-SECOND PARTIAL: 40%

-EXERCISES IN CLASS: 5%

-INDIVIDUAL ACTIVITY (PAPER IN ENGLISH): 15%

Bibliography

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- J. A. Orlando. "Cogeneration design guide", ASHRAE, 1996. ISBN: 1-883413-36-2.
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