



Universitat de Lleida

DEGREE CURRICULUM **SERVICES I**

Academic year 2015-16

Subject's general information

Subject name	SERVICES I
Code	102311
Semester	1r Q Continuous evaluation
Typology	Optional
ECTS credits	6
Theoretical credits	0
Practical credits	0
Office and hour of attention	To be specified on the first day of class.
Department	Informàtica i Enginyeria Industrial
Teaching load distribution between lectures and independent student work	60 h of lectures (40%) 90 h independent student work (60%)
Modality	Presencial
Important information on data processing	Consult this link for more information.
Language	English (with the exception of problem statements and regulatory texts, which will be in Catalan or Spanish). The student can answer the assessment tests in English, Spanish or Catalan.
Degree	Degree of Mechanical Engineering
Distribution of credits	Marc Medrano 6 ECTS
Office and hour of attention	To be specified on the first day of class.
E-mail addresses	mmedrano@diei.udl.cat

Dr. Marc Medrano Martorell

Subject's extra information

Subject that requires continuous work throughout the semester in order to achieve the proposed objectives. It is recommended to visit frequently the site of the subject on the Virtual Campus, since most of the information and announcements can be found there. This is a subject that belongs to module "Optional Formation", namely the subject "Installations".

Learning objectives

- Be able to find, understand and synthesize information in foreign language
- Provide the students an overview of the energy situation in the world and future prospects.
- Provide the students with the basic knowledge and current legislation concerning the various installations of the buildings
- Provide the students with the knowledge of the distribution and the elements that form the various installations
- Be able to pre-size water, air conditioning, drainage, and electrical installations, and also of the systems that exploit renewable energy sources, applying the theoretical and basic fundamentals of the different specialities

Competences

University of Lleida strategic competences

- UdL2 Command of a foreign language..

Cross-disciplinary competences

- EPS4. To have the skills required to undertake new studies or improve the training with self-direction.
- EPS9. Capacity for unidisciplinary and multidisciplinary teamwork.

Specific competences

- GEM-EPS31. Capacity to design HVAC installations (heating, ventilation and air conditioning).
- GEM-EPS32. Applied knowledge to distributed energy generation and energy use.
- GEM-EPS33. Capacity of analysis of energy systems, optimization and integration

Subject contents

1. Introduction about energy in the World
2. Gas Installations
3. Electrical Installations
4. Fire protection
5. Distribution and supply of potable water
6. Sanitation
7. Common infrastructures of telecommunications (CIT)
8. Air conditioning
9. Steam Installations

10. Cogeneration

11. Renewable energies

Methodology

The methodological axes of the course will be divided into:

1.-Theoretical sessions where the professor will present theoretical contents needed for the acquisition of knowledge and for the proper development of the practical sessions.

2.-Hands-on problem solving sessions, where the professor will solve some examples, but where students will take an active part in the learning process working in small groups or individually.

Development plan

The development plan will follow the order of the contents

Week	Day	Topic
1	14 SEP	Presentation of the subject
	15 SEP	1. Introduction
2	21 SEP	2. Gas installations. Theory
	22 SEP	3. Electrical Installations. Theory
3	28 SEP	HOLIDAY: UDL FESTIVITY
	29 SEP	HOLIDAY: SANT MIQUEL
4	5 OCT	3. Electrical Installations. Problems
	6 OCT	3. Electrical Installations. Problems
5	12 OCT	HOLIDAY: SPANISH CONSTITUTION
	13 OCT	4. Fire protection: Theory
6	19 OCT	5. Water: Theory
	20 OCT	5. Water: Theory and problems
7	26 OCT	6. Sanitation: Theory
	27 OCT	6. Sanitation: Problems
8	2 NOV	7. CIT: Theory
	3 NOV	8. Air conditioning: Theory
9	9 NOV	PARTIAL EXAMS WEEK
	10 NOV	PARTIAL EXAMS WEEK
10	16 NOV	Papers presentation
	17 NOV	Papers presentation
11	23 NOV	8. Air conditioning: Theory and problems
	24 NOV	8. Air conditioning: Problems
	30 NOV	9. Vapor: Theory

12	1 DES	9. Vapor: Theory and problems
13	7 DES	9. Vapor: Problems
	8 DES	HOLIDAY: Immaculada Concepció
14	14 DES	10. Cogeneration: Theory
	15 DES	10. Cogeneration: Theory and problems
15	21 DES	11. Renewable energies
	22 DES-6 JAN	CHRISTMAS HOLIDAY
	11-22 JAN	EXAMS: EXAM SECOND PARTIAL
	1-5 FEB	ACTIVITIES OF RECOVERY

Evaluation

ACTIVITY OF EVALUATION 1: FIRST PARTIAL (individual, written)

- 35%

- Grade > 3

ACTIVITY OF EVALUATION 2: SCIENTIFIC PAPER EXPOSITION (individual, oral)

- 15%

ACTIVITY OF EVALUATION 3: SCIENTIFIC PAPER REPORT (written, group)

- 15%

- Group activity

ACTIVITY OF EVALUATION 4: SECOND PARTIAL (individual, written)

- 35%

- Grade > 3

Bibliography

Recommended bibliography

- Arizmendi Barnes, Luis Jesús (2003): "Cálculo y Normativa Básica de las Instalaciones en los edificios". Tomo I y II. Editorial EUNSA.
- Huidobro, José M. Manual de Telecomunicaciones. Ed. Ra-Ma
- Lagunas Marqués, Ángel – Instalaciones eléctricas de baja tensión en edificios de viviendas-Ed.Parainfo – Madrid – 2003
- Martín, F.INSTALACIONES ELÉCTRICAS. Fundación Escuela de la Edificación.
- Vázquez Moreno, Javier. Herranz Aguilar, Juan Carlos. "Manual práctico de instalaciones en edificación. Tomo I. Instalaciones hidráulicas". Editorial LITEAM. 1ª edición. Año 2001. ISBN: 84-95596-05-9R
- Vázquez Moreno, Javier. Herranz Aguilar, Juan Carlos. "Manual práctico de instalaciones en edificación. Tomo II. Instalaciones energéticas". Editorial LITEAM. 1ª edición. Año 2001. ISBN: 84-95596-06-7R
- Vázquez Moreno, Javier. Herranz Aguilar, Juan Carlos. "Manual práctico de instalaciones en edificación. Tomo III. Instalaciones eléctricas." Editorial LITEAM. 1ª edición. Año 2001. ISBN: 84-95596-04-0
- GEA 2012 – Global Energy Assessment. Toward a Sustainable Future. Ed. Thomas B. Johansson, Anand

Patwardhan, Nenojsa Nakicenovic, Luisa Gomez-Echeverri. International Institute for Applied Systems Analysis (IIASA). Cambridge University Press, 2012.

- ETP 2012 – Energy Technology Perspectives 2012. Pathways to a Clean Energy System. International Energy Agency (IEA), 2012.