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220006 - Chemistry

Coordinating unit: 205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering

Teaching unit: 713 - EQ - Department of Chemical Engineering

Academic year: 2019

Degree: BACHELOR'S DEGREE IN AEROSPACE TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN AEROSPACE VEHICLE ENGINEERING (Syllabus 2010). (Teaching unit Compulsory)

ECTS credits: 6 Teaching languages: Catalan

Teaching staff

Coordinator: Cortes Izquierdo, M. Pilar

Others: Torrades Carne, Francesc
Daga Monmany, Jose Maria

Degree competences to which the subject contributes

Specific:

1. An understanding of the basic principles of general, organic and inorganic chemistry and the ability to apply this knowledge in engineering

Transversal:

2. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 1. Analyzing the world¿s situation critically and systemically, while taking an interdisciplinary approach to sustainability and adhering to the principles of sustainable human development. Recognizing the social and environmental implications of a particular professional activity.

Teaching methodology

· Large group lessons: Development of theoretical concepts.
· Medium group lessons: Application of the theoretical concepts seen in big group lessons or acquired by the student trough self-learning processes.
· Small group lessons: Laboratory practicals.
The Atenea platform will be used as a support tool to the three varieties of lessons described above. It would be used as a way of communication between the students and the teacher.

Learning objectives of the subject

Providing basic chemistry knowledge to other related subjects. Relate and apply theoretical concepts both in solving problems and laboratory practices.

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Study load

Total learning time: 150h	Hours large group:	32h	21.33%
	Hours medium group:	14h	9.33%
	Hours small group:	14h	9.33%
	Self study:	90h	60.00%

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Content

1. Introduction to chemistry.	Learning time: 40h Theory classes: 4h Practical classes: 3h Laboratory classes: 7h Self study : 26h
Description: Related activities:	

2. Atomic structure. Periodic table of elements.	Learning time: 12h Theory classes: 3h Practical classes: 1h Self study : 8h
Description: Related activities:	

3. Molecular structure.	Learning time: 16h Theory classes: 6h Practical classes: 1h Self study : 9h
Description: Related activities:	

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4. States of matter.	Learning time: 20h Theory classes: 6h Practical classes: 2h Self study : 12h
Description: Related activities:	

5. Chemical kinetics. Chemical equilibrium.	Learning time: 38h Theory classes: 6h Practical classes: 5h Laboratory classes: 7h Self study : 20h
Description: Related activities:	

6. Electrochemistry	Learning time: 16h Theory classes: 4h Practical classes: 2h Self study : 10h
Description: Related activities:	

7. Organic chemistry.	Learning time: 8h Theory classes: 3h Self study : 5h
Description:	

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Planning of activities

ACTIVITY 1:THEORY SESSIONS	Hours: 68h Theory classes: 25h Self study: 43h
ACTIVITY 2: PROBLEM SESSIONS	Hours: 33h Practical classes: 14h Self study: 19h
ACTIVITY 3: LABORATORY	Hours: 32h Laboratory classes: 14h Self study: 18h
ACTIVITY 4: MIDTERM EXAM	Hours: 3h Theory classes: 3h
ACTIVITY 5: FINAL EXAM	Hours: 3h Theory classes: 3h
ACTIVITY 6: FORMULATION EXAM	Hours: 11h Theory classes: 1h Self study: 10h

Qualification system

Note global = 0,20 x N1P + 0,50 x N2P + 0,20 x NL + 0,10 x NAD
NL: Laboratory practices. Activity 3 of this guide
NAD: Guided activity 6
N1P First midterm exam
N2P Final exam
in case of failure of the midterm exam N1P, there will be the chance to recover it in the following way:
=0,70xN2P + 0,20 x NL + 0,10 x NAD, if N2P>N1P

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Bibliography

Basic:

Whitten, Kenneth W. Química general. 8a ed. Madrid: Paraninfo, 2010. ISBN 978-970-686-768-8.

Chang, Raymond. Química. 9a ed. México: McGraw-Hill, 2007. ISBN 9789701061114.

Flaqué Lajara, C. [et al.]. Química per a l'enginyeria. 3ª ed. Barcelona: Iniciativa Digital Politècnica, Publicacions Acadèmiques UPC, 2014. ISBN 978-84-9880511-6.

Petrucci, Ralph H. Química general: principios y aplicaciones modernas [on line]. Undécima edición. Madrid: Pearson Prentice Hall, 2017 [Consultation: 04/10/2018]. Available on: <http://www.ingebook.com/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=6751>. ISBN 9788490355336.

Complementary:

Formulació i nomenclatura segons normativa IUPAC.

Others resources:

Hyperlink

http://www.webelements.com/

http://www.periodicvideos.com/#