

Caraterização da Unidade Curricular / Characterisation of the Curricular Unit

Designação da Unidade Curricular / Curricular Unit:	[3181300251] Física e Química [3181300251] Physics and Chemistry		
Plano / Plan:	2015/2016		
Curso / Course:	Ensino do 1.º Ciclo do Ensino Básico e de Matemática e Ciências Naturais no 2.º Ciclo do Ensino Básico		
Grau / Diploma:	Mestre		
Departamento / Department:	CEN - Ciências Exatas e Naturais		
Unidade Orgânica / Organic Unit:	Escola Superior de Educação de Viseu		
Área Científica / Scientific Area:	Área de Docência		
Ano Curricular / Curricular Year:	2		
Período / Term:	S1		
ECTS:	4		
Horas de Trabalho / Work Hours:	0108:00		
Horas de Contacto/Contact Hours:			
(T) Teóricas/Theoretical:	0000:00	(TC) Trabalho de Campo/Fieldwork:	0000:00
(TP) Teórico-Práticas/Theoretical-Practical:	0045:00	(OT) Orientação Tutorial/Tutorial Orientation:	0000:00
(P) Práticas/Practical:	0000:00	(E) Estágio/Internship:	0000:00
(PL) Práticas Laboratoriais/Practical Labs:	0000:00	(O) Outras/Others:	0000:00
(S) Seminário/Seminar:	0000:00		

Docente Responsável / Responsible Teaching

[2069] Maria Cristina Coelho Carvalho Azevedo Gomes Santos E Silva

Outros Docentes / Other Teaching

[2069] Maria Cristina Coelho Carvalho Azevedo Gomes Santos e Silva

[400040] António Manuel Bondoso Cardoso

Learning Outcomes of the Curricular Unit

To consolidate and develop in-depth knowledge of Physics and Chemistry in general, through the approach of various phenomena and concepts essential for the understanding of modern scientific and technological progress, placing Physics and Chemistry in the context of other Exact and Natural Sciences.

To plan and execute experimental activities, collect data, process them and, from their analysis, obtain relevant information, interpreting it in the light of the laws and basic principles of Physics and Chemistry.

Learning Outcomes of the Curricular Unit (Lim:1000)

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Syllabus (Lim:1000)

1. Atoms, molecules and ions.
 - 1.1. the atomic structure
 - 1.2. Atomic number, mass number and isotopes.
 - 1.3. Periodic table
 - 1.4. Molecules and ions. Types of chemical bond
2. Phases of matter and their properties
 - 2.1. Intermolecular Forces.
 - 2.2. Properties of gases, liquids and solids
 - 2.3. Phase Changes
3. Solutions and their properties
 - 3.1. Types of solutions
 - 3.2. Solution concentration units
4. Energy
 - 4.1. types of energy
 - 4.2. Entropy
 - 4.3. The thermodynamic laws
 - 4.4. reaction enthalpy
5. Chemical balance
 - 5.1. balance nature
 - 5.2. Acid-Base Balance and Oxidation Reduction.

Demonstration of the syllabus coherence with the curricular units' learning objectives

By introducing the concepts, combining with their application to real and significant situations, and with practical and laboratory activities, it is intended that students deepen their theoretical framework on concepts of physics and chemistry and the understanding of their scope and applicability.

Teaching Methodologies (Including evaluation; Lim:1000)

Theoretical-practical classes to explore concepts and apply content to specific situations. Practical work activities (research, laboratory) for the development of proposed themes. The evaluation of the curricular unit includes two components: Physics and Chemistry. The theoretical component is assessed through written tests. The practical component includes the presentation of developed works or mini-tests.

Grades Components Physics and Chemistry = 60% Theoretical + 40% Practical

Demonstration of the coherence between the teaching methodologies and the learning outcomes

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Bibliografia / Bibliography (Lim:1000)

Abreu, M. C., Matias, L., Peralta, L. F. (1994). Física Experimental - Uma introdução. Lisboa: Editorial Presença

Almeida, G. (1988): Sistema Internacional de Unidades (S I). Grandezas e Unidades Físicas. Terminologia, Símbolos e Recomendações. Lisboa.

Atkins, P., Loretta, J. (1996). Chemistry. Freeman.

Russell, J. B. (1994). Química Geral vol I e II, McGraw Hill.

Chang, R. (1994). Química. McGraw-Hill.

D. Halliday e R. Resnick (1993), Fundamentos de Física. Livros Técnicos e Científicos Editora.

Ferreira, M., Almeida, G. (2004): Introdução a ζ Astronomia e às observações astronómicas. Lisboa. Plátano Editora.

J. Dias de Deus e outros. Introdução a ζ Física, 2000, Mc-Graw-Hill

Kaufmann, W. J. , Comins, N. (2008): Discovering the Universe, London:W. H. Freeman and Co.

Tipler, P., Mosca, G. (2009). Física para cientistas e engenheiros ? vol 1. Brasil. LTC.