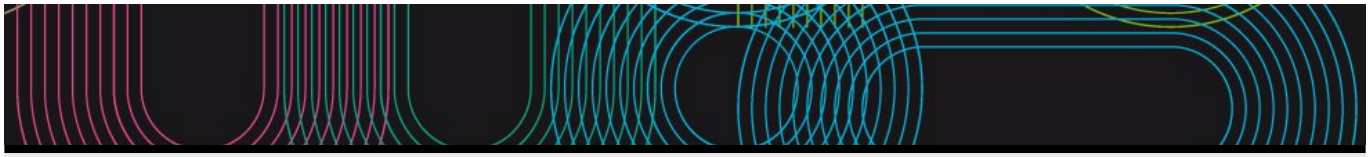

IDENTIFYING DATA				
Chemistry: Chemistry II				
Subject	Chemistry: Chemistry II			
Code	O01G041V01203			
Study programme	Grado en Ciencia y Tecnología de los Alimentos			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	2nd
Teaching language	#EnglishFriendly Spanish			
Department				
Coordinator	Gómez Graña, Sergio			
Lecturers	Gómez Graña, Sergio			
E-mail	segomez@uvigo.es			
Web				
General description	(*)Esta materia proporciona ao alumnado unha introdución aos coñecementos e habilidades en química necesarios para que poidan continuar con éxito a aprendizaxe das materias relacionadas de cursos superiores.			

Training and Learning Results	
Code	
A3	Students will be able to gather and interpret relevant data (normally within their field of study) that will allow them to have a reflection-based considered opinion on important issues of social, scientific and ethical nature.
A4	Students will be able to present information, ideas, problems and solutions both to specialist and non-specialist audiences.
B1	Students will acquire analysis, synthesis and information-management skills to contribute to planning and conducting research activities in the food field.
B2	Students will acquire and put teamwork skills and abilities into practice, whether these have multidisciplinary character or not, in both national and international contexts, becoming familiar with a diversity of perspectives, schools of thought and practical procedures.
C1	To know the physical, chemical and biological foundations of food and its technological processes.
D1	Analysis, organization and planning skills.
D3	Ability to communicate, both orally and in writing, in local and foreign languages.
D4	Independent-learning and information-management skills.
D5	Problem-resolution and decision-making skills.
D8	Critical and self-critical thinking skills.

Expected results from this subject	Training and Learning Results			
*RA1: chemical Balance, sour balance-basic, aqueous phase, processes of solubility, applications of the aqueous balances, balance *redox.	A3 A4	B1 B2	C1	D1 D3 D4 D5 D8
*RA2: Kinetical chemical	A3 A4	B1 B2	C1	D1 D3 D4 D5 D8

Contents
Topic

1.-Thermochemistry	Chemical energy, change and conservation of the energy, functions of state, work and expansion, energy and enthalpy, Hess's, entropy, Gibbs energy.
2.- Entropy and Gibbs energy	Spontaneous processes, entropy, second and third principle, Gibbs energy.
3.- Chemical Equilibrium	Concept of Equilibrium, constants of Equilibrium, homogeneous and heterogeneous Equilibria, principle of Le Châtelier.
4.- Acids and bases. Acid-base Equilibrium	Acid and base concepts, pH, strength of acids and bases, constants of ionisation, acid-base properties of salts. Buffer solutions. Acid-base tritations.
5.- Solubility Equilibrium	Constante of the solubility product. Solubility and molar solubility. Precipitation. Common ion effect. Complex ions formations.
6.- Electrochemical	Redox reactions, galvanic cells, standard potentials of reduction, thermodynamics of redox reactions, Nernst equation.
7.-Chemical Kinetics	Rate of reaction, rate equation, integrated equations, activation energy, Arrhenius equation, mechanisms, catalysis.

Planning

	Class hours	Hours outside the classroom	Total hours
Laboratory practical	14	5	19
Seminars	14	38	52
Mentored work	0	6	6
Lecturing	28	23	51
Problem and/or exercise solving	0	5	5
Report of practices, practicum and external practices	0	5	5
Self-assessment	0	8	8
Objective questions exam	0	4	4
*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.			

Methodologies

	Description
Laboratory practical	Practices of experimental laboratory that accompany to the theoretical knowledges. They will schedule different practical related with the contents of the matter so that the students apply the knowledges purchased in the theory and in the seminars, completing, like this, his training (face-to-face).
Seminars	Resolution of problems type by part of the students. The professor will formulate problems and exercises related with the matter (face-to-face).
Mentored work	Realisation of a voluntary work related with any of the subjects of the matter.
Lecturing	Masterclasses that will enter the basic knowledges of the *temario. They will consist in the exhibition by part *do professor of the most important appearances of the contents of the matter: theoretical bases and guidelines of the works, and exercises to manage by the students (face-to-face).

Personalized assistance

Methodologies	Description
Lecturing	It will be atended the questions posed by the students during the sessions of masterclasses, boosting to the maximum the interaction professor-students.
Laboratory practical	It will be atended the questions posed by the studentss during the practices of laboratory, boosting to the maximum the interaction professor-students.
Seminars	It will be atended the questions posed by the students during the sessions of seminar, boosting to the maximum the interaction professor-students.

Assessment

	Description	Qualification	Training and Learning Results			
Laboratory practical	Preparation by groups of practices of laboratory. The results evaluated are *RA1 and *RA2.	10	A3 A4	B1 B2	C1	D1 D3 D4 D5 D8

Mentored work	Preparation of a work related with any of the subjects of the matter. The results evaluated are *RA1 and *RA2.	35	A3 A4	B1 B2	C1	D1 D3 D4 D5 D8
Problem and/or exercise solving	In this proof will incorporate questions related with the seminars. The results evaluated are *RA1 and *RA2.	20	A3 A4	B1 B2	C1	D1 D3 D4 D5 D8
Report of practices, practicum and external practices	Preparation of a memory that will be delivered at the end of the sessions of laboratory to the professor. The results evaluated are *RA1 and *RA2.	10	A3 A4	B1 B2	C1	D1 D3 D4 D5 D8
Objective questions exam	In this proof will incorporate questions related with the theory. The results evaluated are *RA1 and *RA2.	25	A3 A4	B1 B2	C1	D1 D3 D4 D5 D8

Other comments on the Evaluation

The preferred evaluation modality is Continuous Evaluation. Those students who want the Global Assessment (100% of the grade in the official exam) must notify the person in charge of the subject, by email or through the Moovi platform, within a period not exceeding one month from the beginning of the teaching of the subject.

The examinations will take place in the following dates:

a) End-of-degree exam: 27/09/2024 - 16:00

b) End-of-course exam: 07/06/2024 - 16:00

c) Second opportunity exam: 11/07/2024 - 10:00

In case there are any error in the transcription of the dates, the valid ones are those approved officially and published in the bulletin board and in the web page of the centre.

In the End of Degree exam, the students who choose this modality will be evaluated only by the exam that will be worth 100% of the grade.

In the second opportunity exam, students may choose to be evaluated only by the exam that will be worth 100% of the grade.

CONTINUOUS EVALUATION

A minimum qualification of 4.0 in problem solving and 4.0 points in the test of theoretical questions must be obtained to pass the subject.

The computation of the percentage of the rest of the activities will be effective as long as a minimum score of 3.5 points is obtained. In addition, it will be necessary to attend 80% of the laboratory practice sessions.

In the event that the grade obtained in the final exam is higher than the result of giving a weight of 45% to the exam, 20% to the practices and 35% to the supervised work, the final grade will be the one obtained in the exam.

Students with work occupations, or similar, who cannot attend any of the activities regularly will contact the teacher.

Sources of information

Basic Bibliography

Ralph H. Petrucci, **Química general : principios y aplicaciones modernas**, 10º Edición, Pearson-Prentice Hall, 2011

Peter Atkins y Loretta Jones, **Principios de química : los caminos del descubrimiento**, 5ª Edición, Médica Panamericana, 2012

Raymond Chang, **Química**, McGraw Hill, 2007

Complementary Bibliography

Ralph H. Petrucci, **General chemistry : principles and modern applications**, Pearson Education, 2007

Peter Atkins, **Chemistry : a very short introduction.**, New York : Oxford University Press, 2015

Recommendations

Subjects that continue the syllabus

Physical chemistry/O01G041V01303

Subjects that it is recommended to have taken before

Chemistry: Chemistry I/O01G041V01103

Other comments

To be able to successfully tackle this subject, previous knowledges of basic chemistry adquired in High School are sufficient.