

**1. General information****Course:** GEOLOGY**Type:** BASIC**Degree:** 398 - UNDERGRADUATE DEGREE PROGRAMME IN CHEMISTRY**Center:** 1 - FACULTY OF SCIENCE AND CHEMICAL TECHNOLOGY**Year:** 1**Main language:** Spanish**Use of additional languages:****Web site:****Code:** 57304**ECTS credits:** 6**Academic year:** 2020-21**Group(s):** 20 23**Duration:** First semester**Second language:****English Friendly:** Y**Bilingual:** N**Lecturer:** CARLOS JESUS SANCHEZ JIMENEZ - Group(s): 20 23

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**2. Pre-Requisites**

Those of the access to the Bachelor's Degree in Chemistry, being useful for the student to have basic notions of Geology, Chemistry and Physics, as well as having completed the subjects of Geology and / or Earth and Environmental Sciences in the previous teachings.

**3. Justification in the curriculum, relation to other subjects and to the profession**

Geology is a basic scientific discipline for the training of any science graduate. For its teaching in the Chemistry degree, a Crystallographic and Mineralogical approach has been carried out, since minerals represent a good example to know crystalline structures and forms, aspects of special interest in fields such as Inorganic Chemistry or Geochemistry. On the other hand, the knowledge of the processes involved in the genesis of minerals and rocks is of great interest to understand some environmental phenomena.

**4. Degree competences achieved in this course****Course competences**

Code	Description
CB01	Prove that they have acquired and understood knowledge in a subject area that derives from general secondary education and is appropriate to a level based on advanced course books, and includes updated and cutting-edge aspects of their field of knowledge.
CB03	Be able to gather and process relevant information (usually within their subject area) to give opinions, including reflections on relevant social, scientific or ethical issues.
E13	Identify and characterize the properties of different geological materials, deduce the physical-chemical mechanisms involved in their formation and know their applications
G05	Acquire and adapt new knowledge and techniques of any scientific-technical discipline with incidence in the chemical field
T03	Proper oral and written communication
T05	Organization and planning capacity
T09	Motivation for quality, job security and awareness of environmental issues, with knowledge of internationally recognized systems for the correct management of these aspects
T11	Ability to obtain bibliographic information, including Internet resources

**5. Objectives or Learning Outcomes****Course learning outcomes****Description**

Acquire the capacity for synthesis and objectivity, and promoting all those values and attitudes inherent in scientific activity.

Learn to develop topics and acquire skills in oral and written exposure, developing their ability to work as a team.

Know what is the origin and evolution of chemical elements, the rock cycle and the different types of rocks present on Earth.

Know the concept, classification and properties of polymers, highlighting their applications in the industry.

Know the structure and internal composition of the Earth, both from a point of view of its chemical and mineralogical composition, and from a mechanical point of view.

Know the crystalline matter from the point of view of symmetry, recognize the elements of symmetry that appear in crystals, classes and crystalline systems and know the main crystalline structures.

To ensure that the student is able to search and select information in the field of Earth Sciences and is able to process and present it properly both orally and in writing.

Develop in the student the capacity of initiative to raise and solve problems of Geology, as well as to interpret the results obtained.

Homogenize the knowledge of Geology already acquired by the students in the Secondary School courses and complete certain aspects that have not been previously studied with the necessary depth.

Know how to distinguish minerals and rocks, their characteristics and properties

Being able to distinguish the object of study of the branches of Geology: Geochemistry and Mineralogy and know the relationship between Chemistry and Geology.

## 6. Units / Contents

Unit 1: INTRODUCTION TO GEOLOGY

Unit 2: CONCEPT OF SYMMETRY: OPERATORS AND OPERATIONS OF SYMMETRY

Unit 3: POINT GROUPS: DEDUCTION

Unit 4: NETWORKS AND SPACE GROUPS

Unit 5: CRYSTAL STRUCTURES AND THEIR DEFECTS

Unit 6: INTRODUCTION TO MINERALOGY: SYSTEMATIC MINERALOGY

Unit 7: GEOLOGICAL RESOURCES: INDUSTRIAL MINERALS AND ROCKS.

Unit 8: GEOLOGICAL PROCESSES: MINERALS AND ROCKS FORMATION

Unit 9: SEMINAR 1: THE STEREOGRAPHIC PROJECTION

Unit 10: SEMINAR 2: CRYSTALLOGRAPHIC SOLID PROJECTION

## 7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	CB03	1.12	28	Y	N	
Class Attendance (practical) [ON-SITE]	Workshops and Seminars	T05	0.72	18	Y	Y	
Other on-site activities [ON-SITE]	Problem solving and exercises	T11	1.64	41	N	-	
Study and Exam Preparation [OFF-SITE]	Self-study	T05	2	50	N	-	
Progress test [ON-SITE]		T03	0.2	5	Y	Y	
Final test [ON-SITE]	Assessment tests	T03	0.2	5	Y	Y	
Group tutoring sessions [ON-SITE]	Case Studies	G05	0.12	3	N	-	
<b>Total:</b>			<b>6</b>	<b>150</b>			
<b>Total credits of in-class work: 4</b>			<b>Total class time hours: 100</b>				
<b>Total credits of out of class work: 2</b>			<b>Total hours of out of class work: 50</b>				

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

## 8. Evaluation criteria and Grading System

Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Progress Tests	70.00%	0.00%	
Assessment of problem solving and/or case studies	30.00%	0.00%	
Final test	0.00%	100.00%	
<b>Total:</b>	<b>100.00%</b>	<b>100.00%</b>	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

### Evaluation criteria for the final exam:

#### Continuous assessment:

The final grade will be the sum of the grades obtained in the different progress tests and problem tests. To pass the course, all exams must be passed.

#### Non-continuous evaluation:

In the final test, students will be examined from the subject blocks suspended in the continuous assessment process, needing to pass the course a grade equal to or greater than 5.0.

### Specifications for the resit/retake exam:

Students who did not pass the subject in the ordinary call, will be examined for the entirety of it, and must obtain a grade equal to or greater than 5.0 points to pass this subject.

### Specifications for the second resit / retake exam:

Students who do not pass the subject in the ordinary and extraordinary exams will be examined in its entirety, and must obtain a grade equal to or greater than 5.0 points to pass this subject.

## 9. Assignments, course calendar and important dates

### Not related to the syllabus/contents

Hours	hours
<b>Unit 1 (de 10): INTRODUCTION TO GEOLOGY</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	7
Study and Exam Preparation [AUTÓNOMA][Self-study]	1
Group 20:	
<b>Initial date:</b> 28-09-2020	<b>End date:</b> 29-09-2020
Group 23:	
<b>Initial date:</b> 28-09-2020	<b>End date:</b> 29-09-2020
<b>Unit 2 (de 10): CONCEPT OF SYMMETRY: OPERATORS AND OPERATIONS OF SYMMETRY</b>	
<b>Activities</b>	<b>Hours</b>

Class Attendance (theory) [PRESENCIAL][Lectures]	2
Study and Exam Preparation [AUTÓNOMA][Self-study]	2
Group 20:	
<b>Initial date:</b> 29-09-2020	<b>End date:</b> 30-09-2020
Group 23:	
<b>Initial date:</b> 29-09-2020	<b>End date:</b> 30-09-2020
<b>Unit 3 (de 10): POINT GROUPS: DEDUCTION</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	7
Study and Exam Preparation [AUTÓNOMA][Self-study]	2
Group 20:	
<b>Initial date:</b> 30-09-2020	<b>End date:</b> 01-10-2020
Group 23:	
<b>Initial date:</b> 30-09-2020	<b>End date:</b> 01-10-2020
<b>Unit 4 (de 10): NETWORKS AND SPACE GROUPS</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	9
Study and Exam Preparation [AUTÓNOMA][Self-study]	10
Group 20:	
<b>Initial date:</b> 08-10-2020	<b>End date:</b> 17-10-2020
Group 23:	
<b>Initial date:</b> 08-10-2020	<b>End date:</b> 17-10-2020
<b>Unit 5 (de 10): CRYSTAL STRUCTURES AND THEIR DEFECTS</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Study and Exam Preparation [AUTÓNOMA][Self-study]	2
Progress test [PRESENCIAL][]	2
Group 20:	
<b>Initial date:</b> 17-10-2020	<b>End date:</b> 21-10-2020
Group 23:	
<b>Initial date:</b> 18-10-2020	<b>End date:</b> 21-10-2020
<b>Unit 6 (de 10): INTRODUCTION TO MINERALOGY: SYSTEMATIC MINERALOGY</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	10
Study and Exam Preparation [AUTÓNOMA][Self-study]	5
Group 20:	
<b>Initial date:</b> 22-10-2020	<b>End date:</b> 31-10-2020
Group 23:	
<b>Initial date:</b> 22-10-2020	<b>End date:</b> 31-10-2020
<b>Unit 7 (de 10): GEOLOGICAL RESOURCES: INDUSTRIAL MINERALS AND ROCKS.</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	8
Study and Exam Preparation [AUTÓNOMA][Self-study]	2
Group 20:	
<b>Initial date:</b> 02-11-2020	<b>End date:</b> 10-11-2020
Group 23:	
<b>Initial date:</b> 02-11-2020	<b>End date:</b> 10-11-2020
<b>Unit 8 (de 10): GEOLOGICAL PROCESSES: MINERALS AND ROCKS FORMATION</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	8
Study and Exam Preparation [AUTÓNOMA][Self-study]	2
Progress test [PRESENCIAL][]	3
Group 20:	
<b>Initial date:</b> 11-11-2020	<b>End date:</b> 18-11-2020
Group 23:	
<b>Initial date:</b> 11-11-2020	<b>End date:</b> 18-11-2020
<b>Unit 9 (de 10): SEMINAR 1: THE STEREOGRAPHIC PROJECTION</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (practical) [PRESENCIAL][Workshops and Seminars]	2
Study and Exam Preparation [AUTÓNOMA][Self-study]	2
Group 20:	
<b>Initial date:</b> 19-11-2020	<b>End date:</b> 23-11-2020
Group 23:	
<b>Initial date:</b> 19-11-2020	<b>End date:</b> 23-11-2020
<b>Unit 10 (de 10): SEMINAR 2: CRYSTALLOGRAPHIC SOLID PROJECTION</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (practical) [PRESENCIAL][Workshops and Seminars]	13
Study and Exam Preparation [AUTÓNOMA][Self-study]	5
Final test [PRESENCIAL][Assessment tests]	2
Group 20:	
<b>Initial date:</b> 24-11-2020	<b>End date:</b> 11-12-2020

Group 23:	
<b>Initial date:</b> 24-11-2020	<b>End date:</b> 11-12-2020
<b>Global activity</b>	
<b>Activities</b>	<b>hours</b>
Class Attendance (practical) [PRESENCIAL][Workshops and Seminars]	15
Progress test [PRESENCIAL][]	5
Final test [PRESENCIAL][Assessment tests]	2
Class Attendance (theory) [PRESENCIAL][Lectures]	55
Study and Exam Preparation [AUTÓNOMA][Self-study]	33
	<b>Total horas: 110</b>

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Bastida F.	Una visión moderna de las Ciencias de la Tierra .Vol 1				1998	
Bustillo M y Lopez Jimeno C.	Recursos Minerales	Entorno gráfico SL			1996	
Monroe Js, Wicander R y Pozo M	Geología: dinámica y evolución de la Tierra	Paraninfo			2006	
Tarbucck E y Lutgens F	Ciencias de la Tierra	Prentice Hall			2005	
Ancochea F. et al	Geología: Procesos externos	Edelvives			1993	
Castro A.	Petrografía básica	Paraninfo			1989	
Kuzwart M	Industrial minerals and rocks	Elsevier			1984	
Lopez Jimeno C	Rocas ornamentales	LOEMCO edt.			1995	
Vera JA. et al	Geología de España	Edelvives			2000	
Nesse WD	Introduction to Mineralogy	Oxfor Univ. Press			2009	
Bastida F.	Una visión moderna de las Ciencias de la Tierra .Vol 2	Rueda			2005	
Gibson W y Moreno T.	The geology of Spain	Geol. Soc. Edt.			2006	
Wicander R y Monroe JS	Fundamentos de Geología	Thomson Ed			2000	
Pozo M, González J y Giner J	Geología práctica	Pearso Ed.			2004	
Díaz Mauriño C.	Prácticas de mineralogía	Alhabra SL			1988	
Anguita F. et al	Geología: Procesos internos	Edelvives			1991	
Anguita F. et al	Origen e Historia de la Tierra	Rueda			1988	
Hurburt CS y Klein C	Manual de mineralogía de Dana	Reverte			1989	
Vazquez F.	Geología económica de los recursos minerales	Fundac, Gomez Pardo Eda.			1996	