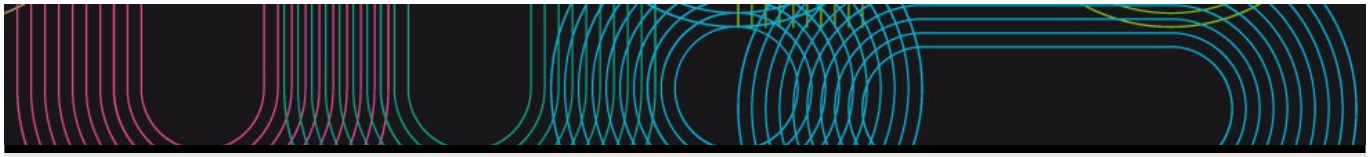

IDENTIFYING DATA				
Minerallurgy				
Subject	Minerallurgy			
Code	V09G310V01521			
Study programme	(*)Grao en Enxeñaría dos Recursos Mineiros e Enerxéticos			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	3rd	1st
Teaching language	Spanish Galician			
Department				
Coordinator	Giráldez Pérez, Eduardo			
Lecturers	Giráldez Pérez, Eduardo			
E-mail	egiraldez@uvigo.es			
Web	http://faitic.uvigo.es/			
General description	In this matter the student will purchase the necessary knowledges to pose processes of mineral resources use and the treatment of materials extracted in mining exploitations			

Competencies	
Code	
B1	(*)Capacitación científico-técnica para o exercicio da profesión de Enxeñeiro Técnico de Minas e coñecemento das funcións consultivas, análise, deseño, cálculo, proxecto, construción, mantemento, conservación e explotación.
B2	(*)Comprender os múltiples condicionamentos de carácter técnico e legal que xorden no desenvolvemento, no ámbito da enxeñaría de minas, que teñan por obxecto, de acordo cos coñecementos adquiridos segundo o previsto no parágrafo 5 da orde CIN7306 / 2009, a prospección e investigación xeolóxica-mineira, as explotacións de todo tipo de recursos xeolóxicos, incluíndo as augas subterráneas, as obras subterráneas, os almacenamentos subterráneos, as plantas de tratamento e beneficio, as plantas de enerxía, as plantas mineralúrxicas e siderúrxicas, as plantas de materiais para a construción, as plantas de carboquímica, petroquímica e gas, as plantas de tratamentos de residuos e efluentes e fábricas de explosivos e capacidade para empregar métodos contrastados e tecnoloxías acreditadas, co obxectivo de acadar unha maior eficacia dentro do respecto polo Medio Ambiente e a protección da seguridade e saúde dos traballadores e usuarios das mesmas.
B3	(*)Capacidade para deseñar, redactar e planificar proxectos parciais ou específicos das unidades definidas no parágrafo anterior, tales como instalacións mecánicas e eléctricas e o seu mantemento, redes de transmisión de enerxía, instalacións transporte e almacenamento para materiais sólidos, líquidos ou gasosos, entullarías, balsas ou encoros, sostemento e cimentación, demolición, restauración, voaduras e loxística de explosivos.
B4	(*)Capacidade para deseñar, planificar, operar, inspeccionar, asinar e dirixir proxectos, plantas ou instalacións, no seu ámbito.
B5	(*)Capacidade de realización de estudos de ordenación do territorio e dos aspectos medioambientais relacionados cos proxectos, plantas e instalacións, no seu ámbito.
B6	(*)Capacidade para o mantemento, conservación e explotación dos proxectos, plantas e instalacións, no seu ámbito.
B7	(*)Coñecemento para realizar, no ámbito da enxeñaría de minas, de acordo cos coñecementos adquiridos segundo o disposto no apartado 5 da orde CIN /306/2009, medicións, replanteos, planos e mapas, cálculos, valoracións, análise riscos, peritaxes, estudos e informes, plans de traballo, estudos de impacto ambiental e social, plans de restauración, sistema control de calidade, sistema de prevención, análise e avaliación das propiedades dos materiais metálicos, cerámicos, refractarios, sintéticos e outros materiais, caracterización de solos e macizos rochosos e outros traballos semellantes.
B8	(*)Coñecemento, comprensión e capacidade de aplicar a lexislación necesaria no exercicio da profesión de Enxeñeiro Técnico de Minas.
C38	
D1	
D2	
D3	
D4	
D5	

D6	
D7	
D8	

Learning outcomes			
Expected results from this subject	Training and Learning Results		
Comprise the basic appearances of the concentration of minerals	B1 B2 B6 B7 B8	C38	D1 D3 D4 D5 D6 D7
Know the experimental process used when it works with plants of treatment of minerals and dominate the available current technicians for the analysis of release of minerals. It will purchase like this the necessary knowledge to execute the design, operation and maintenance of plants of preparation and treatment of minerals, industrial rocks, ornamental rocks and waste.	B1 B2 B3 B4 B5 B6 B7 B8	C38	D1 D2 D3 D4 D5 D6 D7 D8
Deepen in the technicians of flotation of minerals and purchase skills on the process of analysis of gravimetric concentration. This will allow to the student propose and develop practical solutions, using the theoretical knowledges, to treat and benefit mineral resources, developing the strategies adapted the such end.	B1 B2 B3 B4 B5 B6 B7 B8	C38	D1 D2 D3 D4 D5 D6 D7 D8

Contents	
Topic	
DIDACTIC UNIT 1. Introduction to mineral processing and his technology	- Mineral substances, metallic minerals and no metallic - Methods of mineral processing - Costs of the mineral processing - Diagrams of flow - Efficiency of the operations of mineral processing: release (fragmentation) and concentration (enrichment). - Introduction to the technologies of release and enrichment: reduction of the size, classification, concentration, flotation, magnetic and electrostatic separation.
DIDACTIC UNIT 2. Crushing and mill. Reduction of size.	-Fragmentation of the solids and his purpose - Theory of wool fragmentation - energetic Laws - Types of fragmentation and stages - Fragmentation by compression: crushes of jaws, rotational crushes and cones. - Fragmentation by percussion: mills of hammers and mixed - Fragmentation by mixed processes: bars, balls and autogenous -practical Cases of circuits of calculation of balance of masses in circuits with crushers and mills.
DIDACTIC UNIT 3. Sorting. Control of size and classification	- Direct classification: sifted. Factors, performance and efficiency and teams of sifted. - Indirect classification: foundations, types of settlement, types of sorters , efficiency and performance. - Practical cases of calculation of balance of masses of circuits with screeners in dry, in humid and working with pulpes.

DIDACTIC UNIT 4. Concentration	1. Gravimetric concentration in water. - Pull buttons JIG - Tables of shakes - Spiral Humphreys - Channels of tips - Cones Reichert - Concentrators of centrifugal - Concentrator Mozley 2. Gravimetricconcentration in half dense (DMS) - Principles - Liquid of separation - Equips of gravity screening - Equips of centrifugal screening
DIDACTIC UNIT 5. Magnetic separation.	- Principles of the method - Teams of separation - Purificación - Concentration - humid Road - dry way
DIDACTIC UNIT 6. Electrostatic separation	- Principles of the method - Teams of separation - Electrodynamic or of high tension - Electrostatic - Type rotor - Type plate - Of plate - Of mesh
DIDACTIC UNIT 7: Flotation	- Principles of the method - Types - Reactive of flotation - Teams - Variable in the flotation - selective Flotation
DIDACTIC UNIT 7. The control of the mineralurgic process	- Taking of samples. Conditionings - Systems of sampling and division of the samples - Technical analytical for the control of the mineralurgic process

Planning			
	Class hours	Hours outside the classroom	Total hours
Laboratory practises	6	10	16
Outdoor study / field practices	10	5	15
Integrated methodologies	2	20	22
Troubleshooting and / or exercises	10	22	32
Master Session	19	28	47
Short answer tests	2	15	17
Systematic observation	1	0	1
*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.			

Methodologies	
	Description
Laboratory practises	Activities of application of the knowledges to concrete situations and of acquisition of basic skills and procedures related with the matter object of study. They develop in special spaces with equips of skilled (scientific laboratories-technical).
Outdoor study / field practices	Activities of application of the knowledges to concrete situations and of acquisition of basic skills and procedures related with the matter object of study. They develop in spaces no external academicians (companies of the sector).
Integrated methodologies	Education based in projects of learning: Method in which the students carry out to realisation of a project in a determinate time to resolve a problem or technical approach of the offers a previous information and guidelines to be resolved
Troubleshooting and / or exercises	Activity in which they formulate problem and/or exercises related with the matter. The student has to develop the suitable or correct solutions by means of the application of routines, formulas or algorithms and the interpretation of the results. It uses as I complement of the lecture
Master Session	Exhibition by part of the professor of the contents on the matter object of study, theoretical bases and/or guidelines of a work, exercise or project to develop by the student

Personalized attention

Methodologies	Description
Master Session	It will offer personalised attention to the student during all the course for the resolution of doubts on the theoretical classes and the problems and on the preparation of the exposed project. The tutorial class will be able to offer during the face-to-face sessions of teaching, in the dispatch of the professor (M119) and by means of platforms of educational support, like the platform (Faitic), as well as by means of email in the direction egiraldez@uvigo.es

Assessment

	Description	Qualification	Training and Learning Results
Laboratory practises	Will take into account in the evaluation of the matter to assistance to the practices of laboratory, the delivery of a bulletin of the experience and the correction of the same. The note of this methodology will be at most of 1 point on 10. The results of learning assessed will be: comprise the basic appearances of the concentration of minerals; know the experimental process used when it works with plants of treatment of minerals and dominate the available current technicians for the analysis of release of minerals	10	B1 C38 D1 B2 D2 B3 D3 B4 D4 B5 D5 B6 D6 B7 D7 B8 D8
Integrated methodologies	The student will have to deliver the result of the project proposed and expose it publicly. It will evaluate the rigour and the correction of the work written and the capacity of synthesis in the oral presentation. The work will mark at most 2 points on the 10 of the global note. The results of learning assessed will be: comprise the basic appearances of the concentration of minerals know the experimental process used when it works with plants of treatment of minerals and dominate the available current technicians for the analysis of release of minerals; deepen in the technicians of flotation of minerals and purchase skills on the process of analysis of gravimetric concentration	20	B1 C38 D1 B2 D2 B3 D3 B4 D4 B5 D5 B6 D6 B7 D7 B8 D8
Troubleshooting and / or exercises	Along the course, the student will have to resolve several bulletins of problems, that work previously in the classroom, and will have to present them and will be assessed until 1 point on the 10 of the global note. The results of learning assessed will be: comprise the basic appearances of the concentration of minerals; know the experimental process used when it works with plants of treatment of minerals and dominate the available current technicians for the analysis of release of minerals	10	B1 C38 D1 B2 D2 B3 D3 B4 D4 B5 D5 B6 D6 B7 D7 B8 D8
Short answer tests	The proof written will consist in the resolution of questions of short answer and of several problems. The punctuation of this examination on the global note is of a maximum of 5 on the global note of 10; so that the note of the examination can explain in the global evaluation, will have to surpass the 2.5 on 5. The results of learning assessed will be: comprise the basic appearances of the concentration of minerals; know the experimental process used when it works with plants of treatment of minerals and dominate the available current technicians for the analysis of release of minerals; deepen in the technicians of flotation of minerals and purchase skills on the process of analysis of gravimetric concentration	50	B1 C38 D1 B2 D2 B3 D3 B4 D4 B5 D5 B6 D6 B7 D7 B8 D8
Systematic observation	The assistance to class and the resolution of proofs type test of *autoevaluación continuous during the course (subjects to a calendar) will mark with a maximum weight of 1 point on 10 of the global note. The results of learning evaluated will be: comprise the basic appearances of the concentration of minerals; know the experimental process used when it works with plants of treatment of minerals and dominate the available current technicians for the analysis of release of minerals; deepen in the technicians of flotation of minerals and purchase skills on the process of analysis of gravimetric concentration	10	B1 C38 D1 B2 D2 B3 D3 B4 D4 B5 D5 B6 D6 B7 D7 B8 D8

Other comments on the Evaluation

The evaluation consists of *do parts:1) Examination. The punctuation of this examination on the global note is of a maximum of 5 on 10. So that the note of the examination can explain in the global evaluation, will have to be equal or upper to 2.5 on 5.2) Practical of laboratory, integrated methodologies, resolution of problems and exercises and systematic observation: these four methodologies mark in group 5 points on the global note 10. So that the note of this group of methodologies compute in the final note, has to obtain at least a 2.5 on 5 for the group of methodologies.&*nbsp;The dates of the examinations, approved in Board of SchoolThis information can verify/consult of
up to date form in the page web of the centre:http://webs.uvigo.es/etseminas/cms/index.php?id=57,0,0,1,0,0

Sources of information

Recommendations