



IDENTIFYING DATA

GIS and land management

Subject	GIS and land management			
Code	V09G310V01701			
Study programme	Degree in Mining and Energy Resources Engineering			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Mandatory	4th	1st
Teaching language	Spanish English			
Department				
Coordinator				
Lecturers	González Jorge, Higinio Martínez Sánchez, Joaquín			
E-mail				
Web	http://fatic.uvigo.es/			
General description	Geographic Information Systems			

Competencies

Code	
B1	Scientific and technical training in order to work professionally as a Technical Mining Engineer, with knowledge of the functions of consultancy, analysis, design, calculation, planning, construction, maintenance, conservation and exploitation.
B2	Understanding of the many technical and legal considerations that arise during development within the field of mining engineering, according to section 5 of Order CIN7306/2009, which have to do with geological-mineral prospecting and research, mine exploitation of all types of geological resources, including groundwaters, underground works, underground stores, treatment and smelting plants, energy plants, mineral and iron and steel plants, construction materials plants, carbon-chemical, petro-chemical and gas plants, waste and effluent treatment plants, and explosives manufacturing plants. In addition, the capacity to employ proven methods and accredited technologies in order to attain improved efficiency while respecting the Environment and protecting the health and safety of workers and users.
B3	Capacity to design, write and plan partial or specific projects for the units described in the previous section, such as mechanical and electrical installations, together with their maintenance, energy transport networks, transport and storage facilities for solid, liquid and gaseous materials, dumping sites, pools or dams, supports and foundations, demolition, restoration, blasting and explosives logistics.
B4	Capacity to design, plan, operate, inspect, sign and manage projects, plants or installations within the field.
B5	Capacity to carry out land planning studies and environmental studies related to the projects, plants and installations within the field.
B6	Capacity to maintain, conserve and exploit the projects, plants and installations within the field.
B7	Knowledge required to undertake, within the scope of mining engineering knowledge as established in section 5 of Order CIN/306/2009, measurements, layouts, plans and maps, calculations, valuations, risk analyses, expert inspections, studies and reports, work plans, environmental and social impact studies, restorations plans, quality control systems, prevention systems, evaluation analyses of the properties of metal, ceramic, refractory, synthetic and other materials, soil and solid rock characterization and other similar tasks.
B8	Knowledge, understanding and capacity to apply the legislation needed when working professionally as a Technical Mining Engineer.
C27	Ecology and land planning. Land and urban planning and management.
D1	Capacity to interrelate all the acquired knowledge and interpret it as components in a body of knowledge with a clear structure and strong internal coherence.
D3	Propose and develop practical solutions, which develop suitable strategies based on theoretical knowledge, for problem phenomena and situations that arise as everyday realities in engineering.

- D4 Encourage work based on cooperation, communication skills, organization, planning and recognition of responsibility in a multilingual and multidisciplinary working environment that fosters education in equality, peace and respect for fundamental rights.
- D5 Know what sources are available for ongoing and continual updating of all the information required to undertake their work, with access to all the current and future tools for seeking information and adapting it in the light of technological and social changes.
- D7 Capacity to organise, interpret, assimilate, create and manage all the information needed to organise their work, handling the I.T., mathematical, physical and other tools required.

Learning outcomes

Expected results from this subject	Training and Learning Results		
Relate and differentiate the distinct processes that have implications for the land.	B1 B2 B3 B4 B5 B6 B7 B8	C27	D1 D3 D4 D5 D7
Know and understand the distinct stages of the land planning process.	B1 B2 B3 B4 B5 B6 B7 B8	C27	D1 D3 D4 D5 D7
Know and apply the various planning models.	B1 B2 B3 B4 B5 B6 B7 B8	C27	D1 D3 D4 D5 D7
Be able to undertake and use cartography for optimum location of uses and activities by means of GIS.	B1 B2 B3 B4 B5 B6 B7 B8	C27	D1 D3 D4 D5 D7
Know the specific land use problems of particular special interest and mining areas.	B1 B2 B3 B4 B5 B6 B7 B8	C27	D1 D3 D4 D5 D7
Acquire a basic knowledge of land use planning norms.	B1 B2 B3 B4 B5 B6 B7 B8	C27	D1 D3 D4 D5 D7

Contents

Topic

Concept of land management. The need of the land management.

Legal and institutional frame of the land management

The land management and its relation with the environment

Land management and sustainable mining

Methods and processes of the territorial analysis.

Climatic and atmospheric factors.

Urban planning and land management

Models of planning. Evaluation of alternatives.

The Geographic Information Systems in land management.

GIS geoprocessing

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	27.5	50	77.5
Troubleshooting and / or exercises	25	47.5	72.5

*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies

	Description
Master Session	Theoretical session in class
Troubleshooting and / or exercises	Resolution of problems

Personalized attention

Methodologies	Description
Master Session	Telematic attention and tutorials
Troubleshooting and / or exercises	Telematic attention and tutorials

Assessment

	Description	Qualification	Training and Learning Results		
Master Session	Theoretical exam. Results of learning: Relate and differentiate the distinct processes that have implications for the land. Know and understand the distinct stages of the land planning process. Know and apply the various planning models. Be able to undertake and use cartography for optimum location of uses and activities by means of GIS Know the specific land use problems of particular special interest and mining areas. Acquire a basic knowledge of land use planning norms.	50	B1 B2 B3 B4 B5 B6 B7 B8	C27	D1 D3 D4 D5 D7
Troubleshooting and / or exercises	Practical exam. Results of learning: Relate and differentiate the distinct processes that have implications for the land. Know and understand the distinct stages of the land planning process. Know and apply the various planning models. Be able to undertake and use cartography for optimum location of uses and activities by means of GIS Know the specific land use problems of particular special interest and mining areas. Acquire a basic knowledge of land use planning norms.	50	B1 B2 B3 B4 B5 B6 B7 B8	C27	D1 D3 D4 D5 D7

Other comments on the Evaluation

Assessment:

Written exam that integrates theoretical and practical contents.

In the extraordinary announcement will apply the same system of evaluation that in the ordinary announcement.

Exams dates:

First period: 19/12/2017

Extra period: 25/06/2018

Final: 08/09/2017

More information:

<http://minasyenergia.uvigo.es/es/docencia/examenes>

Sources of information

Basic Bibliography

Bolstad, P., **GIS Fundamentals**, 5, Eider Press, 2008

Garrard, C., **Geoprocessing with Python**, 1, Manning, 2016

Bahgat, K., **Python Geospatial Development Essentials**, 1, Packt Publishing, 2105

Complementary Bibliography

Recommendations

Subjects that it is recommended to have taken before

Geomatics/V09G310V01401

Thematic cartography and remote sensing/V09G310V01514

Construction management and on-site layout/V09G310V01601