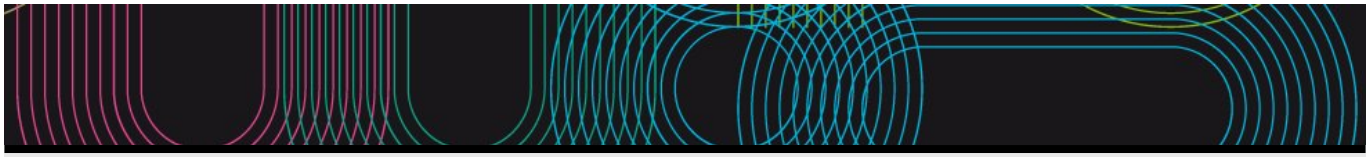

IDENTIFYING DATA

Prospecting Techniques for Surface Subsoil

Subject	Prospecting Techniques for Surface Subsoil			
Code	O02M143V03110			
Study programme	(*)Máster Universitario en Valoración, xestión e protección do patrimonio cultural			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	3	Mandatory	1st	1st
Teaching language	Spanish			
Department	Natural Resources and Environment Engineering			
Coordinator	Caparrini Marín, Natalia			
Lecturers	Caparrini Marín, Natalia Solla Carracelas, María Mercedes			
E-mail	nataliac@uvigo.es			
Web	http://cursos.faitic.uvigo.es			
General description	(*)O obxectivo da materia é que os alumnos sexan capaces de deseñar e planificar unha campaña de prospección, así como interpretar os resultados esperados.			

Competencies

Code	
A2	That students know how to apply the knowledge acquired and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study.
B2	Acquire the necessary knowledge to handle the different tools of graphic, dimensional and geospatial documentation to be applied in the documentation and valuation of Cultural Heritage.
C7	Know the basics of the most used non-destructive techniques for the sub-surface prospecting of the cultural heritage and develop the ability to determine its applicability to specific cases.
D4	To be able to integrate the diverse information and data contributed by diverse technicians and tools in the writing of conclusions of action.
D5	Be able to predict and control the evolution of complex situations through the development of new and innovative work methodologies adapted to the specific scientific / research, technological or professional field, in general multidisciplinary, in which their activity is developed.

Learning outcomes

Expected results from this subject	Training and Learning Results
Design and plan a prospecting campaign, as well as interpreting the expected results	A2 B2 C7 D4 D5

Contents

Topic

1. Introduction to the Geophysical Prospecting	1.1 Introduction 1.2 The geophysical methods 1.3 Election of the geophysical methods 1.4 Applications 1.5 Phases of a campaign geophysics 1.6 Interpretation 1.7 Estimate of Costs
2. Technical Geophysics	2.1 electrical Methods 2.2 electromagnetic Methods 2.3 magnetic Methods 2.4 Methods gravimétrics 2.5 seismic Methods
3. GPR	3.1 theoretical Foundations of the GPR 3.2 Components of the system. 3.3 Methodologies of acquisition of data in field. 3.4 Interpretation. 3.5 Applications. 3.6 current Teams. 3.7 Estimate of Costs.
4. Processed of GPR	4.1 Processed of the signal GPR. 4.2 Example of application.

Planning			
	Class hours	Hours outside the classroom	Total hours
Introductory activities	1	0	1
Previous studies	0	30	30
Case studies	4	0	4
Problem based learning	0	10	10
Autonomous practices through ICT	0	10	10
Group tutoring	1	0	1
Laboratory practice	0	9	9
Essay	0	10	10
*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.			

Methodologies	
	Description
Introductory activities	Activities directed to take contact and gather information on the students, as well as to present the subjet
Previous studies	Research, reading and work of documentation, proposals of resolution of problems and/or exercises that will realise of autonomous form by part of the students.
Case studies	Analysis of a problem or real case, with the purpose to know it, interpret it, resolve it, generate hypothesis, diagnose it and pose in alternative procedures of solution, to see the application of the theoretical concepts in the reality. They will employ as I complement to the studies and previous activities.
Problem based learning	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 tackle a task by means of the planning, design and realisation of a series of activities
Autonomous practices through ICT	Activities of application of the knowledges to concrete situations and of acquisition of basic skills and procediments related with the matter of study. It develops through the TIC of autonomous way.
Group tutoring	You interview that the student is supported by the teacher of the subject for advice/develop of activities of the subjet and of the process of learning.

Personalized attention	
Methodologies	**Description**
Introductory activities	Time devoted to attend the needs and queries of the students related with the study and/or subjects linked with the matter, providing him orientation, support and motivation in the process of learning. This activity can develop of form semi-face-to-face (through emeeting) or of form no face-to-face (through the email or of Faitc)
Case studies	Time devoted to attend the needs and queries of the students related with the study and/or subjects linked with the matter, providing him orientation, support and motivation in the process of learning. This activity can develop of form semi-face-to-face (through emeeting) or of form no face-to-face (through the email or of Faitc)

Problem based learning	Time devoted to attend the needs and queries of the students related with the study and/or subjects linked with the matter, providing him orientation, support and motivation in the process of learning. This activity can develop of form semi-face-to-face (through emeeting) or of form no face-to-face (through the email or of Faitc)
Autonomous practices through ICT	Time devoted to attend the needs and queries of the students related with the study and/or subjects linked with the matter, providing him orientation, support and motivation in the process of learning. This activity can develop of form semi-face-to-face (through emeeting) or of form no face-to-face (through the email or of Faitc)
Previous studies	Time devoted to attend the needs and queries of the students related with the study and/or subjects linked with the matter, providing him orientation, support and motivation in the process of learning. This activity can develop of form semi-face-to-face (through emeeting) or of form no face-to-face (through the email or of Faitc)
Group tutoring	Time devoted to attend the needs and queries of the students related with the study and/or subjects linked with the matter, providing him orientation, support and motivation in the process of learning. This activity can develop of form semi-face-to-face (through emeeting) or of form no face-to-face (through the email or of Faitc)

Assessment

	Description	Qualification	Training and Learning Results			
Laboratory practice	Proofs for the evaluation that include activities, problems or practical exercises to resolve. The students have to give answer to the activity posed, applying the theoretical and practical knowledges of the subjet. The results of the learning are: Design and schedule a campaign of prospecting, as well as interpret the results expected.	40		B2	C7	D4
Essay	The student presents the result obtained in the preparation of a document on the thematic of the matter, in the preparation of seminars, investigations, memories, essays, summaries of readings, conferences, etc. The results of the learning are: Design and schedule a campaign of prospecting, as well as interpret the results expected.	60	A2	B2	C7	D4 D5

Other comments on the Evaluation

The student, according to the valid rule, has two announcements of evaluation.

The first carries out during the *cuatrimestre of teaching. In the case that the weeks of teaching of the matter are not sufficient for the delivery of all the planned works, will enable the platform of teaching two additional weeks, at the end of the *cuatrimestre, to facilitate said delivery, establishing in this case a *cronograma alternative of delivery of tasks.

The second evaluation realises in the month of Julio, for which will enable again the access to the educational platform.

In the extraordinary announcement of July the criteria of evaluation will be the same.

Sources of information

Basic Bibliography

Complementary Bibliography

V. Perez-Gracia, **Evaluación GPR para aplicaciones en arqueología y en patrimonio histórico-artístico**, 2001

D. Goodman and S. Piro, **GPR Remote Sensing in Archaeology**, 2013

A.P. Annan, **Ground Penetrating Radar. Principles, Procedures & Applications**, 2003

L. B. Conyers, **Ground-penetrating radar for archaeology**, 2004

WYNN, J. C, **Archaeological prospection: An introduction to the Special Issue**, 1986

Cámara, M.E.,, **- Métodos Geofísicos aplicados en investigaciones Arqueológicas. Tesis Doctoral.**, 1989

Recommendations

Other comments

The teaching of the matter carries out using the educational platform *Moodle and, of face-to-face way, participating in the educational activities through videoconference or through tools of remote connection *sincrónica (as it Season *Connect).

To be able to receive the teaching of effective way, recommends , previously to the start of the matter, consult the manual of access to the platform and follow the technical specifications to be able to assist to the remote sessions. This information

is available in the common space of the *máster".

It is indispensable that the student access to the educational platform of the matter previously to the start of the same.