



## IDENTIFYING DATA

### Construction works, on-site layout and processes

Subject	Construction works, on-site layout and processes			
Code	V09G290V01802			
Study programme	Degree in Energy Engineering			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	4th	2nd
Teaching language	#EnglishFriendly Spanish Galician			
Department				
Coordinator	Liñares Méndez, Patricia			
Lecturers	Arias Sánchez, Pedro Garrido González, Iván Liñares Méndez, Patricia Rodríguez Somoza, Juan Luis			
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Web	<a href="http://faitic.uvigo.es/">http://faitic.uvigo.es/</a>			
General description	<p>The main objectives of this subject, highlights:</p> <ul style="list-style-type: none"> <li>- Know how the raw materials and other manufactured used in the building process, as well as, its his application.</li> <li>- Know how the methods and constructive methodologies used in the design process.</li> <li>- Know how and realice the legal rules and normative of general character that affect to the execution of the works supervised for engineers.</li> <li>- Know how the environmental impact of the building and the energetic efficiency solutions.</li> </ul> <p>English Friendly subject: International students may request from the teachers: a) materials and bibliographic references in English, b) tutoring sessions in English, c) exams and assessments in English.</p>			

## Competencies

Code	
C52	Op15 Capacity for comprehensive planning and management of works, measurements, layouts, monitoring and tracking.
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
To know how to schedule, manage and control the working execution, its economy, materials, systems and working techniques	C52

To know the different techniques to perform and calculate the measurements in engineering projects (in every technical unit)	D7
To know how to evaluate the geometrical characteristics of the ground in the study and analysis stage of a execution project	D3
To master topographic instrumentation handling for use in projects and setting outs	D1
Knowledge and use of software for topographical purposes	D5
To know the most important procedures and constructive elements	D4

## Contents

Topic	
Urbanism and land planning	<p>What is the urbanism. The origins of the land planning. The land planning in Spain. Legal aspects of the ground. Town planning.</p> <p>Consequences of the urbanization on the territory. Basic principles of the bioclimatic town planning. Analysis of the historical background. Current situation and urban pathologies. The administrative structure by means of Geographical Information Systems.</p>
Works, survey stakeout, movements of earths and management of the construction activity	<p>The project. The process of bidding. The construction companies. Planning and management of a work. Execution and control of Works, agents. Activities related with the execution of a work.</p> <p>Survey stakeout. Definition and procedure. Instrumentation. Survey stakeout of points and alignments. Planimetric &amp; altimetric methods for survey stakeout.</p> <p>Linear surveying, general considerations. Linear profiles, methods. Trasversal profiles and transversal sections. Slides. Volumetric measurements. Earth-moving.</p>
Bioclimatic architecture and environmental conditioning.	<p>The psychometry how base of environmental conditioning. The hygrothermal welfare and the inner conditions. The thermal behaviour of the material constructive.</p> <p>The building and safe energy. Design rules for winter conditions. Design rules for summer conditions. The thermal inertia.</p>
Systems and construction material	Introduction of building materials. Materials: Stone, Ceramic, Binder, Organic, Metallic. Mortar & concrete.

## Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	20	25.5	45.5
Laboratory practical	6	6	12
Practices through ICT	15	20	35
Case studies	6	18	24
Project based learning	3.5	18	21.5
Objective questions exam	2	0	2
Report of practices, practicum and external practices	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
Lecturing	The professor shows the subjects of study, theoretical bases and/or guidelines, exercise or project to develop for the students.
Laboratory practical	Application of the knowledges to real situations and acquisition of basic skills related with the subject object of study. They will be developed in real spaces with specialized equipment.
Practices through ICT	Activities of application of the knowledges to real situations, and acquisition of basic skills and related with the subject object of study. They will be developed through the ICT in the computer room.
Case studies	Analysis of a problem or real event with the aim to know it, interpreted, resolved, generate hypothesis, contrast data, reflect, and diagnosed for alternative procedures of resolution.
Project based learning	Activities to allow the cooperation of varied subjects, working in team, to open problems. They allow to train the capacities of learning, leadership, organisation, communication and strengthening of the personal relationships.

## Personalized assistance

Methodologies	Description
Laboratory practical	Activities of application of the knowledges to concrete situations and of acquisition of basic skills and relative procedures with the subject object of study. They develop in special spaces with specialized equipment. The teaching staff will be available to resolve doubts during his schedule of tutorials.
Practices through ICT	Activities of application of the knowledges to concrete situations, and of acquisition of basic skills and relative procedures with the subject object of study. They develop through the TIC in the classrooms of computing. The teaching staff will be available to resolve doubts during his schedule of tutorials.
Case studies	Analysis of a done, problem or real event with the aim to know it, interpreted, resolved, generate hypothesis, contrast data, reflect, complete knowledges, diagnosed and trained in alternative procedures of solution. The teaching staff will be available to resolve doubts during his schedule of tutorials.
Project based learning	Realization of activities that allow the cooperation of varied subjects and confront to the students, working in team, to open problems. They allow to train, go in another, the capacities of learning in cooperation, of leadership, of organisation, of communication and of strengthening of the personal relations. The teaching staff will be available to resolve doubts during his schedule of tutorials. For all teaching methodologies, the tutorial sessions may be carried out by telematic means (email, videoconference, FAITIC forums, ...) with prior agreement.

### Assessment

	Description	Qualification	Training and Learning Results
Objective questions exam	Global evaluation of the educational process and the acquisition of competitions and knowledges through proofs type test.  RESULTS OF LEARNING: Know how schedule, direct and control the materials execution, economic issues, materials and systems. Know how forms to realize and calculate the measurement of the units of work in engineering project. Know how the geometrical characteristics of a project. Handling of topographical instrumentation. Know how surveying software.	60	C52 D1 D3 D4 D5 D7
Report of practices, practicum and external practices	Memory of works realized in the computer room or field practice.  RESULTS OF LEARNING: Know how schedule, direct and control the materials execution, economic issues, materials and systems. Know how forms to realize and calculate the measurement of the units of work in engineering project. Know how the geometrical characteristics of a project. Handling of topographical instrumentation. Know how surveying software.	40	C52 D1 D3 D4 D5 D7

### Other comments on the Evaluation

The note of the subject will be the average resultant of the score achieved in the tests of objective questions, in the case of study and in the report of practices. A minimum score will be mandatory (it will indicate during the teaching period). The option of July keeps the score achieved in the report or memory of practices realized during the period of continuous evaluation. The calculation of the final score will follow the same methodological parameters that the realized in May, in relation with minimum score to achieve.

Tests schedule. Consult of form updated in the page web of the centre:<http://minaseenerxia.uvigo.es/gl/docencia/examinations>

### Sources of information

#### Basic Bibliography

Neila González, F. Javier y Acha Román, Consuelo, **Arquitectura bioclimática y construcción sostenible**, 1ª edición, DAPP, 2009

Paricio Ansuategui, Ignacio, **La construcción de la arquitectura. Volumen 2**, 3ª edición, ITEC, Institut de Tecnologia de la Construcció de, 1996

#### Complementary Bibliography

Moreno Garzón, Ignacio y Benavides López, José Antonio, **Topografía aplicada a la construcción y replanteo de obras**, 1ª edición, Colegio Oficial de Aparejadores y Arquitectos Técnicos, 1995

Mataix Sanjuán, Jesús, **Prácticas de diseño geométrico de obras lineales**, 1ª edición, Universidad de Granada, 2012

Ayuso Muñoz, Jesús y Caballero Repullo, Alfonso y Pérez García, Francisco, **Fundamentos de ingeniería de cimentaciones**, 1ª edición, Universidad de Córdoba, 2005

Schmitt, Heinrich, **Tratado de construcción**, 8ª edición, GUSTAVO GILI, 2009

Crespo Escobar, Santiago, **Materiales de construcción para edificación y obra civil**, 1ª edición, Club Universitario, 2010

Garrard, Chris, **Geoprocessing with Python**, Shelter Island, NY: Manning, cop, 2016

Paul Bolstad, **GIS fundamentals : a first text on geographic information systems**, 4ª ed., White Bear Lake (Minnesota): Eider Press, 2012

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## Recommendations

### Subjects that continue the syllabus

Final Year Dissertation/V09G290V01991

### Subjects that are recommended to be taken simultaneously

Projects/V09G290V01801

### Subjects that it is recommended to have taken before

Geomatics/V09G290V01401

Materials resistance/V09G290V01304

Environmental technology/V09G290V01402

Materials technology/V09G290V01303

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## Contingency plan

### Description

Considering the uncertain and unpredictable evolution of the health alert caused by COVID-19, the University establishes an extraordinary planning that will be activated when the administrations and the institution determine it. It is based on safety, health and responsibility, and it guarantees teaching in an online or semi-presential modalities. These already planned measures will guarantee, at the required time, the development of teaching in a more agile and effective way, because they will be known in advance by students and teachers through the standardized tool for teaching guides DOCNET.

#### 1. Semi-presential modality

Once the semi-presential teaching is required, it would mean a reduction of the capacity of the teaching spaces used in the face-to-face modality. Therefore, as the first measure of the centre, the capacity of the teaching spaces would be reformulated and informed to the teachers, in order to proceed to reorganize the formative activities for the rest of the semester. It should be noted that the reorganization will depend on the moment throughout the semester in which this semi-presential modality is activated. For the reorganization of the teaching activities, the following guidelines would be followed:

Through the FaiTIC platform, all the students will be informed about the new conditions under which the formative activities and assessment tests will be carried out at the end of the semester.

The tutorial sessions will be carried out by telematic means (email, videoconference, FAITIC forums, ...) with prior agreement.

Once some of the students have carried out experimental or computer laboratory practices in the face-to-face modality, if it is possible, the rest of the students will have the possibility to perform the same or equivalent activities in the same modality.

For the rest of the activities until the end of the semester, it should be done a proper identification of those formative activities which can be done under face-to-face modality and those which will be carried out remotely.

Regarding the potential tools to be applied for the formative activities during the online mode, CampusRemoto and the FaiTIC platform will be used.

#### 2. Online modality

In the event that the non-face-to-face teaching modality is required (suspension of all face-to-face formative and assessment activities), the tools currently available at the University of Vigo, CampusRemoto and the FaiTIC platform will be used. The reorganization will depend on the moment throughout the semester in which this online modality is activated. In the reorganization of the teaching activities, the following guidelines would be followed:

##### 2.1. Communication

Through the FaiTIC platform, all the students will be informed about the new conditions under which the formative activities and assessment tests will be carried out at the end of the semester.

## 2.2. Adaptation and / or modification of teaching methodologies

As the teaching methodologies have been conceived for the face-to-face teaching modality, the teaching methodologies that would be kept and those which would be modified or replaced in the online modality are indicated below.

The teaching methodologies that would be kept, since they can be used in face-to-face and online teaching mode

- Lecturing
- Practices through ICT
- Case studies
- Project based learning

The teaching methodologies that would be modified are the following

Laboratory practical would be replaced by interactive videos of the technological processes.

## 2.3. Adaptation of tutorial sessions and personalized attention

The tutorial sessions may be carried out by telematic means (email, videoconference, FAITIC forums, ...) with prior agreement.

## 2.4. Evaluation

Attendance to practical will be positively valued. Evaluation will be carried out by test and telematic tools offered by teachers and by the university.

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