

28704 - Geological engineering

Información del Plan Docente

Academic Year	2016/17
Academic center	175 - Escuela Universitaria Politécnica de La Almunia
Degree	423 - Bachelor's Degree in Civil Engineering
ECTS	6.0
Course	1
Period	First semester
Subject Type	Basic Education
Module	---

1. Basic info

1.1. Recommendations to take this course

In this course the most important geological aspects of application to various fields of civil engineering are presented , from an eminently basic level , so there are no specific recommendations to take this course .

1.2. Activities and key dates for the course

2. Initiation

2.1. Learning outcomes that define the subject

2.2. Introduction

3. Context and competences

3.1. Goals

3.2. Context and meaning of the subject in the degree

3.3. Competences

3.4. Importance of learning outcomes

4. Evaluation

5. Activities and resources

5.1. General methodological presentation

Strong interaction between the teacher/student. This interaction is brought into being through a division of work and responsibilities between the students and the teacher. Nevertheless, it must be taken into account that, to a certain degree, students can set their learning pace based on their own needs and availability, following the guidelines set by the teacher.

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The current subject (Engineering Geology) is conceived as a stand-alone combination of contents, yet organized into two fundamental and complementary forms, which are: the theoretical concepts of each teaching unit, and the solving of problems/resolution of questions.

5.2.Learning activities

Involves the active participation of the student, in a way that the results achieved in the learning process are developed, not taking away from those already set out, the activities are the following:

— **Face-to-face generic activities :**

1. **Theory Classes** : The theoretical concepts of the subject are explained and illustrative examples are developed as support to the theory when necessary.
2. **Practical Classes** : Problems and practical cases are carried out, complementary to the theoretical concepts studied.
3. **Individual Tutorials** : Those carried out giving individual, personalized attention with a teacher from the department. Said tutorials may be in person or online.

— **Generic non-class activities :**

1. ● Study and understanding of the theory taught in the lectures.
2. ● Understanding and assimilation of the problems and practical cases solved in the practical classes.
3. ● Preparation of seminars, solutions to proposed problems, etc.
4. ● Preparation of the written tests for continuous assessment and final exams.

5.3.Program

The theoretical contents are articulated on the basis of fifteen teaching units, which are organized into two main blocks , as detailed below:

BLOCK A: BASIC GEOLOGY

1. Introduction to Geology. Introducción a la Geología. Importance of Geology in Civil Engineering.
2. Matter and Minerals.
3. Igneous Rocks.
4. Sedimentary Rocks.
5. Metamorphic Rocks.

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6. Joints

7. Introduction to Geological Cartography

BLOCK B: APPLIED GEOLOGY

8. Introduction to Rock Mechanics. Use of rocks in Civil Engineering.

9. Surface and Ground Hydrology. Climatology

10. Introduction to Soil Mechanics

11. Introduction to Natural Risks in Civil Engineering

12. Seismic Risk.

13. Fluvial processes and Flooding Risk.

14. Slope Movements Risk.

15. Karstic Subsidence Risk.

5.4.Planning and scheduling

The subject has 6 ECTS credits, which represents 150 hours of student work in the subject during the trimester, in other words, 10 hours per week for 15 weeks of class.

A summary of a weekly timetable guide can be seen in the following table. These figures are obtained from the subject file in the Accreditation Report of the degree, taking into account the level of experimentation considered for the said subject is moderate.

Activity	Weekly school hours
Lectures	4

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Other Activities

6

Nevertheless the previous table can be shown into greater detail, taking into account the following overall distribution:

— 52 hours of lectures, with 50% theoretical demonstration and 50% solving type problems.

— 4 hours of written assessment tests, two hours per test.

— 90 hours of personal study, divided up over the 15 weeks of the 2 nd semester.

5.5. Bibliography and recommended resources

- Tarbuck, Edward J.. Ciencias de la tierra : una introducción a la geología física / Edward J. Tarbuck, Frederick K. Lutgens ; ilustrado por, Dennis Tasa; traducción AMR Traducciones científicas; revisión técnica y adaptación, Manuel Pozo Rodríguez, José Manuel González Casado . - 8ª ed. Madrid : Prentice Hall, D.L. 2005
- Strahler, Arthur N.. Geografía física / Arthur n. Strahler, Alan H. Strahler ; [trad. por Marta Barrutia y Pere Sunyer] . - 3ª ed., 4ª reimp. Barcelona : Omega, cop. 1989 (reimp. 2005)
- Blyth, Francis George Henry. Geología para ingenieros / F.G.H. Blyth, M.H. de Freitas . - 1a. ed. en español correspondiente a la 7a. en inglés México : Compañía Editorial Continental, 1989
- Ingeniería geológica / Luis I. González de Vallejo...[et al.] Madrid [etc.] : Prentice Hall, D.L. 2002
- Waltham, Tony. Foundations of engineering geology / Tony Waltham . - 2th ed., repr London [etc.] : Spon Press, 2003
- Gutiérrez Elorza, Mateo. Geomorfología climática / Mateo Gutiérrez Elorza Barcelona : Omega, 2001