### Course Description

**Geotechnics and Foundation Technology Applied to Building Engineering**

**Academic Year 2013-14**

This document may suffer changes throughout the academic year. Use it only for information and guidance. Please mind the Spanish guide version for future changes. 

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**Professor(s)**

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**Contact Details for Consultations**

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**Consultations Timetable**

Contact via e-mail to set an appointments

**Field of Study**

Bachelor Degree in Building Engineering

**Requirements and/or Recommendations (if necessary)**
SUMMARY OF CONTENTS (IN ACCORDANCE WITH THE REPORT OF DEGREE VERIFICATION)


GENERAL AND SPECIFIC COMPETENCES

Basic knowledge of soil and rock geotechnics and earth behaviour. Mechanic development and behaviour of base materials, considering its unchangeable nature and during the execution process. Ability to find failures originated by base materials or caused by lack of stability of a slope. Earth compacting, monitoring and sizing intended to be paved in urban locations. Be able to establish criteria and methods based upon features of the soil and the structure design. Analyse material’s failure that originate pathologies.

In any case, it is guaranteed that the students:
Possess knowledge and understand concepts within this field, which is subject of study from high school at secondary education level and supported by advanced textbooks.

This subject will thoroughly measure that these individuals are able to develop themselves within the boundaries of their professional field based on arguments that prove the technician’s veracity as well as their dexterity at solving problems.
Collect useful information and relevant data enough to emit judgement that shed light into the field of this work.

Ability to pass on information and solutions to specialized public and regular public

Self-starting skills to take up new teaching programmes

Based on the criteria described above, the following competences are described:

TRANSVERSE COMPETENCES (GENERAL)

As described by the norms:
Gender equality (Ley 3/2007, de 22 de marzo, para la igualdad efectiva de mujeres y hombres)
Accessible architecture and barriers elimination (Ley 51/2003, de 2 de diciembre, de igualdad de oportunidades, no discriminación y accesibilidad universal de las personas con discapacidad)
Basic principles of a Democratic Society (ley 27/2005, de 30 de noviembre, de fomento de la educación y la cultura de la paz)
The following competences are defined:

INSTRUMENTALS
Management and planning capacity
Problem-solving abilities
Decision-making
Oral and written interaction in native language
Ability to synthesize and analyse
Informatics knowledge in regard to this work field
Capability to manage information
Average understanding of a foreign language

INDIVIDUALS
Team work
Ethical commitment
Critical reasoning
Work within an international context
Work in interdisciplinary teams
Skills for interpersonal relationships  
Recognition to diversity and multiculturalism  

SYSTÉMICS  
Raise awareness towards environmental issues  
Motivation for quality assurance  
Adaptability to new situations  
Self-learning capabilities  
Initiative and self-starter attitude  
Leadership  
Knowledge of other cultures and customs  
Creativity  

OTHER TRANSVERSE COMPETENCES  
Goal-oriented  
Guidance to the client  

MAIN ACADEMIC COMPETENCES  
Ability to improvise and adaptation to new situations  
Positive vital attitude for social and technological innovations  
Ability to express, defend and present own ideas  
Communication skills aided with pictures  
Develop study and work methods  
Abilities for seeking, analyse and select information  

GOALS (EXPRESSED AS EXPECTED RESULTS OF EDUCATION)  
- Understand the prefixed nature of the soil materials underneath the building and thus, considering this as a part of our building project  
- Basic concepts of Building engineering concerning geotechnical properties of soil and rocks  
- Mechanical behaviour of soil materials during the structural build-up process  
- Ability to detect failure in soil components (site condition) and slope stability  
- Earth compacting, checking and pavement dimensioning  
- Given a type of structural design and soil, select the most appropriate construction methods and systems.  
- Analyse the pathologies derived from support material’s failure  

DETAILED LIST OF THE SUBJECT’S TOPICS
THEORETICAL UNITS:


**Topic 2.** Geotechnical report followed in accordance with *documento Básico SE-C del Código Técnico de la Edificación*: Overview, Field survey (Field methods and lab essays), contents and interpretation of the geotechnical report, final stage and acceptance/validation.


**Topic 9.** Pathologies derived from soil failure. Case study applying systems of study, analysing outcomes, causes and solutions.

PRACTICE UNITS:

**Seminaries**
- Geological and geotechnical features of the soil.
- Landslides: Examples, Causes and prevention measures.
- Building pathologies: Examples, Causes and prevention measures.
- Building foundation above complex soil: Expansive soil, Soil subjected to collapse, anthropic soil and soft soil.
- Seismic chart analysis, seismic hazards, Stabilization: Seismic modifications and displacements within Granada’s metropolitan area. Effects induced by earthquakes.
- Presentation of Studies and Research projects in reference to the topic covered by this subject.

**Laboratory practices**
- Soil identification essays
- Chemical properties of soil and the phreatic zone. Concrete exposed to moisture damage: General and specific types
- Physical and mechanic properties of rock and soil
- Establish geotechnical parameters

**Field visits**
- Visit to areas of interest regarding the geotechnical field and building construction
- Visit to partial plan where urban construction and development is under construction
- Visit to built-up areas with pathologies associated with soil failure
- Site visit: Stabilizing a land slope in suitable areas for building
**FUNDAMENTAL BIBLIOGRAPHY**

**MAIN REFERENCE GUIDE BOOKS**


**BASIC SPECIFIC BIBLIOGRAPHY:**


NORMS:


COMPLEMENTARY BIBLIOGRAPHY:

Scientific magazines:

Canadian Geotechnique
Electronic journal of geotechnical engineering
Geotechnical and geological engineering
Geotechnique
Journal of Engineering Geology
Journal of geotechnical engineering
Journal of geotechnical and geoenvironmental engineering
Bulleting of Engineering Geology and the Environment

RECOMMENDED WEBSITES