### Degree competences to which the subject contributes

**Specific:**

4067. An original exercise to be done individually and presented and defended before a university tribunal consisting in a project in the sphere of the specific mine engineering synthesising and integrating the competences acquired on the course.

**General:**

3103. Students will learn to identify, formulate and solve a range of engineering problems. They will be expected to show initiative in interpreting and solving specific civil engineering problems and to demonstrate creativity and decision-making skills. Finally, students will develop creative and systematic strategies for analysing and solving problems.

3108. Students will learn to identify and model complex systems and to identify the most suitable methods and tools for defining and solving the associated equations. They will acquire the knowledge and skills to perform qualitative analyses and approximations, estimate the uncertainty of results, formulate hypotheses and define experimental methods through which to validate them, establish compromises, identify principal components and prioritise their work. More generally, students will develop their capacity for critical thought.

3109. Students will learn to plan, design, manage and maintain systems suitable for use in civil engineering. They will develop a systematic approach to the complete life-cycle of a civil engineering infrastructure, system or service, which includes drafting and finalising project plans, identifying the basic materials and technologies required, making decisions, managing the different project activities, performing measurements, calculations and assessments, ensuring compliance with specifications, regulations and compulsory standards, evaluating the social and environmental impact of the processes and techniques used, and conducting economic analyses of human and material resources.

3114. Students will learn to identify market requirements and opportunities and to compile information from which to determine the ideal specifications of a new product, process or service. They will acquire the skills to prepare a basic business plan, define a new product, process or service, and plan and implement the different phases in the design process.

**Transversal:**

587. ENTREPRENEURSHIP AND INNOVATION - Level 3. Using knowledge and strategic skills to set up and manage projects. Devising and managing innovation in organizations.

590. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 3. Taking social, economic and environmental factors into account in the application of solutions. Undertaking projects that tie in with human development and sustainability.

593. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.
The TFG may include:
- Construction project
- Basic project
- Study or work on some aspect of engineering geology

In any case it must be an original work of the student.

If the TFG is a basic project it consists of:

1. Memory and Appendixes
2. Drawings
3. Tender Specifications (may not exist)
4. Budget (there will be at least an economic assessment)

Basic projects are considered, for example, studies of alternative routes of tunnels, economic feasibility studies, preliminary studies, etc... Its basic character makes it unnecessary to reach the detail in all documents, as in a construction project, but requires more effort on the specifics of that blueprint, as studies of alternatives.

In case of a construction project it will consist of:

1. Memory and Appendixes
2. Drawings
3. Specifications
4. Budget

In this case it is particularly interesting that the project is complete in its documents and the student has applied knowledge of various branches of the geological engineering (environmental, geology, geotechnical) showing a global view of the constructive fact.

In case of a study it must comprise at least:

* Summary
* Introduction and Objectives
* Conclusions
* References

Besides all those sections deemed necessary.

The estimated time of writing the TFG is 2 months full time.

The development of the TFG will always be guided by a supervisor from the School of Civil Engineering and/or the Faculty of Geology. That supervisor must perform a function of student guidance and advice throughout the writing process, from the time of the selection of the topic. It is also responsible for authorizing or not the presentation of the TFG in a public court. You may not submit any TFG without the express approval of the tutor. Additionally, the student may have an external supervisor, not linked to the University. In this case, the external supervisor must write a report on the student prior to the presentation of the TFG.

The TFG can be written in Catalan, English, French or Spanish. The use of other languages must be approved by the professor. The oral presentation will be held in Catalan or Spanisch, unless authorized otherwise by the commission president.
250348 - TFG - Bachelor's Thesis

Learning objectives of the subject

Students will carry out a professionally relevant final project on geological engineering technologies in which they demonstrate the skills acquired on the degree course.

Upon completion of the course, students will have acquired the ability to: Synthesise the knowledge of engineering they have gained in their final projects. Apply the knowledge they have acquired in the various subjects on the degree course to engineering problems. Relate the various branches of knowledge covered on the degree course to each other and integrate them into a coherent whole. Explain ideas and concepts in a straightforward way, relate concepts to one another and express themselves clearly and correctly. Structure and organise the content, observe the corresponding regulations on technology and include the necessary documentation to ensure the final project is as good as possible. Understand and assimilate the content studied, justify the solutions adopted in each case and defend the design proposed over other possible options.

The final project consists of an original piece of work that is carried out individually and is presented and defended before a panel of examiners. It must be a professionally relevant project on geological engineering technologies in which the student demonstrates the skills that he or she has acquired on the degree course.

The TFG has the following objectives:
- Familiarize students with the projects as a basic professional tool for engineers
- Provide students with an overview of studies, allowing integrate knowledge and develop their creativity,
- Deepening important capacities in an engineer such as decision making, the development of technical documents, work planning, drawing, writing and oral presentation, etc..

Study load

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<th>Total learning time: 300h</th>
<th>Theory classes:</th>
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<td>Practical classes:</td>
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<td>Guided activities:</td>
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Content

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<tr>
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<tbody>
<tr>
<td></td>
<td>Laboratory classes: 120h</td>
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</tbody>
</table>

Description:

TFG

Qualification system

The TFG is evaluated by its public presentation in front a panel of three university professors.
Regulations for carrying out activities

The schedule of presentations will be determined by the School

Bibliography

Basic: