

Master's Degree Dissertation

Code: 43193
ECTS Credits: 6

| Degree | Type | Year | Semester |
|--|------|------|----------|
| 4317414 Teacher Training for Secondary Schools, Vocational Training and Language Centres | OB | 0 | 2 |

Contact

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Teachers

Jordi Deulofeu Piquet
Iolanda Guevara Casanova
Genaro Gamboa Rojas

Use of Languages

Principal working language: catalan (cat)

External teachers

Albert Mallart Solaz
Joan Gómez Urgellès
Joaquim Giménez Rodríguez
Maria Rosa Massa
Mireia López Beltrán
Montserrat Alsina
Pere Grima
Salvador Casals
Sergi Muria
Vicenç Font Moll

Prerequisites

To be able to present the Final Master's Project, you must have passed the practicum module

Objectives and Contextualisation

The TFM is a final reflective work in which the student will have to show, through a public oral presentation in front of a court, that he has acquired the master's set of skills and that enable him to start his performance as a mathematics teacher in a secondary education center.

It is aimed at demonstrating transversal professional achievements, as well as the interrelationship between theoretical and practical knowledge, through the realization of an educational proposal for teaching innovation/improvement, which integrates the various contents worked on in the Master's and applied to the practicums, justified in based on research results and/or innovation and research methodologies.

The Master's Final Thesis (TFM) must allow:

(1) to carry out a transversal work of a large part of the skills provided for in the master

(2) for the student to show that he has acquired the skills of the Master's in Secondary Teacher Training of Mathematics

Competences

- Acquire strategies to encourage student effort and enhance their capacity to learn by himself and others, and develop thinking skills and decision-making to facilitate autonomy, confidence and personal initiative.
- Adopt an attitude and ethical behavior and act according to the ethical principles of the profession.
- Communicate and justify conclusions clearly and unambiguously to both specialist and non-specialist audiences.
- Communicate effectively both verbally and non-verbally.
- Continue the learning process, to a large extent autonomously.
- Design and conduct formal and informal activities that help make the center a place of participation and culture in the environment where it is located. Perform the functions of mentoring and guiding students in a collaborative and coordinated manner. Participate in the evaluation, research and innovation of teaching and learning.
- Design and develop learning spaces with special attention to equity, education and emotional values, equal rights and opportunities for men and women, civic education and respect for human rights that facilitate life in society, decision making and building a sustainable future.
- Fleshing out the math curriculum that is to implement at a school participating in the collective planning thereof. Develop and implement both group and personalized teaching methodologies adapted to the diversity of students.
- Generate innovative and competitive professional activities and research.
- Inform and advise families about the process of teaching and learning on personal, academic and professional guidance of their children.
- Integrate knowledge and use it to make judgements in complex situations, with incomplete information, while keeping in mind social and ethical responsibilities.
- Know and apply basic educational research and assessment methodologies, and design and develop research, innovation and assessment projects on mathematics teaching programmes.
- Know the processes of interaction and communication in the classroom, mastering skills and social skills necessary to promote learning and coexistence in the classroom, and address problems of discipline and conflict resolution.
- Know the rules and institutional organization of education systems and models of quality improvement with application to the schools.
- Make effective use of integrated information and communications technology.
- Plan, develop and evaluate the teaching and learning process enhancing educational processes that facilitate the acquisition of the competences of the teaching of mathematics, based on the level and previous training of students as well as the orientation of the same, both individually and in collaboration with other teachers and school professionals.
- Possess the necessary learning skills to carry out continuous training in both content and teaching of mathematics and general aspects of the teaching profession.
- Seek out, obtain, process and communicate information (oral, printed, audiovisual, digital or multimedia), transform it into knowledge and apply it in teaching and learning processes in the corresponding areas.
- Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.

- Understand and analyze the historical features of the teaching profession, its current situation, perspectives and interaction with the social reality of the time.
- Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.

Learning Outcomes

1. Communicate and justify conclusions clearly and unambiguously to both specialist and non-specialist audiences.
2. Continue the learning process, to a large extent autonomously.
3. Create an atmosphere conducive to interaction and acknowledge the contributions that pupils make to foster mathematics learning in the classroom.
4. Critically analyse one's own behaviour in educational planning and development.
5. Demonstrate knowledge and application of the regulations of the education system.
6. Demonstrate knowledge of how the family and its influence on education has evolved through history.
7. Demonstrate knowledge of innovative teaching initiatives and Implement them in the field of mathematics.
8. Demonstrate knowledge of the different types of continuing education.
9. Demonstrate knowledge of the historical progression of the education system in Catalonia and Spain.
10. Design and carry out a research and/or innovation projects in the area of mathematics teaching.
11. Design learning activities taking into account equality of rights and opportunities between men and women.
12. Gain experience in planning, teaching and assessing the subject areas that correspond to the mathematics discipline.
13. Identify the problems in mathematics teaching and learning and put forward possible alternatives and solutions.
14. Integrate knowledge and use it to make judgements in complex situations, with incomplete information, while keeping in mind social and ethical responsibilities.
15. Know and use internet resources and software to teach mathematics in secondary school.
16. Know basic methodologies and techniques in educational research and assessment and apply them to mathematics teaching.
17. Master the social skills needed to create an atmosphere conducive to learning and companionship.
18. Obtain and select print or digital information and use it to design and manage learning activities.
19. Participate in proposals for making improvements in the different areas of activity on the basis of reflection on practice.
20. Show mastery of oral and written expression in teaching.
21. Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
22. Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.

Content

The subject is made up of the following blocks of content:

- Elements of reflective analysis of one's own practice in order to identify problems in mathematics education.
- Search for bibliographical references and research results related to the identified problems and use of research techniques in mathematics education.
- Elaboration of a master's final work report that includes an innovative proposal/improvement justified based on results and/or innovation and research methodologies.

Methodology

It will be ensured that the tutor of the Practical II (PII) and the TFM are the same to guarantee continuity between the internship period and the Master's Final Thesis.

The teaching and follow-up of the Final Master's Thesis will be carried out through seminars with the tutor with

the aim of helping the students to organize their reflection between what they have experienced at the secondary school and the knowledge of the master's. The teaching staff will encourage shared reflection between the students doing internships at the same centre.

The TFM will be developed in 4 phases:

- (1) Choice of subject (preferably a justified improvement proposal for your internship period)
- (2) Preparation of work and guidance
- (3) Public defense of the Work
- (4) Evaluation

In addition to the seminar with a TFM tutor, participation in a general seminar aimed at all students in the group is contemplated.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

| Title | Hours | ECTS | Learning Outcomes |
|--|-------|------|-------------------|
| Type: Directed | | | |
| Participation in the TFM follow-up general seminar | 10 | 0.4 | |
| Type: Supervised | | | |
| Participation in the TFM follow-up seminar | 10 | 0.4 | |
| Type: Autonomous | | | |
| Written report of the TFM and oral presentation | 100 | 4 | |

Assessment

Requirements to be entitled to the final assessment will be:

Attendance at seminars with the whole group and with the tutor (a minimum of 80% of the sessions).

The delivery of the written Report of the Final Master's Thesis within the established deadlines

The oral defense of this report before a court

Assessment Activities

| Title | Weighting | Hours | ECTS | Learning Outcomes |
|--|-----------|-------|------|---|
| Oral defense of the TFM | 30% | 5 | 0.2 | 20, 12, 4, 15, 16, 3, 8, 5, 6, 9, 7, 11, 10, 17, 13, 18, 19, 22, 14, 21, 1, 2 |
| Participation in the TFM follow-up seminar | 20% | 10 | 0.4 | 20, 12, 4, 15, 16, 8, 5, 6, 9, 7, 11, 10, 13, 18, 22, 14, 21, 1 |
| Written report of the TFM | 50% | 15 | 0.6 | 20, 12, 4, 15, 16, 3, 8, 5, 6, 9, 7, 11, 10, 17, 13, 18, 19, 22, 14, 21, 1, 2 |

Bibliography

The general bibliography of this module is the one provided in all the other modules of the master's degree and, in particular, in the innovation and initiation to research module in Mathematical Education.

In addition, the following references are of interest:

Giménez, J.; Vanegas, Y.; Font, V.; Ferreres, S. (2012). El papel del trabajo final de Máster en la formación del profesorado de Matemáticas UNO. *Revista de Didáctica de las Matemáticas*, 61, 76-86.

Godino, J. D.; Neto, T. (2013). Actividades de iniciación a la investigación en educación matemática. UNO. *Revista de Didáctica de la Matemática*, 63, 69-76.

Goñi, J. M. (ed.) (2011). *MATEMÁTICAS: Investigación, innovación y buenas prácticas*, Barcelona, España, Graó.

Once the topic is selected, the tutor will provide specific references for the selected topic to each student.

Software

The TFM can be edited in word or latex. The tutor will indicate, if necessary, other software to use