

Academic Year: (2019 / 2020)

Review date: 24-05-2019

Department assigned to the subject: Department of Bioengineering and Aerospace Engineering

Coordinating teacher: MARTINEZ SANTAMARIA, LUCIA

Type: Master Final Project ECTS Credits : 12.0

Year : 1 Semester : 2

STUDENTS ARE EXPECTED TO HAVE COMPLETED

All courses in the Master. The public defense of the Master's Thesis (TFM, Trabajo Fin de Máster) will occur when the student has passed all the subjects of the master, within the period established for this purpose in the current academic calendar for postgraduate studies and according to the regulations set by the University and by the Polytechnic School (EPS).

COMPETENCES AND SKILLS THAT WILL BE ACQUIRED AND LEARNING RESULTS.**BASIC COMPETENCES**

CB6. Acquire knowledge and understanding to provide the basis to develop and/or apply original ideas, often in a research context.

CB7. Apply the acquired knowledge and the ability to solve problems in new contexts within broader (or multidisciplinary) contexts related to their field of study.

CB8. To be able to integrate the acquired knowledge and handle complexity of formulate judgments based on incomplete or limited information, including reflections on social and ethical responsibilities linked to the application of their knowledge and judgments.

CB9. To be able to communicate their conclusions and thoughts to a specialized and non-specialized audience in a clear and unambiguous manner.

CB10. Learn skills that will enable the students to continue their studies.

GENERAL COMPETENCES

CG1. Achieve a multidisciplinary scientific view, with a clear translational orientation and applied to the field of biomedical science and technology.

CG2. Demonstrate a deep theoretical and practical knowledge about both the principles and the most advanced technologies in biomedical sciences.

CG4. Ability to analyze, synthesize and apply knowledge to propose original solutions to biomedical problems.

CG5. Develop abilities to identify and understand the social needs and to provide scientific and technological solutions in the biomedical field.

CG6. Identify the keys of technology transfer in the Spanish and in the EU market, and understand the basis for the management and building of a biomedical based company.

LEARNING RESULTS

The student must be able to identify a relevant biomedical problem (from the scientific and/or technological point of view) and must be able to search for relevant information in relation to its state of the art. Using that information, students should be able to: 1) If the topic requires research, design and execute the procedures, indicating the biomedical impact of your results and design a collaborative research action or a transfer strategy to a hospital or biomedical/biotech company. 2) If the topic/product hasn't been exploited commercially, design a market-entry strategy. In addition, the student must be able to prepare a report describing the work done and must be able to present and defend the Final Master Thesis in front of a tribunal. Students will defend their Master's thesis in a public session.

DESCRIPTION OF CONTENTS: PROGRAMME

The Master's thesis (TFM) aims to carry out an individual work under the direction of an academic tutor.

The student must carry out an original research project in which she/he applies or develops the knowledge and competences acquired during the Master.

The student will write a report reflecting the work done and will defend the results obtained during the master's thesis in front of a committee

Description of contents:

- Presentation of work topics.
- Compilation and analysis of information related to the Master's Thesis.
- Development of the Master's Thesis.
- Preparation of the report and defense of the Master's Thesis.

The coordinator of the TFM is in charge of searching for project offers and communicate them to the students throughout the web of the TFM course. The students value them apply for those in which they are interested. To that end, students must send a CV and a motivation letter that are re-submitted to the responsible of those offers. A personal interview is the most common step to finally select an appropriate student for each offer.

All students are assigned a director of the TFM, and when the TFM is carried out outside UC3M, tstudents will also have an academic tutor, who is a PhD from the department of the Master. In all cases, the tutors will have the necessary qualifications to guide and follow the student¿s project, as well as to evaluate their performance. In this way, the acquisition of the stablished learning results is guaranteed.

The coordinator of the TFM encourages the communication with the students, teachers and departments and supervises the correct planning and implementation of the projects by the students including the proposal presentation, the development and the final public defense.

According to the learning results, there are two TFM modalities: a research project or an innovation project. In each case, the structure of the report is explained below:

1) Research project: the structure of the report must include an abstract, introduction, goals and hypothesis, materials and methods, results, discussion, conclusions and bibliography.

Since almost a third of the ECTS in the Master are related to economy and business, the project must have a specific section about the socio-economic aspects As an example, some of these aspects can be (*):

- Legal and social framework
- Identification of the problem, business opportunity and time to market.
- Public market size; customers, major competitors, stakeholders and target audience.
- Economic needs related to the degree of maturity of the technology, or the creation of the company, and ways to solve these needs.
- How will the entities involved be affected economically by potential savings or improved incomes?
- Viability of the commercialization of the results, and ways to do it. If it involves a topic that requires research, design a collaborative research strategy, or a transfer to a hospital or biomedical/biotechnological industry, indicating the expected biomedical impact of the results. If the technological or scientific topic is mature enough but not commercially exploited yet, design a strategy for its market launch.
- Possibility and viability of creating a company from the results
- Partners and strategic alliances

(*) Depending on the scope of the Project, different extent and combination of these examples will be required.

2) Innovation project. The structure of the report should cover all the sections that reasonably support the opportunity and viability of their creation, including at least the following points: opportunity and value proposition, state of the art, business idea (generation and viability analysis), strategic analysis and competitive advantages, marketing plan, production plan, organization plan, human resources plan, legal-fiscal plan as well as economic and financial plan. Other proposals different from the creation of a company, as for example, launching new lines or new market products, will reasonably adapt its content in the terms of the scope of each section.

LEARNING ACTIVITIES AND METHODOLOGY

FORMATION ACTIVITIES

Tutorials (10 hours)

Individual student work (350 hours)

TEACHING METHODOLOGIES

Preparation of individual or group reports

TFM specific regulations:

<http://www.uc3m.es/ss/Satellite?blobcol=urldata&blobheader=application%2Fpdf&blobheadername1=Content-Disposition&blobheadername2=Cache->

[Control&blobheadervalue1=attachment%3B+filename%3D%22NORMA_TFM_GENERAL.pdf%22&blobheadervalue2=private&blobkey=id&blobtable=MungoBlobs&blobwhere=1371547511386&ssbi](http://www.uc3m.es/ss/Satellite?blobcol=urldata&blobheader=application%2Fpdf&blobheadername1=Content-Disposition&blobheadername2=Cache-Control&blobheadervalue1=attachment%3B+filename%3D%22NORMA_TFM_GENERAL.pdf%22&blobheadervalue2=private&blobkey=id&blobtable=MungoBlobs&blobwhere=1371547511386&ssbi)

nary=true

ASSESSMENT SYSTEM

The evaluation committee will be proposed by the coordinator of the TFM and will be composed of 3 professors of the Master. Taking into account that the Master's training program combines cutting-edge biomedical technologies with management and innovation skills, at least one of the three members will be a representative of the Economy / Business area. The other members will be representatives of the Biomedical area.

The defense of Master's Thesis will be public. The members of the evaluation committee have an assessment form that includes criteria to evaluate different aspects related to both the written report and the oral defense: (http://www3.uc3m.es/reina/MATRIZ/Idioma_1/2015/287.12165.pdf).

The student will give a presentation lasting no longer than 30 minutes, after which the committee may ask the student all the questions needed for the evaluation of the work. The committee, after consulting the supervisor report if required, will proceed to the qualification, which shall inform the student after the deliberation, sending a copy of the qualification certificate to the corresponding administrative services at UC3M.

The University regulations include a grade review procedure that is carried out by the same committee.

The TFM evaluation system places special emphasis on the expected learning results.

The University uses the Turnitin Feedback Studio program within the Aula Global for the delivery of student work. This program compares the originality of the work delivered by each student with millions of electronic resources and detects those parts of the text that are copied and pasted. If the student has correctly made the appointment and the bibliographic reference of the documents he uses as a source, Turnitin will not mark it as plagiarism.

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| % end-of-term-examination: | 100 |
| % of continuous assessment (assignments, laboratory, practicals...): | 0 |

BASIC ELECTRONIC RESOURCES

- Biblioteca UC3M . Useful information for the elaboration of the Work End of Master: <http://uc3m.libguides.com/TFM>