

Master Thesis



Departamento de
**Ingeniería
Electrónica**

Universidad Politécnica de Madrid

Máster Oficial en Ingeniería
de Sistemas Electrónicos

www.die.upm.es



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1. INTRODUCTION

The Master's Thesis (hereinafter TFM) is a curricular subject over Master in Electronic Systems Engineering, managed and delivered mainly by the Department of Electronic Engineering. This course has an allocated effort of 15 ECTS.

2. PURPOSE

The TFM is a work done by the student under the supervision of a tutor, which is aimed at application by one of the knowledge acquired from experiences, talents of creativity and originality and personal skills to solve real problems, the development of ideas, models or prototypes, to technical studies, etc. In the area of Electronic Systems Engineering.

The TFM consist of a work experience serving as synthesis and culmination of their studies and allowing the student to acquire new knowledge and experience.

3. METHODS

As training activity, the student faces a problem similar to the work performed by an Electronic Systems Engineer. Specifically, the TFM can be one of three different modes:

a) Classic engineering Project. This type of Project may relate, for example, on the design and manufacture of a computer or electronic system. Usually provided documentation includes calculations, specifications, plans and budgets and, in some cases, also includes the actual execution of the project.

b) Technical reports. Studies and reports regarding equipment, systems, networks and services that include electronic systems and address any of the technical, economic, planning,

management, operation aspect in the field of electronic systems engineering. Any state of the art of a Phd Thesis is also an interesting TFM.

c) Technical Notes. Development of theoretical and experimental scientific-technical nature in order to develop an idea, a prototype model of a device or system that constitutes a contribution to the techniques of the various fields of electronics.

4. REGULATIONS

The teaching process related to the TFM is done in the following three phases:

Phase I:

4.1. TOPIC AND TUTOR SELECTION

4.1.1. Topics

The research groups, professors or research scholars take the lead in generating themes and tutors of the work. Offers will concentrate preferably in two seasons, October and February, coinciding with the beginning of each semester, and will be responsible for publishing lists of the topics offered.

4.1.2 Tutors

It may be Tutor of a TFM:

- a) A professor E.T.S.I. Telecommunication (ETSIT)
- b) A researcher UPM Master level or higher.
- c) An electronic systems engineer.

In cases (b) and (c) there must be a professor as “ponente”. It is assumed that the student recognizes the ability of the tutor to carry out its function and supports to the school. The “ponente” will be, as well, who supports all administrative actions of the tutor.

4.1.3. Selection

The TFM selection by the student can be made by any of the following:

- For the call TFM organized, groups or teachers shall determine the dates of application and adjudication of the issues.
- The request must be made by the student subjects in the Secretary of the Department, as determined by the latter.
- Direct agreements can be set tutor - student, in this case, it is not necessary to follow the previous procedure.
- The proponents decide freely among applicants, according to the criteria established. The criteria are made public.

Phase II:

4.2. PREPARATION OF WORK

In this phase, the student works under the direction of the tutor. Begin to develop a draft that must be approved by the Management Committee of Master Studies (CGEM), Department of Electronic Engineering. Then the work ends with the preparation of a document that must be submitted to the panel for evaluation.

4.2.1. Draft

The first task of the student is the development of a draft that must be done with the supervision and guidance of the tutor. The draft must contain the following points:

- 1) Name of tutor and student
- 2) Job Title
- 3) Objectives
- 4) Method and phases
- 5) Means that are intended for use
- 6) Bibliography consulted in preparing the draft.

4.2.2. Approval of the preliminary panel

- The tutor shall ensure that within a period of not more than 1 month after the beginning of the thesis, students formalize its request for preliminary approval.

- The request is formalized through the request to the President of the CGEM delivered to the secretariat of the Department of Electronic Engineering, indicating the title of the chosen topic, the name of the tutor and, where appropriate, the "ponente". In addition, a copy of the draft signed by the student and with the approval of the tutor.

- The CGEM evaluates the draft and propose three professors (and one alternate) to compose the panel.

- The tutor is a member of the panel whenever he is a professor. Otherwise, he will be replaced by the "ponente". One approach to consider is that not all members of the panel must be from the same research group. The President shall be the most senior and oldest. The secretary shall be the lower ranking and less old.

- The tutor and student of TFM may request cancellation of the commitment to the realization of a TFM draft of which has been previously authorized. Once such cancellation is requested by one part, the CGEM will take the decision, after taking into account the information provided by the other part.

4.2.3. Deadlines for the development of the work.

- Between the application date of the draft, if approved by the CGEM, and the master thesis defence should be a minimum period of three months, unless permission of the Director of the Department, with a report from the CGEM.
- The TFM must be brought within two years from the date of registration for the draft. This period will be extended by one year, prior approval of the tutor.

4.2.4 Document Content TFM

The TFM document necessarily contains the following:

First page

- Title
- Name of the student
- Name of tutor
- Name of the members of the panel
- Space reserved to indicate the date of defence
- Space for the grade

Second page

Similar to the cover.

Third page

- Summary of the work (with a less than 500 words)
- List of key words that reflect the content of the work. You must think that these keywords should be a way to locate possible by searching bibliographic work.

Full index of contents, with page number.

Glossary

List of acronyms, abbreviations, acronyms, etc.. used in the document along with their meanings.

TFM Body

The main part of the working memory with information according to the thesis type (classic project, technical notes, technical report). The document can be written in Spanish or in English.

Annexes

Further information on the work that "has a place" in the body of TFM, such as listings, information in electronic format (floppy, CD-ROM, ...).

Phase III:

4.3. EVALUATION

4.3.1. Request for examination

1) TFM defence will occur at any time within the period of semester, provided that:

(A) The tutor and, where appropriate, the "ponente", will have given their agreement in writing.

(B) The student has passed the rest of the credits of the master according to the chosen curriculum.

2) To formalize the request will require:

(A) Be enrolled in the course

(B) Placing the Secretary of the Department a copy in paper and electronic.

(C) Submit to the Secretary of the Department and tutor permission, "Ponente" where appropriate, to proceed with the TFM defence.

4.3.2. Defence and rating

- After a minimum period of 10 days from the request for examination and within 40 school days, the student will present the work. This defence will consist of an exhibition of the work, after which members of the Panel discussed with the student and formulate the questions they deem appropriate to judge the quality of the work.

- The above discussion is held in open session and the department and research groups endeavour to give adequate publicity to the call.

- In the case that the tutor is not a member of the panel, the panel can ask him about the students work, but he may not be present in the discussion for the rating.

- After the examination and after deliberation of the Panel will proceed to the work rating from 0 to 10. Between 9 and 10, the TFM can be proposed for Honour Mention. Only 5% of the TFM can be awarded with this Mention. CGEM will decide this 5% in case of having more number of proposals.

Then, in order to guide the student in writing of certain aspects of TFM document and the draft, there are a number of recommendations to consider.

Title

The title of TFM should be sufficiently explanatory contents, avoiding, at the same time unnecessarily long titles. As indications, one can observe the following:

Oversimplification

In many cases, in order to avoid a title "excessively long" tends to oversimplification, whereby the title TFM becomes no reflection of contents. Thus, for example, a title such as "monitoring system", no explanation about what aspect of the system work develops. This title could be supplemented with some words that improve the specification: "Development of a monitoring system for access control", "Economic Survey of the monitoring system about XXX model" as appropriate.

In other cases, a TFM may consist of developing a particular aspect or part of a larger project area. In this case it is advisable to employ subtitle separate global title. So, you might have titles of the form: "The monitoring system XXX. Supply circuit development

Acronyms

Sometimes, in order to avoid titles "excessively long", are commonly used acronym for simplicity (or reduce) the extension graph that conceptually TFM title. At this point you should only use abbreviations that are of "current use" in the field of electronic systems. If in doubt, you can write the acronym in parentheses preceded by its meaning.

It is also advisable not to "translate" the letters so that their meaning becomes questionable or incomprehensible (eg "MTA Networking" instead of "ATM Networks" or "DCAs panels" instead of "CCDs panels" etc..) In any case, you can check the UNE regarding the use and definition of acronyms (eg UNE 50-134).

Vocabulary

Using anglicisms

As a general rule, you should avoid the use of anglicisms in the title and in the development of TFM document. Be used provided there, the Spanish nomenclature for each term (as a source

of terminology are available to UNE on labour issues. For example, 21 Roma 302-714:1993 (UNE Electro technical vocabulary sets and switching and Signalling in Telecommunications).

Sometimes, it is unavoidable the use of certain terms in English. In that case, write the term "quotation marks" or italics to emphasize that it is a foreign term, followed, if possible, a brief description in Spanish.

For abbreviations, acronyms or other abbreviations, it may use only those that appear in the glossary (see contents of the work).

References

The references to other texts or documents must be complete including, where applicable: title, author/s, publication, issue, volume, page/s, date, etc. Examples are: rules established by the UNE 50-104.

INSTANCIA DE SOLICITUD DE TFM

Don/Doña DNI.....Correo
Electrónico.....Teléfono.....Domicilio.....
..... Código Postal.....Localidad.....Provincia.....

EXPONE: Que, reuniendo las condiciones requeridas para comenzar la elaboración del Trabajo Fin de Master, desea realizarlo con el:
Título:.....
.....

SOLICITA: Que le sea autorizado dicho Trabajo, a la vista del anteproyecto que se acompaña, y se nombre al Tribunal para juzgarlo en su día de acuerdo con esta propuesta.

CONFORME DEL TUTOR (1)

D/Doña:
Profesor/ a del Departamento
de:.....
Firma del Tutor

CONFORME DEL PONENTE (2)

D/Dña.....
Profesor/a del Departamento de.....
Firma del Ponente

Para la composición del Tribunal se propone a los siguientes profesores (3): [Un criterio a considerar es que no todos los miembros del tribunal sean del mismo grupo de investigación]

PRESIDENTE VºBº
VOCAL VºBº
SECRETARIO VºBº
SUPLENTE VºBº

Madrid, de de

(Firma del/de la solicitante)

- (1) Puede ser Tutor/a de TFM
 1. Un/a Profesor/a de la Escuela.
 2. Un/a investigador/a con venia docente en algún Departamento de la Escuela.
 3. Un/a ingeniero/a en el ejercicio de la profesiónEn los casos (b) y (c) debe existir un/a profesor/a PONENTE
- (2) Rellenar sólo si el/la Tutor/a no es Profesor/a de la Escuela.
- (3) Hay que tener en cuenta que El Presidente del Tribunal será el Profesor/a de mayor rango y antigüedad y el/la Secretario/a será el/la de menor rango y antigüedad. El/la Tutor/a no podrá formar parte del Tribunal si no es Profesor/a de la Escuela. En tal caso, será sustituido/a por el Ponente

ILMO. SR. DIRECTOR DEL DEPARTAMENTO DE INGENIERÍA ELECTRÓNICA DE LA ESCUELA
TÉCNICA SUPERIOR DE INGENIEROS DE TELECOMUNICACIÓN. UNIVERSIDAD POLITÉCNICA DE
MADRID



INSTANCIA DE LECTURA Y DEFENSA DEL TFM

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.....Teléfono..... Domicilio..... Código
Postal.....Localidad.....Provincia.....

EXPONE: Que, reuniendo todos los requisitos exigidos para proceder al examen del Trabajo Fin Master, con el título y tutor/a que se indican a continuación:

Título:

Tutor:

Ponente:

cuyo anteproyecto fue registrado con fecha: / /

(a rellenar por la Secretaría del Departamento)

y que fue aprobado por la Comisión de Gestión de Estudios de Master.

SOLICITA: le sea autorizada su lectura y defensa.

Madrid, de de

(Firma del/de la solicitante)

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TÉCNICA SUPERIOR DE INGENIEROS DE TELECOMUNICACIÓN. UNIVERSIDAD POLITÉCNICA DE
MADRID



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EXPONE:

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SOLICITA:

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ESCUELA TÉCNICA SUPERIOR DE INGENIEROS DE TELECOMUNICACIÓN

MÁSTER EN INGENIERÍA DE SISTEMAS ELECTRÓNICOS



Departamento de
**Ingeniería
Electrónica**

Universidad Politécnica de Madrid



MATHER THESIS

TITLE

NAME

Madrid, 20XX

MASTER THESIS

TITLE: XXXXX

AUTHOR: XXX

TUTOR: D. XXXX

DEPARTAMENT: Departamento de Ingeniería Electrónica (DIE)

PANEL:

D. XX

D. XX

D. XX

D. XX

SIGNATURE

DATE:

GRADE: