

# Università degli Studi di Napoli Federico II



## Dipartimento di Ingegneria Elettrica e delle Tecnologie dell'Informazione

*Classe delle Lauree Magistrali in Ingegneria Elettronica,  
Classe n. LM-29*

Corso di Laurea Magistrale in Ingegneria Elettronica

Thesis

*Title according to the official assignment*

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# Revisioni

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23-03-2020	0.1	Turco Mario	Prima versione del documento

# Parte I

## Requisiti Software

# Capitolo 1

## Modello funzionale

This chapter contains useful information for the preparation and the presentation of the master degree thesis for students of Electronic Engineering (M61), at the University of Study of Naples Federico II.

The final test for the Master Degree course in Electronic Engineering consists in the preparation and discussion of a thesis, written with the help of a supervisor (eventually with one or two co-supervisors). This work is the final result of the student career and it testifies his/her ability in exploring in deep the topics encountered during the degree course.

### 1.1 Modellazione dei casi d'uso

The supervisor is one of the professors that the candidate encountered during the degree course. Usually, the student finds its supervisor through informal talks, once provided that the professor is available and the student is interested in the professor's topics of interest. The degree course, on its website [www.ingegneria-elettronica.unina.it](http://www.ingegneria-elettronica.unina.it), has defined a page with a non-exhaustive list of available theses topics, in order to facilitate the information exchange between students and professors.

In case the thesis is developed after an intra-moenia internship, among one of the laboratories of the departement, the tutor that has already followed the student during the internship becomes the supervisor.

The supervisor defines the thesis topic. As already mentioned, the supervisor can be helped by one (or two maximum) co-supervisor. Supervisor and co-supervisor must guide and assist the student during the thesis development and also provide him all the needed methodological and practical instruments. During the thesis are usually foreseen periodical meetings of

the candidate with the supervisor, during which the ongoing work and the obtained results are discussed, also to define the future steps of the work.

## 1.2 Tabelle di Cockburn

Some theses can require part of the work to be done in a company. The degree course in Electronic Engineering promotes this kind of thesis, usually carried on as the culmination of an extra-moenia internship; in order to facilitate theses in a company, on the degree course website is also present a list of available intership available among companies in the electronic field.

*For theses in a company, the supervisor from the University is necessarily complemented by a co-supervisor from the company.*

The topic of the thesis is to identify accordingly to both the supervisor from the University and from the company, and also according to the goals of the degree course training. The co-supervisor from the company, in addition to the duties mentioned before, must also follow the activities of the student during the stay in the company, giving him/her the needed assistance. The company can ask to the student and the University supervisor to declare that some of the information and the material concerning the work is not to publish during the working period.

For the theses in company too, during the activities, are generally foreseen meetings between the candidate, the supervisor from the Univeristy and the co-supervisor from the company, during which the results and future steps are discussed.

## 1.3 Mockup

The redaction of the thesis has to be carried on by the candidate independently. A dissertation type thesis has the structure of a scientific article where it is required to derive, from the international literature, the most recent developments on the topic of interest, it is required to synthsize them, present them in an omogenous way, and finally compare the different approaches highlighting pros and cons of each of them. A sperimental type thesis has the structure of a scientific report, it faces a specific problem, typically within a more wide project of interest forthe supervisor, proposing a solution that is innovative if compared to the state of the art. A sperimental thesis also includes a validation of the proposed solution, made by means of experimental measuraments and/or numerical simulations.

## 1.4 Glossario

During the thesis discussion, the candidate has at his/her disposal **12 minutes** for the final presentation. The 12 minutes limit is imperative and the committee chairman will take care of the observance of this limit. Thus, the candidate must pay attention in synthesizing in a proper way the done work.

For the final presentation, the candidate has to use a *PowerPoint presentation*. For the time limit, the presentation must include a limited number of slides (more than 15 are not suggested!) and focus the attention on the main aspects of the thesis:

- the faced problem
- the state of the art
- the adopted methodologies
- the obtained results
- other...

highlighting, if it is the case, the personal contribution to the innovation. All the details are not essential and digressions are to avoid.

It is important that the presentaion is accurately organized and proved, and that the student expose its work in a clear way to the committee. At the end of the presentation, the committee could also ask clarifications or curiosities to the candidate.



## Capitolo 2

# Modello di Dominio

This chapter contains useful information for the preparation and the presentation of the master degree thesis for students of Electronic Engineering (M61), at the University of Study of Naples Federico II.

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### 2.1 Classi, oggetti e relazioni di analisi

The supervisor is one of the professors that the candidate encountered during the degree course. Usually, the student finds its supervisor through informal talks, once provided that the professor is available and the student is interested in the professor's topics of interest. The degree course, on its website [www.ingegneria-elettronica.unina.it](http://www.ingegneria-elettronica.unina.it), has defined a page with a non-exhaustive list of available theses topics, in order to facilitate the information exchange between students and professors.

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the candidate with the supervisor, during which the ongoing work and the obtained results are discussed, also to define the future steps of the work.

## 2.2 Diagrammi di sequenza di analisi

Some theses can require part of the work to be done in a company. The degree course in Electronic Engineering promotes this kind of thesis, usually carried on as the culmination of an extra-moenia internship; in order to facilitate theses in a company, on the degree course website is also present a list of available intership available among companies in the electronic field.

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For the theses in company too, during the activities, are generally foreseen meetings between the candidate, the supervisor from the University and the co-supervisor from the company, during which the results and future steps are discussed.

## 2.3 Diagrammi di stato di attività

The redaction of the thesis has to be carried on by the candidate independently. A dissertation type thesis has the structure of a scientific article where it is required to derive, from the international literature, the most recent developments on the topic of interest, it is required to synthesize them, present them in an omogenous way, and finally compare the different approaches highlighting pros and cons of each of them. A sperimental type thesis has the structure of a scientific report, it faces a specific problem, typically within a more wide project of interest forthe supervisor, proposing a solution that is innovative if compared to the state of the art. A sperimental thesis also includes a validation of the proposed solution, made by means of experimental measuraments and/or numerical simulations.

## 2.4 Diagrammi di attività

During the thesis discussion, the candidate has at his/her disposal **12 minutes** for the final presentation. The 12 minutes limit is imperative and the committee chairman will take care of the observance of this limit. Thus, the candidate must pay attention in synthesizing in a proper way the done work.

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highlighting, if it is the case, the personal contribution to the innovation. All the details are not essential and digressions are to avoid.

It is important that the presentation is accurately organized and proved, and that the student expose its work in a clear way to the committee. At the end of the presentation, the committee could also ask clarifications or curiosities to the candidate.

## Capitolo 3

# Impegno risorse e pianificazione dell'attività

This chapter contains useful information for the preparation and the presentation of the master degree thesis for students of Electronic Engineering (M61), at the University of Study of Naples Federico II.

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### 3.1 Diagrammi di Grant

# Parte II

## Design del sistema

# Capitolo 4

## Desgin

This chapter demonstrates a few examples of mathematical text typesetting.

### 4.1 Analisi dell'architettura

A number in the mathematical mode with decimal point:  $\pi \doteq 3.141\,592\,653\,589$ .

Test on a 5% level, 95% confidence interval.

We have  $\text{var}(X) = \text{E } X^2 - (\text{E } X)^2$ .

### 4.2 Diagramma delle classi di design

### 4.3 CRC Cards

### 4.4 Diagramma di stato di design

### 4.5 Diagramma di sequenza di design

# Parte III

## Testing del sistema

# Capitolo 5

## Testing

The inclusion of tables and figures in a scientific publication follows certain common and certain specific rules. Tables and figures are not included inside the text but placed either on dedicated pages or floated at the top or the bottom of a text page. L<sup>A</sup>T<sub>E</sub>X handles floating figures and tables automatically. Every table and figure must be numbered and accompanied with a legend. The legend should describe the contents of the table of figure with enough detail so that the reader can understand them without studying the text of the publication. Each table and figure should be referenced by its number in the text. The text should summarize the most important conclusions that can be drawn from the table of figure. The text should be easy to follow and understand even without seeing the figures and tables (and on the contrary, the figures and tables should be easy to understand even without reading the text). Figures and tables should be referenced indirectly in the sentences: instead of “*Table ?? shows that men are on average 9.9 kg heavier than women*” we write “*Men are on average 9,9 kg heavier than women (see Table ??)*”.

### 5.1 Test Plan per il System Testing

### 5.2 Codice jUnit per unit testing



# Conclusions

The conclusion of the thesis has to sum up the main considerations and results of the whole work, eventually addressing future steps to continue the work on the discussed topic.