|  |  |  |
| --- | --- | --- |
| Οπτική Ταυτότητα – Μέρος 2ο - Πανεπιστήμιο Δυτικής Αττικής | **MSc program “Biomedical Engineering and Technology”****Department of Biomedical Engineering****University of West Attica**Agiou Spyridonos, 12243 Egaleo, Athens, GreecePhone: +30 210 538 5855Email: bmet.msc@uniwa.gr |  |

**Guidelines for diploma thesis**

1. General description

The successful completion of a Diploma Thesis is a mandatory requirement for all students enrolled in the MSc Program. The Diploma Thesis constitutes an independent scientific and systematic project focused on the analysis of a specific topic. It draws upon existing literature and research while utilizing the knowledge and skills acquired throughout the student's studies.

The thesis is supervised by a designated member of the teaching staff of the MSc program (referred to as the Supervisor).

The thesis involves the following components:

a) Comprehensive review of relevant literature on the thesis topic.

b) Implementation of a theoretical, computational, or experimental approach related to the thesis subject.

c) Generation, extraction, and analysis of the results obtained from the chosen approach.

d) In-depth discussion and interpretation of the results, accompanied by a comparison with similar studies found in the existing literature.

e) Summary of the most significant findings.

Under the guidance of the supervisor, the student is encouraged to develop critical and analytical thinking abilities, as well as organizational and combinatorial skills necessary for in-depth investigation of a specialized subject of interest. The systematic and scientific approach applied throughout the thesis allows for the synthesis and practical application of knowledge gained during the student's studies, promoting scientific thinking and research. Consequently, the completion of the Diploma Thesis is considered a vital component that enables postgraduate students to demonstrate their ability to integrate and utilize acquired knowledge in both theoretical and experimental contexts, fostering scientific development.

2. Indicative types

Indicative types of Diploma Theses may be:

* Theoretical Research: This involves the development of a new theoretical model or the extension of an existing one. The model is then applied to solve specific problems.
* Development Research: This type focuses on the design and/or construction of an experimental device, protocol, approach, or method. It may also involve conducting experimental measurements, processing data, and developing computational methodologies or algorithmic schemes.
* Empirical Investigation: In this type, a specific problem is explored through data collection, processing, analysis, and documentation.
* Technological Study: This type comprehensively investigates a technological issue. It may involve detailed computational analysis or examination within the context of a research-oriented approach.
* Independent Synthesis: This type involves the independent synthesis of a particular topic. It includes a detailed presentation of fundamental concepts, current and future trends, and a documented critique.

3. Content

The content of the Diploma Thesis is tailored to the specific subject of specialization being studied. The following are the key stages for the successful completion of the thesis:

* Thoroughly analyzing and understanding the scientific background of the topic of the Diploma Thesis.
* Critical examination of the relevant literature.
* Structuring and designing a research plan.
* Technical and theoretical documentation of the solution methodology.
* Completion of the required steps by the selected approach to solving the problem.
* Analysis and interpretation of the obtained results, and formulation of corresponding conclusions.
* Public defense of the Diploma Thesis.

4. Learning outcomes

Upon successful completion of the Diploma Thesis, the student should be able to:

• Identify and acknowledge the boundaries of the problem that needs to be solved, while fully understanding its fundamental and supplementary aspects.

• Employ a critical and analytical mindset when analyzing existing literature.

• Devise a comprehensive research plan and formulate an appropriate methodology to effectively approach and investigate the chosen topic.

• Provide sound justifications for subjective opinions and arguments.

• Demonstrate proficiency in scientific writing by effectively composing a scholarly essay.

• Assess and appraise the reliability and validity of the results obtained from problem-solving efforts.

• Deliver a thorough and comprehensive presentation of the chosen topic with success.

5. Assignment of Diploma Thesis

* After consulting with the prospective supervisor, the student submits a thesis application to the Secretariat of the MSc Program for approval by the Department Assembly. The supervising professor endorses the application (the application form may be found [here](https://bmet.uniwa.gr/courses-2/3rd-semester/)).
* Before commencing the Diploma Thesis, the student, in collaboration with the supervising professor, must ensure compliance with the University of West Attica's Code of Ethics, if necessary (refer to the [website of the Research Ethics Committee of the University of West Attica](https://research-ethics-comittee.uniwa.gr/)). This compliance typically applies when using data obtained from human subjects.
* Students must be in the 3rd semester or beyond to be assigned a Diploma Thesis.
* The standard period for completion of the Diploma period is one academic semester. With the consent of the supervising professor, this period can be extended by one additional semester.
* In exceptional cases, and upon a well-reasoned student request, an extension of one additional semester may be granted for the work's completion.
* The student can request a change of topic or supervisor only once by applying to the Department Assembly.

6. Procedure for submitting an application for the Diploma Thesis examination

The Diploma Thesis is examined at the end of each semester in February/March, June/July, or September on specific dates announced on the website of the MSc Program.

The Diploma Thesis must have been audited for plagiarism under the responsibility of the supervising professor [through the special TurnitIn software](https://bme.uniwa.gr/info/antiplagiarism-turnitin/) available to the University of West Attica for detecting and recording the rate of similarity of the Diploma Thesis under investigation with the content of other sources. The results are summarized in an authenticity report stating the similarity rate. The final decision regarding the evaluation of the authenticity report is made by the supervisor. In case the authenticity and originality of the work are verified through this process, the examination procedure can be followed as analyzed below.

After consultation with the supervising professor, and if the supervising professor deems that the Diploma Thesis has sufficiently progressed, the student submits an application for the examination of the Diploma Thesis to the Secretariat of the MSc Program, up to two (2) weeks before the end of the semester’s educational activities (i.e., courses, examinations, etc.). The application must be endorsed by the supervising professor (the application form may be found [here](https://bmet.uniwa.gr/courses-2/3rd-semester/)).

The supervising professor endorses the three-member examination Committee of the Diploma Thesis. One of the members of this committee is the supervisor. Members of the Examination Committee may be members of the teaching staff of the MSc Program or researchers of other Universities or Research Centers of the same or related to the Diploma Thesis’ topic.

The student is responsible for submitting a copy of the Diploma Thesis, in electronic form, to the examination committee and the Secretariat. The student should also submit the author declaration form (the form may be found [here](https://bmet.uniwa.gr/courses-2/3rd-semester/)).

At least one (1) week before the end of the semester’s educational activities (i.e., courses, examinations, etc.), the Secretariat of the MSc Program must prepare an examination program, which should be sent to the interested students, to the supervisors and should be announced on the website of the MSc program.

7. Evaluation of Diploma Thesis

The members of the Examination Committee evaluate the Diploma Thesis presentation and pose questions to form an assessment regarding the accuracy and comprehensiveness of the approach followed and the solution provided for the problem addressed. The grade for the Diploma Thesis is determined by averaging the scores assigned by the three members of the Examination Committee. The supervising professor submits the examination report, including the scores given by the committee members, to the MSc program Secretariat.

The examination encompasses an evaluation of the deliverable of the Diploma Thesis, as well as its presentation and defense, regarding the following indicative aspects:

• Comprehension of the scientific topic investigated with a thorough review of the relevant literature.

• Organization and planning of the necessary steps for completing the Diploma Thesis.

• Contribution to scientific knowledge through the research findings of the Diploma Thesis.

• Analysis and interpretation of the results, and formulation of corresponding conclusions.

If a Diploma Thesis is deemed incomplete, it is returned to the student for further revision. In such cases, the presentation re-occurs on a date determined by the three-member Examination Committee, following consultation with the student. In such cases, the examination process is repeated as described in the aforementioned paragraphs.

Should the scientific outcomes of the Diploma Thesis be subject to patenting, the applicable Greek legislation governs the rights of the individuals holding such rights.

8. Formatting instructions

The general formatting instructions are the following:

Margins

Margins: Normal, see Fig. 1.

Paper Length

The standard length of the diploma thesis is not predefined, but is usually between 60 - 100 pages including figures, tables, and references.

Font

General text format: Calibri, regular, size 11 or 12, space between lines = single.

Equations

Equations are numbered and presented as follows:

$$A=b+c (1) $$

Figures and Tables

Figures should be numbered (Arabic style) and mentioned at the appropriate parts of the text (e.g., ‘according to Fig. 3.4’, where the first number denotes the chapter, and the second number denotes the number of the image in the particular chapter. Thus, in the example, Figure 3.4 corresponds to the 4th image of the 3rd chapter). Figures should be of high quality (at least 300 DPI), **clear**, and **readable**. Axes, if any, should be labeled. Figure legends should be presented in Calibri regular, size 11 (e.g., see Figure 3.4):



**Figure 3.4:** Page margins

Tables should be numbered (Arabic style) and mentioned at the appropriate parts of the text (e.g., ‘according to Table 4.5’), where the first number denotes the chapter, and the second number denotes the number of the Table in the particular chapter - thus, in the example, Table 4.5 corresponds to the 5th table of the 4th chapter). Table headings/titles/legends should be in CAPS, Calibri, size 11 (e.g., see TABLE 4.5):

**TABLE 4.5:** TABLE HEADING/TITLE/LEGEND

| Table Head | Table Column Head |
| --- | --- |
| Subhead | Subhead | Subhead |
| content | content | content | content |

9. General structure of the thesis

The suggested general structure of the diploma thesis is as follows (for details consult the following pages):

* Title page
* Three members Examination Committee page
* Student/author declaration page
* Abstract
* Acknowledgments
* Contents
* Introduction
* Material and Methods
* Results
* Discussion
* Conclusions
* References
* Appendixes (if any)

|  |  |  |
| --- | --- | --- |
| Οπτική Ταυτότητα – Μέρος 2ο - Πανεπιστήμιο Δυτικής Αττικής | **University of West Attica****School of Engineering****Department of Biomedical Engineering****MSc program “Biomedical Engineering and Technology”** |  |

**Diploma Thesis Title**

**NAME OF STUDENT**

**Registration Number: XXXXXXXXX**

**Supervisor**

**First Name Last Name, Affiliation**

**Athens XX (day) / XX (month) / 20XX (year)**

The Three-Member Examination Committee

|  |  |  |
| --- | --- | --- |
| SupervisorFirst Name Last NameAffiliationSignature | First Name Last NameAffiliationSignature | First Name Last NameAffiliationSignature |

**DECLARATION BY THE AUTHOR OF THE DIPLOMA THESIS**

The signatory First Name Last Name of Father and Mother Names, with registration number ………………., student of the MSc Program “Biomedical Engineering and Technology” of the University of West Attica, I declare responsibly that:

"I am the author of this Diploma Thesis and any help I had for its preparation is fully recognized and referenced. Also, any sources from which I have used data, ideas, or words, whether exact or paraphrased, are listed in their entirety, with full reference to the authors, the publisher, or the journal, including any sources that may have been used by the internet. I also certify that this work has been written exclusively by me and is a product of intellectual property of both myself and the University of West Attica.

Violation of my above academic responsibility is an essential reason for the revocation of my diploma ".

Date: **XX** (day) / **XX** (month) / **20XX** (year)

 Signature

CONTENTS

[Abstract 11](#_Toc138337062)

[Acknowledgments 12](#_Toc138337063)

[1. Introduction 14](#_Toc138337064)

[2. Methods and Material 15](#_Toc138337065)

[2.1 Material 15](#_Toc138337066)

[2.2 Methods 15](#_Toc138337067)

[3. Results 16](#_Toc138337068)

[4. Discussion 17](#_Toc138337069)

[5. Conclusions 18](#_Toc138337070)

[Appendix 1: Title of appendix 20](#_Toc138337071)

# Abstract

This is a brief section summarizing the purpose/goal of the work, the method and material used, the results obtained, the discussion/commentary of results, and the most important/indicative findings or conclusions of the work. The size of the abstract should range between 200-400 words.

***Keywords: Diploma thesis, etc…***

# Acknowledgments

Acknowledgment to those who provided support during the implementation of the Diploma Thesis (emotionally, materially, financially, etc.)

General guidelines

The Diploma Thesis is written in a formal but not rigid language. Its overall size is not predefined, but is usually between 60 and 100 pages.

Abbreviations are not used, unless they have been explained the first time they appear in the text, i.e., Master in Science (*M.Sc.*). Avoid using multiple different abbreviations.

*SI* units are used for all measurements. Decimal number accuracy is 2 digits (i.e., 90.12%), unless the subject of the diploma requires a different definition.

When composing the Thesis texts, attention should be given to the following:

1. Plagiarism - theft of intellectual property
	* All sources should be referenced
	* All texts should be composed by the author, no copy-paste is allowed.
2. Data protection and research ethics
	* If the study involves data obtained from humans, the Diploma Thesis should comply with the Code of Ethics of the University of West Attica (see the [website of the Research Ethics Committee of the University of West Attica](https://research-ethics-comittee.uniwa.gr/)).
3. Intellectual property of results. When applicable, details should be given about all parties involved, ensuring data protection when applicable:
	* Research team.
	* The University.
	* Public.
	* *Sponsors.*
	* *Participants.*
	* *Other parties that are involved with the Thesis.*

# 1. Introduction

* Thorough analysis of the scientific background of the topic of the Diploma Thesis. Definition of the topic/problem that the Thesis attempts to investigate. Why this topic/problem is important? What is the historical development of research in the field? Which are the open research questions regarding this topic/problem? Which are the open research questions that deserve more attention?
* Critical examination of the relevant literature (presentation of similar studies that have attempted to investigate the same or a similar topic).
* Purpose, goal, and objectives of the Thesis. What questions/topics the Thesis attempts to investigate? Why the topic of the Thesis is important? What is the innovation (if any) of the Thesis as compared to existing solutions presented in literature on the same topic?

# 2. Methods and Material

## 2.1 Material

* Presentation of the material used in the Thesis with examples, annotations, protocols for data generation, etc.

## 2.2 Methods

* Structure and design of the research plan,
* Presentation of all necessary technical and theoretical documentation of the solution methodology selected.

# 3. Results

* Presentation of results. Indicative, results may be presented as:
	+ Numbers, i.e., the accuracy of the prediction is 80%,
	+ Graphs/images, e.g., the ECG signal is illustrated in Figure …., the microcalcifications are illustrated in Figure …,
	+ Tables,
	+ Text.

# 4. Discussion

* Analysis and interpretation of the obtained results, and formulation of corresponding conclusions. Moreover, discussion should address the following:
	+ interpretation of results,
	+ correlation of results to the research questions raised in the Thesis,
	+ comparison of the Thesis results to the results obtained by other similar studies that either answer the same questions or similar questions,
	+ why results may differ from those of presented by other studies,
	+ advantages, disadvantages and limitations of the Thesis,
	+ contribution of the Thesis to existing knowledge,
	+ future steps, new questions that need to be investigated.

# 5. Conclusions

* Summary of the work and presentation of most important findings. References

References should be numbered and placed at the appropriate parts of the text in brackets (e.g., ‘according to the theory of quantum physics [4], …’). Depending on the type (journal paper, conference paper, book chapter, etc.), references should be presented as follows (Font type: Calibri, Font size: 10):

[1] E.S. Bishop, et al., *3-D bioprinting technologies in tissue engineering and regenerative medicine: Current and future trends*. Genes Dis, 4(4): p. 185-195, **2017**. (for citing of journal papers)

[2] L.C. Wang, and D. Shen, *Fast histogram equalization for medical image enhancement*, Annu Int Conf IEEE Eng Med Biol Soc, pp.2217-20, **2008**. (for citing of conference papers)

[3] R. Gonzalez and R. Woods, *Digital Image Processing*, 3rd ed., Pearson, pp.124-144, **2007**. (for citing of books)

[4] World Health Organization, *Schizophrenia*, pp. 1 (if any), **2022**, [link](https://www.who.int/news-room/fact-sheets/detail/schizophrenia). (for citing of electronic sources)

[5] Who (author/organization), What (*Title)*, Where (periodical, website, etc.), Year (for citing generic sources)

# Appendix 1: Title of appendix

The appendices give the reader information in addition to the Diploma Thesis and not necessary for its understanding and documentation.

They have numbering and title, as above.