

MINISTERUL EDUCAȚIEI ȘI CERCETĂRII UNIVERSITATEA OVIDIUS DIN CONSTANȚA

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FACULTY OF MATHEMATICS AND INFORMATICS

GUIDE FOR THE PREPARATION AND DEFENCE OF THE BACHELOR'S THESIS AND MASTER'S DISSERTATION

Internal document valid for the 2024–2025 academic year

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1. ORGANISATIONAL FRAMEWORK

This guide is a working document of the Faculty of Mathematics and Informatics, applicable for the academic year 2024–2025, and addresses final-year undergraduate and Master's students intending to take the Bachelor's or Dissertation examination during the current academic year. The guide will be published on the faculty's official website and distributed to students by academic supervisors and year/group tutors.

The process of selecting, developing, and presenting the Bachelor's or Master's dissertation shall follow the regulations outlined below:

- The list of topics proposed by academic staff eligible to act as supervisors will be published on the notice board of the Faculty of Mathematics and Informatics and made available online at: https://fmi.univ-ovidius.ro/academic/studii-de-licenta/licenta-documente/ and https://fmi.univ-ovidius.ro/academic/studii-de-licenta/licenta-documente/
- Students must select their dissertation topic by **31 January 2025**, under the guidance of their year or group tutors. By this date, students are required to submit a standard request form (available from the Faculty Office) indicating the title of their dissertation. This form must be signed by the student and endorsed by the academic supervisor. The centralised list of students, supervisors, and assigned topics becomes final upon its approval by the Faculty Council.

• The title of the Bachelor's or Master's dissertation, as specified in the request form signed by the candidate and approved by the supervisor, may be changed only once, subject to the supervisor's consent. The revised title must be communicated to the department through a new request submitted no later than the beginning of the second semester of the current academic year.

• The preparation and supervision of a Bachelor's or Master's dissertation require the academic supervisor to oversee the development of the work by providing suggestions, constructive feedback, and professional guidance. In turn, the student is expected to respond positively to all academic recommendations and to comply with the schedule of meetings and activities set by the supervisor, from the moment the topic is chosen until the dissertation is presented. A sample working model is available in Appendix 1 (Gantt chart of activities).

• The submission of the dissertation (together with a CD containing the application, where applicable) and registration for the Bachelor's/Master's examination shall be carried out by the student with the Secretary of the Examination Board (the Board being approved by the Faculty Council and announced on the Faculty's official website), within the timeframe and at the location or via the online platform communicated both on the website and on the Faculty noticeboards.

• At the time of registration, candidates must submit the documents specified in the Internal Methodology for the organisation of final examinations in higher education – Bachelor's and Master's examinations – within the Faculty of Mathematics and Informatics.

• Dissertations found to contain evidence of plagiarism will not be accepted !

• For Part One of the Bachelor's Examination, the list of topics shall be drawn up by the candidate in collaboration with the academic supervisor, based on the subjects studied in the curriculum relevant to the degree programme. Where possible, the topics should be aligned with the theme of the final dissertation. In other words, these topics should ideally reflect the academic groundwork that led to the final Bachelor's or Master's dissertation.

• The project presentation (which may be created using Beamer, PowerPoint, Prezi, etc.) must also be saved in PDF format to avoid the need to install additional software during the examination.

• On the day of the examination (Bachelor's or Master's), candidates are expected to dress appropriately and to conduct themselves in a manner that reflects the formality and significance of the event and its academic setting.

2. CONTENT AND STRUCTURE OF A BACHELOR'S OR MASTER'S DISSERTATION

The Bachelor's/Master's dissertation shall provide an overview of the candidate's ability to process the knowledge acquired during the years of study together with new knowledge obtained from bibliographic materials in the chosen field, in the context of solving specific problems related to the completed study programme/specialisation. The dissertation must clearly demonstrate knowledge of the field, the ability to synthesise information and to apply working techniques, the author's contribution, the ability to write, in Romanian or English, in a coherent and consistent language, the essential aspects of the addressed topic, as well as the way in which the applications were conceived, designed, and implemented (where applicable).

General Structure

The general structure of a Bachelor's/Master's dissertation is as follows:

• Cover and title page;

• *Summary/Abstract* (maximum one page) of the dissertation (in Romanian and English). Keywords must be indicated: main field, related fields (these will also be useful later when selecting the 10 questions for the Bachelor's examination). The type of dissertation must also be specified: synthesis and/or research.

- Table of contents
- List of figures
- List of tables
- *Introduction* 1.5 pages (indicative at least 1 page)
- *Main body* organised into chapters, subchapters, etc.

- Software Application Description (where applicable)
- Conclusions 1.5 pages (indicative preferably 1 page)
- Bibliography
- Appendices (optional)

Diacritics must be used throughout the dissertation, including on the cover and title page.

The cover and title page must both include the following information:

• header:

Ministry of Education and Research OVIDIUS University of Constanța Faculty of Mathematics and Informatics Specialisation: Computer Science (for example)

• centre of the page:

Bachelor's Dissertation Title of the dissertation (only on the title page)

Scientific Supervisor,

Graduate,

• centred at the bottom of the page:

Constanța 2025

The abstract of the dissertation bears the title Abstract, followed by a summarised description of the aim, objectives, and content, in both Romanian and English.

The table of contents includes the titles of chapters, sections (paragraphs), and, where applicable, subsections, with numbering and the corresponding page numbers.

The list of figures includes all figures appearing in the dissertation, with their number, caption, and the page on which each figure is found.

The list of tables includes all tables appearing in the dissertation, with their number, caption, and the page on which each table is found.

The introduction of the dissertation includes: the objectives of the dissertation, a 4–5-line sentence presenting the personal motivation for choosing the topic, a general overview of the subject and structure of the dissertation, one sentence describing/presenting each chapter,

several historical references related to the topic and known results (possibly the current state of the field), and mention of any original results and personal contributions.

The main body of the dissertation includes a detailed presentation of the topic addressed, structured into chapters, sections (paragraphs), and subsections. The following aspects must be considered:

- the logical and chronological order of presentation.
- outlining the field addressed.
- clarification of necessary concepts, previous results, working methods, historical references or bibliographic sources (citations) used.
- clear presentation of the issues addressed, and the solutions proposed.
- consistent use of terminology and notation.

• personal contributions: original results, own applications and appropriate numerical methods, comparative studies, original structuring of the dissertation, original monographic synthesis, etc.

It is recommended that definitions, mathematical statements, observations, equations, diagrams, figures, and charts referred to throughout the dissertation be numbered.

The software application is specific to dissertations in computer science but may also be related to a dissertation in applied mathematics. The software application must clearly present: the functionalities provided, the development and organisation process, how it is used, test examples, implementation details, and a minimal "help" system.

The final conclusions highlight the results presented in the dissertation, may discuss other perspectives on the topic or unresolved aspects, and suggest new directions for investigation/research.

The bibliography includes, first and foremost, the references to books, articles, internet sources, etc., that are used/cited in the dissertation.

The bibliographic entries must contain all identifying details of the works and be listed in alphabetical order, by the surname of the first author, using symbols such as: [1].

• For books, the following details must be given, in order: authors, titles, publisher, place of publication, year. For example:

[3] Ng, M.K., Iterative Methods for Toeplitz Systems, Oxford University Press, 2005.

• For articles, the reference details are authors, title of the article, journal/publication, issue/volume, year of publication, and page numbers. For example: [21] Usmani R. Inversion of a Tridiagonal Jacobi Matrix. Linear Algebra Appl. 212/213

[21] Usmani, R., Inversion of a Tridiagonal Jacobi Matrix, Linear Algebra Appl. 212/213, 1994, 413-414.

• For internet sources, the following details must be provided: authors, title of the work (where applicable), and the web address. For example:

[7] http://de.mathworks.com/matlabcentral/contest/

The bibliography of the Bachelor's/Master's dissertation must also include references to the lecture materials (in printed or electronic format) studied during the degree programme, which contributed to the development of the dissertation project. **Blog links or Wikipedia references are not accepted!**

The assessment will also consider the relevance and recency of the bibliographic references, as well as the inclusion of established works in the field.

All works listed in the bibliography must be cited in the main text, with a clear indication of the source text/image (where applicable). Special attention must be given to images protected by copyright. It is recommended that students contact the copyright holder to obtain permission to use the image.

Appendices. This section may include code excerpts (the main body of the dissertation may contain pseudocode or short code snippets not exceeding one page), an index of algorithms, or a list of keywords. The dissertation, in its entirety, **does not** represent the documentation of a software product.

There is **no strict page limit** for the dissertation; however, it is recommended that the final version be between 40 and 70 pages for bachelor's dissertations and between 40 and 60 pages for master's dissertations

The dissertation should preferably be written using the **LaTeX e**ditor. A possible template is provided with this document. (see the "Dissertation Template" folder).

Preparation of the Presentation

The dissertation presentation shall be allocated a maximum of 10 minutes, followed by up to 5 minutes of discussion with the examination panel, if applicable. Therefore, **the structure**

proposed below is indicative.

The presentation should include an average of 10–15 slides (but no more than 20), as follows:

- 1-title of the dissertation, author, supervisor
- 2- structure of the presentation
- 3-12 content of the presentation
- 13 demonstration (video/application)
- 14 conclusions / future directions
- 15 acknowledgements
- 16 selected bibliography (optional)

It is advisable to avoid slides filled with text. Sentences should be short and express clear ideas. Sound effects and complex animations (which may interfere with the timing of the speech) should be avoided. It is recommended that each slide contains a single main idea, supported by 1-5 key words (possibly/recommended also through images, formulas, or tables).

The structure of the presentation does not necessarily have to follow the structure of the written dissertation.

Presentation and Defence

The speech must be clear, concise, and fluent, allowing the candidate to stay within the allocated 10-minute time frame. Eye contact should be directed towards the audience.

Reading from notes or slides is not permitted! However, preparing a presentation outline is recommended, as it helps recall the main ideas and manage the allocated time effectively. Formulas should not be read out letter by letter but rather commented on or explained.

Within the approximate 5 minutes available, the panel will engage in an impersonal dialogue

with the candidate, focused on the topic of the presentation (a question is followed by an answer – the panel expects the candidate's response).

Evaluation Criteria

Dissertation Content: (A – 32 points)

	0	1	2	3	4
	NO	POOR	FAIR	GOOD	VERY GOOD
Relevance and currency of references					
Compliance with formatting requirements					
Balance and consistency between chapters					
Clarity and effectiveness of the demonstration					
Practical applicability					
Synthesis of information					
Originality of the solution					
Relevance of the conclusions					
Evaluation by the scientific supervisor					
Software application – functionality, usefulness, originality					

Presentation Content: (**B** – **16 points**)

	0	1	2	3	4
	NU	POOR	FAIR	GOOD	VERY GOOD
Visual clarity					
Conciseness and synthesis					
Clarity of message					
Logical structure					

Highlighting the results obtained, with clear indication of the candidate's personal contribution			
Explanation of the working method and, where applicable, comparative discussion of other methods used in the field			

Presentation Delivery: (C – 16 points)

	0	1	2	3	4
	NO	POOR	FAIR	GOOD	VERY GOOD
Time management					
Clarity of delivery					
Coherence					
Persuasiveness					

Calculation of the Final Mark

The final examination for the undergraduate or master's degree consists of one or two distinct components, each graded separately:

Part 1. (Only for the Bachelor's Examination) – Assessment of fundamental and specialised knowledge. Candidates shall choose two topics from the list of ten approved by the scientific supervisor.

Part 2. – Presentation and defence of the final dissertation.

The Chair of the Examination Board announces the results to the candidates, and the final lists are displayed on the faculty's noticeboard and on the faculty website, in accordance with the UOC Regulations on the Protection of Personal Data.

M1 – The mark obtained by the candidate for Part 1. This part is conducted orally; the assessment is graded on a scale from 1 to 10, with **5.00** being the minimum passing mark.

M2 – The mark obtained by the candidate for Part 2 (N2=(A+B+C)/32) *5)

The final mark (**FM**) is calculated as follows:

FM = (M1 + M2) / 2 (for the bachelor's Examination) FM = M2 (for the master's Examination)

To pass the final degree examination, the candidate must obtain a minimum final mark (**FM**) of **6.00.**

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	OCT N	0	DEC	AN	FEB	MAR	APR	MAI	NN	IUL	AUG	SEP
Activitatea 1 - DOCUMENTARE												
Livrabilul 1 - Motivatia lucrarii (1-5 pagini)												
1.0. Titlu												
1.1. Enuntul problemei												
1.2. Cadrul general al problemei												
1.3. Importanta problemei												
Livrabilul 2 - Starea domeniului (SOA - State of the art) -draft												
2.1. Tehnologii/metode.tehnici existente												
Livrabilul 3 - Starea domeniului (SOA - State of the art)												
2.2. Pozitia/parerea mea despre cele prezentate												
Activitatea 2 - PROIECTARE/IMPLEMENTARE - hardware & software												
Livrabilul 4 - Solutia propusa												
3. Solutia propusa												
3.1. Arhitectura software/hardware												
 Aspecte deosebite rezolvate de autor (elemente utilizate in 												
implementare)												
3.3. Concluzii												
Activitatea 3 - TESTARE												
Livrabilul 5. Prezentarea aplicatiei/demonstrarea utilizabilitatii solutiei												
 Prezentarea aplicatiei / demonstrarea utilizabilitatii solutiei 												
4.1. Cazuri de utilizare												
4.2. Studiu de utilizabilitate												
Activitatea 4 - Finalizarea lucrarii & Prezentarea												
Livrabilul 6 - Lucrarea de licenta/dizertatie												
5. Concluzii												
5.1. Ce mi-am propus												
5.2. Ce am reusit												
5.3. Ce nu a mers si de ce nu a mers												
5.4. Directii viitoare												
Livrabilul 7 - Prezentarea												
Activitatea 5 - Sustinerea examenului												

APPENDIX 1 – Gantt Chart of the Activities for Preparing the Bachelor's/Master's Examination