GUIDE TO DRAFTING THE DIPLOMA PROJECT
Navigation, hydrography and naval equipment

This guide is based on the Methodology for drafting and presenting the diploma project, approved by the Senate of the "MIRCEA CEL BATRAN" Naval Academy, no. 671_L of 28.02.2018.

I. GENERAL ISSUES

The diploma project is part of the diploma exam, a summative exam that certifies the assimilation of professional skills corresponding to the university qualification and represents an important component of the procedures for finalizing the studies of future specialists in the naval industry, thus certifying the acquisition of technical-applicative knowledge throughout the professional training, corresponding to the fundamental field to which it belongs.

By drafting the diploma project, the student proves the acquisition of analytical and synthetic thinking skills in relation to the need to solve a technical problem.

The diploma project finalizes undergraduate university studies and demonstrates the ability to analyze and synthesize information in the graduated field, the ability to make connections between related fields, the use of rational thinking and creativity.

The topics of the diploma project can have 1-2 supervisors, of which at least one must be a tenured professor of the ANMB.
To delimit the topic of the diploma project, the Project Sheet / technical memorandum (Annex no. 2) is drawn up by the project supervisor together with the graduate who chose the respective topic. The sheet is made available to the student as soon as he/she has chosen the respective topic. The sheet is approved by the coordinator of the study program and approved by the dean of the faculty. In the Project Sheet, the supervisor mentions: the chapters and subchapters necessary to cover the topic, the minimum bibliography, drawings, sketches and graphic works to be executed, the creation of computer programs, the stages of carrying out the topic, and other methodical indications.

If the diploma project also has a practical finalization, it will be accompanied by the Practical realization sheet (Annex no. 3), drawn up by the student under the guidance of the supervisor. This is also made available to the student as soon as he/she has chosen the respective topic.

The discipline "Practice for the elaboration of the diploma project" ends with a colloquium, in which the supervisor evaluates by a grade in the catalog and by a report (Annex no. 4), which contains the recommendation for the admission/non-admission of the presentation and defense of the project within the diploma exam. The supervisor's report will be attached to the diploma project.

The diploma projects (editable electronic format) will be handed over by the secretaries of the diploma examination commissions by study programs to the Center for Information Technologies for introduction into the university database necessary for the anti-plagiarism evaluation of the works.

II. REQUIREMENTS AND RECOMMENDATIONS FOR DRAFTING THE DIPLOMA PROJECT

The diploma project will comply with the following standards:

- It will be drafted on A4 size sheets;
- It will have 40-50 A4 pages (without annexes);
- The distance between the lines will be 1.5 spaces;
- The font used will be Times New Roman, 12, with 2 cm top and bottom margins, 2.5 cm left margin and 2 cm right margin, mirror;
- A 1.5 cm header will be used (with Times New Roman 10, the title of the project/title of the chapter) and a central footer which will include the pagination with Arabic numerals;

The structure of the diploma project will be as follows:

Part One (not numbered)

The cover and sub-cover (first page) will be identical and will include the graduate's name and surname, the supervisor's name and surname and the year of elaboration (Annex no. 5).
The second page will include the project topic, which will be completed on forms like the one in Annex no. 6, with the provided data and signatures.
The third and fourth pages will include the abstract in Romanian and English respectively (maximum one page each), a concise drafting of the project content (the purpose, the stage of realization in production/research, the personal solutions, and the main methods used for their finalization) and a short synthesis of the results, conclusions and recommendations (the usefulness of the project and the practical applications).

Part Two - is represented by the actual content of the project

The fifth page of the project will contain the table of contents drafted according to STAS, using decimal numbering and will be the first numbered page of the project.

The introduction must:

- Contain a maximum of 4 pages;
- Present the necessity and importance of the project topic for the studied field;
- Present the object and purpose of the project, the problems that had to be analyzed and solved in the project and the general way of solving them;
- Present the work materials and methods/models used;
- Present the new, original ideas that appear in the project content.

Chapter 1 - The current state of the topic's problematic: the technical and armament systems existing on board the ships of the Romanian Naval Forces and of other armies must:

- Present a synthesis of the theoretical documentation, the level reached in research at national and

international level and the general characteristics of the field/fields in which the research is done.
- Contain a brief description of the technical and armament systems that are the subject of the topic.
- Comprise between 5 and 8 pages.

Chapter 2 Tactical procedures for the use in combat of armament systems from the endowment of military ships, like those in the project topic must:

- Present a description of at least one tactical procedure by which the armament systems that are the subject of the topic are used in combat or at least a description of the methods and procedures for the use in combat of the ship on which the armament system is located.
- Comprise between 5 and 8 pages.

Chapter 3 - Technical variants for achieving the project topic, Choosing the optimal calculation variant must:

- Contain the technical variants for achieving the topic, as well as the argumentation for choosing the optimal variant (comparative analysis, SWOT analysis, cost/efficiency analysis, etc.)
- Comprise a maximum of 10 pages.

Chapter 4 - The calculation of the necessary parameters for the finalization of the project topic must:

- Contain the calculation algorithm, the design methodology and the related calculations, necessary to determine the parameters that lead to the finalization of the project topic.
- Comprise a maximum of 10 pages.

Chapter 5 Validation of the calculations and simulations performed with the procedures used in practice must:

- Contain simulations (made with different software packages, such as: ANSYS, LabView, Matlab, MathCad) or a description of the method by which the practical validation of the results obtained in the previous chapter was performed.
- If the project has a practical realization, this chapter will describe the steps taken to develop the prototype/technological demonstrator/experimental model/etc., as well as the contents of these stages.
- Comprise a maximum of 10 pages.

Part Three - Final Conclusions - 3 pages

Part Four - Bibliography

Part Five - Annexes

The content of the project must:
- Follow the typology and structure established in the Discipline Sheet corresponding to the study program and treat the chapters and subchapters in the order presented in the table of contents and in accordance with the Project Sheet / technical memorandum;

- End each chapter with short conclusions,
- Present the personal contribution to solving the topic,
- Describe in detail the methods and techniques used and the basic constructive solution conceived,
- Clearly show which are the borrowed elements and which are the original ones proposed by the graduate,
- Present the proposed solutions as completely as possible, with the help of schemes, sketches, relations, calculations,
- Present optimization variants and comparisons between the proposed variants,
- Present specific and comparative interpretations with similar results from the bibliography.

The conclusions must:

- Contain in a concise form the results obtained in the treated topic, with emphasis on the personal contribution.

- Highlight the novelty elements of the project,
- Make the appropriate recommendations for the results with applicability in the economic-industrial activity,

The bibliography must:

- Be recorded only once, at the end of the project,
- Include the consulted works, numbered, presented in alphabetical order according to the name of the first author.
- Include only those works that were directly used in the project, effectively contributing to the realization of the project.
- Include at least 3 references - proposed by the supervisor - from the Scientific Database to which the university community of ANMB has free access (http://www.anmb.ro/reviste). The supervisor will record the references in the project appreciation report (Annex no. 4).
- Include at least one reference to a personal work from a scientific event during the schooling period. The supervisor will record the reference in the project appreciation report (Annex no. 4).
- Be drafted according to STAS 6158-70, as follows:
    - a) books and technical monographs: author's name and surname (surname with initials); title of the book; translation of the title; edition number; place of publication; publisher; year of publication; volume number;
    - b) scientific articles: author's name and surname (surname with initials); translation of the title; title of the journal; volume and number; year of publication; pages between which the work appears;
    - c) links and websites (example): http://www.anmb.ro

The relations and figures will be numbered by chapters, in the order of their appearance and after the figure number, its content will also be specified.

It is recommended that each chapter start on a new page, keeping the distance from the top edge of the sheet to the chapter title constant.

The figures indicating the number of the relation will be included in parentheses and will be aligned vertically.

The third person will be used in the drafting of the text.

Both in the text and in the graphic part, the symbols and terminologies according to the standards in force will be used. The symbols and notations used must be uniform throughout the project.

When drafting, the relations will be written separately from the text, on a separate line, in the middle of the sheet, and the meaning of each coefficient will be indicated on separate lines, in the order in which it appears in the respective relation.

References in the text to the calculation relations in the project are made by indicating the order number of the respective relation, written in parentheses, for example: "substituting relation (14.3) in relation (16.9) gives".

The tables are placed within the project where they are mentioned and are numbered, the order number being preceded by the word "table", which is written in the upper right, above it.
When using relations, formulas, equations, tables, schemes, etc. taken from the specialized literature, the bibliographic source will be indicated by a marking in square brackets of the position of the cited publication according to the bibliographic list and the page: [16, p. 215]".