

Annex to the Final Examination
Regulations of the Faculty

DIPLOMA THESIS GUIDE

For the preparation of theses and dissertations at the end of the bachelor's and master's degree in computer engineering and business informatics at the Department of Informatics

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INTRODUCTION

The Guide is aims to define the general requirements for the preparation of diploma works and theses¹ by BSc and MSc Computer Science graduate students at the Department of Informatics, beyond the requirements of the Faculty and the Final Examination Regulations § 5 of the Department of Informatics.

In addition to students and their supervisors, the Guide is also intended to provide guidance for external supervisors who assist students in the preparation of their thesis and for the referees who grade the thesis.

The Guide does not deal with issues defined by the higher regulations of the University and the Faculty, e.g. the Study and Examination Regulations (hereinafter referred to as the "TVSZ") or the Faculty Final Examination Regulations (hereinafter referred to as the "ZVSZ"), or with the deadlines set centrally or by the Department. Students can find information on these on the University's or the Department's website and in the Neptun system.

Computer science students are required to complete a final thesis at the end of their studies at both bachelor and master level. Computer Science Engineering students may write their final thesis in one of the five departments involved in the degree programme - the Department of Automation, the Department of Physics and Chemistry, the Department of Informatics, the Department of Mathematics and Computational Sciences and the Department of Telecommunications - while business informatics students may write their final thesis only in the Department of Informatics.

The final thesis is a two-semester subject – Thesis Consultation I. (Bachelor Programme) and Thesis Consultation II. (Bachelor Programme) for BSc level and Thesis Consultation I. (Master Programme) and Thesis Consultation II. (Master Programme) for MSc level. The course may be taken in one of the above departments - the department code in the subject code refers to the place of publication – but where I. is taken, II. must also be taken.

The provisions of this Guide apply to the preparation of the final theses for the Bachelor's and Master's degree in Computer Engineering and Business Informatics to be defended at the Department of Informatics.

¹ The syllabus uses the term "thesis" for bachelor's degree programmes and "dissertation" for master's degree programmes. The term "thesis" is used throughout the remainder of this Guide.

Students who have started their studies earlier - after having selected a consultant and submitted a data sheet - must apply for a course according to the following table:

Programme	Course	Notes
Computer engineering BSc full-time	Thesis Consultation I. (Bachelor Programme) NGB_IN092_1	-
Computer engineering BSc correspondence	Thesis Consultation I. (Bachelor Programme) LGB_IN092_1	-
Business Informatics BSc full-time	Thesis Consultation I. (Bachelor Programme) NGB_IN091_1	For students starting their studies on or after 01.09.2010
Business Informatics BSc full-time	Thesis Consultation (Bachelor Programme) NGB_IN099_1 one semester course	Students starting before 01.09.2010
Business Informatics BSc correspondence	Thesis Consultation I. (Bachelor Programme) LGB_IN092_1	For students starting their studies on or after 01.09.2010
Business Informatics BSc correspondence	Thesis Consultation (Bachelor Programme) LGB_IN099_1 one semester course	Students starting before 01.09.2010
Computer engineering MSc full-time	Thesis Consultation I. (Master Programme) NGM_IN093_1	-
Computer engineering MSc correspondence	Thesis Consultation I. (Master Programme) LGM_IN093_1	-
Business Informatics MSc correspondence	Thesis Consultation I. (Master Programme) NGM_IN093_1	-

Within the subject, you should choose the course with a consultant teacher have been agreed. Upon successful completion of the semester, each student will register for the 2nd semester of the course they have started (i.e. the start of the subject code will be the same but ending in _2).

Students who have already completed a semester in any of the Thesis Consultation courses, may continue to take only the course from which they have already completed the first semester (this is necessary to ensure that the total number of credits is correct.)

1. APPLICATION AND TOPIC SELECTION IN THE DEPARTMENT OF INFORMATICS

A student who fulfils the pre-study requirements may take Thesis Consultation I. - B_in092_1 for bachelor's degree; M_in093_1 for master's degree - if he/she has a thesis assignment approved by the Department of his/her choice by the given deadline.

The rules for the assignment and selection of the topic are laid down in § 3 of the ZVSZ.

1.1 Content requirements for the topic

The aim of the diploma thesis is to demonstrate the suitability of the candidate to work as a computer scientist by completing a complex task that demonstrates the acquisition of theoretical and practical knowledge acquired during the studies, and that requires the candidate to carry out independent, creative work.

It must therefore contain a section in which the independent work can be recognized and measured.

In accordance with the professional guidelines, the following topic choices and proposals with specific formal and content features are accepted:

- Thesis of a scholarly nature.
- Development thesis.
- A thesis of a database management nature.

A thesis is a **thesis of a scholarly nature** if it deals with a specific field of information technology, science, education or a special application area, primarily from the point of view of system development, program design or programming. For this topic, the exploration, study and processing of the relevant literature is of particular importance. It should also be used as a teaching aid, demonstration and/or information material. If the topic is suitable, use multimedia presentation.

The computer engineer's thesis should contain as many programs as possible, not necessarily large ones, but ones developed by the student and meeting the above objective.

Without being exhaustive, some relevant topics:

- Analysis of the IT system of a real company, creating a development concept.
- Comparative evaluation of methodologies.
- Design and development of algorithms in computer science, or in the field of computer science or operations research.
- A sub-field or family of algorithms in computer science or operations research.
- Analysis of a program design or development system.
- Presentation of a subfield of program design, program development.
- Analysis of networks, network applications, development concepts.
- Presentation and analysis of a specific IT application.

A **development thesis** is a thesis that contains a plan or a software package for solving a well-defined IT, technical, economic or other application problem. For this topic, the system and/or program design - programming - algorithm development performance is of particular importance, both in terms of quality and quantity. For this type of work, a well-designed, well-tested, reliably functioning application or software package, detailed and accurate design and user documentation must be produced to fully address the task. In the case of a student involved in the design of a complex enterprise IT system, a presentation of the development with a clear indication of the student's own work is acceptable, provided that the independent work fits the expectations of the thesis and can be clearly presented.

A **thesis of a database management nature** is an application task in which the size, complexity and complexity of the data set to be managed is dominant, the main task is to analyze it and to choose the right set of available options database management software system to solve the problem in an efficient, economical and usability-oriented manner. Obviously, a well-designed, well-tested and reliably functioning software package that fully solves the task, as well as detailed and accurate design and user documentation that clearly supports the results, are also essential.

Of course, due to the diversity and complexity of IT applications, not all specific topics can necessarily be clearly classified into the above groups. The recommendations are indicative, and the final decision on the acceptance of specific topic proposals will be taken by the departmental consultant and the Department.

1.2 IT environment

The following main guidelines should be followed when choosing the system and software development environment to be used for the thesis:

- The resulting program must be presentable on the tools available at the university,
- The candidate should choose the most up-to-date tools available and best suited to the task,
- The user communication shall be implemented by the Candidate in a modern, commonly known and widely used graphical user interface.

In certain exceptional cases, where justified by the specific task or the expected application, the above may be waived with the agreement of the consultant, but the legitimate use of the development system must be respected.

For the preparation of the thesis, the use of development tools used in university teaching may be lawfully used without restriction. The author of the thesis is responsible for the use of all other tools.

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2. HOW TO WRITE YOUR THESIS

The thesis is written independently by the candidate with the help of the departmental and external adviser. The curriculum allows 2 semesters for the thesis. To be admitted to the final examination, the candidate must have passed the subjects related to the diploma thesis and have submitted a thesis that meets the formal and substantive requirements of the TVSZ.

2.1 Evaluation of the Diploma Planning subjects

For each of the two semesters, the student will receive a grade, which is registered in the Neptun system by the departmental adviser. The signature of both semesters is

subject to consultation with the student's advisor, which is confirmed by the student with a signed consultation form (TVSZ § 77).

In order to complete the first semester and to receive a grade, the essay must have reached at least 50% completion by the end of the study period. The formal presentation of this is the submission of a paper of approximately 20 pages, which meets the formal requirements of the thesis - 1 printed copy, bound.

The condition for the completion of the second semester is the submission of the thesis by the deadline. It depends on when the student wishes to take the final exam:

1. The deadline for the final examination is the date set by the Department - usually 1 December or 1 May.
2. If later, the deadline is the end of the study period.

In case of non-completion of the subjects related to the diploma planning, the rules of the TVSZ apply. The student may choose a new subject only in the case of an unsatisfactory grade in the course Thesis Consultation I. (Bachelor Programme) / Thesis Consultation I. (Master Programme). In this case, the student has the right to choose another department.

Completion of the subjects related to the diploma planning is assessed by the departmental adviser on the basis of the student's work. The marks awarded for the two subjects reflect the candidate's attitude and the work invested in the preparation of the thesis; there is no absolute correspondence between the mark and the mark awarded for the examination or the thesis!

2.2 Formal requirements for the essay

The essay must be submitted in electronic form. The essay must be printed on one page, the annex may be printed on two pages.

2.2.1 Structure of the essay

The order of the elements and the format of the essay are prescribed by the faculty's ZVSZ for each department.

The structure of the essay is as follows:

- Cover
- Internal title page
- Completed Data Sheet for Authorization of the Diploma Thesis
- Declaration that the essay is the student's own work²
- Abstract in Hungarian, 1 page in length
- English abstract, 1 page in length
- Table of Contents - including a separate List of Figures and List of Tables
- Contents of the thesis
- Bibliography
- Annex and Disk Attachment

The structure of the content section:

- An introduction in which the candidate justifies the choice of topic and sets out his/her objectives.
- The actual content, in which the work is presented in chapters.
- Summary - not the same as the Hungarian/English version at the beginning of the thesis abstract! - briefly summarizing the results and lessons learned from the work.

2.2.2 Scope and typographic requirements

The essay should be structured as described in 2.2.1. The scope of the essay (without annex) should be 50-70 pages!

The "contents" part of the essay is written in multi-level decimal chapter numbering, in "Times New Roman" font, with 1.5 line spacing. Paragraphs are indicated by a single indent before the paragraph. Avoid style cavalcade! The following styles may be used in the essay:

- Title - Table of Contents, List of Figures, List of Tables, Introduction, Summary, Bibliography, Annex - unnumbered!
- Chapter title - multi-level, decimal numbering
- Caption of Figure, of Picture, of Table, of Source code parts.
- normal - all other text should be done with of text, of bulleted list.

In the essay, the method of citation: bibliographic identifier of the work cited between square brackets.

² A model of the forms is attached to the ZVSZ

A description of the styles to be used is given in Chapter 3 (Styles and patterns) of the Guide.

Figures, images, tables, source codes should always be numbered consecutively and given a textual name (caption style). Figures should be numbered consecutively between round brackets, no textual name is required. Source code/program excerpts should be in a text box and in 10pt 'Consolas' font with syntax highlighting. E.g:

```
//puts numbers to the end of the list
List *listToTheEnd(List *start, int data) {
    List *moving, *new; new = new List;
    new->data = data;    new->next = NULL;
    if (start == NULL) //empty list?
        return new;
    for(movin = start; start->next!=NULL; next=movin->next)
        ; // empty loop, finds the last element
    movin->next = new;
    return start;
}
```

In the essay, references - literature, figures, formulas, etc. – must be created by "cross-reference" function.

2.3 Deadlines for submission

For Thesis Consultation I. (Bachelor Programme) and Thesis Consultation I. (Master Programme), the deadline for the presentation of the semester's results is the last day of the examination period.

The deadline for submission of the Thesis /Dissertation is announced on the website each year.

If the student wishes to take the final examination in a later final examination period, the deadline for submission of the thesis is the last day of the examination period corresponding to the semester of the completion of the Thesis Consultation II. (Bachelor Programme) / Thesis Consultation II. subjects.

2.4 Evaluation of the thesis

The completed and submitted thesis will be evaluated by the Department according to the regulations of the TVSZ and ZVSZ. The referee must be a senior professional or university lecturer with expertise in the subject - see. ZVSZ § 6. The head of the

department appoints and invites the referee on the basis of a proposal from the departmental adviser. (In the case of theses related to a company, it is recommended to ask the company to delegate the referee.)

The referee will evaluate the thesis on the basis of the criteria given in Annex 4 of the Code of Conduct, both in text and in marks. In addition to making his/her comments, the referee may also ask the Candidate questions, which the Candidate will answer in the final examination.

In addition to the independent referee, the Departmental Adviser will also mark the essay.

3. STYLES AND PATTERNS

The structure of the essay and the rules for its presentation are set out in the Annex to the ZVSZ. The following are the attributes that the ZVSZ refers to the scope of the department's guide.

3.1 Description of the styles used in the essay

3.1.1 Layout

A4 size, standard page size (3 cm left margin, 2.54 cm bottom, top and side margins). Page numbering centered in the footer, title of the paper and author's name in the header. Header should be in the standard essay font, 10 pt. Separate the header with a ½ pt full-width continuous underline.

3.1.2 Normal heading

The basic style of the essay.

12 pt, regular "Times New Roman" font, 1.5 line spacing, with paragraph indentation. Important highlights are in bold or italics. Alignment: justified.

3.1.3 Title

Used to indicate unnumbered titles that appear in the Table of Contents - table of contents, list of figures and tables, abstract, introduction, summary, bibliography, annexes.

16pt, upper case, bold "Times New Roman" font. Starting on a new page, then 24 pt spacing.

3.1.4 Headings

To indicate the chapters of the essay. Multi-level, decimal numbering is used.

Level 1: The style of level 1 is otherwise as described in 3.1.3.

Level 2: Consecutive, 24 pt before, 18 pt after. 16 pt font size, bold, first letter of title in upper case.

Level 3: Consecutive, 18pt before, 12 pt after. 14 pt font size, bold, first letter of title in upper case.

Level 4: Consecutive, 12pt before, 6 pt after. 14 pt font size, normal, first letter of title in upper case.

If the use of additional levels is justified, it is up to the candidate to develop them, taking into account the above logic.

3.1.5 Objects

All objects must be provided with a "caption". Use a sequential numbering starting from 1 per type, the name of the type (figure, picture, table, program, etc.) and a short, typical object name.

The style of the 'caption': center-aligned, in bold 'Times New Roman', preceded by a 6pt line and followed by a 18pt line.

For figures and figures and figures and figures, the "caption" should be placed below the object, for tables and code parts, above the object.

3.1.6 Listing

Lists indicated by symbols or numbering should use the "normal" style! They may be single or multi-level, but use the same indentation and symbol at the same level throughout the essay!

3.2 Name and level of the course

On the title page of the essay, under the name

- a) BSc in Computer Engineering
- b) MSc in Computer Engineering
- c) BSc in Business Informatics
- d) MSc in Business Informatics

3.3 Name of the Department

On the inside front page, under the name of the University and the Faculty:

DEPARTMENT OF INFORMATICS

Department of Computer Science logo - placed on the inside front cover, top right.

