RIGA TECHNICAL UNIVERSITY

Faculty of Electronics and Telecommunications

INSTITUTE OF TELECOMMUNICATIONS

Bachelor's Study Program "Telecommunications"

Guidelines for Writing a Bachelor's Thesis

Approved Telecommunication Institute

at a Board meeting

Riga, 202_

Contents

1. GENERAL INSTRUCTIONS

Bachelor thesis is an analytical and / or experimental research with science elements of the study program "Telecommunications" sector for the student's individual topic. The requirements of Bachelors thesis formatting are meant for the study program "Telecommunications" Bachelor's students, Scientific advisors and Consultants.

Bachelor thesis consultant needs engineering master's degree in Telecommunications. Bachelor thesis scientific advisor need Doctor degree of Engineering.

2. BACHELOR'S THESIS GOAL

Bachelor thesis (as a graduation paper) is designed so that student can demonstrate:

• skills to collect, systematize and analyze information about the process in the telecommunications sector, using scientific methods and methodologies;

• ability to conceptually use both theoretical knowledge in acquired engineering categories, and previously defended term papers to promote, develop and verify student's theoretical ideas,

• skills to analyze telecommunication's theoretical problems and predict their possible solutions;

• ability to make theoretical judgments and to prove them;

• with control of scientific advisor carry out a research project.

3. BACHELOR'S THESIS DEVELOPMENT

Development and control timescale of Bachelor's thesis is made and accepted for each academic year separately in accordance with the study plan.

3.1. Bachelor's thesis structure

Bachelor 's thesis should be submitted for review and defense in two copies:

□ In printed form;

□ Electronic version on ortus.

Format:

□ Paper format: A4;

□ Page: one sided;

□ Font type: Times New Roman;
□ Font size: 12;

□ Intervals between lines: 1,5 line;

□ Margins: top - 2 cm; bottom - 2 cm; left - 3 cm; right - 1,5 cm.

All printed copies of bachelor's thesis need to bound in hardcover. Optimal bachelor's thesis consists of 60-80 thousand characters in printed form (without attachments). Deadline of bachelor's thesis submission is determined by Institute of Telecommunications in agreement with the chairman of bachelor's examination commission (BEC).

Bachelor's thesis structure is following (sequence is crucial):

1. Title page: formatting example (see Appendix 1);

2. Evaluation page: acknowledgment of bachelor thesis author, scientific advisor and consultant (if such exists), study programs Director conclusions, reviewer conclusion and conclusion of final commission;

3. Annotation: short annotation in English and Latvian language;

4. List of abbreviations: in alphabetical order (for example, AM - Amplitude Modulation).

5. Table of contents: sections and subsections titles with page numbering, **page counting starts from title page, but page number should not be displayed on title page, evaluation page, annotation and table of contents page;**

6. Introduction: author describes reasons why he/she choose this theme, its novelty, research problems, research methods and objects, defines goals and tasks of thesis and introduces to each chapter of thesis in order;

7. Literature review: review of used sources, data and literature;

8. Bachelor's thesis text: in following sections and sub-sections in this sequence is set out research object, method and results;

9. Conclusion: research results, conclusions and recommendations are set out laconically.

10. Summary (thesis): shortly, laconically, numbered and in paragraph form are set out research method used in data collection and analysis, argumentation of bachelor's thesis, theoretical and practical conclusions.

References: a complete list of written documents you have referred to in the thesis.

3.2. Text formatting

Titles of sections should be written with caps lock and bold (**1. CAPS LOCK** (bold, font size 14)) and centered in middle of the page. **Each section starts with new page!** Title of subsections should be written in bold (**1.2. Small letters and big the initial letter** (bold, font size 14)). All sub-subsection should be written in bold (***1.2.1. Small letters and big the initial letter*** (bold, italic, font size 12)). To annotations, introduction, conclusion, summary, and bibliography numbers are not assigned.

Illustrations can be placed in the text and appendix. To each illustration (drawing, picture, scheme, table, photo illustration) should be added a number of order (numbering can be performed within the

chapter, for example, fig.1.1., table 2.3., fig.4.6.) and caption describing illustrations relation to section. Example of reference formatting can be seen in Appendix 2.

4. BACHELOR'S THESIS SUBMISSION PROCEDURES

Bachelor thesis should be submitted to the Institute of Telecommunications major secretary or any other appointed person from Institute before the date of defense.

The work must be written in accordance with the "Guidelines for Writing a Bachelor's Thesis" instructions.

Author should submit one copy of Bachelor thesis with approximate 60 pages (printed in Times New Roman 12, on A4 sized paper with 1,5 spacing)(paper format: A4; Page: one sided; font type: Times New Roman; font size: 12; line spacing: 1,5 line).

5. BACHELOR'S THESIS DEFENSE

Development of bachelor's thesis is followed by scientific advisor, consultant (if such exists), and Institute of Telecommunications. In dates, which are set by scientific advisor, consultant (if such exists) and Institute of Telecommunications, have to be submitted application for the theme conception of bachelor 's thesis development, project, draft and finally completed a bachelor's thesis, that formatted in accordance with the requirements of this instruction.

Bachelor thesis are defended in Institute of Telecommunications bachelor's examination committee meeting (Committee is approved by RTU Rector). Bachelor's examination committee meetings are held according to the schedule. Bachelor's thesis defense meetings are open for all interested persons. The order of defense of thesis are determined by Institute based on order in which thesis where submitted.

Bachelor thesis defense procedure:
- The author's speech (theme of the paper, justification of the choice, goals, objectives, theoretical background);
- The use of empirical material and research methods, structure, hypotheses and course of their prof, the main conclusions, practical application) - no longer than 10 minutes;
- Questions for author (first questions will be asked by scientific advisor, reviewer, committee members, then questions can be asked by rest of the audience) and author answers;
- Speech of Scientific advisor;
- Reviewer's speech and author's answers to the reviewer's questions.

Each bachelor's thesis defense is scheduled for 10-15 minutes. Bachelor thesis is assessed on a scale (maximum 10 points) according to the follow criteria:
- The novelty of research and significance of the problem identification, research and analysis;

- The theoretical concept;
- Quality of theoretical conclusion;
- Usage of experimental research methods, data processing and analysis, the quantity of material, systematization and analysis;
- The clarity of ideas of Bachelor's thesis, regularity and purposefulness

Committee's discussion about the mark is closed, additionally can participate only Scientific advisor and reviewer. Marks are announced after each meeting of examination committee.

Appendix

Appendix 1 "Sample of title page formalization"

Appendix 2 "Sample and explanation of list of references"

RIGA TECHNICAL UNIVERSITY

Faculty of Electronics and Telecommunications

INSTITUTE OF TELECOMMUNICATIONS

Bachelor's Thesis

Analysis and evaluation of capacitance in twisted pair

Author- Janis Kalnins

Telecommunications Study Program

Stud. ID number..............

Supervisor -

Doc. A.Liepins, Dr.sc.ing

Consultant-

Lec. J. Berzins, M.sc.ing

Riga, 202_

LIST OF REFERENCES

Option A

- All sources used in Bachelor's thesis are mentioned in one combined list, which is placed in the very end. List is arranged in alphabetical order or accordingly to source appearance in the paper. Sources from the Internet without the author (links) are placed in the end.

- References can be placed in the end of the page they have appeared. Number should be assigned increasingly in the framework of current section or whole bachelor's thesis.

- After citation or mention of source can be placed number in square brackets which identifies the reference. In the list must be mentioned page number or page interval in which citation used in bachelor's thesis can be found. All records in list of references should be in original language of the source.

Option B

Sources and literature are separated and divided in following groups:

- Sources;
- Official documented materials;
- Bibliographic and bio-bibliographic materials;
- Books (monographs);
- Press;
- Articles;
- Abstracts of thesis.

Examples:

1. Kavacis, A., Lauks, G. Daudz-protokolu iezimju komutesana. MPLS. Metodiskie lidzekli. - Riga: RTU TI, 2008, 378 lpp.

2. Chappel, L.A., Tittel, E. Guide to TCP/IP. Third Edition. - USA: Thomson Course Technologies, 2007, 742.

3. Franklin D. Ohrtman, Jr. Softswitch. Architecture for VoIP. - Boston: McGraw-Hill, 2003, pp.359.

4. Tanenbaum, A.S. Computer Networks. Third Edition. - New Jersey: Prentice Hall PRT, 2002, pp.846.

5. Belmanis, O. Pakesu komutacija. Macibu lidzeklis. - Riga, RTU TI, 2006, 95

6. Bottorf,P., Saltsidis, P. Scaling Provider Ethernet //IEEE Communications. Magazine.- Vol. 46, No.9, September 2008, pp. 104-109.

7. ITU-T Rec. G.781, "Synchronization Layer Functions", Feb.2008. 8. Cisco 12000 Router. Product Overview. http://www.retrevo.com/s/Cisco-12000-Routers reviewmanual/id/8366ag021/t/1-2/