1862

RIGA TECHNICAL UNIVERSITY

FACULTY OF COMPUTER SCIENCE, INFORMATION TECHNOLOGY AND ENERGY

# FORMATTING AND STYLE GUIDELINES FOR GRADUATION THESES

2025

RTU Press

RIGA TECHNICAL UNIVERSITY

FACULTY OF COMPUTER SCIENCE, INFORMATION TECHNOLOGY AND ENERGY

# FORMATTING AND STYLE GUIDELINES FOR GRADUATION THESES

RTU Press
Riga 2025

The Formatting and Style Guidelines for Graduation Theses. Riga: RTU Press, 2025. 46 p.

The Formatting and Style Guidelines for Graduation Theses lay down the general requirements concerning the formatting of the graduation theses – Bachelor Theses, Master Theses, Diploma Projects, and Qualification Papers – developed on completion of any study program at the Faculty of Computer Science, Information Technology and Energy (FCSITE) of RTU. The general formatting and academic integrity guidelines can also be used for other study works and assignments (essays, reports, etc.). The Guidelines have been developed by the Curriculum Design and Testing Committee of RTU FCSITE based on the RTU Regulation on the Formatting of Graduation Theses (2014).

The Formatting and Style Guidelines for Graduation Theses were approved at the Council of RTU FCSITE meeting on 9 October 2024, Minutes No. 33000-1.1-e/34.



ISBN 978-9934-37-153-0 (pdf)

# CONTENTS

# 1. GENERAL REQUIREMENTS

Formatting a graduation thesis, it is necessary to observe the following general requirements.

- The graduation thesis shall be written in clear English, observing grammar norms and spelling rules and using English terms relevant to the field of the study program. The use of the English language is permitted for international students or students studying in the study programs implemented in English.
- The graduation thesis shall be computer-typeset on an A4 format paper page (height – 29.7 cm, width – 21 cm).
- Times New Roman is the main font to be used in drawing up the thesis; line spacing – 1.5, colour – black.
- The minimum volume of the bachelor thesis is 50 pages. The recommended volume of the bachelor thesis shall not exceed 80 pages. The minimal volume of the master thesis is 70 pages. The recommended volume of the master thesis shall not exceed 100 pages. It is important to take into account that all pages are included in the overall page count, except for the list of references and appendices to the graduation thesis.
- Study programmes are entitled to set additional requirements for the content and volume of the specific parts of the graduation thesis.
- Pages shall be numbered using Arabic numerals centred in the footer (font – Times New Roman, size 12). The dashes before and after the page number are not recommended. The pages are numbered starting with the title page; however, the page number on the title page is not written.
- The following page settings shall be used: left and right margins – 3.18 cm, top and bottom margins – 2.54 cm (Fig. 1.1).
- The pages shall be oriented vertically; however, if necessary (large figures or tables), the page can also be oriented horizontally.
- The thesis shall be submitted for the defence (*viva voce examination*) only in electronic form (in PDF format), signed with a secure electronic signature.

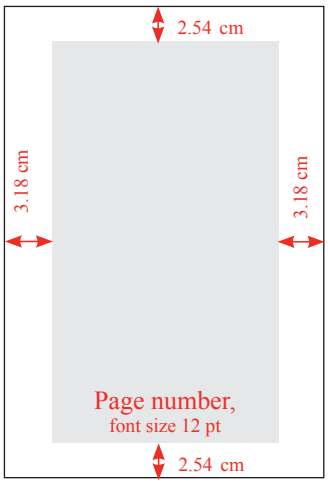


**Fig. 1.1. Page settings**

# 2. SECTIONS OF THE THESIS

The constituent parts of the graduation thesis and their sequence are listed in Table 2.1.

**Table 2.1**

**Sections of the Graduation Thesis**

| No | Part | Explanation |
|---|---|---|
| 1. | Title page | The title page of the graduation thesis shall be formatted in accordance with the sample given in Appendix 1. |
| 2. | Work Performance and Assessment Sheet | This page shall be formatted in accordance with the sample given in Appendix 2. |
| 3. | Abstract | The Abstract shall contain three compulsory elements:<br>1) 3–5 keywords that characterize the field of research.<br>2) A brief description of the graduation thesis, including an introduction to the research field, the goal of the thesis, and the obtained results. After reading this description, the reader shall gain a general understanding of the topic of the thesis, the issues that have been studied/solved, and the results achieved. The Abstract shall not contain information about the sections of the thesis and references to particular information sources.<br>3) Information on the volume of the thesis – the number of pages, figures, tables, appendices, sources of reference, and the number of pages of the technical drawings (if any).<br>The volume of the Abstract shall not exceed 1 page. The abstract shall be formatted in accordance with the sample given in Appendix 3. |
| 4. | Anotācija | It is the translation of the Abstract into Latvian. The translation must be identical in content to the abstract in English. |
| 5. | Table of Contents | It shall reflect the structure of the graduation thesis, comprising headings of all three levels and respective page numbers. The headings are included in the Table of Contents starting with the Introduction. The sample for formatting the Table of Contents is given in Appendix 4. |

| | | |
|---|---|---|
| 6. | Introduction | The Introduction shall contain the following compulsory elements:<br>1) Substantiation of the topicality of the topic and research problem and/or motivation for the research.<br>2) The goal of the graduation thesis and tasks set to complete the goal.<br>3) A brief description of the content of the sections and appendices to the graduation thesis.<br>In addition, the Introduction may describe the research methodology (hypothesis, research questions, research methods), the theoretical and practical relevance of the research, and other aspects specific to the study program. The volume of the Introduction is 1–2 pages. |
| 7. | The sections of the body of the thesis | The sections of the body of the thesis should include the description of the conducted research presented in the literary language, observing conventions of research writing and using the terminology pertaining to the study program field. |
| 8. | Results and Conclusions | In this concluding part of the thesis, the author:<br>1) provides a summary of the research conducted in the graduation thesis and presents the obtained results (in accordance with the set goal and tasks);<br>2) reflects personal conclusions and presents the knowledge gained rather than reiterates widely known, trivial statements found in the literature;<br>3) specifies the areas for further research (if identified);<br>4) provides information on one`s own publications, reports at the conferences and/or participation in the research projects related to the theme of the graduation thesis.<br>The volume of this section is 1–3 pages. |
| 9. | List of References | The list of sources referred to in the body of the thesis shall be arranged according to the referencing style used in the thesis. |
| 10. | Appendix(es) *(not obligatory)* | Appendices include explanatory information not included in the body of the thesis, for example, a full user guide for the developed software; detailed examples; design, modelling and development methodology; description of the tools or environment; a full collection of developed diagrams, questionnaires, etc. |
| 11. | Technical Drawings *(depending on the study program)* | The created technical drawings are placed in the drawings section if the study program has such a requirement. |

# 3. DIVISION OF THE THESIS INTO SECTIONS AND SECTION HEADINGS

The graduation thesis may contain the following sections: Level 1 – chapter, Level 2 – section, Level 3 – sub-section. It is not recommended to introduce a more detailed hierarchy. Each chapter shall start on a new page. At the same time, sections and sub-sections shall not be started on a new page, they follow the previous stretch of the text on the same page.

The following requirements are applied to section headings:

- headings are centred;
- headings are not syllabified, not underlined, a full stop is not added after the heading;
- chapters are numbered with Arabic numerals placed before the heading;
- the number of the chapter is followed by a full stop and a space;
- interrogative and exclamatory sentences may not be used as the headings; it is also recommended to avoid using abbreviations in the headings;
- headings of all sections (except for ABSTRACT, ANOTĀCIJA, and TABLE OF CONTENTS) are included in the Table of Contents;
- the page may not finish with a heading, at least one line of text shall follow the heading on a page.

Section headings are formatted as follows:

- settings for Level 1 headings (chapters):
  - all letters capitalized,
  - font size 14,
  - bold,
  - 12 pt spacing after the heading,
  - chapter headings are numbered with Arabic numerals, for example, 1., 2., etc. (except for ABSTRACT, ANOTĀCIJA, TABLE OF CONTENTS, INTRODUCTION, RESULTS AND CONCLUSIONS, LIST OF REFERENCES, TECHNICAL DRAWINGS),
- settings for Level 2 headings (sections):
  - first letter capitalized,
  - other letters in lower case,
  - font size 14,
  - bold,
  - 12 pt spacing before and after the heading,
  - sections are numbered within the framework of the respective chapter; for example: the numbers of sections of Chapter 1 will be 1.1., 1.2., etc.,

- settings for Level 3 headings (sub-sections):
  - first letter capitalized,
  - other letters in lowercase,
  - font size 12,
  - bold,
  - 12 pt spacing before and after the heading,
  - sub-sections are numbered within the framework of the respective section; for example: the numbers of sub-sections of Section 2 of Chapter 2 will be 2.2.1., 2.2.2., etc.

Examples of heading formatting are given in Figure 3.1.

---

# 1. TEXT FORMATTING

## 1.1. Page settings

### 1.1.2. Indents

---

**Fig. 3.1. Formatting of section headings**

# 4. BODY TEXT AND LISTS

The body of the text of the graduation thesis shall be formatted as follows:

- font size – 12;
- the text is justified along both margins;
- indent of the first line of the paragraph – 1 cm;
- there is no extra spacing between the paragraphs;
- words in the text are not syllabified;
- sections and sub-sections may not be shorter than 1/3 page;
- in the body of the text, pages shall be maximally filled with text, figures and/or tables;
- there shall be more than one section in each chapter and more than one sub-section in a section;
- in exceptional cases, when it is necessary to highlight some fragment of the text, *italic* or **bold** may be used.

It is recommended to use numbered and bulleted lists for more explicit structuring of the text of the graduation thesis. A list starts with an introductory phrase typically followed by a colon. Entry text is given in the next line, it is preceded with a list symbol. The following symbols can be used to introduce the entries in a list:

- an Arabic numeral followed by a round bracket (Fig. 4.1 a)) or a full stop (Fig. 4.1 d)),
- a lower-case letter followed by a round bracket (Fig. 4.1 b)),
- a hyphen (Fig. 4.1 c)).

The text after the list symbol shall start with a lower-case letter; it is separated from the next entry with a comma or semi-colon (in the case of longer entries), and a full stop is placed at the end of the last entry. If an Arabic numeral followed by a full stop is used (Fig. 4.1 d)) to introduce the entries in the list, a full stop is placed after the introductory phrase, and each entry and the text in the next entry shall start with a capital letter. Multi-level lists are also possible (Fig. 4.1 e)).

| a) | b) | c) | d) | e) |
|---|---|---|---|---|
| Qwerty:<br>1) qwerty,<br>2) qwerty,<br>3) qwerty,<br>4) qwerty. | Qwerty:<br>a) qwerty,<br>b) qwerty,<br>c) qwerty,<br>d) qwerty. | Qwerty:<br>- qwerty,<br>- qwerty,<br>- qwerty,<br>- qwerty. | Qwerty.<br>1. Qwerty.<br>2. Qwerty.<br>3. Qwerty.<br>4. Qwerty. | Qwerty:<br>1) qwerty:<br>- qwerty,<br>- qwerty,<br>2) qwerty. |

**Fig. 4.1. Formatting a list: a) with Arabic numerals and “)”; b) with a letter and “)”; c) with a hyphen; d) with Arabic numerals and “.”; e) multi-level list**

The indent between the entry in the list and the margin is 1.9 cm. The spacing between the list symbol and the entry text is 0.63 cm. The text in the list entries longer than one line is aligned with the text in the first line. In the multi-layer list, each level below is shifted away from the left margin, respectively, Level 2 is presented with a 2.54 cm indent, Level 3 – with a 3.17 cm indent, etc. It is not allowed to present an introductory phrase to the list on one page and to place the list itself on the next page.

The student should avoid extensively adding images or code fragments to list entries. However, if the addition of images and code to the entries of lists is essential for the understanding of the research carried out in the graduation thesis, the images and code fragments must be formatted according to the rules described in Chapters 5 and 7 of these guidelines, centring them within the indentation of the list.

# 5. FIGURES

The designation “Figure” is used to describe any illustration included in the thesis – photos, drawings, schemes, graphs, diagrams, and the like. The figures are numbered with Arabic numerals within the framework of a chapter, first identifying the number of the chapter followed by a full stop and a sequential number of the figure. Each figure shall be named. The number and name of the figure are written in size 12 bold font one line below the figure. The name of the figure start with the abbreviation “Fig.” followed by a space and the number of the figure, a full stop, a space and the text containing the title or decription of the figure. The name of the figure is written in lower-case letters; the first letter is capitalized, and no full stop is added at the end of the name of the figure. Both the figure and its name are centred in the middle of the line. The spacing before the name of the figure is 6 pt, and after it – 12 pt. An example of formatting a figure is given in Figure 5.1, i.e., an example of the first figure included in Chapter 5.

**Fig. 5.1. Example of formatting of a figure**

In formatting figures, it is necessary to observe the following guidelines:

- one free line (12 pt) shall be used as a spacing between the preceding text and the figure;
- figures narrower than the page width shall be centred;
- the text in the figures shall be readable;
- the text illustrated with a figure shall contain the reference to this figure, using one of the following formats: a) including a reference in the text and writing in full – “Figure”, for example: .. which is clearly illustrated by the scheme in Figure 1.3. .., or b) including a reference in brackets and using the abbreviation “Fig.”, for example: As it is illustrated in the diagram (Fig. 1.4)..;
- the reference to the figure shall be provided in the body of the text immediately preceding the figure;
- the figure and its name shall be presented on the same page (it is not allowed to present a figure on one page and its name – on another page);
- if a figure consists of several parts, as shown in Figure 5.2, the name of the figure should include the description of each part of the figure designated as a), b), etc. Identifiers of the parts of the figure are given at the bottom right corner of each part of the figure;

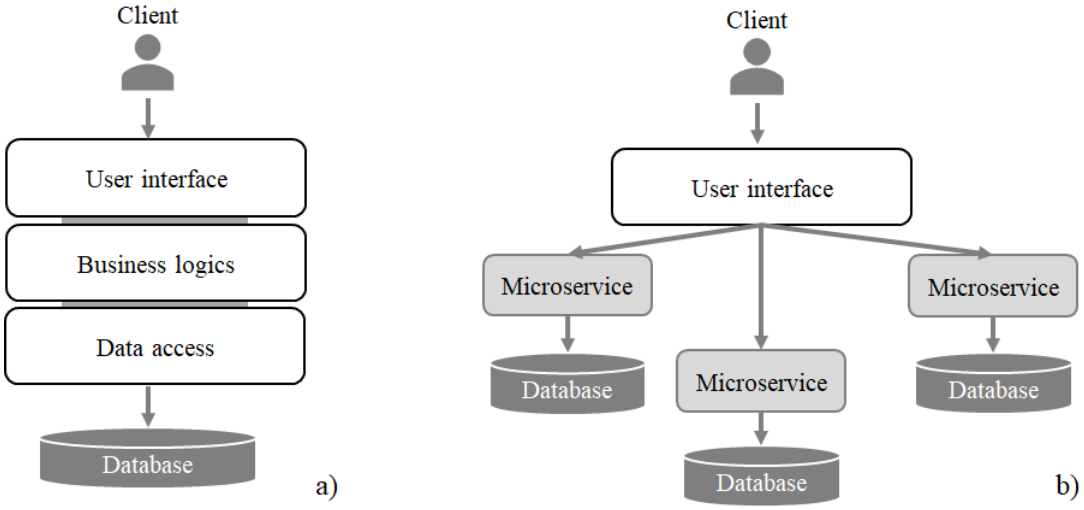


**Fig. 5.2. Software architecture: a) monolithic; b) microservice-based**

- if it is necessary to add a legend to the figure, it is given under the figure name (the legend is written using a smaller font, e.g., 10 pt, Normal, centred), as shown in Figure 5.3;

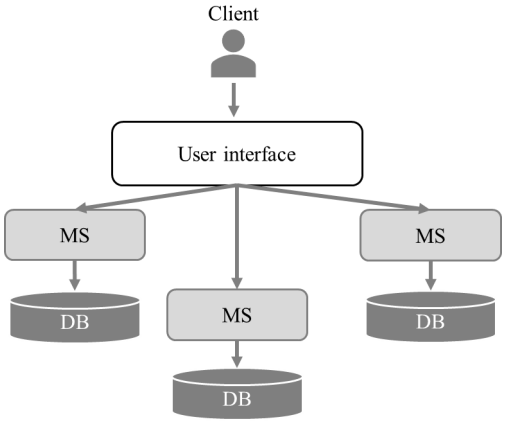


**Fig. 5.3. Microservice-based software architecture**

MS – microservice, DB – database

- figures taken from an information source written in a foreign language should be translated into English;
- **all figures taken, modified or translated from information sources should be accompanied by a reference to the information source** in accordance with the rules set out in Chapter 10 of these guidelines;
- it is recommended to include large figures, which take up more than 70 % of the page and are retrieved from other information sources, in the appendices to the graduation thesis.

# 6. TABLES

The tables included in the graduation thesis are numbered; each table shall be named:

- tables are numbered with Arabic numerals within the framework of the chapter, initially writing the word "Table", then – space and the number of the chapter followed by a full stop and the sequential number of the table within the chapter, for example, Table 6.1;
- size 12 bold font is used for formatting the name and the number of the table;
- the number of the table is written on the right above the name of the table; spacing before the table number and preceding text is 12 pt;
- the name of the table shall be aligned in the centre above the table (in the next line following the table number), each meaningful word shall be capitalized, and no full stop be added after the name of the table;
- the name of the table shall be centred;
- the spacing between the name of the table and the table itself is 6 pt;
- the name of the table shall be brief and succinct;
- the name of the table shall not be underlined.

An example of the description of the sequentially first table included in Chapter 6 is presented below.

**Table 6.1**

**Comparison of Algorithms**

| Algorithm | Programming language | Completion time (sec) | Algorithm description |
|---|---|---|---|
| Binary search | Python | 0.08 | The algorithm repeatedly splits an ordered list in half until it finds the element it is looking for or determines that the element is not in the list. |
| | C++ | 0.03 | |
| Linear search | Python | 0.17 | The algorithm checks each element in the list sequentially from beginning to end until the searched element is found or the end of the list is reached. |
| | C++ | 0.11 | |

While formatting the tables, it is necessary to take into consideration that:

- a reference to the table shall be either given in the text preceding the table; for example: ..as shown by the data in Table 1.3. .., or in brackets, for example: ..summarizing the data (Table 2.1) ..;
- tables narrower than the page width are centred;
- the content of the table and column titles are typeset in size 11 font with a line spacing of 1;
- in the head of the table, column headings should be bold, capitalized and centred;

- justification or alignment of the table content is selected depending on the text; for example: text columns are aligned with the left margin (Column 1 of Table 6.1) or justified against both margins (Column 4 of Table 6.1), the columns containing one value or a short text (Columns 2 and 3 of Table 6.1) are centred;
- one free line (12 pt) is left after the table before the forthcoming text:
- if some explanations of the symbols used in the table are added after the table, they shall be written immediately after the table (in size 10 font, Normal, centred), a free line is left after the explanations (Table 6.2):

**Table 6.2**

**Values of Measurements Taken**

| Measurement | Value |
|---|---|
| *t* | 22.5 °C |
| *H* | 63 % |

*t* – temperature, *H* – humidity

- it is recommended to avoid using large numbers or many digits after the decimal point in tables; instead use SI (Système International d'Unités – International System of Units) unit prefixes (Table 6.3) to represent decimal multiples;

**Table 6.3**

**SI prefixes (adapted from (BIPM, n. d.))[1]**

| SI prefix | Symbol | Multiplying factor |
|---|---|---|
| pico | p | $\cdot 10^{-12}$ |
| nano | n | $\cdot 10^{-9}$ |
| micro | μ | $\cdot 10^{-6}$ |
| mili | m | $\cdot 10^{-3}$ |
| centi | c | $\cdot 10^{-2}$ |
| deci | d | $\cdot 10^{-1}$ |
| deca | da | $\cdot 10^{1}$ |
| hecto | h | $\cdot 10^{2}$ |
| kilo | k | $\cdot 10^{3}$ |
| mega | M | $\cdot 10^{6}$ |
| giga | G | $\cdot 10^{9}$ |
| tera | T | $\cdot 10^{12}$ |

[1] BIPM. The International System of Units (SI): Prefixes. Online. n.d. Available from: https://www.bipm.org/en/measurement-units/si-prefixes [viewed 2024-11-27].

- tables taken from an information source written in a foreign language are translated into English;
- **all tables taken, modified or translated from information sources should be accompanied by a reference to the information source** in accordance with the rules set out in Chapter 10 of these guidelines;
- it is recommended to include large tables, which take up more than 70 % of the page and are retrieved from other information sources, in the appendices to the graduation thesis.

# 7. FORMULAS AND CODE FRAGMENTS

Formulas included in the graduation thesis shall be incorporated in the text; however, each formula shall be written in a separate line. Formulas shall be formatted as follows:

- symbols used in the formulas shall be explained, and the explanation shall be presented immediately after the formula, starting the first line with the word "where". It is written in the left part of the page; no colon added. Starting from the second line, the explanation of symbols shall be aligned with the variable in the first line;
- in a formula, the symbols of variables are italicized; the units of measurement are not italicized;
- symbols /explanations in the text shall look in exactly the same way as in the formula;
- a 12 pt spacing shall be left before the formula;
- formulas are centred in the middle of the line;
- a comma is added at the end of the formula;
- formulas are numbered with Arabic numerals within the framework of a chapter; the number is added on the right after the formula in the formula line, and is written in regular (round) brackets;
- if a formula takes more than one line, the number is written in the last formula line;
- the first reference to the formula shall be given in the text preceding the formula;
- referring to any formula in the text, its number shall be written in a similar manner – in the round brackets, for example: .. calculated using Formula (7.1);
- **all formulas taken, modified or translated from information sources should be accompanied by a reference to the information source** in accordance with the rules set out in Chapter 10 of these guidelines.

Sample formula formatting is given below:

$$Q_g = q \times N_g, \tag{7.1}$$

where $Q_g$ – volume of material required per year, kg;
$q$ – material consumption rate, kg/pcs;
$N_g$ – annual production volume, pcs.

The code may be included in the graduation thesis only in the textual mode, using Arial Narrow size 11 font (if necessary, font size may be reduced up to size 8). It is **prohibited** to embed it as an image. The source code of the developed software is included in the appendices to the thesis. If the source code takes more than 10 pages, only the most important elements of the source code developed by the student rather than those generated by the development environment shall be added in the appendices. Certain fragments of the code may be included in the body of the graduation thesis, formatted in one of the following ways:

- short code fragments are incorporated in the text; for example: .. all root classes may be found using m.listHierarchyRootClasses()..;

- longer code fragments are separated from the text used to explain them by a colon; code fragments are written below the explanation, making a 1 cm indent from the left and right margin of the page (respectively 4.18 cm); for example:

In the Moodle environment, the description of the folder element in XML format contains a unique identifier of the folder and its setting values:

```
<?xml version="1.0" encoding="UTF-8"?>
<activity contextid="752" modulename="folder" moduleid="389" id="14">
    <folder id="14">
        <name>Folder_1</name>
        <intro><p>This is a folder for important documents</p></intro>
        <introformat>1</introformat>
        <revision>1</revision>
        <timemodified>1591725437</timemodified>
        <display>0</display>
        <showexpanded>1</showexpanded>
    </folder>
</activity>
```

# 8. TECHNICAL DRAWINGS

Some study programs may require the graduation thesis to include technical drawings, for example, single-line diagrams of the analysed power systems or electrical networks, circuit diagrams, electrical schemas of experiments, technological or electrical schematics of equipment, and block diagrams of proposed algorithms or techniques. The technical drawings shall be prepared utilizing computer-aided design software. They may be presented on A4, A3, A2, A1, and A0 sheets. Irrespective of the size of the sheet, a working area, which includes the drawing space, the title block, and any other tables necessary, is to be delimited by drawing the inside border with lines 0.35 mm thick and spaced 20 mm from the left edge of the sheet and 5 mm from the other edges of the sheet (Fig. 8.1). A more detailed standard design of the drawing border may also be used, where it includes a reference grid made of even number of cells with sequential numerals in the horizontal direction and sequential capital letters in the vertical direction, and which includes corner markings. When the border with the reference grid is utilised, the narrow borders can be extended to 10 mm if required to accommodate the letters and numerals. For A4 drawing sheets, only the portrait layout should be used; for other sheet sizes, only the landscape layout should be used.

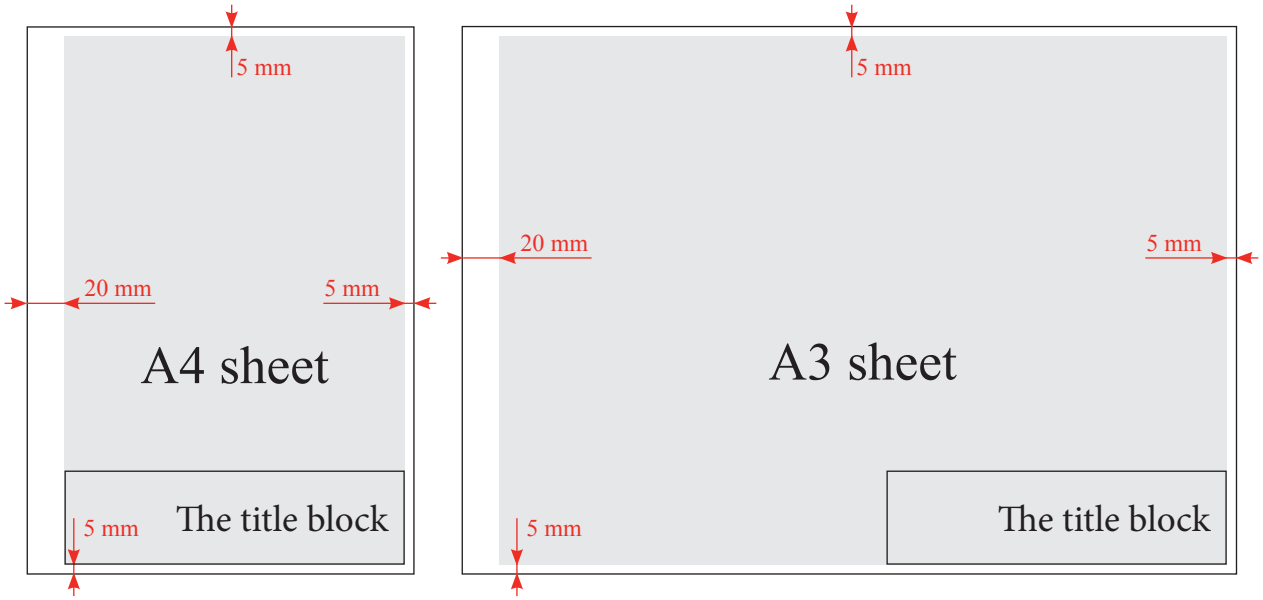


**Fig. 8.1. The delimitation of the working area by the inside border and the position of the title block for A4 and A3 format pages**

The general design of the title block with column sizes is presented in Figure 8.2. The following information should be included in the numbered fields in the figure:

(1) – the initial and surname of the draftsman (student), for example, J. Green;

(2) – the initial and surname of the project (graduation thesis) supervisor, for example, A. Dolgicers;

(3) – the initial and surname of the consultant (an additional consultant or graduation thesis supervisor, if there is no additional consultant), for example, J. Kozadajevs;

(4) – the initial and surname of the norm (standard) controller, for example, L. Zemite;

(5) – a drawing code consisting of a student group code, year of the submission of the graduation thesis, student ID number, number of an assembly unit (here "00"), number of a lower level assembly unit (here "00"), part number (here "00") and designation of the scheme type, for example, RECR01.2024.201REB598.00.00.00.E1;

(6) – the title of the technical drawing;

(7) – a letter representing the maturity level of the technical drawing for project implementation (designations "X,Ex or MX" are used for experimental drawings, study drawings can use "X" or "T"(from the tutorial), while "P" refers to production drawings. If improvements are made after the initial work is signed, they should carry Symbols A1, A2, etc. );

(8) – a drawing scale, for example, 1 : 100;

(9) – an ordinal number of the drawing sheet in the technical drawings part;

(10) – number of sheets in the technical drawings part;

(11) – the title of the graduation thesis;

(12) – "RTU" followed by a space and the abbreviation of the title of the faculty.

In the above-mentioned field (5), the designation of the type of scheme is a combination of one letter and one number, which can be formed from letters and numbers bearing the following meaning:

| | |
|---|---|
| E – electrical | 1 – structural |
| H – hydraulic | 2 – functional |
| G – gases, pneumatic | 3 – principal |
| Kn – kinematic | 4 – assembly |
| O – optical | 5 – connections |
| V – vacuum | 6 – common |
| En – energetic | 7 – disposition or location |
| D – divided | 8 – combinational |
| K – combined | |

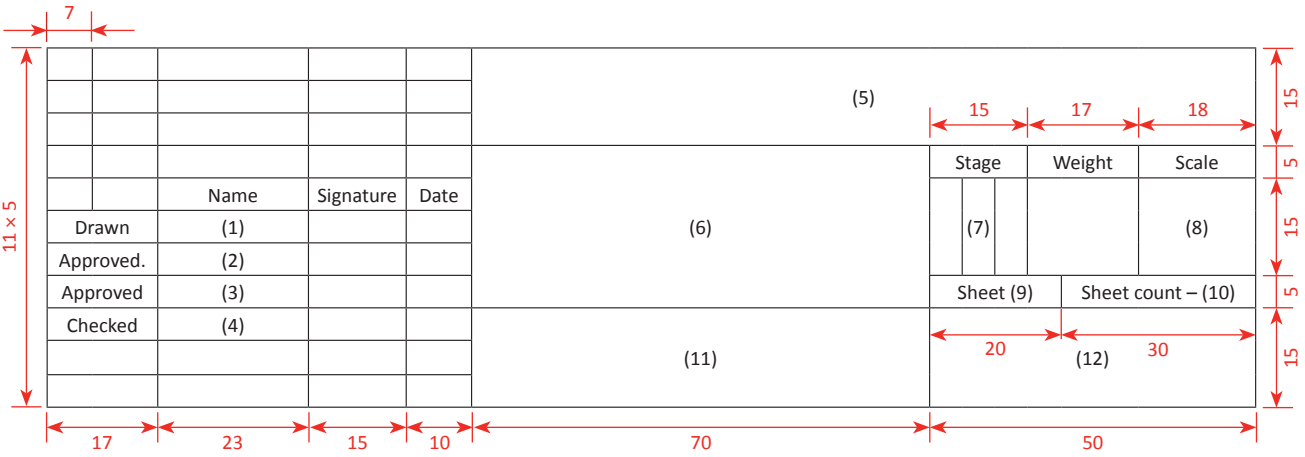


**Fig. 8.2. Desing of the title block with column sizes**

Technical drawings should be designed in accordance with the current requirements of the applicable standards, e.g., ISO 128-20, EN ISO 3098-0, EN ISO 9431. The symbols of elements in electrical circuits and schematic diagrams should comply with the requirements of IEC 60617. However, if non-standard symbols or designations are necessary for comprehension or completeness of the technical drawings, they should be transcribed on a separate specification sheet, which should also include the border lines and the title block. The non-standard designations and their meaning or descriptions should be assembled in tables. A specification sheet may also be added to provide a table of equipment or parts required for the project.

The technical drawings section of the graduation thesis should be added after the appendices and should start with the page bearing the chapter heading "TECHNICAL DRAWINGS" (Level 1 heading). A list of drawing sheets included in the graduation thesis is placed below the chapter heading. The list of technical drawing sheets should contain the ordinal sheet number and the title of the drawing indicated in the title block of that page, e.g., "Sheet 1. A single-line diagram of the power system analysed in the simulations". The formatting of the list of drawings should be identical to that of the body text of the thesis. The title of the drawing chapter with its first-page number should be included in the table of contents. The drawing sheets, on the other hand, need not be included and need not be given an additional page number, as is the case for the body text of the thesis and the first page of the drawings chapter. The drawing sheets shall be numbered separately, the number of the drawing shall be indicated in the title block.

If a drawing contains content retrieved from other information sources, a reference to the information sources should be inserted after the title of the drawing in the list at the beginning of the drawings chapter. At least one reference should be made to each drawing sheet in the body text of the graduation thesis.

When uploading the graduation thesis to ORTUS Register of Graduation Theses, the first page of the drawings chapter with the list of sheets should be left in the document containing the body text of the thesis. The drawing sheets are then combined into a single PDF document and uploaded as an attachment with the title "<Name>_<Surname>_<Student ID number>_ Attachment" or as multiple attachments with the number of the drawing sheet without a space after the word "Attachment" at the end of the document title.

# 9. ABBREVIATIONS, TERMINOLOGY AND TRANSLITERATION

It is allowed to use both traditional (widely used) abbreviations, which should not be additionally explained (Table 9.1), and abbreviations introduced by the author of the graduation thesis, which should be deciphered. When the abbreviation introduced by the author of the thesis is used in the text for the first time, it is necessary to spell out the abbreviation followed by the abbreviation in brackets. Further in the text, only the abbreviated version is used, for example: .. Artificial intelligence (AI) is increasingly used in engineering .... AI tools help engineers to model and simulate complex technical systems, analyse large amounts of data, and make more accurate decisions, for example, when designing structures or improving manufacturing processes. If many abbreviations are used in the graduation thesis, they can be listed in the section "Abbreviations used in the thesis", which is inserted before the introduction to the graduation thesis and not included in the table of contents. An example of the formatting of this chapter is given in Appendix 5. Abbreviations in this section should be arranged in alphabetical order.

**Table 9.1**

**Traditional Abbreviations**

| Abbreviation | Meaning |
|---|---|
| e. g. | for example |
| et al. | et alia (and other) |
| etc. | etcetera (and so on) |
| i. e. | id est (that is) |
| No | sequential number |
| p. | page |

In developing a graduation thesis, it is necessary to use the standardized terminology relevant to the field of the study program. It is recommended to use reliable terminographic resources to search for relevant terms.

# 10. REFERENCES

A graduation thesis shall not contain any unsubstantiated statements. Normally, substantiation can be found in the works of some other authors and it is necessary to provide a reference to these works in the graduation thesis, or some conclusions can be deduced from the information presented in other information sources (it should be made clear in the text of the graduation thesis) or they are formulated by the author of the thesis on the basis of the results of the conducted research. Therefore, when developing a graduation thesis, for a variety of reasons it might be necessary to mention the results obtained by other authors, for example:

- the author quotes a text, which is interpreted immediately afterwards in the body of the graduation thesis;
- the author quotes a text in order to substantiate or support one`s own opinion;
- a reference to the results obtained by other researchers is provided and the author explains how these results are used, supplemented, or reconsidered in the graduation thesis;
- the author conducts a survey of the literature, providing references to the considered information sources; as a result, a wider overview of the research questions is provided;
- the author analyzes the sources referred to in the body of the thesis; as a result, the author may establish regularities, define requirements, make forecasts, etc.

If the content from some information source is quoted, mentioned, or in any other way directly or indirectly used in the graduation thesis, the reference to this source should be provided in the body of the text. It is the duty of the author of the graduation thesis to precisely indicate the source of information and its author. Correctly formatted references inform the reader of the sources used by the author while developing the thesis and help the reader find the content used. Two basic aspects shall be considered while formatting the references – the reference in the text and the entry in the list of references.

References to information sources in the body of the graduation thesis can be made in either of two ways.

1) By indicating the author and the year of publication (Author, year) in round brackets after the content used, e. g., (Schenfelde, 2012). In this case, information sources are arranged in alphabetical order (without additional numbering) in the list of references.
2) By indicating the ordinal number of the information source after the content used in square brackets, e. g., [1], [2]. In this case, the information sources are arranged in the order of their mentioning and are numbered with Arabic numerals in the list of references.

The first referencing method that implies the mentioning of the author of the information source and the year of its publication is preferred. The use of numbered references is permitted if required so by the study program. In this case, the requirements for the formatting of references defined in Appendix 6 shall be followed.

References that include the author of the information source and the year of publication may also include a page number, e. g., (Schenfelde, 2012, p. 16), to enable the reader of the

graduation thesis to identify more precisely the referred content. If the author of the information source is mentioned in a sentence, the year of publication shall be placed next to it, e. g., Berzins (2021) argues that artificial intelligence tools provide new opportunities for knowledge acquisition. In addition, the following rules shall be observed:

- If the source has two authors, the reference shall contain the surnames of both authors separated by "&" and a publication year – **(Surname of the first author & Surname of the second author, year)**, for example, (Black & White, 2023).
- If the source has more than two authors, the reference shall contain the surnames of the first and second author separated by a comma and the abbreviation "et al." at the end – **(Surname of the first author, Surname of the second author et al., year)**, for example, (Grey, Green et al., 2024),
- If it is necessary to refer to several sources simultaneously, all these sources shall be given in one set of round brackets separated with a semi-colon – **(Surname(s), year; Surname(s), year)**, for example, (Black & White, 2023; Grey, 2020).
- If it is necessary to refer in the body text to two or more sources published by the same authors in the same year, these sources are additionally notated with a letter, adding it after the publication year (both in the reference and in the list of references), for example, (Grey, Green et al., 2024a; Grey, Green et al., 2024b).

Text developed by other authors can be included in the graduation thesis only in two formats – as a quotation or as a paraphrase. A quotation is a precise representation of the other author`s words (in the original language or as an accurate translation), obligatorily presenting them in inverted commas, for example, ..In their paper, Gao, Wu et al. (2023) highlight that "renewable energy is used to reduce harmful emissions, mitigate climate change and ensure a sustainable energy future". In case of paraphrase, the author of the graduation thesis retells but does not distort ideas expressed by some other author in their own words; for example, ..Harmful emissions and climate change can be reduced by using renewable energy (Gao, Wu et al., 2023).

**References to information sources are placed also before each list or at the end of its entries, next to each figure, table, formula, and fragment of a code if they are adopted (at least partly) from literature**, as illustrated in the following examples.

1. The reference before the list or at the end of its entries is added only in case if:
    - the list is taken from the information source with or without alterations (Fig. 10.1);
    - the list has been developed by the author of the graduation thesis, summarizing information available in other sources (Figs. 10.2 and 10.3).

---

Possible applications of artificial intelligence in the context of green energy include (Gao, Wu et al., 2023):

- green energy trading,
- forecasting green energy production,
- load forecasting,
- demand forecasting, etc.

---

**Fig. 10.1. Reference before the listed entries**

---

Modern intelligent tutoring systems should fulfil the following key functions (Schtelmacher, 2020; Nickolsson, 2021; Wu & Li, 2023):

- maintain a dialogue with the student in a natural language,
- select and offer learning content suitable for the student,
- monitor the student`s learning progress and adapt the learning process accordingly,
- provide meaningful feedback.

---

**Fig. 10.2. Reference before the listed entries, summarizing results obtained by other authors**

---

The pedagogical knowledge module of intelligent tutoring systems may appear under different names:

- expert tutor (Warendorf & Tan, 1997),
- learning module (Smith, 1998),
- learning object (Virvou & Tsiriga, 2001).

---

**Fig. 10.3. Reference at the end of each listed entry, summarizing results obtained by other authors**

2. Reference next to the figure, as shown in Figure 10.4 (if the figure is adopted or translated from an information source with no alterations, the phrase “adopted from” should be added before the reference, but if the author of the graduation thesis has made some changes to the figure, the inscription “adapted from” or “modified from” is added).

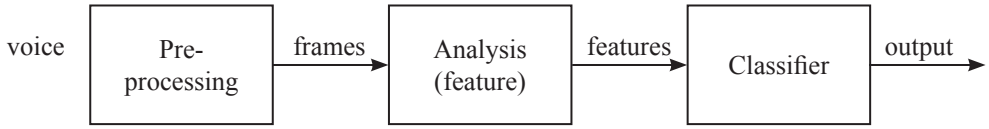


**Fig. 10.4. Traditional method for emotion recognition in speech (adopted from (Zhang, Quan et al., 2016))**

3. Reference next to the table (if the table is adopted or translated from an information source with no alterations, the phrase "adopted from" should be added before the reference, but if the author of the graduation thesis has made some changes to the table or has compiled data published in various information sources, the inscription "adapted from" or "modified from" is added), as demonstrated in Table 10.1.

**Table 10.1**

**Description of Dataset Features (adopted from (Michalick, 2023))**

| Feature title | Type | Value range |
|---|---|---|
| Name | String | – |
| Category | Integer | [1, 2, 3, 4] |
| Length | Float | 180.00–236.50 |
| Weight | Float | 5.6–8.3 |

4, Reference next to the code fragment (if the code fragment is adopted from an information source with no alterations, the phrase "adopted from" should be added before the reference, but if the author of the graduation thesis has made some changes to the code fragment the inscription "adapted from" or "modified from" is added), for example, Simple reflex or reactive agent program envisions comparison of the current state of the agent with the rules stored in the knowledge base (adopted from (Russell & Norvig, 2003)):

```
function SIMPLE-REFLEX-AGENT (percept) returns action
static: rules, a set of condition-action rules
    state ← INTERPRET-INPUT(percept)
    rule ← RULE-MATCH(state, rules)
    action ← RULE-ACTION[rule]
return action
```

5. Reference next to the formula (if the formula is adopted from an information source with no alterations, the phrase "adopted from" should be added before the reference, but if the author of the graduation thesis has made some changes to the formula the inscription "adapted from" or "modified from" is added), for example, ..The efficiency of switched capacitor voltage source converters shall be calculated according to Formula (10.1), adopted from (Ma & Bondade, 2013)):

$$h = \frac{P_{\text{out}}}{P_{\text{in}}} \times 100\ \%, \tag{10.1}$$

where $P_{\text{out}}$ – output power, W;

$P_{\text{in}}$ – input power, W.

The information sources mentioned in the graduation thesis should be listed in the section "List of References" placed before appendices. They should be arranged alphabetically, first presenting the sources written in the Latin script irrespective of the language, followed by the sources in Cyrillic or any other script.

The sources of information are formatted as follows:

- font – Times New Roman,
- font size – 12,
- the text is aligned with the left margin,
- the first line with no indent,
- in other lines there is a 1 cm indent from the left margin.

The guidelines for formatting bibliographic entries for various information sources (articles, books, online resources, etc.) in the List of References are laid down in Appendix 7. The List of References can be also formatted using other internationally recognized referencing styles, for example, APA, IEEE, Chicago, Harvard, MLA, and others. The student must note that the chosen style shall be applied consistently throughout the graduation thesis and that mixing different styles is not allowed.

# 11. ACADEMIC INTEGRITY

The student is expected to develop the graduation thesis following the principles of academic integrity. Plagiarism is one of the most common forms of academic misconduct, which is not acceptable under any circumstances, as the graduation thesis is the student`s original research. The Code of Academic Integrity of RTU (2023) defines plagiarism as "the usage of a published or unpublished work (including fragment, expressions, etc.) of another author, not providing the precise reference to the author and/or work, as well as the use of content generated by an artificial intelligence tool without a precise reference to the use of an artificial intelligence tool". Thus, plagiarism in the context of the graduation theses should be considered in two dimensions:

a) incorrect reference to the information sources used,
b) the use of content generated by an artificial intelligence tool without reference to the fact of generation.

## 11.1. Incorrect reference to the information sources

According to the Breach of Academic Integrity and Breach Consideration Procedures of RTU (2016), plagiarism "may appear in different forms that can be detected in both texts failing to provide the reference to the original sources and the texts providing such reference". The following forms of plagiarism can thus be listed as common in students` graduation theses.

- References are given in the text, but at least some of them are:
    - inaccurate references – the year of publication, the names of the authors, or the order of the authors are incorrectly represented in the reference;
    - inappropriate references – references that do not correspond to the information sources from which the content is taken, i.e., the student takes content from one information source but adds a reference to another information source;
    - unidentifiable references – a reference is included in the text of the graduation thesis, but the corresponding information source is not included in the list of references;
    - borrowed references – the student takes the content together with the references attached to the content from an information source but does not add a reference to the information source used, which results in the fact that only the borrowed references can be found in the relevant part of the graduation thesis; in this case, the student has not read the information sources corresponding to the borrowed references;
    - references at the end of paragraphs – the student takes one or more paragraphs from an information source but only makes a reference at the end of the last sentence of the borrowed text. It should be noted here that a reference always refers exclusively to the sentence at the end of which it is placed. In this situation, all content before the last sentence is considered plagiarism.

**If, however, it is necessary to reproduce several sentences from an information source, the reference should not be placed at the end of each sentence, and introductory words should be used**, which would allow the reader to understand that other sentences have also been reproduced from the same source, e.g., ..According to the authors of the above source.. or The above source also identifies...

- References are not given in the text – the student has taken content from an information source but does not refer to it in the graduation thesis, claiming the content taken as their own contribution to the graduation thesis. It is important to note that references should be given even when the content is paraphrased or translated because in this case, the student is merely changing the form of the original content, while the ideas and concepts expressed therein still belong to the author of the content. Code fragments, tables, figures, and formulas freely available on the web must also be referenced, as they have not been developed by the student.

Self-plagiarism is a specific type of plagiarism, where the student does not refer to their own work (graduation thesis, publications, etc.) developed in the past and whose results are used in the current thesis, e.g., the student develops a master`s thesis by continuing the theme started in the bachelor`s thesis and using the results obtained there. Reference to the previous work is necessary to distinguish between the results achieved in the current thesis and those achieved in the past and to clearly identify the knowledge and skills acquired by the student in the new education cycle or while completing an assignment. If the student has published scientific papers during the development of the graduation thesis, these should be referenced in the thesis with regard to the content of the specific publication.

Other types of plagiarism are described in the Breach of Academic Integrity and Breach Consideration Procedures of RTU (2016).

## 11.2. Unreferenced use of content generated by an artificial intelligence tool

Artificial intelligence tools can be used to generate content for the graduation thesis in case:

a) it is not related to the skills and knowledge that the student is required to demonstrate in the graduation thesis;
b) it is not related to the original contribution expected from the student;
c) it is authorized or supported by the study program;
d) the use of artificial intelligence tools is conditioned by the specifics of the research to be carried out in the graduation thesis.

Typically, the analytical part of the thesis, which presents the results of the analysis of information sources and the study of theories and concepts relevant to the thesis, requires the student to demonstrate the ability to independently acquire, select, analyse, and use information, as well as to formulate and critically analyse problems in the field of science.

This severely limits the use of artificial intelligence tools for content generation in this part of the thesis, and therefore, artificial intelligence text-generation tools should be used with caution, especially in sections where the student is expected to provide their own conclusions, evaluation, comparison, etc. The use of such tools is also not allowed for the formulation of the goal, tasks, and conclusions of the thesis. In the solution part of the graduation thesis, the student is typically expected to demonstrate the ability to independently develop a solution to the problem addressed in the graduation thesis. The solution must be original, and therefore, artificially generated content may not be used in this part of the graduation thesis.

Thus, the use of artificial intelligence tools to generate content can become a serious problem in the graduation thesis if:

- the student inserts artificially generated content (text, images, etc.) in the graduation thesis but does not include a reference to the tool used;
- the student uses artificial intelligence tools to generate large amounts of content;
- the student uses artificial intelligence tools to generate content where they should demonstrate their own contribution, knowledge, and skills.

In any case, when generating content artificially, the student assumes full responsibility for it, i.e., the truth and critical evaluation of the facts included in the content, the logic of the presentation of the content, the accompanying references to information sources, etc.

Correct referencing methods regarding the content generated by artificial intelligence tools are given in Appendix 7 of these guidelines. In the appendices to the graduation thesis, the student should include a screenshot of the response provided by the artificial intelligence tool.

## 11.3. Other breaches of academic integrity

Breaches of academic integrity can take other forms than just plagiarism. Students should also avoid other breaches, such as:

- missing references in the text of the student`s graduation thesis to some of the information sources listed in the list of references;
- the student produces the graduation thesis by mixing sentences translated, paraphrased, or quoted from other information sources, with appropriate references to the information sources but without providing their analysis, summary, conclusions, critical evaluation, comparison or contrast of the considered ideas. In this case, the student does not demonstrate the ability to process, analyse and summarize the information sources;
- the student presents the ideas of a single information source or provides a translation of the information source with appropriate reference in separate parts of the graduation thesis. In this case, the student does not demonstrate the ability to select and summarize information sources independently;
- the student falsifies or fabricates research results or data.

# 12. APPENDICES

Various additional materials that cannot be integrated into the body of the graduation thesis can be added in appendices. Appendices are used to present auxiliary information, which:

- is useful in order to better understand the content of the graduation thesis but is not essential for the overall understanding of the text;
- is voluminous, and its insertion in the text would interrupt its natural flow;
- is mentioned in several sections of the thesis, so it is difficult to find a relevant place in the text to present it.

A separate page with the inscription APPENDICES is inserted in the thesis before appendices. The inscription is centred both horizontally and vertically, font size is 22, bold, and all letters are capitalized. If there is only one appendix to the thesis, it is not necessary to add a separate page with the inscription APPENDICES; the appendix is not numbered either.

Each appendix should start on a new page, the number of the respective appendix is given in the top right corner: the word "Appendix" followed by a space and the ordinal number of the appendix, for example, Appendix 1, Appendix 2, etc. The title of the appendix is written below, in the middle of the next line, using size 12 bold font. The title of the appendix is written in lower-case letters with the first letter capitalized; no full stop is added at the end. The spacing between the title of the appendix and the forthcoming text is 12 pt. It is necessary to provide a reference to the appendix in the respective section of the thesis; for example, the data are given in Appendix 1. **Appendices that are not properly referred to in the body of the thesis may not be included in the graduation thesis**.

If an appendix contains several figures, tables and/or formulas, the numbering should start with the letter P and the sequence number of the appendix followed by a dot, the sequence number of the figure/table/formula, e.g., Figure P2.3. Average temperature change over the last 10 years. Other formatting features of figures, tables, and formulas in the appendices should follow the rules laid down in Chapters 5 to 7 of these guidelines.

# 13. SUMMARY OF FORMATTING SETTINGS

The information about the sizes and types of fonts used in the graduation thesis, as well as their formatting and alignment, are summarized in Table 13.1.

**Table 13.1**

**Fonts and Formatting**

| Element of the graduation thesis | Font type and size | Formatting | Alignment | Spacing before (pt) | Spacing after (pt) |
|---|---|---|---|---|---|
| Page number | TNR[2], 12 | Normal | Centred | 0 | 0 |
| Level 1 heading | TNR, 14 | Bold, all letters capitalized | Centred | 0 | 12 |
| Level 2 heading | TNR, 14 | Bold, first letter capitalized, all other letters in lowercase | Centred | 12 | 12 |
| Level 3 heading | TNR, 12 | Bold, first letter capitalized, all other letters in lowercase | Centred | 12 | 12 |
| Body text | TNR, 12 | Normal, spacing between the lines – 1.5, indent in the 1st line in a paragraph – 1 cm | Justified against both margins | 0 | 0 |
| Entries in the list | TNR, 12 | Indent between the symbol introducing an entry in the list and the margin –1.9 cm; indent between the symbol and the entry text – 0.63 cm | Justified against both margins; if the text in the list entry is longer than one line, it is aligned along the text of the first line | 0 | 0 |
| Name and number of the figure | TNR, 12 | Bold, small letters, first letter capitalized, without a full stop at the end | Centred | 6 | 12 |
| Legend to the figure | TNR, 10 | Normal | Centred | 0 | 12 |
| Code | Arial Narrow, 8–11 | Normal; in case of longer fragments – 1 cm indent from the left and right margins | – | 0 | 0 |
| The number of the table | TNR, 12 | Bold | At the right margin | 12 | 0 |
| The name of the table | TNR, 12 | Bold, all meaningful words capitalized, without a full stop at the end | Centred | 0 | 6 |

[2] TNR – Times New Roman.

| | | | | | |
|---|---|---|---|---|---|
| Titles of the columns in the table | TNR, 11 | Bold, first letter capitalized, others – lower-case letters, line spacing – 1 | Centred | 0 | 0 |
| Content of the table | TNR, 11 | Normal, line spacing – 1 | At the discretion of the author | 0 | 0 |
| Explanation (legend) after the table | TNR, 10 | Normal | Centred | 0 | 12 |
| Formula | TNR, 12 | Normal | Centred | 12 | 0 |
| Explanation of the symbols used in the formula | TNR, 12 | Normal | Starts with the word “where”, placing it on the left side of the page | 0 | 0 |
| Entries in the list of references | TNR, 12 | Normal | Aligned at the left margin, the first line with no indent, other lines – a 1 cm indent from the left margin | 0 | 0 |
| Heading “Appendix” | TNR, 22 | Bold, all letters capitalized | Centred horizontally and vertically | 0 | 0 |
| Number of appendix | TNR, 12 | Bold | At the right margin | 0 | 0 |
| Appendix heading | TNR, 12 | Bold, first letter capitalized, all other letters in lowercase | Centred | 0 | 12 |
| The heading “Technical drawings” | TNR, 14 | Bold, all letters capitalized | Centred | 0 | 12 |
| List of technical drawings sheet | TNR, 12 | Normal, line spacing – 1.5 | Justified against both margins | 0 | 0 |

# APPENDICES

**Appendix 1**

## Sample title page of a graduation thesis

**RIGA TECHNICAL UNIVERSITY**

*(Times New Roman, font size – 16 pt, bold, all letters capitalized, centred, spacing before and after – 0 pt)*

Faculty of Computer Science, Information Technology and Energy

*(Times New Roman, font size – 15 pt, normal, centred, spacing before and after – 0 pt)*

<Name of the institute responsible for implementation of the study program>

*(Times New Roman, font size – 14 pt, normal, centred, spacing before and after – 0 pt)*

**<Name and surname of the student>**

*(Times New Roman, font size – 16 pt, bold, centred, spacing before and after – 0 pt)*

Student of <Academic/Professional Bachelor (First Cycle)/Master (Second Cycle) Study Program "Title of the study program">, student ID No <.....>

*(Times New Roman, font size – 12 pt, normal, centred, spacing before and after – 0 pt)*

# <TITLE OF THE GRADUATION THESIS>

*(Times New Roman, font size – 24 pt, bold, all letters capitalized, centred, spacing before and after – 0 pt)*

**<BACHELOR/MASTER THESIS, DIPLOMA PROJECT, QUALIFICATION PAPER>**

*(Times New Roman, font size – 16 pt, bold, all letters capitalized, centred, spacing before and after – 0 pt)*

Scientific adviser <scientific degree, academic position>

*(Times New Roman, font size – 12 pt, normal, aligned at the right margin, spacing before and after – 0 pt)*

<Name, surname>

*(Times New Roman, font size – 16 pt, normal, aligned at the right margin, spacing before and after – 0 pt)*

RIGA <20….>

*(Times New Roman, font size – 16 pt, normal, centred, spacing before and after – 0 pt)*

**Appendix 2**

## Work Performance and Assessment Sheet

**RIGA TECHNICAL UNIVERSITY**
*(Times New Roman, font size – 14 pt, bold, all letters capitalized, centred, spacing before and after – 0 pt)*

**FACULTY OF COMPUTER SCIENCE,
INFORMATION TECHNOLOGY AND ENERGY**
*(Times New Roman, font size – 12 pt, bold, all letters capitalized, centred, spacing before and after – 0 pt)*

<name of the institute>
*(Times New Roman, font size – 12 pt, normal, centred, spacing before and after – 0 pt)*

**Work Performance and Assessment Sheet of the <Type of the graduation thesis from the following list: Bachelor Thesis, Master Thesis, Diploma Project, Qualification Paper>**
*(Times New Roman, font size – 12 pt, bold, aligned at the left margin, spacing before and after – 0 pt)*

The author of the graduation thesis

Student <name, surname> _____
(signature, date)

*(Times New Roman, font size – 12 pt, normal, aligned at the left margin, spacing before and after – 0 pt)*

The graduation thesis has been approved for the defence

Scientific adviser

<scientific degree, academic position, name, surname> _____
(signature, date)

*(Times New Roman, font size – 12 pt, normal, aligned at the left margin, spacing before and after – 0 pt)*

**Appendix 3**

## Sample Abstract

# ABSTRACT

*(Times New Roman, font size – 14 pt, bold, centred, spacing after the text – 12 pt)*

MACHINE LEARNING, IMAGE CLASSIFICATION, ALGORITHM PERFORMANCE
*(Times New Roman, font size – 12 pt, alignment at the left margin, all letters capitalized, spacing after the text – 12 pt)*

There are many machine learning algorithms available for image classification, but each has its own limitations and advantages. The goal of this bachelor thesis is to evaluate and compare the performance of machine learning algorithms in the context of image classification. The thesis considers the most popular machine learning algorithms, including neural networks, random forests and support vector machines, and evaluates their performance on three datasets of different sizes. The results show that neural networks demonstrate higher accuracy on large datasets, while support vector machines showed the highest accuracy on smaller datasets.

The bachelor thesis consists of 64 pages; it contains 11 figures, eight tables, two appendices, 36 references, and five sheets of technical drawings.
(*Times New Roman, font size – 12 pt, line spacing – 1.5, indent of the first line of the paragraph – 1 cm, justified against both margins)*

**Appendix 4**

## Sample Table of Contents

# TABLE OF CONTENTS

**Appendix 5**

## Example of the Abbreviation Section

### ABBREVIATIONS USED IN THE THESIS

*(Times New Roman, font size – 14 pt, bold, centred, spacing after the text – 12 pt)*

AI – artificial intelligence
ANN – artificial neural network
LLM – large language model
MLA – machine learning algorithm

(*Times New Roman, font size – 12 pt, line spacing – 1.5, no indent, aligned with the left margin; arranged in alphabetical order)*

**Appendix 6**

## Rules for Formatting the Numbered References

- The use of numbered references is permitted if required by the study program.
- Each source of information should be numbered in Arabic numerals in the list of references.
- The ordinal number of the information source is assigned in the order in which the source is mentioned in the text of the thesis, i.e., the first source mentioned is ascribed the number 1, the second source – the number 2, and so on.
- When a specific information source is referred to, its number remains the same throughout the graduation thesis.
- In the text of the graduation thesis, the reference to the information source is enclosed in square brackets before any punctuation, separated from the preceding text by a space.
- If in the thesis it is necessary to cite or refer to a specific part or element of the information source, the specific page or page range of the information source shall be indicated in the reference by adding it in square brackets after the number of the information source, for example [1, page 3] or [3, pages 4–5].
- If it is necessary to refer to the authors of the information source in the text of the graduation thesis, the authors' names should be mentioned in the text with reference to the source after their names, e.g., ..Ozols [3] believes that... or ..Bērziņš, Ivanovs et al. [6] state that...
- In the text of the graduation thesis, when referring to several sources at the same time, the references should be arranged in ascending order, each in separate square brackets and separated by a comma, e.g., [1], [3], [15] or a dash if three or more references are to be inserted and their interval is continuous, e.g. [1]–[5] (reference to information sources one to five in the list of references).
- Using this referencing style, the graduation thesis should also provide references to lists, figures, tables, formulas, and code fragments if they are taken from the information sources, in accordance with the examples given in Chapter 10 of these guidelines.

**Appendix 7**

## Reference formatting style (LVS ISO 690:2023 [adapted])

### 1. SCIENTIFIC MONOGRAPH / BOOK / LECTURE COURSE

Surname of the author**,** Initials**.,** Surname of the next author**,** Initials. *Title in the original language (italic)***.** Online**.** Edition**.** Volume (if more than one)**.** Place**:** Publisher**,** year**.** Page count**.** ISBN**.** e-ISBN**.** Available from: <URL>[3].

- **If the source has more than four authors, abbreviation et al. is added after the surname of the fourth author.**
- **E-books must be followed by "Online". At the end, the access link must be specified "Available from".**

Examples

Negnevitsky, M. *Artificial Intelligence: A Guide to Intelligent Systems*. 3rd ed. Addison-Wesley, 2011. 394 p. ISBN 978-0201711592.

Barkans, J., Zalostiba, D. *On the Global Climate Change*. Online. Riga: RTU Publishing House, 2010. 89 p. ISBN 9780-9934-10-042-0. Available from: https://www.rtu.lv/writable/public_files/ RTU_032.pdf.

### 2. PhD THESIS

Surname of the author**,** Name**.** *Title in the original language (italic)***.** PhD/Doctoral Thesis**.** Place**:** Publisher**,** year**.** Page count**.** Available from: <URL>.

Example

Sīlis, A. *Power System Management under Market Conditions with High Dispersion of Renewable Energy Production*. Doctoral Thesis. Riga: RTU Press, 2024. 144 p. Available from: https://ebooks.rtu.lv/product/power-system-management-under-market-conditions-with-high-dispersion-of-renewable-energy-production-promocijas-darbs/.

[3] Coloring is used only to highlight the most essential elements; it shall not be used in formatting the list of references.

## 3. SUMMARY OF THE PhD THESIS

Surname of the author, Name. *Title of the thesis (italic)*. Summary of the PhD/Doctoral Thesis. Place: Publisher, year. Page count. ISBN. e-ISBN. Available from: <URL>.

Example

Sīlis, A.. *Power System Management under Market Conditions with High Dispersion of Renewable Energy Production*. Summary of the Doctoral Thesis. Riga: RTU Press, 2024. 64 p. e-ISBN 978-9934-37-088-5. Available from: https://doi.org/10.7250/9789934370885.

## 4. PAPER IN THE BOOK OF ABSTRACTS OF A CONFERENCE / PAPER IN THE CONFERENCE PROCEEDINGS

Surname of the author, Initials., Surname of the next author, Initials. Title of the paper in the original language. **In:** *Title of the conference and proceedings, Country, City, Date (italic)*. Volume (part). Place: Publisher, year, page numbers. ISBN. e-ISBN. ISSN. e-ISSN. Available from: <URL>.

Example

Zicans, J., Kalnins, M., Bledzki, A. K., Jablonskis, I., Merijs Meri, R. Tensile Properties of Irradiated Binary Heterogeneous Blends Based on Poly (ethylene terephtalate) and Polyethylene. **In:** *Materials Engineering & BALTTRIB – 2001: Materials of the X-th International Baltic Conference*, *Latvia, Jurmala, September 27–28, 2001*. Riga, 2001, pp. 120–121.

## 5. ARTICLE IN THE COLLECTION OF SCIENTIFIC ARTICLES

Surname of the author, Initials., Surname of the next author, Initials. Title of the article in the original language. **In:** *Title of the book (italic)*. Volume. Place: Publisher, year, page numbers. ISBN. e-ISBN. ISSN. e-ISSN. Available from: <URL>.

Example

Počs, R. Regulations and Requirements for Development of Promotion Theses in Latvia. **In:** *Overcoming the Hindrance in Writing Doctoral Theses: Collection of Scientific Articles*. Riga: RTU Publishing House, 2009, pp. 7–25. ISBN 978-9984-32-113-4.

## 6. CHAPTER IN THE SCIENTIFIC MONOGRAPH/BOOK

Surname of the author, Initials., Surname of the next author, Initials. Title of the chapter in the original language. **In:** Surname, Initials of the author or editor of the book. *Title of the book (italic)*. Edition. Volume (if more than one). Place: Publisher, year, page numbers. ISBN. e-ISBN. Available from: <URL>.

Example

Merkuryev, Y., Burinskiene, A., Merkuryeva, G. Warehouse Order Picking Process. **In:** Merkuryev, Y., Merkuryeva G. *Simulation-Based Case Studies in Logistics: Education and Applied Research.* London: Springer, 2009, pp. 147–165. ISBN 978-1-84882-186-6. e-ISBN 978-1-84882-187-3. Available from: https://doi.org/10.1007/978-1-84882-187-3_9.

## 7. ARTICLE IN THE JOURNAL

Surname of the author, Initials., Surname of the next author, Initials. Title of the article in the original language. *Name of the journal (italic)*. Year, volume number (issue), page numbers. ISSN. e-ISSN. Available from: <URL>.

Example

Haritonovs, V., Smirnovs, J., Naudžuns, J. Prediction of Rutting Formation in Asphalt Concrete Pavement. *The Baltic Journal of Road and Bridge Engineering*. 2010, vol. 5, no. 1, pp. 38–42. ISSN 1822-427X. e-ISSN 1822-4288. Available from: https://doi.org/10.3846/bjrbe.2010.05.

- **2 variants for formatting numbers and pages are possible:**

2010, vol. 5, no.1, pp. 38–42.
2010, 5 (1), 38–42.

## 8. ARTICLE IN SCIENTIFIC JOURNALS OF RTU

Surname of the author, Initials., Surname of the next author, Initials. Title of the article in the original language. *Name of the journal (italic)*. Year, volume number, page numbers. ISSN. e-ISSN. Available from: <URL>.

Example

Buzdin, D., Nikiforova, O. Transformation of UML Class Diagram to Internal Java Domain-Specific Language. *Applied Computer Systems*. 2012, vol. 13, pp. 61–67. ISSN 2255-8683. e-ISSN 2255-8691. Available from: https://doi.org/10.2478/v10312-012-0008-0.

## 9. ONLINE PUBLICATION

Surname of the author, Initials., Surname of the next author, Initials. *Title in the original language (italic)*. Online. Place: Publisher, year/date. Available from: <URL>. [viewed yyyy-mm-dd].

- **It is often not possible to determine the place and publisher of the publication, therefore, these elements are not compulsory.**

Example

Janusevskis, J., Le Riche, R. *Simultaneous Kriging-Based Sampling for Optimization and Uncertainty Propagation*. Online. CCSd, 2010. Available from: https://hal.science/hal-00506957. [viewed 2024-09-30].

## 10. PATENTS

APPLICANT or HOLDER OF THE PATENT (patent jurisdiction code). *Title of patent (slīprakstā)*. Inventor(s). Appl: [Aplication date: yyyy-mm-dd]. Iss: [Issuance date: yyyy-mm-dd]. Patent or Patent application number. Available from: <URL>.

Examples

TECHNICKÁ UNIVERZITA V LIBERCI (WO). *A Method of Nanofibres Production from a Polymer Solution Using Electrostatic Spinning and a Device for Carrying out the Method*. Oldřich Jirsák, Filip Sanetrník (inventors). Appl: 2003-09-08. Iss: 2004-09-08. WO 2005024101 A1. Available from: https://worldwide.espacenet.com/ patent/search/family/033304495/publication/WO2005024101A1?q=WO2005024101A1.

CHRISTENSEN, G. K. (US). *Toy building set*. Appl: 1968-11-18. Iss: 1971-08-10. US Patent 3,597,875.

## 11. TECHNICAL OR PROJECT REPORTS

Responsible body or Author. *Title (Italic)*. Online. Place: Publisher, year/date. Report number. Available from: <URL>.

Example

Riga Technical University. *Development of efficient clad-pumped fiber optical amplifiers for telecommunication systems (DOPAnT)*. Online. Riga: RTU Institute of Telecommunications, 2019. Project No 1.1.1.1/18/A/068. Available from: https://www.rtu.lv/lv/universitate/projekti/atvert?project_number=4124.

- **If the report is not available on the Internet**

Mitchell, D., Loader, A. *Investigation of pollutant emissions from crematoria*. Stevenage: Warren Spring Lab., 1993. WSLLR-908 (PA).

## 12. STANDARDS

The name of the standardisation organization. Standard code, *Title (Italic)*.

Example

International Organization for Standardization (ISO). ISO/IEC/IEEE 15939:2017, *Systems and software engineering – Measurement process.*

## 13. DATASET

Surname of the author, Initials., Surname of the next author, Initials. *Title in the original language (Italic)*. Dataset. Publisher, Publication date. Available from: <URL>.

Example

Dzikevics, M. *Experimental data for latent thermal storage cooling.* Dataset. Zenodo, July 29, 2021. Available from: https://doi.org/10.5281/zenodo.5146091.

## 14. SOFTWARE

Software or Tool developer**.** *Software or Tool title (Italic)***.** Source type**.** Version (if known)**.** Publisher, date of last update or release**.** Available from: <URL>**.** Date of usage [viewed yyyy-mm-dd].

Examples

Oracle Corp. *MySQL®*. Program. Enterprise edition. Oracle, 2015. [viewed 2016-03-23].

OpenAI. *ChatGPT-4*. AI program. OpenAI, 18 July 2024. Available from: https://openai.com/chatgpt/. [viewed 2024-09-30].

Nintendo. *Mario Kart 8 Deluxe for Nintendo Switch*. Game. Nintendo Switch edition. Nintendo, 2017. Available from: https://mariokart8.nintendo.com. [viewed 2024-09-30].

Kahoot. *Kahoot!*. Mobile application. Version 5.8.3. Kahoot, 25 September 2024. Available from: https://play.google.com/store/apps/details?id=no.mobitroll.kahoot.android. [viewed 2024-09-30].

## 15. GENERATIVE ARTIFICIAL INTELLIGENCE TOOLS

Tool developer**.** Name of the tool and version (if known)**.** *Prompt used (italic)***.** Tool web address**.** [accessed yyyy-mm-dd]**.** vai [image generated yyyy-mm-dd].

Examples

Microsoft. CoPilot. Prompt: *Summarize the Geneva Convention in 100 words*. https://copilot.microsoft.com/. [accessed 2024-11-21].

OpenAI. ChatGPT, version 3.5. Prompt: *Explain to general audiences the possible causes and effects of climate change*. https://chatgpt.com/. [accessed 2024-02-15].

OpenAI. GPT-4o mini. Prompt: *Describe the differences between ChatGPT, Claude and Gemini in 1-2 paragraphs*. https://chatgpt.com/. [accessed 2024-08-14].

OpenAI. DALL·E 2. Prompt: *A modern office rendered as a cubist painting*. https://openai.com/index/dall-e-2/. [image generated 2024-08-14].

Craiyon V4 Beta. Prompt: *University of the future*. https://www.craiyon.com/. [image generated 2024-11-21].

- **Use the full prompt, or the first several words of the prompt.**