**THESISCA**

for the qualification

of **inżynier/magister**

Faculty of Mechatronics

and

Mechanical Engineering

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Thesis for the qualification of inżynier / magister

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on:

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thesis supervisor:

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Kielce 202... (year of defence)

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<<<BLANK PAGE>>>Table of contents <<<PŚk Unnumbered Chapter Heading style>>>14 pt Times New Roman boldface font, 12 pt after-heading spacing, 1.5 line spacing

Introduction …<<<< 12 pt TNR, 1.0 line spacing, << PŚk Table of contents style>>> 7

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Introduction <<<PŚk Unnumbered Chapter Heading style>>> 14 pt Times New Roman boldface font

The main text must be written in 12-point Times New Roman font with 1.5 line spacing. The first line of each paragraph should be indented by 1.25 cm. Pages should have a 2.5 cm margin on all sides (top, bottom, right, and left). Add extra space of 1 cm to allow for binding. The text must be fully justified. All pages must be numbered. The text needs to be divided into paragraphs. One-sentence paragraphs are to be avoided. A paragraph is usually about one topic and there should be logical connection between sentences.

Since the thesis structure is assessed by the reviewers, the text needs to be properly organized. Use decimal numbers for sections and subsections. It is not recommended to use more than two levels of sectioning, e.g., 4.1.2. Sections, subsections and chapters should be of an adequate and consistent length, not too short or too long. Tables of contents can be created automatically in MS Office; this will help you keep your document organized. If you make changes to your document, make sure to update the table of contents. <<<<PŚk Main text style>>>>

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Once the thesis has been checked through the JSA plagiarism detection software and accepted by the supervisor to be deposited in the APD USOS, a print-ready file with control codes at the page bottom (codes starting on page 5) is generated. For printing purposes, **use only the print-ready file**. The paper copy **must be identical (100%)** to the electronic copy (uploaded to the system), which each student confirms by signing a written declaration.

The Introduction should not be too long, usually 2−3 pages. It must differ in form from the abstract. The Introduction states the general topic and provides background information. It outlines the overall goals and rationale. It overviews the main issues to be covered. It may emphasize that the research was in line with the latest developments. The Introduction briefly explains what the research involved and what problems were dealt with. It also includes a short review of the literature. The Introduction must not contain information that is not relevant to the thesis topic or aim.

1. Chapter title <<<PŚk Numbered Chapter Heading style>>> 14 pt Times New Roman boldface font, 0 cm left indentation, 1.25 cm hanging indentation, 12 pt after-heading spacing

Start each new chapter on a new page. Justify the text. Figure 1.1 shows how to format the text. Each figure must be mentioned in a sentence before they appear in the text, for example, “Figure 1.2 shows …”or “… a diagram of the system depicted in Figure 2.3.” Do not refer to ‘the figure above/below’. Always refer to the figure number. Use 12 pt single-line spacing above and below figures. Figures must be centered. Place the caption below the figure, also centered; for captions, use 12-point Times New Roman font and single-line spacing. Leave a single-line space between the caption and the text.

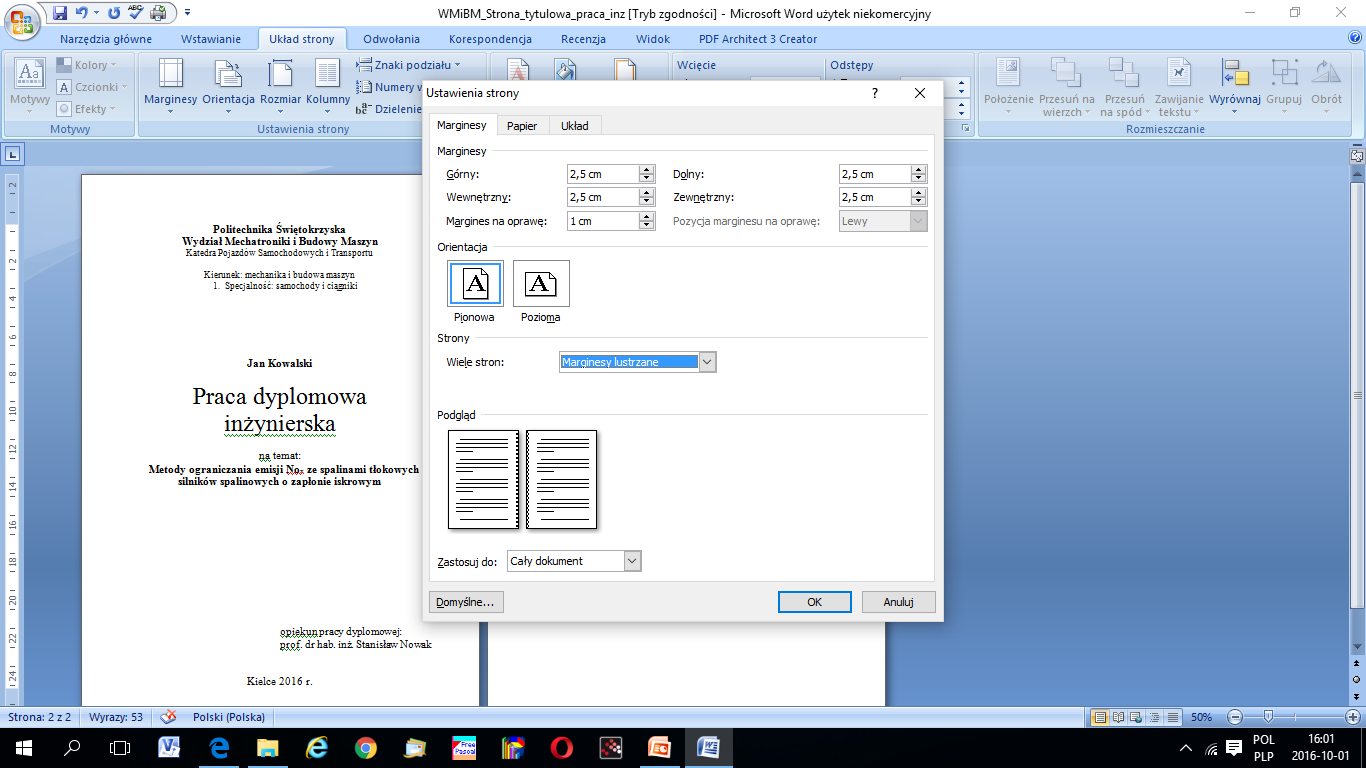


Fig. 1.1. Place a figure centered; captions numbered sequentially through each chapter using decimal numbers; after the figure number, add a descriptive caption (12 pt TNR font, single-line spacing, no full stop at the end); <<<PŚk Figure title style>>> if a figure is not original to your work, but comes from a different source, cite the source by using the number assigned to that source in the reference list in square brackets, [reference number]

Make sure all figures are readable. The reviewer assessing the thesis may find them non-readable if the font is too small or the image is badly scanned. Figures should have all units labelled in English; if, however, these elements are in a foreign language, translations must be provided in the figure caption. <<<<PŚk Main text style>>>>

The thesis should use impersonal forms, e.g., “was/were performed/discussed/calculated”. Avoid using the first person singular, e.g., “I performed…” or “I calculated …”. Avoid also colloquial writing, technical jargon or foreign expressions.

Use logical, precise language. Avoid incorrect/ambiguous expressions, e.g., “the most optimal”. Long, complex sentences should be avoided to prevent misinterpretation. Do not leave 1-2 letter words at the end of a line; use the so-called hard or non-breaking space.

1. Chapter title<<<PŚk Numbered Chapter Heading style>>> 14 pt Times New Roman boldface font, 0 cm left indentation, 0.5 cm hanging indentation, 12 pt after-heading spacing

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* 1. **Section title <<<**PŚk Numbered Section Heading style>>> 13 pt Times New Roman boldface font, 0 cm left indentation, 1.25 cm **hanging** indentation, 12 pt before- and after-heading spacing

Images and diagrams included in the thesis are called figures. Each figure and table must be referred to in the main text before they appear.

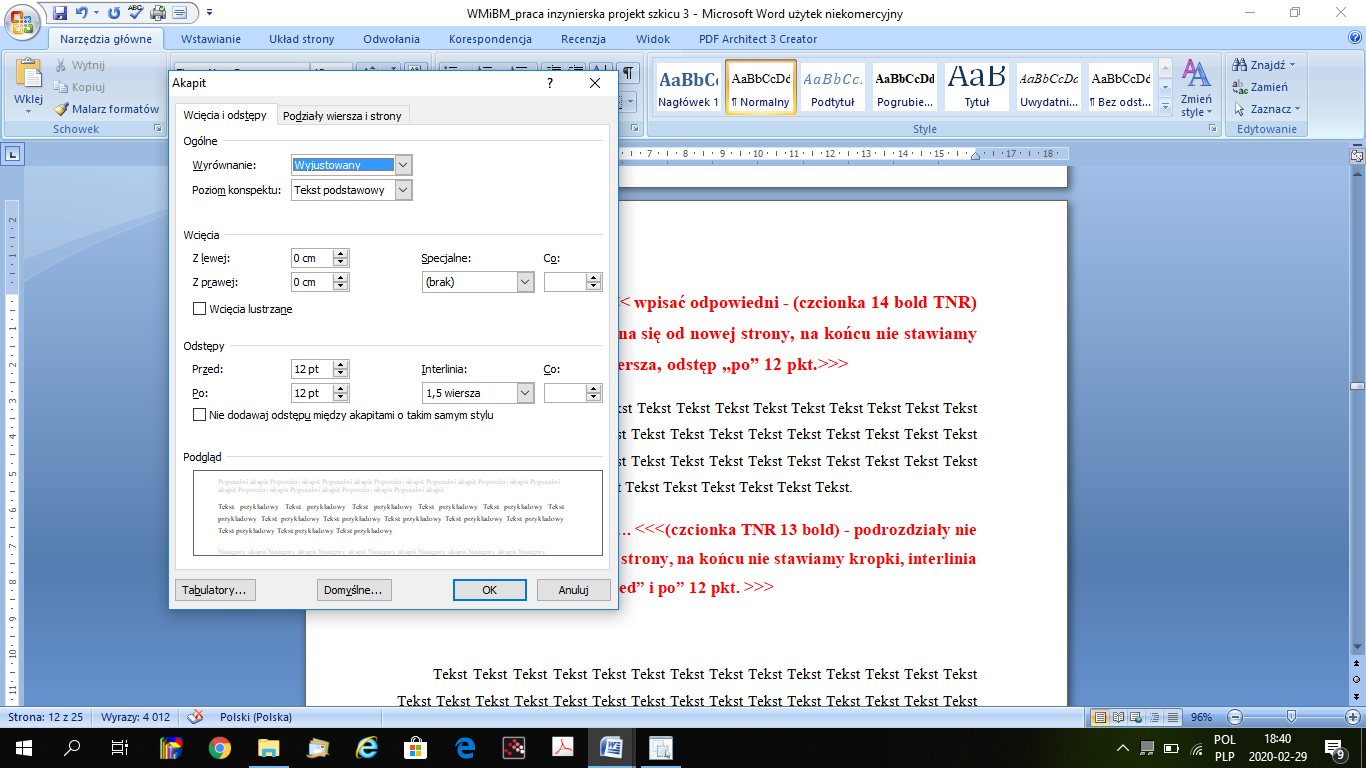
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Fig. 2.1. Place a figure centered, captions numbered sequentially through each chapter using decimal numbers; after the figure number, add a descriptive caption (12 pt TNR font, single-line spacing, no full stop at the end); <<<PŚk Figure title style>>> if   
a figure is not original to your work, but comes from a different source, cite the source by using the number assigned to that source in the reference list in square brackets, [reference number]

If a figure is cited from a book, a journal, or a website, the figure caption needs   
to indicate the source in square brackets [reference number]. If a drawing, a photograph, or a diagram is your original work, no source is provided. If a diagram contains data from other sources, you need to reference the original works. Avoid beginning a Section at the bottom of a page if there are fewer than 3-4 lines of text left.

* + 1. Subsection title <<<PŚk Numbered Subsection Heading style>>> 12 pt Times New Roman boldface font, 0 cm left indentation, 1.25 cm **hanging** indentation, 12 pt before-and after-heading spacing

Avoid beginning a new Subsection at the bottom of a page. The space left should accommodate more than 3-4 lines of text.

Each table must be mentioned in the text before it appears, e.g., “Table 1.4 depicts …”, “Table 2.1 shows ...”.

If a table is not your original work, and the data come from different sources, all the sources must be provided, e.g., [12, 15, 17]. The in-text citations must perfectly correspond with the reference list entries. Each table must be mentioned in the text before they appear. A table needs to be fully justified, i.e., aligned with both margins. The table caption, written in 12-point Times New Roman font, must be centered. For captions, use single-line spacing. Leave a single line space between the text and the top of the table caption and another single line space between the table and the text.

Table 2.1. Table title [if a table or its elements come from another source, indicate the source] <<<PŚk Table title style>>> 12 pt before-table spacing

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| Table header | Minimum 10 pt font | Single line spacing |
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Tables should not split across multiple pages. If, however, a table is more than one page in length with a large number of rows, break the table to present the data in smaller tables. See the example below.

Table 1.1 continued. Table title [if you reproduce a table from another source, indicate the source]

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If the information in the table comes from a book, a journal, a website, etc., the source of the data must be indicated [the reference number]. For example, “The engine parameters are given in Table 2.3 [7].” The in-text citations must perfectly correspond with the reference list entries. If a table is created on the basis of data from multiple sources, all the sources need to be cited.

For formulae/equations, use the Equation editor. Number them chapterwise. If a formula/equation comes from another source, indicate the source. Formulae/Equations are centered and have right-justified numbers given in parentheses. Choose 7.5 cm tab stops to align the text +15 cm to the right. An equation is given its own line with a space above and below it. Generally, an equation is part of a sentence. For example, “The results were used to determine the values of coefficient A [reference source]:

<<<<single line spacing>>>>

(1)

where:

A – coefficient,

a – numerator’s value,

b – denominator’s value.” <<<PŚk equation symbols style>>>.

All symbols used in an equation should be explained directly below the equation (preferably in the list format) unless they were explained above in text. If you refer to an equation in text, use Eq. and its number in parentheses. For example: “The value of coefficient A calculated from Eq. (1) is then used to determine the value of parameter X [reference source]:

<<<<single line spacing>>>>

(2)

where:

s – symbol explanation,

c – symbol explanation,

y – symbol explanation.”

Conclusions <<<PŚk Unnumbered Chapter Heading style>>> 12 pt Times New Roman boldface font, 0 cm left indentation, 0.5 cm hanging indentation, 12 pt after-heading spacing

The Conclusions Chapter should not be too long, usually 1.5-2 pages. It should summarize the key findings of your research, the work you have done or the results you obtained. <<<<PŚk Main text style>>>>

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References <<<PŚk Unnumbered Chapter Heading style>>>

Reference list entries appear in the order the sources are cited in the text. Thus, the reference list is organized numerically, not alphabetically. In MS Office, you can use the referencing tool to automatically generate a Reference List. Use the IEEE citation style.

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If a fragment of a legal document or a standard is copied word-for-word and then analyzed/discussed in the text, quotation marks must be used where necessary and the source must be indicated. For example, “Article 12 of this regulation reads ‘*text of the regulation text of the regulation text of the regulation*’ [23], which suggests that …”. If a source is not given, the text may be considered **plagiarism** by the JSA plagiarism detection software and by the supervisor.

If controversial data are included in the thesis, their source should also be indicated. Reference sources should be provided in the text each time the information is cited; the above is true also for numerical data, formulae, dates, structural solutions, names, etc. There is no such principle that a reference number is always placed at the end of a paragraph because the information included in a paragraph may come from different sources. Reference numbers must be placed at the end of the relevant clause or sentence.

If the text you have quoted or paraphrased is formatted as a list, place the reference number(s) in square brackets before the colon introducing the whole list, e.g. “… [2]:”. If more than one source is cited, you may cite the sources separately before the final punctuation mark at the end of a line.

A minimum of one in-text citation is required for each entry on the list of references. The reference indicated in the text and figure or table captions must correspond with the number of the citation provided in the references section. Even if a work is cited in text more than once, only one entry in the reference list should be provided. References listed must follow the IEEE formatting guidelines. For details see the IEEE Reference Guide at <https://ieeeauthorcenter.ieee.org/wp-content/uploads/IEEE-Reference-Guide.pdf>

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References <<<PŚk Unnumbered Chapter Heading style>>>

1. J. Wicher, *Bezpieczeństwo pojazdów*, Warszawa: Wydawnictwa Komunikacji i Łączności, 2015.
2. A. Pyrża, *Poradnik wynalazcy*, Warszawa: Urząd Patentowy Rzeczypospolitej Polskiej, 2009.
3. A. C. Wójcik, “Wypadki drogowe w roku 2022,” *Auto-technika motoryzacyjna,* 9, pp. 20-25, 01.09.2022.
4. I. D. Nowak, “Transport multimodalny,” *Logistyka, 6,* pp. 15-18, 05.06.2022
5. J. Pokorski, H. Sar, A. Reński, “Influence of exploitation conditions on anti-skid properties of tyres,” *Transport*, 34, 2, pp. 415–424, 2019, https://doi.org/10.3846/ transport.2019.10426.
6. V. Chen, A.T. Chacko, F.V. Costello, N. Desrosiers, P. Appleton, E.K. Rodriguez, “Driving after musculoskeletal injury: addressing patient and surgeon concerns in an urban orthopaedic practice,” *J Bone Joint Surg Am*., 90, pp. 2791-2797, 2008.
7. A. Brake, L. Hernandez, L. Mann, A. Dickerson, T. Reistetter, “The RT-2S simple reaction time tester”, 18.02.2019, [Online]. Available: https://www.atpwork.com/images /pdfs/test\_retest.pdf, accessed18.02.2019 r.
8. J. Nowak, “Uszkodzenia półosi”, 15.01.2023, [Online]. Available: <http://autokult.pl/25885,do-czego-sluza-przeguby-polosi-i-jakie-sa-objawy-ich-zuzycia> accessed 01.10.2020 r.
9. M. Nowak, “Analiza przyczyn zużycia noża tokarskiego,” in *Konferencja Problemy Technologii Materiałowych*, Kielce, 2021
10. M. Blanco, J. M. Hankey, J. A. Chestnut, “Taxonomy for Secondary In-Vehicle Tasks Based on Eye Glance and Task completion Time”, In Proceedings of the Human Factors and Ergonomics Society Annual Meeting, pp. 1975-1979, 12.09.2023.

For Reference lists, use 12-point Times New Roman font and 1.5 line spacing. Make the text fully justified. <<<<PŚk References style>>>>.

Abstract <<<PŚk Unnumbered Chapter Heading style>>>

An abstract should be one paragraph long. There should be a minimum of 10 lines of text. It should contain the problem statement or the thesis aim, methods (approach), results, and general conclusions. Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text TextText. Text Text Text Text Text Text Text Text Text Text Text Text Text. <<<< PŚk Main text style>>>>

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List of figures (optional) <<< PŚk Unnumbered Chapter Heading style>>>

1. Figure title <<<< PŚk List of figures and tables style>>>>

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