

—Please remember to remove all instructions in *red colour* and insert correct/pertinent information in the fields in **yellow highlights** throughout the template before finalising the technical paper/thesis and taking subsequent action—

**TITLE OF THE TECHNICAL PAPER/MASTER THESIS**

**SUBTITLE (IF ANY)**

**Technical Paper / Master's Thesis**

A thesis presented to the higher degree committee of the Trier University of Applied Sciences, Environmental Campus Birkenfeld, in partial fulfilment of the requirements for the degree of **Master of Engineering / Master of Science (*select one*)** in International Material Flow Management (IMAT).

Submitted: **Month Date, Year**

By: **First name Family name**

**Location, Country**

Matriculation number: **0123456**

First supervisor: Academic title **First name Family name**

Second supervisor: Academic title **First name Family name**

Internship Tutor or Instructor (if any): Academic title **First name Family name**

***Please make sure to use the correct academic titles AND names of the supervisors. Once the instructions on this page are removed, rearrange the spacing between elements to improve the layout and readability. Depending on the type of composition presented, remove the irrelevant information above and add others as required. Please also see Appendix B for additional information.***

## **Eigenständigkeitserklärung**

### **Declaration of Authorship**

Hiermit erkläre ich, dass ich die vorliegende Arbeit selbständig und ohne unzulässige Hilfe Dritter angefertigt habe.

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Des Weiteren erkläre ich, dass ich die Arbeit in dieser oder ähnlicher Form noch nicht als Prüfungsleistung eingereicht habe.

**Ort, Datum**

Unterschrift

**\_\_\_\_\_**

## Abstract

The abstract offers a brief description of the work and a concise summary of its main results and conclusions.

*Be sure to describe the subject and focus of the work. Please avoid symbols, foreign words, formulae, diagrams and other illustrative materials, lengthy explanations, or opinions. No citations and/or references should be made, as the abstract must be a standalone piece. For a thesis, the length of the abstract must not exceed two pages, and for a technical paper, ca. 300 words.*

## **Dedication**

A brief dedication of this work here, if any.

*This is an optional section. The heading “Dedication” may be removed depending on the styling requirement.*

## **Acknowledgements**

Present here one's gratitude and recognition of the people who supported the endeavour.

*Do not exceed the length of this page.*

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## List of Abbreviations

*Tabulate all abbreviations used in this work alphabetically. Add rows as required. Once the first two columns are populated, move to the fourth and fifth columns. Remove ALL table borders after populating the table.*

AD	anaerobic digestion		...	...
BAU	business as usual		...	...
...	...		...	...
...	...		...	...
...	...		...	...
...	...		...	...
...	...		...	...
...	...		WWT	wastewater treatment
...	...		ZLD	zero liquid discharge

## Units and Symbols

*Tabulate all units and symbols used in this work alphabetically. Add rows as required. Once the first two columns are populated, move to the fourth and fifth columns. Remove ALL table borders after populating the table.*

°C	Celsius		...	...
€/EUR	euro		...	...
...	...		...	...
...	...		...	...
...	...		...	...
...	...		...	...
...	...		...	...
...	...		MPa	megapascal
...	...		tkm	tonne-kilometre

## Key Terms and Frame of Reference

*Tabulate all key terms and frame of references used in this work that need clarification. Present alphabetically. Add rows as required. Remove ALL table borders after populating the table. Citation may be provided, and accordingly, reference the cited work.*

Sustainability Assessment (SA)	Within the fundamental premise of <i>sustainability</i> , SA refers to the complex appraisal and methodology of environmental, economic, and social performance and compatibility of a product or service. SA is used herein as a decision-support tool for both science-based and policy-based decision-making (Sala et al., 2015).
...	...
...	...
...	...
...	...
...	...
...	...
...	...
...	...

# 1 Introduction

This document (IMAT thesis/technical paper template) provides a guideline for both the outline and format of the work. *In this section—i.e. Introduction, one should introduce the topic. Ideally, the research problem should be derived from real-world situations and/or research undertaken elsewhere to show awareness of the issue.* Therefore, the researcher/author should present the “problem”—either business or scientific, the composition’s objectives clearly and unambiguously, and the expected contributions of this work to the existing body of knowledge, especially to the core areas focused in the IMAT Mater’s programme. A good guideline on the structure and content of a “research paper”—that can also be applied to a thesis/technical paper—is presented in the Publication Manual of the APA 7<sup>th</sup> Edition—see Chapter 2. One is encouraged to associate the APA manual. *However, the structure provided in this template must be adhered to.*

## 1.1 Objectives

In order to create a common understanding of the research described in this thesis, it is important to highlight the objectives of this thesis/work clearly and concisely. The research questions must be well formulated to precisely and accurately conclude the objectives.

## 1.2 Research Queries and Methodological Overview

Research queries may be presented here separately for clarity. Alternatively, sections 1.1 and 1.2 may be combined into “1.1 Objectives and Research Queries [...]”. The outline of the “methods employed” to answer the research queries should be presented synoptically.

A detailed presentation of the methods should be done in Chapter 3. A graphical illustration/synopsis of the research queries, associated objectives and applied methods is greatly encouraged here—i.e. Section 1.2, which will improve the clarity of the work presented.

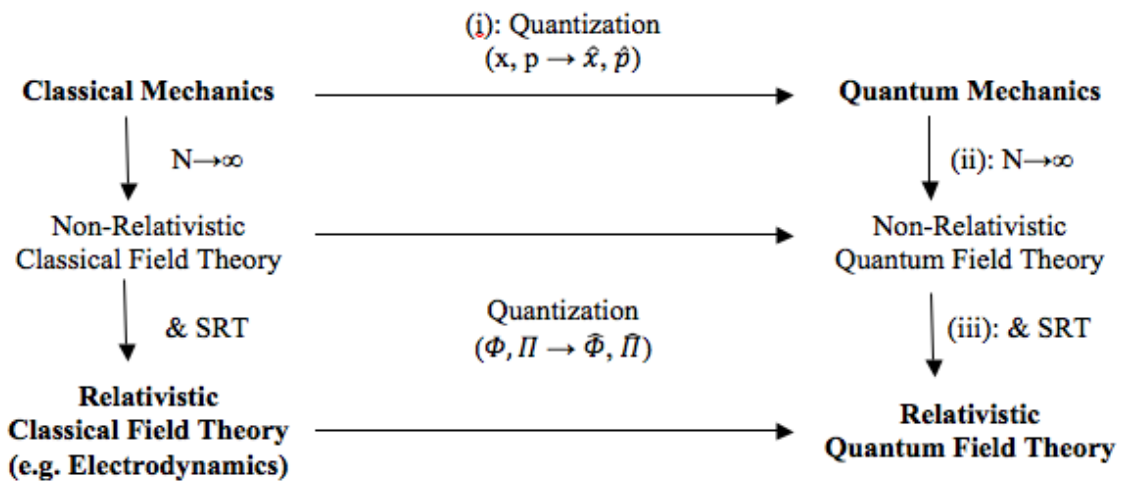
### **1.3 Outline of the Thesis**

The explanation of the structure of this thesis/work helps a reader to follow the concept and offers a rough overview of the chapters herein. Present only a synoptic overview of each chapter's key contents.

## 2 Literature Review

Here, one must provide a foundation of knowledge on the research topic. It is necessary to identify areas of prior scholarship (and it is necessary to prevent duplication), and accordingly, one must give credit to other researchers whose work associated with the work presented herein. A literature review is also a good place to identify/highlight inconsistencies in the research area focused, and the gaps and conflicts in prior studies, unanswered questions left from prior/preceding research, etc.

Importantly, identify the need for current research (this is where one must justify his/her own research presented in this work). Furthermore, attempt to position one’s own research within the context of existing literature, making a case for why further study is required. If one’s work is based on other scientific theories and models, it is important to outline their structure and results. Use illustrations of models and theories as demonstrated below in Figure 1.



NOTE: Reproduced with permission from Kuhlmann (2023). *Here, please take note of the font size of the “NOTE” and how it is placed relative to the figure and the figure’s caption. One must not change the relative position or the spacing between the elements.*

**Figure 1.** From Classical Mechanics to Relativistic Quantum Field Theory.

In addition to figures, one of the most powerful ways to present information coherently is to create tables, as shown in Table 1. *Make sure to include an empty line above and below figures and tables.*

<i>Left-aligned</i>	<i>Centred</i>	<i>Right-aligned</i>
1	2.2	3,300.03

**Table 1.** A Table.

As required, the styling of tables (adding/removing borders, shading and colours, bold, capitalisation and italicisation of the heading row., etc.) is encouraged. However, it is strictly advised to maintain the consistency of styling (of tables) across the entire technical paper/thesis.

Multiple ways of presenting information can be chosen as need be, e.g.

- figures,
- tables,
- lists,
- and enumerations like this one. Here, items can be single sentences or full paragraphs. Appropriate end punctuation should be included.

## 2.1 Citation Style

For all IMAT-related academic writing, the American Psychological Association (APA) 7<sup>th</sup> edition citation (and referencing) style is required. The following section presents an excerpt from APA 7<sup>th</sup> ed. on the general modality of citation. However, *one is advised to peruse the APA 7<sup>th</sup> ed. carefully and completely for accurate and full details of the required standard*. Adhering to citation (and subsequent referencing) rules is vital to composing a successful technical paper/thesis.

## 2.2 Guidelines for Citation

Following is an excerpt from APA (2020) on citation. Note that it is presented in a “block quote”—another rule one must follow in the work presented. Please also take note of how the in-text narrative citation had been done and the punctuation used. In this particular case, no period was added after the page numbers in parentheses.

Cite the work of those individuals whose ideas, theories, or research have directly influenced your work. The works you cite provide key background information, support or dispute your thesis, or offer critical definitions and data. Cite only works that you have read and ideas that you have incorporated into your writing. Cite primary sources when possible and secondary sources sparingly. In addition to crediting the ideas of others that you used to develop your thesis, provide documentation for all facts and figures that are not common knowledge. Both paraphrases and direct quotations require citations. If you reprint or adapt a table or figure (e.g., if you reproduce an image from the internet, even if it was free or in the Creative Commons) or reprint a long quotation or commercially copyrighted test item, you may also need to seek permission from the copyright holder and provide a copyright attribution.

The number of sources you cite in your paper depends on the purpose of your work. For most papers, cite one or two of the most representative sources for each key point. Literature review papers, however, typically include a more exhaustive list of references, given that the purpose of the paper is to acquaint readers with everything that has been written on the topic.

Avoid both undercitation and overcitation. Undercitation can lead to plagiarism and/or self-plagiarism. Even when sources cannot be retrieved (e.g., because they are personal communications), you still need to credit them in the text (however, avoid using online sources that are no longer recoverable). Overcitation can be distracting and is unnecessary. For example, it is considered overcitation to repeat the same citation in every sentence when the source and topic have not changed. Instead, when paraphrasing a key point in more than one sentence within a paragraph, cite the source in the first sentence in which it is relevant and do not repeat the citation in subsequent sentences as long as the source remains clear and unchanged. When the author's name appears in the narrative, the year can be omitted in repeated citations under certain circumstances. (pp 253–254)

## 2.3 Footnotes

According to APA (2020), “a footnote is a brief note that provides additional content or copyright attribution. Any type of paper may include footnotes. Content footnotes supplement or enhance substantive information in the text; they should not include complicated, irrelevant, or nonessential information”. It is advised to use footnotes sparingly. If explanatory notes prove necessary, provide supplemental information<sup>1</sup> in footnotes (an example footnote is presented below). When providing content notes, be concise and focus on only one subject. Try to limit the comments to one small paragraph. One can also point readers to information that is available in more detail elsewhere. Footnotes should be single-spaced and formatted with the default settings of the word-processing program employed.

Additional information that cannot be included in footnotes maybe presented in endnotes or in an appropriate appendix.

## 2.4 Second Order Heading

One may continue to add sub-headings (also called Level 2 or 3 heading) as required. Each sub-heading should be sequentially numbered and must follow a logical order in presenting clear and concise ideas pertinent to the key arguments. *Please take careful note of the font sizes of headings and sub-headings. One must not change the font sizes.*

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<sup>1</sup> See UNFCCC (2023) for the update on the GWP of greenhouse gases. *Please take note of the font size and single-line spacing that must be used in footnotes. Below the footnote, leave a blank line.*

## **3 Methodology**

Here, one must present a systematic approach used in addressing the key research queries investigated including the underlying theory and analysis of how the research had been done (or should be done). Essentially, the methodology must provide all essential details—a blueprint or a “recipe”—to the reader so that the research undertaken here can be reproduced under similar circumstances. All methods—i.e. the techniques used in gathering information/data/evidence—presented here must correspond with the respective research query/ies.

***NOTE: Even though there is more space left on the page before, every main chapter of the thesis should start on a new page. Insert page breaks before the headlines of every chapter to ensure this condition. Try to write in a compact manner and make sure that the last page of a chapter is not mainly blank.***

### **3.1 A Second Order Heading**

This is an example of a sub-section/sub-chapter.

#### **3.1.1 A Third Order Heading**

It is also possible to create third order chapters such as this one. If possible, avoid further segmentation in the thesis/work in order to reduce the complexity and improve the clarity of the structure.

#### **3.1.2 Another Third Order Heading**

Note that when starting sub-chapters, it is not necessary to insert a page break, as explained above. Use one’s own discretion otherwise, according to the styling needs.

#### **An inline headline**

Inline headlines (sentence case) are not designed to be dedicated sections but they can help structure longer paragraphs and quickly describe the most important points.

## **4 Results**

The chapter is one of the most important chapters of one's technical paper/thesis. It must show the reader what was found in terms of data one has collected. Present the data using a clear text narrative, supported by charts, graphs and tables, while highlighting any potential concerns, such as outliers or anomalies. When presenting a large volume of data, one must consider using the Appendices as need be.

## **5 Discussion**

Here, one must include explanations and interpretations of the results in the context of the key research questions addressed and the literature review undertaken. One must discuss the implications of the results, acknowledge their limitations, and give recommendations (see below). In doing so, one must make an argument to support the relevant conclusion. One must be careful not to discuss ideas that are not relevant to the current results or findings.

### **5.1 Contributions to Theory**

One may highlight the contribution of the finding to the main theories focused in the research work (or in the IMAT programme), if any. This section maybe removed as necessary.

### **5.2 Contributions to Practice**

One should highlight the contribution of the findings to the applied aspects focused on the IMAT programme. Sections 5.1 and 5.2 maybe combined as necessary.

### **5.3 Limitations and Future Work**

One must provide a concise outline of the limitations of the current work and what needs to be undertaken in future work in the domain investigated/focused.

## **6 Conclusions**

In this chapter, one must coherently summarise the technical paper/thesis and highlight the most important aspects/findings of the work. No conclusions should be drawn from anything external to the current findings/results.

## List of References

Please use **APA 7<sup>th</sup> edition** as the citation and referencing style for this technical paper/master's thesis. General information can be found at: <https://apastyle.apa.org/>. Following is an example list of references extracted from the **APA 7<sup>th</sup> edition**.

- Anderson, M. (2018). Getting consistent with consequences. *Educational Leadership*, 76(1), 26–33.
- Burgess, R. (2019). *Rethinking global health: Frameworks of power*. Routledge.
- Guarino, B. (2017, December 4). How will humanity react to alien life? Psychologists have some predictions. *The Washington Post*.  
<https://www.washingtonpost.com/news/speaking-of-science/wp/2017/12/04/how-will-humanity-react-to-alien-life- psychologists-have-some-predictions>
- Huestegge, S. M., Raettig, T., & Huestegge, L. (2019). Are face- incongruent voices harder to process? Effects of face–voice gender incongruency on basic cognitive information processing. *Experimental Psychology*. Advance online publication.  
<https://doi.org/10.1027/1618-3169/a000440>
- Kalnay, E., Kanamitsu, M., Kistler, R., Collins, W., Deaven, D., Gandin, L., Iredell, M., Saha, S., White, G., Woollen, J., Zhu, Y., Chelliah, M., Ebisuzaki, W., Higgins, W., Janowiak, J., Mo, K. C., Ropelewski, C., Wang, J., Leetmaa, A., . . . Joseph, D. (1996). The NCEP/NCAR 40-year reanalysis project. *Bulletin of the American Meteorological Society*, 77(3), 437–471. <http://doi.org/fg6rf9>
- Klymkowsky, M. (2018, September 15). Can we talk scientifically about free will? *Sci-Ed*. <https://blogs.plos.org/scied/2018/09/15/can-we-talk- scientifically-about-free-will/>
- McCauley, S. M., & Christiansen, M. H. (2019). Language learning as language use: A cross-linguistic model of child language development. *Psychological Review*, 126(1), 1–51. <https://doi.org/10.1037/rev0000126>

- Schmid, H.-J. (Ed.). (2017). *Entrenchment and the psychology of language learning: How we reorganize and adapt linguistic knowledge*. American Psychological Association; De Gruyter Mouton. <https://doi.org/10.1037/15969-000>
- Shore, M. F. (2014). Marking time in the land of plenty: Reflections on mental health in the United States. *American Journal of Orthopsychiatry*, 84(6), 611–618. <https://doi.org/10.1037/h0100165> (Reprinted from “Marking time in the land of plenty: Reflections on mental health in the United States,” 1981, *American Journal of Orthopsychiatry*, 51[3], 391–402, <https://doi.org/10.1111/j.1939-0025.1981.tb01388.x>)
- Travis, C. B., & White, J. W. (Eds.). (2018). *APA handbook of the psychology of women: Vol. 1. History, theory, and battlegrounds*. American Psychological Association. <https://doi.org/10.1037/0000059-000>
- U.S. Food and Drug Administration. (2019, February 14). *FDA authorizes first interoperable insulin pump intended to allow patients to customize treatment through their individual diabetes management devices* [Press release]. <https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm631412.htm>
- U.S. Securities and Exchange Commission. (2017). *Agency financial report: Fiscal year 2017*. <https://www.sec.gov/files/sec-2017-agency-financial-report.pdf>
- Zalta, E. N. (Ed.). (2019). *The Stanford encyclopedia of philosophy* (Summer 2019 ed.). Stanford University. <https://plato.stanford.edu/archives/sum2019/>

## **Appendix A**

Appendices contain any further information that is noteworthy but does not necessarily need to be included, elaborated or described in the main part of the technical report/thesis. Usually, voluminous, lengthy and complex tables, calculations, process maps, figures, etc. created during the work/research undertaken should be presented in an Appendix. All work presented in an Appendix must be referred to in the body of the work appropriately. All appendices must be titled and presented sequentially.

## Appendix B

Please read the additional information provided here and implement them accordingly.

1. *Language and spelling convention: please use British English and spelling convention.*
2. *Punctuation must be used in line with the use of British English.*
3. *Page layout: please do not change the page layout. To insert larger tables and figures, one may change the page orientation from Portrait to Landscape. However, all Landscape-oriented pages must have page numbers as oriented in Portrait pages.*
4. *Double-sided printing is encouraged for printed theses. Accordingly, one may add or remove pages as required. To improve the layout, one may add additional design pages with information between sections/chapters.*
5. *Cover page/Thesis jacket: one may use a hardcover (high grammage paper board) with a design on it. The first page, as indicated in this template, must carry all the necessary technical details and the logos at the bottom. In regard to the logos, please do not change the size, aspect ratio, colour or the positions of the logos.*
6. *If a non-disclosure agreement had been signed between the researcher and a third party, it must be communicated to the IMAT Management office and ECB, and accordingly, a non-disclosure statement must accompany (as the first page) the thesis.*
7. ...

## Appendix C

### Use of AI Tools

AI-Tool	Used for	Why?	When?	With which input question or prompt?	At what point of the paper was it incorporated?
ChatGPT	Getting an explanation for concept XY.	Helping to understand ...	When working on the theoretical part of the paper	What are the key features of concept XY?	p. 25, 30 ff.
Deep L Write	Reformulation of my text drafts	Improved readability and legibility	Through out the entire work process	Reformulate chapters 2 and 3 in simple and easy-to understand sentences.	p. 45 ff., p. 67 ff.
...	...	...	...	...	...

## **Endnotes**

One may use endnotes for explanations or comments that cannot be placed in a footnote that would otherwise interrupt the flow of the main text.