RUHR-UNIVERSITÄT BOCHUM

CompEng
Computational Engineering

FACULTY OF CIVIL AND ENVIRONMENTAL ENGINEERING

Chair of …
Prof. Dr. …

Master thesis

Title of the thesis in one

or two lines

Student:	First and last name
Matriculation number:	108 …
Date	02. May 2017

Copy of the output sheet of the Master thesis

Table of contents

List of figures

1 Template for documents

This is a template for writing theses at the Chair of Steel, Lightweight and Composite Structures at RUB.

Please use this template with the formatting options presented here. For this purpose, the format templates labeled **A_Beispiel** are intended for whole paragraphs. The formats **Z_Beispiel** are to be used for single words. A maximum of 4 headings are to be used (**Überschrift 1 to 4**). Furthermore, there is **M_Beispiel** for inserting pictures, formulas and tables and **Liste_Beispiel** for enumerations and lists.

A_Text is the default text. Font Arial.

Start with page 1

Header with chapter number, chapter text and page number

$$f = \int \overline{M} \cdot \kappa \, dx = \frac{1}{3} \cdot (-h) \cdot \left(-\frac{Q_2 \cdot h}{EI} \right) \cdot h = \frac{h^3}{3 \cdot EI} \cdot Q_2 = \frac{h^2}{3 \cdot EI} \cdot M_1 \tag{1.1}$$

1.1 Text - FORMATS

A_Text   Normal text

A_Formate for the whole paragraph, Z_Formate only for single words. M_Formate for captions and co.

A_Text_Tabelle   Text in tables smaller for tables
A_LeerzeichenNachTabelle   for a space under tables

A_Überschrift 1 ohne Nummerierung and without page break for content listing and appendix

NOTE   FOR NOTES DURING EDITING

                          M_Bilder   line spacing variable

Z_Symbol   A_Σψμβολ

Z_~~Durchgestrichen~~ / Hoch / capital / subscript

Z_Durchgestrichen / ^{superscript} / capital / subscript

Z_Durchgestrichen / superscript / CAPITAL / subscript

Z_Durchgestrichen / superscript / capital / $_{subscript}$

Z_Durchgestrichen / superscript / capital / subscript / **bold**

1.2   List formats

a) Liste_a

b) Liste_a

A) Liste_A

B) 4225

- Liste_Bu

- Liste_Bu

1. Liste_Num

2. Liste_Num

3. asdfasdf

Format text after enumeration again with A_Text. For a new enumeration:

a) Liste_a (right click: start numbering again)

b) Liste_a

c) a

2 Structure of the template

Heading 1 (Überschrift 1) always starts on the new page.

2.1 Formulas

2.1.1 How to insert a formula?

Copy another table, then only exchange formula.

Get current numbering via "Update fields"

Insert cross-reference for formula under the label "(".

Formula; font size 11, Arial in Mathtype

$$f = \int \overline{M} \cdot \kappa \, dx = \frac{1}{3} \cdot (-h) \cdot \left(-\frac{Q_2 \cdot h}{EI} \right) \cdot h = \frac{h^3}{3 \cdot EI} \cdot Q_2 = \frac{h^2}{3 \cdot EI} \cdot M_1 \tag{2.1}$$

With CTRL+A and then F9 all fields can be updated!

M_Gleichung   for equations, so that a variable line spacing is available.

M_Formelnummerierung   for numbering, so that it is right-justified.

2.2 M_Formate for figures and co.

Normal Text.

2.2.1 Tables

For tables, figure etc. the **labels must be defined first** (on each PC). To do this, mark the corresponding object - right click - insert label. If the desired label is not available: → new - select "Tab." as name, check the box for include chapter number (with dot or hyphen, as desired), above or below the object, as desired. Only then can a reference be created with "Insert cross-reference". In doing so, the name of the table must be designated as it is to appear later in the text. "see Tab. 2.1" requires the name "Tab.". After inserting the name, define it in the format M_Bildunterschrift.

If desired, insert a blank line below the table with A_Leerzeichen_nach_Tabelle corresponding to ½ line height. After inserting the name, define the table heading with the format M_Tabelle. Table heading is not separated from table at page change

Table 2.1

Table in font size 9. Line spacing left at 14.5	Table text in **A_Text_Tabelle**	
Insert caption		

Blank line after table

If desired, insert a blank line below the table with A_Leerzeichen_nach_Tabelle equaling ½ line height.

Table designation above the table in M_Tabelle

M_Bilder: centered, variable line spacing for images

M_Bildunterschrift   caption for images

M_Gleichung   for formulas with Mathtype, variable line height

M_Formelnummerierung   formula numbering

M_Tabelle   caption for tables

2.2.2 Images

Insert images as references

Use format "**M_Bilder**", because other formats have a fixed line height. Image and caption below are NOT separated on two pages.

Caption with: "Insert caption", format: **M_Bildunterschrift**. After inserting the caption still define the caption with the format M_Bildunterschrift.

Fig. 2.1 Text format M_Bildunterschrift, font size 9, line height 14.5

Normal text: member buckling failure stability theory of straight members that have at least one line of symmetry in the cross-section, are loaded in their cross-sectional plane, and also fail in this plane due to member buckling.

In Fig. 2.1, three penguins can be seen **Insert - cross-reference**

2.2.2.1   Heading 4
No other headings are expected.

3 Include literature

Insert references e.g. using Citavi...

Alphabetical and chronological order

Meier shows in [1, 2] ...

[3] shows....

Please leave section breaks before the list of references!

List of references

[1]   DIN EN 1993-1-9:12/2010. Eurocode 3: Bemessung und Konstruktion von Stahlbauten – Teil 1-9: Ermüdung.

[2]   Haibach, E. 2006. Betriebsfestigkeit. Verfahren und Daten zur Bauteilberechnung. VDI-Buch. Springer. Berlin

[2]   Kindmann, R. 2008. Stahlbau. Teil 2: Stabilität und Theorie II Ordnung. Bauingenieur-Praxis, Bd. 2. Ernst und Sohn. Berlin.

[3]   Kragerup, J. 1984. Buckling of rectangular, unstiffened steel plates in compression. Dissertation, Technical University of Denmark Lyngby. Denmark.

[5]   Pedersen, M. M.; Andersen, J. G.; Olafsson, O. M. 2012. Investigation of the thickness effect for butt welded joints. IIW WG1-154-12.

[4]   Rauch, M.; Knobloch, M. Challenges for tower structures of multi-megawatt class wind turbines. In: Zingoni, A. (Hrsg.): Insights and Innovations in Structural Engineering, Mechanics and Computation. Proceedings of the Sixth International Conference on Structural Engineering, Mechanics and Computation, Cape Town, South Africa, 5-7 September 2016. Boca Raton: CRC Press 2016, S. 335–336 (full paper on CD-ROM)

4   Statement of independent work

I hereby declare that the work in this Master thesis represents a result of my own independent work, carried out in accordance with the requirements of the University's Regulations and Code of Practice for Research Programmes, without the use of any sources beyond those cited in the references. This includes possible figures or tables. Furthermore, I ensure that: no other persons were involved in the preparation of the present work or have received any monetary benefit from me for the work presented, unless indicated as such; the thesis has not been submitted to any other examination authorities or for any academic awards in the same or a similar form either in Germany or abroad; the submitted report represents the research work with independent views, opinions, results and conclusions conducted under the guidance of my supervisor.

I am aware that a noncompliance with this declaration may result in a grading of my work as "failed". I also know that a copyright violation as well as an attempted fraud may be prosecuted and a deliberate infringement on any laws concerning cheating constitutes an administrative offence, for which may result in serious consequences. In case of repeated or particularly severe attempts of deception a forced exmatriculation might ensue.

_____   _____

(First and last name)   (Date)