 <p>Zürcher Hochschule für Angewandte Wissenschaften</p> <p>Life Sciences und Facility Management</p>	<b>Guidelines for writing project work, literature reviews, semester assignments, Bachelor's and Master's theses</b>	Code: W235-08.1b Page: 1 / 17 Date: 28.09.15
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## 1 General points

### Associated documents

All instructions for project-, literature- and semester-assignments, Bachelor's- and Master's theses (documents W235-..).

### Objective

Through their project work, literature reviews, semester assignments, and Bachelor's and Master's theses, students demonstrate that they are able to independently deal with a problem within a certain time frame and to present their work in a suitable format, thereby learning how to work scientifically.

### Assessment

The work is evaluated according to technical content, presentation, structure, bibliographic references, overall impression and language.

### Title

The content of the work must reflect the title and task definition. The title should be short and concise.

### Format Guidelines

Written work must be submitted electronically. The right- and left-hand margins should be at least 2 cm. The text should be consistently formatted, preferably using a font such as Arial 11pt. The title page should be formatted according to the example provided. In the header, the following information **may** be included: ZHAW School N, PA (project work), LA (literature review), SA (semester assignment), BA (Bachelor's thesis) or MA (Master's thesis), year, and author. In the footer, the page number should be indicated.

The choice of the active, personal or the passive, impersonal form depends on the topic and is determined together with the supervisor.

Footnotes are usually omitted. Should terms require definition, they can be explained directly in the text itself.

Generally, the introduction and the theoretical part of the work should be written in present tense, and experiments/surveys and interpretations drawn from them written in past tense. Materials and methods are, depending on the field, described in either the present or the past.

In the discussion section, the present tense should, as a rule, be used for making general statements and describing knowledge. Future forms should be used to describe how work will proceed.

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Attention should be paid to good writing style in the formulation of the report, and students should refrain from using laboratory jargon or colloquial expressions. Written work should be printed double-sided.

#### **Use of the work, storage and confidentiality**

The person or organisation for whom/which the work was carried out receives a copy of the assignment. Since students' degrees of experience and skills vary, results cannot always be used as they stand. The ZHAW School of Life Sciences and Facility Management (School N) archives a copy of the assignment. With the exception of confidential pieces of work, assignments are available to the public in the school's library.

Work that contains confidential information can be treated as "confidential" after consultation with the supervisor at the School of Life Sciences and Facility Management. **The word "CONFIDENTIAL" must appear on the title page.** Such pieces of work are securely archived by the School of Life Sciences and Facility Management and are not publicly accessible. The supervisor at the School of Life Sciences and Facility Management treat all information therein as confidential.

Regarding the use of results obtained, publication and disclosure to third parties, reference should be made to the specific instructions provided by the ZHAW School of Life Sciences and Facility Management (Weisungen zur Verwendung der Resultate W235-09).

## 2 Format for assignments

The following basic format for scientific assignments makes reading easier and should, in general, be adhered to. Deviations from the prescribed format may be allowed after consultation with the supervisors.

### Title page

Format as per template (Appendix 4).

On the reverse of the title page a note with the following information should be included: keywords, citation proposal, address of the institute.

### Structure

The following structure has proven effective and should, if possible, be adhered to.

Abstract	
Table of contents	
List of abbreviations (as required)	
Introduction	(start section numbering)
Literature review or theory section (after consultation with supervisors)	(numbered consecutively)
Materials and methods	(numbered consecutively)
Methodological procedures (connected to literature review)	(numbered consecutively)
Results	(numbered consecutively)
Discussion	(numbered consecutively)
Bibliography	(numbered consecutively)
List of images (as required)	(not numbered)
List of tables (as required)	(not numbered)
Appendices (as required) (with list of appendices immediately preceding them)	(not numbered)
Poster (A4)	(not numbered)
Work in digital form (CD)	

Decimal numbering should be used for the numbered sections and subsections (for example: 3, 3.1, 3.2, 3.2.1, 3.2.2, etc.). Subsections should only be numbered if there are at least two of them. Using more than 3 numbering levels is confusing. Depending on the type of work (for example, literary review, business topics, etc.) deviations from this structure are possible. Subdivision of the assignment into a literature section (after the introduction), and a section describing practical experiments is often advisable.

## Information on individual sections

### Abstract

The aim of the abstract is to arouse interest in the work presented, and to describe the most important results and findings in brief. Only results that are presented in the work should be included. Length: half to a maximum of one page.

The abstract should describe all sections of the assignment, i.e. the area being examined, objectives, research methods, results and conclusions. The abstract should not contain any literature information.

For scientific assignments, the abstract must also be written in English. For assignments written in English, an abstract in German is also required.

### Acknowledgements, preface, dedications

Thanks to supervisors and possibly companies is only usual in exceptional circumstances (such as when a company performs an analysis without charge). Prefaces or dedications are generally only included when an assignment is published in book form. Where necessary, acknowledgements, prefaces or dedications can be inserted before the table of contents.

### Table of contents

The table of contents generally follows the abstract. All sections and subsections must be listed with page numbers.

### Introduction

The introduction consists of three parts. The first part, the background and the problem or situation should be presented and current technology / scientific knowledge described. Current primary literature sources should be referred to. In the second part, the niche or gap explored by the assignment should be addressed. The main purpose is to show areas that have been neglected or have only recently gained importance. In the third part, the objective of the assignment should be provided (with reference to an appendix containing a copy of the task assigned) and the student's own interpretation of the task, formulated as precisely as possible, possibly in the form of a testable hypotheses. For more detailed explanations of current technology or a literature review, a separate section (literature review or theory section, see below) is preferred.

### Theory section

The theoretical foundations and models used in the discussion section to interpret the experimental data are presented here. The advantages and disadvantages of any technical equipment of special importance for the assignment are then discussed. General technical concepts should not be included here (for example, if injection techniques are of particular importance for work on gas chromatography, only the different injection techniques should be discussed; it can be assumed that the fundamentals of gas chromatography are familiar to the reader). In the Theory section, complete references are particularly important.

### **Materials and methods**

In the materials and methods section, experimental procedures, planning, materials (origin, condition, quantity, etc.) as well as analysis methods (including statistical evaluation methods) should be described so that the experiments are reproducible. Any own or little known techniques and modifications should be presented in detail. Well-known experiments and methods need not be described in depth. The brand and type name should be given for all technical equipment and devices used (images are not necessary). Own constructions specially designed for the assignment should be described. Depending on the type of assignment, materials and methods can be described in separate sections.

For literature reviews, the section on methodological procedures should contain a description of how the work was executed. For database research, database names, keywords, logical connections in search criteria, number of hits, hits used and search dates should all be included; information about unsuccessful searches can also be given.

### **Results / practical section**

In the Results section, all results (including negative ones) should be presented in the most appropriate form (text, figures, tables, etc.). Important: figures and tables must always be explained with a short text and identified by a reference. The results should only be presented in one form (table **or** figure). Interpretations usually belong in the Discussion section and raw data belong in an appendix.

Coloured graphics / text should only be used where absolutely necessary. Coloured graphics should be formatted in such a way that there is no loss of information when a black and white copy is made at a later date. Maps and plans must be provided in colour.

All measurement data used in this section must have precise cross-references to the raw data in the appendix from which it was taken.

### **Discussion**

In the Discussion section, results are interpreted and critically evaluated, i.e. the student's own findings are weighed up against each other and then compared with those of other authors. This section should also refer directly to the topic in the introduction / the research questions and clearly show the contribution made by the assignment. Including recommendations for proposed further action is also useful.

Example raw data on which discussions are based on should not only be included in an appendix, but also as figures in this section.

Results and discussions can, if appropriate, be dealt with together in a single section.

## **Bibliography**

The Bibliography section contains a list of all the sources quoted in the student's work. It is important to note that only literature actually referred to in the text section should be mentioned. The list should be organised in accordance with the rules given below.

Only scientifically recognized sources should be used. Internet addresses should, as far as possible, not be used; instead the underlying sources of the information found should be listed.

## **Abbreviations and figures**

Too many abbreviations and figures make understanding difficult, with the exception of certain commonly used abbreviations. Lesser-known abbreviations should be introduced when they first occur, or possibly in a list of abbreviations after the table of contents. In addition, abbreviations used in tables and figures should be defined in the legend.

All figures (graphs, charts, photographs, etc.) and tables must have explanatory titles and be sequentially numbered. Figures should be labelled below and tables above. The terms used are figures (Fig.) and tables (Tab.). The content of the figures and tables must be described in the written text.

For example, Fig. 1: Whitefly damage to tomato leaves.

## **Appendices**

The appendices contain, as necessary, documents that would reduce the clarity of the work and are only of importance for readers with a particular interest. Normally page and section numbering is not continued through the appendices. Should an appendix have more than one part, each part should be referred to as Appendix A, Appendix B, etc. or as Appendix 1, Appendix 2, etc. Appendices should be mentioned in the text. A list of appendices must be included before the first appendix.

The following documents also belong in the appendices:

- Copy of the assigned task signed by the supervisors and the student
- Plagiarism declaration for Bachelor's and Master's theses (in particular for the Chemistry, Food Technology, and Biotechnology degree programmes)
- As required and when agreed upon, experimental protocols, raw data, records of analytical devices used, offers from companies, etc.

## Citations and bibliographical references

The origins of all findings (including tables and figures) taken from other authors must be referenced directly in the text. Copyright should be taken into account. Plagiarism violates copyright.

Quotations should be placed in quotation marks. Long direct quotations should be avoided and for indirect quotations it is sufficient to note the reference. There are various ways of referencing literature but many publishers of scientific journals prescribe a specific convention. Two methods are described below (see option 1 (Style: APA) and option 2 in the Appendix). A different convention that is established in the scientific field in question may also be chosen with the agreement of the supervisors. It is important that the method chosen is consistently used throughout the assignment.

Literature citations in the text should provide the surname of the author(s) and year of publication or a reference number. Examples are provided in the appendix.

The individual types of source are listed in the bibliography as follows:

**Books:** Name of author(s), first name initials of all authors. (Year of publication). Title (possibly edition and volume). Publication location: publisher.

Ternes, W. (2008). *Scientific Principles of Food Preparation* (3rd edition). Hamburg: Behr's Verlag.

**Journals:** Name of author(s), first name initials of all authors. (Year of publication). Title. *Journal name, volume number, page number.*

Ozboy-Ozbas, O., Seker, I.T. & Gokbulut, I. (2010). Effects of resistant starch, apricot kernel flour, and fiber-rich fruit powders on low-fat cookie quality. *Food Science and Biotechnology, 4(19)*, pp. 979-986.

**Articles in a collection (author(s) of the article different to editor of the collection):** Name of author(s), first name initials of all authors. (Year of publication). Article title. In: First name initials of editor, editor name (Ed.). *Title of collection* (possibly edition, volume and/or page number). Publication location: publisher.

Swaigood, H. (2008). Characteristics of Milk. In S. Damodaran, K. L. Parkin, & O. R. Fennema (Eds.), *Fennema's Food Chemistry* (4th edition). Boca Raton, FL: CRC Press Taylor & Francis Group.

**Legislation texts:** Official name (official abbreviation). (Date of publication). SR number (last update).

Federal law on foodstuffs and commodities (Food Act, LMG). (9 October 1992). SR 817.0 (as of 1 April 2008).

**Patents:** Name of author, first name initials of author. (Year of publication): Patent number: *Title*. Date of publication.

Huber, H. (2000): WO2005083605; *Roller shutter lower edge protective cover*. 07.07.2008.

**Internet:** Avoid if possible; inclusion to be agreed with the supervisor.

If available: name of all author(s), first name initials of all authors. (Year of publication / Year): title. 'Accessed on' date of the Internet search 'at' Internet address.

Payne C.A., Bursley R.G. (1999): Microbial transglutaminase: product characteristics and food application potential. Accessed on 18.2.2008 at [www.confex.com/ift/99annual/abstracts/5010.htm](http://www.confex.com/ift/99annual/abstracts/5010.htm)

**Teaching materials/semester assignments, and Bachelor's and Master's theses:** Name, first name initials (year). Title. In *type of literature (for example, Bachelor's thesis ZHAW), possibly chapter*, unpublished.

Baumer, B. (2010). Food Chemistry. In *ZHAW teaching materials, chapter on phenolic compounds*, unpublished.

**Company brochures, literature without authors:** Anon. (Year). Title, type of literature (for example, process specification), possibly chapter, source (e.g. company, Internet).

**Verbal communications** should be referenced directly in the text. They should not be included in the bibliography since they cannot be reconstructed by the reader.

#### **Poster**

The design of a **poster in A0 format** is part of both Bachelor's and Master's theses as well as semester assignments (with the exception of the Food Technology degree program). In the Chemistry and Food Technology study programmes, a template is provided. The poster must be submitted in electronic form and attached in a printable form on an A4 page. Tips for creating posters can be found at the end of this document.



### 3 Working procedure

The following working procedure is recommended:

- Contact supervisor; detailed discussion of the topic.
- Collect findings from previous similar studies; literature study.
- Formulate experimental goals and planning.
- Determine experimental objects and sizes of samples.
- Decide upon simple experimental structure, and set up plan of experiments.
- Perform experiments.
- Create experimental protocol.
- Perform statistical evaluation.
- Formulate report.
- Correction of individual sections or an entire assignment by colleagues may be beneficial for both sides (with confidentiality respected!)

The following number of copies must be submitted:

- per corrector: 1 bound copy and one labelled CD Rom
- for the archive: 1 CD Rom
- for the library (non-confidential work only): 1 bound copy

In the Biotechnology and Natural Resource Sciences degree programmes the following also applies:

Creating a poster: a draft must be submitted in electronic form and as a print-out on an A4 page.

In consultation with the corrector, one of the following alternatives may be planned and agreed in writing instead of a poster:

- Oral presentation of assignment to an appropriate body (company, board of directors, etc.)
- Creation of a website;
- Writing a publication for a journal.

For the Natural Resource Sciences programme a cover page must also be submitted with the assignment for the purpose of registration in the Academic Office. This cover sheet is generated via the creation of a web summary in complesis and can be printed out.

#### **4 Additional literature on writing scientific assignments**

Detailed instructions on drafting scientific assignments can be found in the following works. Students are advised to consult these sources.

Soles, D. (2010). The Essentials of Academic Writing (2<sup>nd</sup> edition). Boston: Wadsworth Cengage Learning..

Hepworth, A. (2011). Studying for your future. Successful study skills, time management, employability skills and career development. A guide to personal development planning (PDP) for University and College students. Lnacashire: Universe of Learning Ltd.

Lipson, C. (2011). Cite right. A quick guide to citation styles – MLA, APA, Chicago, the Sciences, Professional and more (2<sup>nd</sup> edition). Chicago: The University of Chicago Press.

## Appendix 1

### Option 1: In-text reference by author and year (Style: APA-American Psychological Association)

#### In-text information

When referencing publications with two authors, both authors are named using their surnames, connected by "and" in the text and by "&" in parentheses. For more than two authors, only the first author / editor is named; the co-authors are referred to as "et al."

References are, most commonly, added in parentheses at the end of a sentence or statement. If the author's name is used within the text itself, only the year is included in parentheses.

#### Examples:

Zinc deficiency was first recognized as a world health issue in 2002 (Gibson, 2006).

According to Gibson (2006), zinc deficiency has only been recognised as a global health issue since 2002. Hambidge and Krebs (2007) estimate that a large part of the world population (...). These authors confirm studies by Maret and Sandstead (2006), which (...). Data from various researchers (Cakmak, 2008; Garcia et al., 2009; Jen and Yan, 2010) also shows that (...).

#### Suitable information for bibliographies

Authors are listed **alphabetically**, regardless of the type of source.

- If the same author is quoted several times, order according to year (oldest first).
- If there are several publications by the same author in the same year, use letters to label them consecutively by year (for example, 2009a, 2009b)


Quotes from the Internet, oral communications and lecture notes should be used very sparingly.

### **Bibliography examples**

- Baumer, B. (2010). Food Chemistry. In *ZHAW course materials, chapter on phenolic compounds*, unpublished.
- Cakmak, I. (2008). Enrichment of cereal grains with zinc: Agronomic or genetic biofortification? *Plant and Soil*, 302(1-2), pp 1-17.
- Garcia, O. P., Long, K. Z., & Rosado, J. L. (2009). Impact of micronutrient deficiencies on obesity. *Nutrition Reviews*, 67(10), pp 559-572.
- Hotz, C. (2009). The potential to improve zinc status through biofortification of staple food crops with zinc. *Food and Nutrition Bulletin*, 30(1), pp 117-118.
- Maret, W., & Sandstead, H. H. (2006). Zinc requirements and the risks and benefits of zinc supplementation. *Journal of Trace Elements in Medicine and Biology*, 20(1), pp 3-18.
- Rosado, J. L. (2003). Zinc and copper: Proposed fortification levels and recommended zinc compounds. *Journal of Nutrition*, 133(9), pp 2985S-2989S.
- Sfar, S., Jawed, A., & Braham, H. (2009). Zinc, copper and antioxidant enzyme activities in healthy elderly Tunisian subjects. *Experimental Gerontology*, 44(12), pp 812-817.
- Swaigood, H. (2008). Characteristics of Milk. In S. Damodaran, K. L. Parkin, & O. R. Fennema (Eds.), *Fennema's Food Chemistry* (4th edition). Boca Raton, FL: CRC Press Taylor & Francis Group.
- Ternes, W. (2008). *Scientific Principles of Food Preparation* (3rd edition). Hamburg: Behr's Verlag.

### **Examples of Internet references**

- Deimer, P. (undated). *Massacre in the sea: the seal hunt in Canada*. Accessed on 17<sup>th</sup> January 2005 at <http://www.gsm-ev.de/texte/massaker.html>
- Schlatterer, C. (2008). *Low-carbohydrate nutrition as therapy*. Accessed on 21. 2. 2008 at NZZ Online:  
[http://www.nzz.ch/nachrichten/wissenschaft/kohlenhydratarme\\_ernaehrung\\_als\\_therapie\\_1.670055.html](http://www.nzz.ch/nachrichten/wissenschaft/kohlenhydratarme_ernaehrung_als_therapie_1.670055.html)
- Tourism statistics, Tourism indicators. (2007). Accessed on 20<sup>th</sup> February 2008 at <http://stats.gov.nl.ca/statistics/tourism/>

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## Appendix 2

### Option 2: In-text referencing by number

#### In-text information

Sources are numbered consecutively in the text, with numbers in square brackets. The number can be inserted after quotes, sentences, and table and figure labels. If whole sections are taken from the same source, the number can also be inserted in the title of the section.

This method of referencing is most suitable for work involving food safety legislation (and legislation in general). Unlike other sources, legislation cited within a text cannot usually be listed according to name and year.

#### Example

It can be shown that the growth of children (...) [1]. Other studies [2, 3] confirm (...). Results from various researchers [6, 7, 8], however, show contradictory findings. Furthermore, studies [1] show that (...). It proved difficult to interpret the various findings [1, 9, 10]. (The last sentence is no longer written in the present, because it describes an issue which emerged during the assignment).

#### Appropriate information for bibliographies

The bibliography is structured as in option 1, but the order corresponds to the **number** used and is **not alphabetical**.

Bibliography for the example shown above:

- [1] Elmadfa, I., & Leitzmann, C. (2004). *Human Nutrition* (4th edition). Stuttgart: Verlag Eugen Ulmer.
- [2] Leitzmann, C., Müller, C., & Michel, P. (2009). *Nutrition in prevention and therapy: a text book* (3<sup>rd</sup> edition). Stuttgart: Hypokrates Verlag.
- [3] Baumer, B. (2010). *Food chemistry. ZHAW teaching materials, chapter on fats and fat-accompagnying substances*. unpublished.
- [4] Federal law on foodstuffs and consumer goods (Food Law, LMG). (9<sup>th</sup> October, 1992). SR 817.0 (as of 1<sup>st</sup> April 2008).

etc.

#### For both options (appendices 1 & 2) the following is valid:

Students may also choose a style which is different to a "peer-reviewed" publication provided it is well-established in the relevant topic area. This should be discussed with the supervisor. It is important that the method chosen is used consistently throughout the assignment.

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## Appendix 3

### Poster (final version)

Here are some tips for creating an attractive poster:

A poster should be original but not overloaded with information. It should invite for closer inspection and be effective from a certain distance (approximately 5 m).

#### Limited amount of text in the right place

- It should be possible to read the poster in two to three minutes. This means that the language should be easily understandable and concise: keywords or lists may be sufficient.
- Less important information should appear towards the lower, less favourable reading area (e.g. bibliography).
- Long amounts of text should be organised in blocks or columns. The ideal line length is 40-50 characters.
- Choose clearly legible fonts. Sans serif fonts (e.g. Arial, Helvetica) are suitable for the title, and serif fonts (e.g. Times, Garamond) for longer blocks of text.
- Use a maximum of two font types and three font sizes.
- A minimum font size of 1 cm (18 pt. on A0) should be used.

#### Design and content

- Photographs, drawings and graphics work better than long texts.
- Graphic presentations are clearer than tables of numbers.
- Use colours and leave some empty space.
- Arrange images and text horizontally and vertically, paying attention to the natural reading direction (left to right, top to bottom).
- Use a similar structure to written work, that is, a brief introduction, materials and methods (if relevant), results (if possible, in graphs and tables), and a brief discussion.

**Appendix 4**

**Title page**

ZÜRICH UNIVERSITY OF APPLIED SCIENCES  
SCHOOL OF LIFE SCIENCES AND FACILITY MANAGEMENT  
INSTITUTE OF ...

**ASSIGNMENT TITLE  
(possibly confidential)**

Project Work, Literature Review, Semester Assignment, Bachelor's  
or Master's Thesis

**by**

**First name Surname**

Bachelor's degree course 2xxx

Master's degree course 2xxx

Submission date ...

Degree programme ...

Supervisors:

(Title: Prof. Dr.), First name (not just initials) Surname  
Company, Address, Town/City

(Title: Prof. Dr.) First name (not just initials) Surname  
Company, Address, Town/City

**Appendix 5**

**Plagiarism Declaration (Example: Bachelor's Thesis)**

**DECLARATION OF ORIGINALITY**

**Bachelor's thesis for the School of Life Sciences und Facility Management**

By submitting this Bachelor's thesis, the student attests to the fact that all the work included in the assignment is their own and was written without the help of a third party.

The student declares that all sources in the text (including Internet pages) and appendices have been correctly disclosed. This means that there has been no plagiarism, i.e. no sections have been partially or wholly taken from other texts and represented as the student's own work or included without being correctly referenced.

Any misconduct will be dealt with according to paragraphs 39 and 40 of the General Academic Regulations for Bachelor's and Master's Degree Courses at the Zurich University of Applied Sciences (dated 29<sup>th</sup> January 2008), and subject to the provisions for disciplinary action stipulated in the University regulations (Rahmenprüfungsordnung ZHAW (RPO)).

Town/City, Date:

Signature:

.....

.....

The original signed and dated document (no copies) must be included in the appendix of the ZHAW version of all Bachelor's theses submitted.



**Appendix 6**

**Plagiarism declaration (Example: Master's thesis)**

**DECLARATION OF ORIGINALITY**

**Master's thesis for the School of Life Sciences und Facility Management**

By submitting this Master's thesis, the student attests to the fact that all the work included in the assignment is their own and was written without the help of a third party.

The student declares that all sources in the text (including Internet pages) and appendices have been correctly disclosed. This means that there has been no plagiarism, i.e. no sections have been partially or wholly taken from other texts and represented as the student's own work or included without being correctly referenced.

Any misconduct will be dealt with according to paragraphs 39 and 40 of the General Academic Regulations for Bachelor's and Master's Degree Courses at the Zurich University of Applied Sciences (dated 29 January 2008) and subject to the provisions for disciplinary action stipulated in the University regulations (Rahmenprüfungsordnung ZHAW (RPO)).

Town/City, Date:

Signature:

.....

.....

The original signed and dated document (no copies) must be included in the appendix of the ZHAW version of all Master's theses submitted.