

Laboratory of Genetics MSc Thesis Course Guide

Version 0.1: May 2017

Authors: Bart Pannebakker, Fons Debets, Klaas Swart, Wytske Nijenhuis

Adapted from WUR MSc Thesis Course Guide

Checklist for organising a thesis at Genetics

- ✓ Check whether you are allowed to start your thesis
- ✓ Find a thesis topic, consult the website and/or the Education Coordinator
- ✓ Check whether the Chair Group and the topic of your thesis are consistent with your study programme
- ✓ If Genetics is not on the pre-approved list of Chair Groups from your study, send an e-mail requesting approval to the Exam Committee
- ✓ Discuss the thesis topic with the supervisor
- ✓ Fill in the Genetics Thesis Contract together with your supervisor
- ✓ Hand in the Genetics Thesis Contract (see Appendix A) to:
 1. the secretary of the supervising Chair Group
 2. the study advisor of your study programme
- ✓ Arrange the formalities at the secretariat (see Appendix D)
- ✓ Discuss the requirements for your research proposal with your supervisor (length, depth etc.)
- ✓ Write a research or design proposal
- ✓ Ask your supervisor for approval of the research/design proposal
- ✓ If applicable: arrange a date for presentation of the research/design proposal
- ✓ Agree the weighting factors of the assessment form
- ✓ Arrange a date for an intermediate evaluation
- ✓ Arrange dates for the final assessment (handing in thesis report, final colloquium, examination)
- ✓ Provide a hard copy of the final version of your thesis to the supervisor and examiner
- ✓ Provide the data (digital and paper) and lab notebook to the supervisor
- ✓ Provide a PDF of the final version of your thesis to the secretarial office of the Chair Group
- ✓ Complete the thesis evaluation questionnaire

Contents

Introduction	4
Thesis Course profile	4
Contact persons, examiners.....	4
Study load	4
Learning outcomes.....	4
Prerequisites	5
Supervision.....	5
Educational activities	5
<i>Research or design proposal/planning</i>	5
<i>Presentation research proposal</i>	5
<i>Carrying out the research or research-based design project</i>	6
<i>Meetings</i>	6
<i>Intermediate evaluation</i>	6
<i>Thesis report</i>	6
<i>Colloquium</i>	7
<i>Oral examination</i>	7
Plagiarism.....	7
Assessment of the thesis.....	8
Evaluation of the thesis.....	8
Checklist for organising a thesis.....	2
Appendix A: Wageningen University Master Thesis Agreement	9
Appendix B: MSc thesis assessment form Wageningen University	14
Appendix C: Rubric for assessment of MSc-thesis	15
Appendix D: Safety regulations (building and laboratory).....	21
Appendix E: Outline MSc thesis proposal	23
Appendix F: Guidelines for keeping a lab journal	24
Appendix H: Guidelines for giving an oral presentation	28
Appendix I: Plagiarism Statement.....	30

Introduction

This course guide informs you about the planning and execution of your research when doing a MSc thesis at the Chair Group of Genetics (GEN). Depending on your study programme and specialization, some prerequisite courses have to be completed before you can start your thesis. Consult the education coordinator and/or your study advisor about this. Here, only general guidelines are described; together with your supervisor, you will make detailed agreements about your thesis, activities, and documentation in the Thesis Agreement.

We wish you good luck with your research and hope that you will enjoy working in our group!

Thesis Course profile

For the MSc thesis, students have to be able to demonstrate that they can conduct a research or a research-based design project individually and independently.

Contact persons, examiners

Your thesis will be supervised by a GEN staff member, post-doc or PhD. The Genetics Education Coordinator, Fons Debets (fons.debets@wur.nl) will have more general information on the process, including on prerequisites, exemptions etc. The final responsibility for the supervision is in the hands of the examiner and Chair Group holder, Prof. Bas Zwaan.

Study load

At the Chair Group of Genetics you can conduct research for a MSc thesis with a workload of 24, 27, 30, 33, 36 or 39 ECTS with the course code GEN804XX for thesis and GEN704XX for internship, XX indicating the number of credits as determined by your approved study programme.

Learning outcomes

After successful completion of your thesis, you are expected to be able to:

- demonstrate commitment, perseverance, initiative and creativity when investigating a research question or performing a design project
- work independently and efficiently
- demonstrate that you know when to ask help from your supervisor and how to handle any comments
- plan and keep to the time schedule
- delineate and define your research or design question
- build a sound theoretical and methodological framework
- collect data in a systematic and verifiable manner
- analyse the data critically and correctly
- develop a design or design alternative (in case of a research-based design project)
- present the major finding(s) in a comprehensible manner for a specific audience, both orally and in writing

- formulate sound conclusions based on a comprehensive discussion of the results
- evaluate and discuss the contribution of your results to the development of the thesis topic
- write a comprehensive, consistent and concise thesis report.

Prerequisites

Specific requirements (e.g. mandatory courses) will depend on the MSc program that you follow. If Genetics is not on the pre-approved list of Chair Groups from your study, a standard e-mail to the Exam Committee requesting for approval is required. Check with your supervisor or the Genetics Education Coordinator for more details. In addition, please check with your study advisor for any specific requirements. Finally, you should be officially registered as a Wageningen University MSc student.

Supervision

The first (main) supervisor is always a GEN staff member, but the daily supervision can also be done by a post-doc or a PhD student. The Chair Group of Genetics uses a thesis contract which includes details of all agreements regarding supervision (Appendix A) . Students have to contact their daily supervisor at least once a week, unless circumstances do not allow such a frequency. The actual frequency of meetings may vary depending on the nature of the thesis project. Although the thesis project is a learning experience, students are encouraged to act independently as much as possible when resolving problems and in difficult situations. However, one supervisor will always be available for feedback and support. In case of issues in with supervision, you can contact the Education Coordinator.

Educational activities

Research or design proposal/planning

At the start of the thesis, you should prepare yourself by reading literature related to the project. After this initial orientation, you formulate a research question/hypothesis and the principle approach to your research or design proposal. This then has to be discussed in depth with the supervisor.

The research or design proposal should include questions supported by up-to-date literature related to the topic, an explicit and specific method for tackling the proposed questions, a project plan and an estimate of the required budget. Appendix E includes an outline and guidelines of the MSc thesis proposal.

If drafted correctly, sections of the proposal can form part of the final thesis report (e.g. the Introduction and Methodology section). However, you cannot start conducting the research project before the research or design proposal/planning has been approved by your supervisor(s).

Presentation research proposal

When your proposal is completed, you should present your research proposal to other MSc students and staff members to inform others about your plans and gain feedback and suggestions for improvement. The presentation is usually done within a smaller group, e.g.

Insect Genetics Group, Evolution Lunch Meeting, Fungal Genetics Group, etc. Discuss the options for your presentation with your supervisor. The presentation should be given in English in order to allow international students and staff members to participate in the discussion.

Carrying out the research or research-based design project

You should document your research activities, findings and sources carefully, including seemingly small details. We recommend that you keep in close contact with your supervisor throughout the project. Should unforeseeable circumstances occur, you will have to adapt your project plan; any changes in planning must be discussed with and approved by your supervisor. In experimental research, a lab or field journal has to be kept. Appendix F contains guidelines for keeping a lab journal.

Discuss possible confidentiality issues with your supervisor. In principle, your MSc thesis is not considered to be confidential, however if part of your results is used in contract research and research which is subject to patenting, then confidentiality agreements do apply. You should be informed by the thesis supervisor prior to starting if your thesis is part of a contract research programme or a patent procedure.

Meetings

The Genetics Chair Group has a weekly Genetics Seminar (GSS), Tuesday 11:00-12:00h in Room W01 at the Radix ground floor, in which research progress of all group members is discussed. Attendance to the GSS is mandatory. In addition, weekly work discussions are organised by smaller interest groups. Consult your supervisor on which meetings are relevant for you.

Intermediate evaluation

The intermediate evaluation is a meeting between student and supervisor halfway through the project, where your progress and potential grade will be discussed. In the intermediate evaluation meeting, all aspects of the thesis project at that point (project plan, supervision, performance) are discussed. If you experienced any shortcomings in your supervision, then this is a good moment to discuss it and agree improvement. In case of severe problems regarding dedication, skills, knowledge or communication, your daily supervisor, together with the thesis examiner, may decide to terminate the thesis project. The thesis assessment form in Appendix B can be used for the intermediate evaluation and provides a clear picture of what goes well and where improvement is needed. You need to achieve a grade of at least 5.5 for both categories 'Research competence' and 'Thesis report' in order to pass an MSc thesis project. The other two categories cannot yet be evaluated, but they should also be satisfactory at the end of the thesis project in order to achieve a pass grade.

Following the intermediate evaluation, students have the opportunity to improve their grade to a satisfactory level or even to improve on the grade given. If, however, progress has not been achieved as planned due to other reasons (e.g. illness, problems in supervision), the planning of the rest of the project has to be adjusted, and new feasible end goals have to be defined.

Thesis report

Your research should result in a comprehensive, consistent and concise thesis report. It is important to realise that the thesis is not a chronological account of the project or a

summary of the lab-journal. Furthermore, as good scientific writing dictates, the results should be properly organised and data should be correctly processed analysed and presented. In principle an MSc thesis report should contain all the elements of a full scientific paper in your discipline. Appendix G includes the guidelines of a Genetics Thesis report.

In some cases, it may be possible to write your thesis in the format of a scientific article, which is usually much shorter than a regular thesis report. Discuss this with your supervisor. Publication of the results of your research in proceedings or a scientific article is also possible. Your supervisor will generally be co-author of publications originating from thesis work.

You should submit your thesis to your supervisor and to your second examiner, at least 2 weeks before the oral examination. After your supervisor has approved the final thesis you should send a **digital copy of your thesis (.pdf)** to the secretariat (Wytske.Nijenhuis@wur.nl) for archiving purposes.

Colloquium

Once you and your supervisor have agreed on the final version of your thesis report, you are required to present your thesis and your major research / design findings to other MSc students and staff members of the Chair Group. MSc thesis results are preferably presented in a GSS meeting. To present at GSS a time slot should be reserved at least 6 weeks in advance. You will have 30 minutes for your colloquium, 20 minutes for the presentation and 10 minutes for the discussion.

Discuss the structure and content of your presentation with your supervisor in advance, so he/she can offer feedback and advice. The presentation has to be in English so international staff and students can participate in the discussion. Guidelines for giving an oral presentation can be found in Appendix H.

Oral examination

The final oral examination is a discussion with your supervisor, a second reviewer/examiner and in some cases, a supervisor outside the chair group. The discussion focuses on the contents of the thesis, in which your knowledge, understanding, insights, as well as creativity and scientific attitude are evaluated. You are expected to be able to place your results and conclusions in the context of the field of science and to indicate possibilities for applying your findings in practice. In addition, during the examination you will receive the reasoning behind your thesis grade including specific feedback on all aspects of the assessment. You have to make an appointment for the oral examination well in advance.

Data transfer

After finishing your work, hand over the raw data (digital and lab notebook) to your supervisor to enable continuation of the research in the future. **Data (digital and paper) and lab notebook should be handed over to your supervisor before the oral examination!**

Plagiarism

Plagiarism is considered to be a serious form of fraud. Supervisors use specialised software to check your thesis for plagiarism. In Appendix I you can find information about several forms of plagiarism. Read this information carefully.

Assessment of the thesis

For the Wageningen University assessment, supervisors/examiners use the Wageningen University Thesis Assessment Form (Appendix B). The average grade for all categories (research competence, thesis report, colloquium, examination) should be at least 5.5 for a pass. Appendix C includes an assessment tool called a Rubric that is used as a guideline for calculating your thesis grade.

Evaluation of the thesis

Following the assessment, Wageningen University will send you a link to an online evaluation questionnaire. Please complete this, even if your work has finished. The results of the questionnaires help us to improve the quality of the thesis supervision and organisation, and to identify potential (or actual) problems. The evaluation is anonymous.

Appendix A: Chair Group Genetics Master Thesis Agreement

This Wageningen University (WU) master thesis agreement sets out the agreements between a master's student and a chair group. The agreement registers the rights and duties of both parties and is a further supplement and elaboration of the Higher Education and Research Act (WHW), Education and Examining Regulations and the Student Charter.

The form has to be completed for each master's thesis by the student and a representative of the chair group before starting work on the thesis.

The student and a university representative sign three copies of the form. Both receive a copy. The third is sent to a representative of the programme: the study advisor.

If the agreement is modified, the student will receive a copy of the amended form.

For complaints regarding supervision or assessment, the student can appeal to:

- The study advisor for advice and support
- The Examining Board for advice on procedures or an official complaint.
- The Examination Appeals Board.
- A Dean or a Confidential student advisor

For additional information see the explanation on page 4.

1. Information on student and chair group

Student: _____
Study programme: _____
Registration number: _____
Study advisor: _____

Chair Group: Laboratory of Genetics
Course code: _____
Supervisor(s): _____
Examiner a¹: _____
Examiner b²: _____

The student has been informed about the (written) guidelines and rules of the Chair Group for thesis students: yes/no

2. Prerequisite course(s)

Course code: _____ Passed:

yes/no

Course code: _____ Passed:

yes/no

¹ This can be the supervisor.

² This name can be entered later.

3. Admission to the thesis

Study advisor _____ declares that the student is qualified³ for a master thesis and that the thesis is part of the student’s programme.

4. Title and planning

Title of the thesis project: _____

Date of completion parts of thesis: _____

Start date: _____

Completion date: _____

Special planning arrangements: _____

5. Arrangements re supervision

(Arrangements regarding the type and intensity of student and supervisor meetings and on roles and responsibilities if more supervisors or more Chair Groups are involved):

6. Arrangements re facilities

(Work place (office/lab), access to buildings and locations. Availability and use of equipment, materials and facilities):

7. Arrangements re report

(Language and lay out, time and format of transfer of results and data, agreements on secrecy of results, and publicity of the thesis report):

³ This means that the student has completed all the requirements for starting this master’s thesis.

8. Arrangements for individual situations.

(Special/unforeseen circumstances, disability, absence for special reasons)

9. Assessment

The Wageningen University [assessment form](#)⁴ for thesis has to be used.

The weighting (%) for each part of the assessment:

Learning outcomes (assessment criteria)	percentage
A. Research competence	45
B. Thesis report	45
C. Colloquium	5
D. Examination	5

The assessment will be conducted in week
(on)

10. Signature

The student agrees to report any relevant changes in circumstances which may affect the results of the project to the supervisor.

The student declares that he/she is familiar with both the Chair Group and assessment form rules and procedures. The Chair Group declares that they have provided the student with all the relevant information (including rules, regulations, and safety issues).

Wageningen,

Name

Date

Signature

Student:

.....

Supervisor(s):

.....

Examiner a:

.....

Examiner b:

.....

⁴<https://teamsites.wur.nl/sites/OWI/Toetsbeleid%20assessment%20policy/Assessment%20MSc%20thesis/MS%20Thesis%20assessment%20form%20WU%20uk%20v%2012%20Def.xlsm>

Explanation

1. Information for student and Chair Group

The study advisor has to be contacted regarding the progress of the student and his/her qualification for a master's thesis. The study programme (study advisor) has to be informed about the arrangements a student wants to make for his/her thesis project in order to establish whether the programme permits the student to take this thesis, and to keep records of the student's progress.

The examiner will be the chair holder responsible for the thesis. The supervisor is responsible for daily supervision. Supervisor from an external organisation cannot have a formal role, and cannot be involved in the grading as they are not qualified lecturers. If more supervisors and chair groups are involved, each role should be explained under item 5. WUR employees working outside the university section (e.g. researchers) have the same status as supervisors (WU lecturer).

2. Prerequisites

Chairs may determine a maximum of two prerequisite courses (in total 12 credits) for starting a thesis. These prerequisites have to be published in the study handbook. The student has to pass the exam(s) before being granted access to the thesis.

3. Admission to the thesis

The Chair Group (supervisor, education coordinator) has to contact the study advisor personally to ensure that the student is qualified for starting the master's thesis.

4. Description and planning

In general, reference can be made to an existing Chair Group project proposal, including subject and type of activities. An important aspect is that the student has to write a detailed project description and is aware of all the consequences with respect to type of activities, intensity and planning of work. If the student intends to interrupt the project for exams or a period of leave/absence, this has to be agreed with the supervisor in advance.

5. Arrangements on supervision

Supervisors have their own guidelines for planning meetings with students and for involving co-workers. In cases where more supervisors and Chair Groups are involved, the student should not be confronted with conflicting rules and opinions: One supervisor should be the focal point for the student. It is recommended to include an intermediate evaluation.

6. Arrangements on facilities

The Chair Group arranges the facilities required for the student. In general, it should be assumed that the student is unfamiliar with the policy concerning priorities for use of equipment and facilities, and is not aware who is in charge of them. The student needs to be informed that arrangements made are never a guarantee for availability, and that due to unpredictable circumstances, the thesis project may have to be adapted with respect to time planning and/or content. The Chair Group and the student then have to agree solutions together.

7. Arrangements on report

Specific rules on the lay-out of a report, the transfer of data sets and processed results have to be agreed.

The thesis project may be part of a larger project in which external partners are involved, or in which results may be generated that require confidentiality. The university has guidelines re protection and embargo of scientific results. Thesis reports can be registered with a restriction on disclosure of contents. The examiners and supervisor(s), however, always need a full copy to be able to assess the student.

From October 2009, all master's theses have to be uploaded to the Wageningen UR Digital Library through the AIR (Administration Enrolment data and Results). It is up to the Chair Group and student to decide whether the thesis will be made public or not in the Digital Library.

8. Arrangement for individual situations

Students can ask for specific facilities for example in the case of disabilities. The student and Chair Group can ask the study advisor or Dean for students for advice. Additional arrangements for Double Degree students can be included here if needed.

9. Assessment procedure

In 2006, the Examining Boards and Board of the Education Institute decided that all WU Chair Groups have to use the standard assessment form for theses and appoint two examiners. The Chair Group can adjust the weight (percentages) of the assessment criteria on the Excel-form. The student should be informed about this weighting (item 9 of this agreement).

Appendix B: MSc thesis assessment form Wageningen University

Assessment Form MSc Thesis Wageningen University				
Complete the green fields boxed with a single line. Use a point as decimal sign; the default language is English (UK)				
Name chair group			Fee Percentage per Chairgroup	
Name student			Chair Group	100%
Registration number			Not applicable	0%
Study programme			Not applicable	0%
Specialisation				
Code thesis				
Short title thesis				
Country (of fieldwork)	1	CountryName		
	2	Not applicable		
Date examination			Signature	
Supervisor chair group				
Supervisor outside chair group (if any)				
Second reviewer/examiner				
			Grading Mark 1-10	Relative weight *
Research competence (30-60%) *				
1 Commitment and perseverance				
2 Initiative and creativity				
3 Independence				0.00
4 Efficiency in working with data				
5 Handling supervisor's comments and development of research skills				
6 Keeping to the time schedule				
Thesis report (30-60%) *				
1 Relevance research, clearness goals, delineation research				
2 Theoretical underpinning, use of literature				
3 Use of methods and data				0.00
4 Critical reflection on the research performed (discussion)				
5 Clarity of conclusions and recommendations				
6 Writing skills				
Colloquium (5-10%) *				
1 Graphical presentation				
2 Verbal presentation and defence				0.00
Oral Defence (5-10%) *				
1 Defence of the thesis				
2 Knowledge of study domain				0.00
<i>* please choose weights such that their sum is 100.</i>	TOTAL			0.00
	FINAL GRADE		FAIL! (partially completed)	Fail

Appendix C: Rubric for assessment of MSc-thesis

Author: Arnold F. Moene, Meteorology and Air Quality Group, Wageningen University
Version: 1.1 (December 15, 2010)

This document is released under the Creative Commons Attribution-Non-commercial-Share Alike 3.0 Netherlands License

Item	Mark for item					
	2-3	4-5	6	7	8	9-10
1. Research competence (30-60%) *						
1.1. Commitment and perseverance	Student is not motivated. Student escapes work and gives up regularly	Student has little motivation. Tends to be distracted easily. Has given up once or twice	Student is motivated at times, but often, sees the work as a compulsory task. Is distracted from thesis work now and then.	The student is motivated. Overcomes an occasional setback with help of the supervisor.	The student is motivated and/or overcomes an occasional setback on his own and considers the work as his "own" project.	The student is very motivated, goes at length to get the most out of the project. Takes complete control of his own project. Considers setbacks as an extra motivation.
1.2. Initiative and creativity	Student shows no initiative or new ideas at all.	Student picks up some initiatives and/or new ideas suggested by others (e.g. supervisor), but the selection is not motivated.	Student shows some initiative and/or together with the supervisor develops one or two new ideas on minor parts of the research.	Student initiates discussions on new ideas with supervisor and develops one or two own ideas on minor parts of the research.	Student has his own creative ideas on hypothesis formulation, design or data processing.	Innovative research methods and/or data-analysis methods developed. Possibly the scientific problem has been formulated by the student.
1.3. Independence	The student can only perform the project properly after repeated detailed instructions and with direct help from the supervisor.	The student needs frequent instructions and well-defined tasks from the supervisor and the supervisor needs careful checks to see if all tasks have been performed.	The supervisor is the main responsible for setting out the tasks, but the student is able to perform them mostly independently	Student selects and plans the tasks together with the supervisor and performs these tasks on his own	Student plans and performs tasks mostly independently, asks for help from the supervisor when needed.	Student plans and performs tasks independently and organizes his sources of help independently.
	No critical self-reflection at all.	No critical self-reflection at all.	Student is able to reflect on his functioning with the help of the supervisor only.	The student occasionally shows critical self-reflection.	Student actively performs critical self-reflection on some aspects of his functioning	Student actively performs critical self-reflection on various aspects of his own functioning and performance.
1.4. Efficiency in working with data Note: depending on the characteristics of the thesis work, not all three aspects (experimental work, data analysis and model development) may	Experimental work	Student is able to execute detailed instructions to some extent, but errors are made often, invalidating (part of) the experiment.	Student is able to execute an experiment that has been designed by someone else (without critical assessment of sources of error and uncertainty).	Student is able to execute an experiment that has been designed by someone else. Takes sources of error and uncertainty into account in a qualitative sense.	Student is able to judge the setup of an existing experiment and to include modifications if needed. Takes into account sources of error and uncertainty quantitatively.	Student is able to setup or modify an experiment exactly tailored to answering the research questions. Quantitative consideration of sources of error and uncertainty. Execution of the experiment
	Student is not able to setup and/or execute an experiment.					

Item	Mark for item					
	2-3	4-5	6	7	8	9-10
be relevant and some may be omitted						is flawless.
	Data analysis Student is lost when using data. Is not able to use a spreadsheet program or any other appropriate data-processing program.	Student is able to organize the data, but is not able to perform checks and/or simple analyses	Student is able to organize data and perform some simple checks; but the way the data are used does not clearly contribute to answering of the research questions and/or he is unable to analyse the data independently.	Student is able to organize the data, perform some basic checks and perform basic analyses that contribute to the research question	Student is able to organize the data, perform commonly used checks and perform some advanced analyses on the data	Student is able to organize the data, perform thorough checks and perform advanced and original analyses on the data.
	Model development Student is not able to make any modification/addition to an existing model.	Student modifies an existing model, but errors occur and persist. No validation.	Student is able to make minor modifications (say a single formula) to an existing model. Superficial validation or no validation at all.	Student is able to make major modifications to an existing model, based on literature. Validation using some basic measures of quality.	Student is able to make major modifications to an existing model, based on literature or own analyses. Validation using appropriate statistical measures.	Student is able to develop a model from scratch, or add an important new part to an existing model. Excellent theoretical basis for modelling as well as use of advanced validation methods.
1.5. Handling supervisor's comments and development of research skills	Student does not pick up suggestions and ideas of the supervisor	The supervisor needs to act as an instructor and/or supervisor needs to suggest solutions for problems	Student incorporates some of the comments of the supervisor, but ignores others without arguments	Student incorporates most or all of the supervisor's comments.	Supervisor's comments are weighed by the student and asked for when needed.	Supervisor's comments are critically weighed by the student and asked for when needed, also from other staff members or students.
	Knowledge and insight of the student (in relation to the prerequisites) is insufficient and the student is not able to take appropriate action to remedy this	There is some progress in the research skills of the student, but suggestions of the supervisor are also ignored occasionally.	The student is able to adopt some skills as they are presented during supervision	The student is able to adopt skills as they are presented during supervision and develops some skills independently as well	The student is able to adopt new skills mostly independently, and asks for assistance from the supervisor if needed.	The student has knowledge and insight on a scientific level, i.e. he explores solutions on his own, increases skills and knowledge where necessary.
1.6. Keeping to the time schedule	Final version of thesis or colloquium more than 50% of the nominal period overdue without a valid reason (force majeure)	Final version of thesis or colloquium at most 50% of the nominal period overdue (without a valid reason).	Final version of thesis or colloquium at most 25% of nominal period overdue (without valid reason)	Final version of thesis or colloquium at most 10% of nominal period overdue (without valid reasons)	Final version of thesis or colloquium at most 5% of nominal period overdue (without good reasons)	Final version of thesis and colloquium finished within planned period (or overdue but with good reason).
	No time schedule made.	No realistic time schedule.	Mostly realistic time schedule, but no timely adjustment of time schedule.	Realistic time schedule, with some adjustments (but not enough or not all in time) in times only.	Realistic time schedule, with timely adjustments. of times only.	Realistic time schedule, with timely adjustments of both time and tasks.

Item	Mark for item					
	2-3	4-5	6	7	8	9-10
2. Thesis report (30-60%) *						
2.1. Relevance research, clearness goals, delineation research	No link is made to existing research on the topic. No research context is described.	The context of the topic at hand is described in broad terms but there is no link between what is known and what will be researched.	The link between the thesis research and existing research does not go beyond the information provided by the supervisor.	Context of the research is defined well, with input from the student. There is a link between the context and research questions.	Context of the research is defined sharply and to-the-point. Research questions emerge directly from the described context.	Thesis research is positioned sharply in the relevant scientific field. Novelty and innovation of the research are indicated.
	There is no researchable research question and the delineation of the research is absent	Most research questions are unclear, or not researchable and the delineation of the research is weak	At least either the research questions or the delineation of the research are clear	The research questions and the delineation are mostly clear but could have been defined sharper at some points	The research questions are clear and researchable and the delineation is clear.	The research questions are clear and formulated to-the-point and limits of the research are well-defined.
2.2. Theoretical underpinning, use of literature	No discussion of underlying theory.	There is some discussion of underlying theory, but the description shows serious errors.	The relevant theory is used, but the description has not been tailored to the research at hand or shows occasional errors.	The relevant theory is used, and the description has been tailored partially successful to the research at hand. Few errors occur.	The relevant theory is used, it is nicely synthesized, and it is successfully tailored to the research at hand.	Clear, complete and coherent overview of relevant theory on the level of an up-to-date review paper. Exactly tailored to the research at hand.
	No peer-reviewed/primary scientific papers in reference list except for those already suggested by the supervisor	Only a couple of peer-reviewed papers in reference list.	Some peer-reviewed papers in reference list but also a significant body of grey literature.	Relevant peer-reviewed papers in reference list but also some grey literature or text books. Some included references less relevant.	Mostly peer-reviewed papers or specialized monographs in reference list. An occasional reference may be less relevant.	Almost exclusively peer-reviewed papers in reference list or specialized monographs (not text books). All papers included are relevant.
2.3. Use of methods and data	No description of methods and/or data.	Research is not reproducible due to insufficient information on data (collection and/or treatment) and analysis methods	Some aspects of the research regarding data-collection, data-treatment, models or the analysis methods are described insufficiently so that that particular aspect of the research is not reproducible.	Description of the data (collection, treatment) or models as well as the analysis methods used is lacking in a number of places so that at most a more or less similar research could be performed.	Description of the data (collection, treatment) or models as well as the analysis methods used is mostly complete, but exact reproduction of the research is not possible due to lack of some details.	Description of the data (collection, treatment) or models as well as the analysis methods is complete and clear so that exact reproduction of the research is possible.
2.4. Critical reflection on the research performed (discussion)	No discussion and/or reflection on the research. Discussion only touches trivial or very general points of criticism.	Only some possible weaknesses and/or weaknesses which are in reality irrelevant or non-existent have been identified.	Most weaknesses in the research are indicated, but impacts on the main results are not weighed relative to each other.	Most weaknesses in the research are indicated and impacts on the main results are weighed relative to each other.	All weaknesses in the research are indicated and weighed relative to each other. Furthermore, (better) alternatives for the methods used are indicated.	Not only all possible weaknesses in the research are indicated, but also it is indicated which weaknesses affect the conclusions most.

Item	Mark for item					
	2-3	4-5	6	7	8	9-10
	No confrontation with existing literature.	Confrontation with irrelevant existing literature.	Only trivial reflection vis-a-vis existing literature.	Only most obvious conflicts and correspondences with existing literature are identified. The value of the study is described, but it is not related to existing research.	Minor and major conflicts and correspondences with literature are shown. The added value of the research relative to existing literature is identified.	Results are critically confronted with existing literature. In case of conflicts, the relative weight of own results and existing literature is assessed. The contribution of his work to the development of scientific concepts is identified.
2.5. Clarity of conclusions and recommendations	No link between research questions, results and conclusions.	Conclusions are drawn, but in many cases these are only partial answers to the research question. Conclusions merely repeat results.	Conclusions are linked to the research questions, but not all questions are addressed. Some conclusions are not substantiated by results or merely repeat results.	Most conclusions well-linked to research questions and substantiated by results. Conclusions are mostly formulated clearly but with some vagueness in wording.	Clear link between research questions and conclusions. All conclusions substantiated by results. Conclusions are formulated exact.	Clear link between research questions and conclusions. Conclusions substantiated by results. Conclusions are formulated exact and concise. Conclusions are grouped/ordered in a logical way.
	No recommendations given.	Recommendations are absent or trivial.	Some recommendations are given, but the link of those to the conclusions is not always clear.	Recommendations are well-linked to the conclusions.	Recommendations are to-the-point, well-linked to the conclusions and original.	Recommendations are to-the-point, well-linked to the conclusions, original and are extensive enough to serve as project description for a new thesis project.
2.6. Writing skills	Thesis is badly structured. In many cases information appears in wrong locations. Level of detail is inappropriate throughout.	Main structure incorrect in some places, and placement of material in different chapters illogical in many places. Level of detail varies widely (information missing, or irrelevant information given).	Main structure is correct, but lower level hierarchy of sections is not logical in places. Some sections have overlapping functions leading to ambiguity in placement of information. Level of detail varies widely (information missing, or irrelevant information given).	Main structure correct, but placement of material in different chapters illogical in places. Level of detail inappropriate in a number of places (irrelevant information given).	Most sections have a clear and unique function. Hierarchy of sections is mostly correct. Ordering of sections is mostly logical. All information occurs at the correct place, with few exceptions. In most places level of detail is appropriate.	Well-structured: each section has a clear and unique function. Hierarchy of sections is correct. Ordering of sections is logical. All information occurs at the correct place. Level of detail is appropriate throughout.
	Formulations in the text are often incorrect/inexact inhibiting a correct interpretation of the text.	Vagueness and/or inexactness in wording occur regularly and it affects the interpretation of the text.	The text is ambiguous in some places but this does not always inhibit a correct interpretation of the text.	Formulations in text are predominantly clear and exact. Thesis could have been written more concisely.	Formulations in text are clear and exact, as well as concise.	<i>Textual</i> quality of thesis (or manuscript in the form of a journal paper) is such that it could be acceptable for a peer-reviewed journal.
3. Colloquium (5%) *						

Item	Mark for item					
	2-3	4-5	6	7	8	9-10
3.1. Graphical presentation	Presentation has no structure.	Presentation has unclear structure.	Presentation is structured, though the audience gets lost in some places.	Presentation has a clear structure with only few exceptions.	Presentation has a clear structure. Mostly a good separation between the main message and side-steps.	Presentation clearly structured, concise and to-the-point. Good separation between the main message and side-steps.
	Unclear lay-out. Unbalanced use of text, graphs, tables or graphics throughout. Too small font size, too many or too few slides.	Lay-out in many places insufficient: too much text and too few graphics (or graphs, tables) or vice versa.	Quality of the layout of the slides is mixed. Inappropriate use of text, tables, graphs and graphics in some places.	Lay-out is mostly clear, with unbalanced use of text, tables, graphs and graphics in few places only.	Lay-out is clear. Appropriate use of text, tables, graphs and graphics.	Lay-out is functional and clear. Clever use of graphs and graphics.
3.2. Verbal presentation and defence	Spoken in such a way that majority of audience could not follow the presentation.	Presentation is uninspired and/or monotonous and/or student reads from slides: attention of audience not captured	Quality of presentation is mixed: sometimes clear, sometimes hard to follow.	Mostly clearly spoken. Perhaps monotonous in some places.	Clearly spoken.	Relaxed and lively though concentrated presentation. Clearly spoken.
	Level of audience not taken into consideration at all.	Level of audience hardly taken into consideration.	Presentation not at appropriate level of audience.	Level of presentation mostly targeted at audience.	Level of presentation well-targeted at audience. Student is able to adjust to some extent to signals from audience that certain parts are not understood.	Clear take-home message. Level well-targeted at audience. Student is able to adjust to signals from audience that certain parts are not understood.
	Bad timing (way too short or too long).	Timing not well kept (at most 30% deviation from planned time).	Timing not well kept (at most 20% deviation from planned time).	Timing is OK (at most 10% deviation from planned time).	Timing is OK.	Presentation finished well in time.
	Student is not able to answer questions.	Student is able to answer only the simplest questions	Student answers at least half of the questions appropriately.	Student is able to answer nearly all questions in an appropriate way.	Student is able to answer all questions in an appropriate way, although not to-the-point in some cases.	Student is able to give appropriate, clear and to-the-point answers to all questions.
4. Examination (5%) *						
4.1. Defence of the thesis	Student is not able to defend/discuss his thesis. He does not master the contents	The student has difficulty to explain the subject matter of the thesis.	Student is able to defend his thesis. He mostly masters the contents of what he wrote, but for a limited number of items he is not able to explain what he did, or why.	Student is able to defend his thesis. He masters the contents of what he wrote, but not beyond that. Is not able to place thesis in scientific or practical context.	Student is able to defend his thesis, including indications where the work could have been done better. Student is able to place thesis in either scientific or practical	Student is able to freely discuss the contents of the thesis and to place the thesis in the context of current scientific literature and practical contexts.

Item	Mark for item					
	2-3	4-5	6	7	8	9-10
					context.	
4.2. Knowledge of study domain	Student does not master the most basic knowledge (even below the starting level for the thesis).	The student does not understand all of the subject matter discussed in the thesis.	The student understands the subject matter of the thesis on a textbook level.	The student understands the subject matter of the thesis including the literature used in the thesis.	Student is well on top of subjects discussed in thesis: not only does he understand but he is also aware of current discussions in the literature related to the thesis topic.	Student is well on top of subjects discussed in thesis: not only does he understand but he is also aware of discussions in the literature beyond the topic (but related to) of the thesis.

Appendix D House Rules Genetics for Thesis students (building and laboratory)

Contact: Wytske Nijenhuis, Chair Group Secretary, wytse.nijenhuis@wur.nl

General

At arrival on the first day, your supervisor will introduce you to the chair group holder and other members of the group and will show you the department. He/she will send a picture of you, together with information about your research, to all members of Genetics using the internal mailing list. Your picture will also be added to the photo board.

Computers, desks and lockers

- You can use the flex PC's and flex desks at the student space (W2.Db.064) or silent room (W2.Ee.073) of Genetics and Biosystematics.
 - Flex desks are subject to a clean desk policy: you always have to leave an empty desk when you log off.
 - Occupy a PC or desk only if you need it. If you go to the lab, the greenhouse or a meeting you have to log off so that others can use the PC or desk.
 - If you only need to leave your desk for a short while, you can only occupy a PC or desk in your absence for a maximum of 45 minutes.
 - If you bring your own laptop, use a flex desk without a PC (silent room or ask Wytske/Wilma).
- Lockers in the corridor can be used for storing your valuables.

Meetings (scientific and social)

- Every Tuesday at 11.00h -12.00h, there is a GSS (Genetics Seminar Series) meeting in Room W01 at the ground floor. Generally, two presentations are given by staff, students or guests. Attendance to the GSS is mandatory.
- Furthermore, you also have regular meetings with the group of your supervisor. Ask your supervisor about the details.
- Our coffee break is around 10.15h, in the Starbucks coffee corner
- Most people have lunch in Starbucks from 12.30h.
- Social meetings like Easter/X-mas brunch, Lab outings, etc. are announced well in advance.

Secretariat - Wytske Nijenhuis

- A completed and signed copy of your thesis agreement must be handed in at the secretariat at the start of your project. The original version of the agreement should be given to your study advisor.
- The secretariat will organize your access to Radix and the labs. The admittance rights will be added to your WUR card.
- You cannot print with your WUR card. If you want to print, send your documents to your supervisor or to Wytske Nijenhuis (wytse.nijenhuis@wur.nl) so you can print with their card.
- Your email address will be added to the mailing list of Genetics so you will receive all information (seminars, social events etc) that is sent to the Genetics-group.

Working in the lab

- Every Tuesday at half past 10, there is a mandatory short lab meeting for all working in the lab. You will get information about the lab duties for the relevant week.
- Before you can do any work in the lab you need to be registered for access. You will receive a registration form for lab access GMO declaration from Wytske Nijenhuis. See attachments?
- You also have to pass a digital safety test, BSTS (Better Safe than Sorry) on blackboard (<http://blackboard.wur.nl>) in order to get admittance. When you passed the test you must send a print screen to wytske.nijenhuis@wur.nl and you will receive a certificate.
- Before starting in the lab, one of the technicians will give you a tour in the lab and, if required, arranges access to Unifarm.
- You are not allowed to work alone in the lab in the evening and in the weekend.

Appendix E: Outline MSc thesis proposal

a. Title page

- Title of the research project
- Student name (incl. reg.nr.), supervisor name, Chair Group name,
- GEN code
- Date
- Chair Group
- (Optional: illustration relevant to the subject)

b. Preface

- Personal statement
- Brief motivation on choice of subject
- Relation of subject to personal objectives and aims

c. Summary of problem and objectives

d. Introduction; elaboration and information on proposal

- Introduction on subject of proposal
- Detailed elaboration of problem and aims of proposal
- Scientific relevance of proposal
- Societal relevance of proposal

e. Experimental/design approach

- Specification of material to be studied
- Description of methods, techniques, apparatus to be used
- Estimation of amount of data that can be collected in time available

f. Data analysis/design evaluation, presentation results

- Type of data to be collected
- Methods of data processing and analysis
- Description of how results will be presented.

g. Project planning

- Phasing of various stages of the research project
- Week by week planning of activities (graphic presentation)

h. Back-up strategies

- Identification of possible problems with proposed research plan
- What to do in case of failing experiments or lack of usable data?

i. Estimation of thesis costs

- Estimation of expenses involved in practical realization of research plan (literature, photocopies, materials, chemicals, travel, licenses, etc.)

j. Literature references

Appendix F: Guidelines for keeping a lab journal

In the laboratory notebook is a record of your aims, practical performance and results of experiments, and the processing and analysis of the results. The laboratory notebook enables you to report your work at a later stage. The laboratory notebook is also useful when communicating with your instructors, superiors and colleagues. You should be able to discuss the experiments with them based on how you did the experiments and your original observations and data. It is also important that the experiment can be repeated based on the descriptions in your laboratory notebook. Therefore, it is of utmost importance that you train yourself to set up and keep a laboratory notebook. In some cases it is obligatory to follow *strict international guidelines* for keeping a laboratory notebook, for example for companies that may want to patent your findings. All pages of this type of notebook have to be signed daily by an independent observer in order to prevent observations from being changed at a later time (fraud). This is not discussed in detail here. However, the guidelines for keeping a laboratory notebook presented below are based on these international guidelines. It is important that you store your extended notebooks 'under lock and key' to prevent them from getting lost, or because they may contain *personal data*, e.g. obtained in nutrition research.

After completion of your thesis, your lab journal should be handed over to your supervisor, who will store it for future reference.

General guidelines for keeping a lab journal

A laboratory notebook should be bound (do not use a loose-leaf ring binder), preferably A4-format with a hard cover. For keeping a laboratory notebook the following general guidelines apply:

- note your *personal data* on the cover, including name, address, and telephone number;
- *number the pages* of the notebook;
- use a pen (not a pencil) when writing;
- during the experiment, you should keep a detailed account of your work, reporting everything of importance that you actually did and observed. Note this in your notebook during the experiments or directly afterwards;
- *do not remove pages* from the notebook;
- start a *new page* for every new experiment you perform;
- start the description of each experiment with a heading i.e. a *short title* and the date;
- in the first instance only use the right hand pages of the notebook to describe the aim and set-up and to record the observations of an experiment. The elaboration of the results is also noted on the right pages. The left pages can then be used for corrections, additional notes, drawings or pictures of gels, thin layer chromatograms, graphs made on the basis of results, etc.;
- data from measurements should be presented in an orderly manner, for example in a Table or a Figure. Clearly indicate what *quantity* you use and the *corresponding units*. Label axes in graphs accordingly;
- use a single stroke to correct wrong observations so it can still be read. Also note if something goes wrong and why, if possible. *Do not remove pages from experiments that went wrong*;

- make sure you use *cross-references* when you need more than one page for an experiment. Use descriptions like "continued on page " and "continuation from page ";
- write down the *aim*: why is the experiment being performed; what do you want to demonstrate or prove. Add additional text if necessary so you are not confused later on. It is worth noting that you may need the results of a certain experiment again, several years later;
- note the materials (chemicals, solutions, concentrations, apparatus etc.) and methods (set-up, conditions including temperature, adjustments of apparatus like wavelengths, method of execution). If you are conducting an experiment for the first time, make complete notes or include a clear reference to a description of a similar experiment from the literature or manual. Give sufficient details so that another person can repeat the experiment using the record in your laboratory notebook;
- address the necessary data for *processing the results*, for example formulas or computer programs;
- write down the *tentative conclusions* that follow from the results and possibly a hypothesis and proposals for future research;
- put a *serial number* and the initial and final dates on the cover of your notebooks when you do a large series of experiments and need more than one laboratory notebook;
- the final pages of your notebook are intended for a *table of contents*. Note here the page, title and date of the experiments.

Lab journal as 'organizer'

Experiments can produce all kinds of data. Nowadays, many data are in electronic format (data files) and are no longer noted in a laboratory notebook. It is therefore important to ensure systematic recording of these data so they can be easily retrieved later. In these cases, your notebook is used as an organizer in which you record the data file(s) that belong(s) to a certain experiment. The following guidelines can be given:

- separate observations, for example readings from a spectrophotometer can be noted directly in your notebook;
 - data that are obtained on paper, for example printouts of spectra, can be glued in a laboratory notebook. However, if they are obtained regularly or in large quantities, it is better to store them in binders *for document files*. They should be sorted by date or experiment number. Make sure each print is labelled by date, type and details of the experiment, and that there is a reference to the correct page in your notebook, as well as other details you might need later, etc. Note which plots or prints you have made and where they can be found. Mark the binders in a logical manner;
 - *electronic data files* (for example data files from mass spectrometry and NMR). These are usually first produced on a hard disk of a PC coupled to the apparatus. Always store the crude data on your own computer, a memory stick, a ZIP-disk or a CD. It is important to systematically label both the files and the media (also list the files that are present on a particular disk or CD). In the notebook you should note which files belong to which experiment and where they are stored. Make sure you store disks, CDs etc. systematically.
- After finishing your thesis hand in your notebook and electronic data to your supervisor.**

Appendix G: Format of Genetics Thesis report

Title page: title, author(s), MSc study programme, course code and number of ECTS, supervisor(s), year, name of the Chair Group and that of other participating institutes, and date of submission.

Contents: including numbered chapters, and other subdivisions

Summary: brief outline of context, research question (hypothesis), methods, results, and discussion. The length of the summary should not exceed 600 words.

Introduction: The introduction includes the background of the research question/hypothesis. As a rule of thumb, the introduction should at least explain all the keywords of the hypothesis/research question. It provides details of the state of the art with regard to the nature of the research question, as well as the (experimental) strategies that have been used so-far to deal with either the thesis project research question or similar research questions.

Materials and methods: note your material and methods in such a way that a colleague within the field can reproduce your experiments. Include a description of the materials and source populations, area description, research methodology, techniques and (data) processing

Results: including statistical analysis, however, omit any interpretations, preliminary conclusions, and references to literature in this section.

Discussion: This section includes your interpretation of the results, including explicit reference to the research question and literature as mentioned in the introduction. Be clear in your conclusions whether, based on your findings, the hypothesis is accepted or rejected. Discuss in retrospect if the methods used in the project were adequate in relation to the research question. Analyse the strengths and the weaknesses of the methods and the results and discuss the results in relation to relevant literature. Identify conclusions that would hold true in further scrutiny. Finally, give recommendations for further research.

Acknowledgements

References: make a reference list according to the following guidelines. Consult the instructions of the WU-library about the use of Endnote or Mendeley software (use the Heredity format) to facilitate proper and easy referencing.

References should be indicated in the text by the surnames of the authors with the year of publication, as shown in the examples below. References to more than one publication by an author in the same year should be distinguished alphabetically with small letters, eg (Watson, 1991a,b). The abbreviated author and date reference should be placed in parentheses unless the name forms part of the text, eg Willmer (1982) has demonstrated that... If no person is named as author, the name of the appropriate body should be used, eg (The Genetics Society, 2000).

The full list of references should be given in alphabetical order at the end of the thesis, in the

form of the examples below. Journal titles should be abbreviated according to Medline. All authors up to the first six should be listed, followed by et al for seven or more authors.

Dickinson, WJ (1991). The evolution of regulatory genes and patterns in *Drosophila*. In: Hecht MK, Wallace B, MacIntyre RJ (eds) *Evolutionary Biology*, Plenum Press: New York. Vol 25, pp 127–173.

Falconer DS (1989). *Introduction to Quantitative Genetics*, 3rd edn. John Wiley and Sons: New York.

Latta RG (1992). *Inbreeding Depression and Mixed Mating Systems in Mimulus*. MSc Thesis, University of Toronto.

Sano Y, Sano R (1990). Variation of the intergenic spacer region of ribosomal DNA in cultivated and wild rice species. *Genome* 3: 209–218.

Swofford DL, Selander RB (1989). BIOSYS-1. A computer program for the analysis of allelic variation in population genetics and biochemical systematics. Release 1.7. University of Illinois, Urbana, Illinois.

Wilde J, Waugh R, Powell W (1992). Genetic fingerprinting of *Theobroma* clones using randomly amplified polymorphic DNA markers. *Theor Appl Genet* 83: 871–877.

Appendix H: Guidelines for giving an oral presentation

- Ensure that the issues you want to present can be presented in the time allocated. Structure your story well and distinguish between major and minor issues; you may find that you have to limit yourself to the major issues. During a rehearsal of your presentation, you can check whether you finish within the given time.
- You have to adjust your language, amount of background information etc. so that the greater part of your audience can follow your presentation. Presenting to an audience of fellow students and colleagues is completely different than to interested laymen.
- It is advisable to repeat the important issues; this will also help your audience follow your story-line. The following structure of a presentation ensures the necessary repetitions:
 - *Introduction.* Give a *rough sketch* of the central issues; discuss the basic concepts at a level adjusted to your audience. Keep in mind that the first minutes of your presentations are essential. If you are able to attract their attention, you will have a receptive audience. The first sentence(s) of your presentation should be devoted to this.
 - *The core of the story.* This contains a *description of the problem, the approach you took, and the results and conclusion of the research.* Do not discuss too many different issues and details, especially not if time is limited. It is better to take time to clearly explain the most important issues. If someone would like to know more, there is time for questions at the end.
 - *Conclusion.* Summarize the *most important results and conclusions.* Do not introduce new results or insights at this point. Clearly indicate that you are at the end of your presentation, for example by thanking the audience for their attention and/or asking whether there are any questions.
- Make sure you know, well ahead of time, whether the audio-visual aids you would like to use (overhead (data) projector, PC, internet connection, etc.) are available and ready for use in the room where your presentation is scheduled. It is extremely frustrating to find out that after preparing a PowerPoint presentation, no projector is available. Ensure that the text on slides/sheets is easy to read from a distance. A rule of thumb is: font size 24, and 6 sentences or less per slide/sheet. Also the text in tables and diagrams should be easy to read. Use contrasting colours and bear in mind that people in your audience may be colour blind. If possible check whether your presentation is also readable for the audience at the back of the room.
- If you find it difficult to estimate what you can and cannot do in the time given and how you come across, it is a good idea to rehearse your presentation with friends and/or colleagues. They can give you feedback, which will help you improve your presentation.
- Before your presentation, check whether everything ((data) projector, microphone, lights, etc.) functions as it should, and if not, make sure that the problem is fixed.
- Your audience should have a good view on what you project. Do not put yourself and the projector in their line of view.
- Look at your audience during your presentation. People like to have personal attention, and by looking at them they experience this. Look at people at face level – but do not react to individual facial expressions - look at their noses.

- Speak loudly and clearly and not too fast. If you doubt whether people can hear you clearly, don't be afraid to ask and, if necessary, adapt your tone/volume etc.
- Show only small pieces of text. During a PowerPoint presentation you can bring in one sentence at the time (do not overdo this). Do not show large chunks of text, and at the same time give additional information. Your audience will then choose either to listen or to read. Give them time to digest what you show and tell them. Use a pointer or stick to point out the information you want to emphasize. The small pieces of text on the slide/transparency also function as a reminder for you, however avoid reading the text literally. The text is there to jog your memory of the details of the story – and to give the audience the key points. . Do not read from a written text; this will make the presentation less attractive.
- While showing figures, tables, and graphs to the audience use a pointer and explain the details clearly (e.g. on the x-axis is indicated; on the y-axis is indicated; the points here are ...); Give the audience time to fully comprehend the illustrations of your presentation. If necessary – redraw/simplify / highlight complex diagrams to clearly show the main issues.
- Be alert to reactions from the audience. It may be annoying when someone from the audience wants to say something thereby interrupting your presentation. However it is sometimes useful to give people the opportunity to do so. These comments may improve your presentation – for example if an image/text is not in focus, or that they have difficulty hearing you. This then allows you to do something about that. Other useful interruptions may be about your use of an unclear term; this gives you a chance to explain what you mean. In general it is better to try to avoid lengthy discussions about questions; say that you will come back to this type of question at the end of the presentation.
- Usually the presentation ends with a discussion. Sometimes questions are directly related with your work and you might have to clarify specific things. It is also possible that your results/views contradict what others have found. Be prepared for these kind of questions. If people ask you questions about subjects you have not studied yourself, be honest and simply tell them that you do not know the answer.
- Ask for feedback about your presentation from your supervisor and fellow-students

Appendix I: Plagiarism Statement

1. Introduction and definition

The task of writing a paper or other assignment for a course sometimes lures students into using other's work, ideas, facts, texts, etc. and represents it as their own. The goal of this statement is to distinguish between methods to do this in an appropriate way and methods that fall under plagiarism.⁵ It is important for students to understand that plagiarism is considered as a very serious offense against academic norms and, hence subject to equally serious punishment.

"Plagiarism" is derived from the Latin *plagiarius*, 'plunderer', 'kidnapper'. It refers to intellectual theft, defined as "the false assumption of authorship: the wrongful act of taking the product of another person's mind, and presenting it as one's own"⁶ "To plagiarize is to give the impression that you wrote or thought something that you in fact borrowed from someone. While some plagiarize deliberately by copying or buying papers or soliciting unauthorized help, most plagiarism is accidental, but it is usually dealt with just as harshly as intentional plagiarism."⁷ It is precisely to avoid discussion about what constitutes plagiarism and its intentional character that we want students to understand the content of this document well.

The **sanction** in case of plagiarism is –based on WU policy (articles 35 and 36 of MSc Education/Examination Regulation):

The examiner informs the student and reports to the secretary of the WU Examination Board the case of plagiarism. The examiner may utilize a plagiarism scanner to prove the case.

The commission will ask the student to express his/her view about the case.

Depending on the magnitude of the fraud the appropriate sanction will be assessed: a warning; a fail for the exam; exclusion of the exam for a maximum period of one a year or a combination of these sanctions.

In the following pages, you will first find several examples of plagiarism, then examples of accepted use of sources and ideas and finally some guidelines on how to avoid plagiarism. We urge students to carefully read these pages and when in doubt talk to their instructors in order to prevent later problems.

2. Examples of plagiarism⁸

A. DIRECT PLAGIARISM

Source Material

From: *Emotion in the Human Face: Guidelines for Research and an Integration of Findings* by Paul Ekman, Wallace V. Friesen, Phoebe Ellsworth (New York: Pergamon Press, Inc.), p.1. (Psychology source)

The human face in repose and in movement, at the moment of death as in life, in silence and in speech, when alone and with others, when seen or sensed from within, in actuality or as represented in art or recorded by the camera is a commanding, complicated, and at times confusing source of information. The face is commanding because of its very visibility and omnipresence. While sounds and speech are intermittent, the face even in repose can be informative. And, except by veils or masks, the face cannot be hidden from view. There is no facial maneuver equivalent to putting one's hands in one's pockets. Further, the face is the location for sensory inputs, life-necessary intake, and communicative output. The face is the site for the sense receptors of taste, smell, sight, and hearing, the intake organs for food, water, and air, and the output location for speech. The face is also commanding because of its role in early development; it is prior to language in the communication between parent and child.

Misuse of source

⁵ See Department of English Northern Illinois University, <http://www.engl.niu.edu/fycomp/plag.html>

⁶ *MLA Style Manual*, 2nd ed. New York: MLA 1998, page 146.

⁷ US Naval Academy Plagiarism policy

⁸ This section is borrowed directly from the Northwestern University website on plagiarism. "The section was written by Jean Smith of the CAS Writing Program, with help from Bob Wiebe of the History Department. Contributors include Katrina Cucueco (Speech '96), Ryan Garino (CAS '98), Scott Goldstein (Tech '96), and Jean Smith and Ellen Wright of the Writing Program. The examples of plagiarism and comments are based upon *Sources: Their Use and Acknowledgement* (published by Dartmouth College)." (<http://www.northwestern.edu/uacc/plagiar.html>)

(italicized passages indicate direct plagiarism):

Many experts agree that *the human face, whether in repose or in movement, is a commanding, complicated, and sometimes confusing source of information. The face is commanding because it's visible and omnipresent. Although sounds and speech may be intermittent, the face even in repose may give information. And, except by veils or masks, the face cannot be hidden. Also, the face is the location for sensory inputs, life-supporting intake, and communication.*

Comment

The plagiarized passage is an almost verbatim copy of the original source. The writer has compressed the author's opinions into fewer sentences by omitting several phrases and sentences. But this compression does not disguise the writer's reliance on this text for the concepts he passes off as his own. The writer tries to disguise his indebtedness by beginning with the phrase "Many experts agree that. ..." This reference to "many experts" makes it appear that the writer was somehow acknowledging the work of scholars "too numerous to mention." The plagiarized passage makes several subtle changes in language (e.g., it changes "visibility and omnipresence" to "it's visible and omnipresent"). The writer has made the language seem more informal in keeping with his own writing style. He ignores any embellishments or additional information given in the source-passage. He contents himself with borrowing the sentence about how only masks and veils can hide the face, without using the follow-up elaboration about there not being a "facial equivalent to putting one's hands in one's pockets." He also reduces the source's list of the face's diverse activities at the end of the paragraph.

Had the writer credited the authors of the Emotions book in this text or in a footnote, and enclosed the borrowed material in quotation marks, this would have been a legitimate use of a source.

B. THE MOSAIC

Source Material

From: *Language in Sociocultural Change* by Joshua Fishman (Stanford University Press, 1972), p.67. (Linguistics source)
In a relatively open and fluid society there will be few characteristics of lower-class speech that are not also present (albeit to a lesser extent) in the speech of the working and lower middle classes. Whether we look to phonological features such as those examined by Labov or to morphological units such as those reported by Fischer (1958) (Fischer studied the variation between -in' and -ing for the present participle ending, i.e. runnin' vs. running and found that the former realization was more common when children were talking to each other than when they were talking to him, more common among boys than girls, and more common among "typical boys" than among "model boys"), we find not a clear-cut cleavage between the social classes but a difference in rate of realization of particular variants of particular variables for particular contexts. Even the widely publicized distinction between the "restricted code" of lower-class speakers and the "elaborate code" of middle-class speakers (Bernstein 1964, 1966) is of this type, since Bernstein includes the cocktail party and the religious service among the social situations in which restricted codes are realized. Thus, even in the somewhat more stratified British setting the middle class is found to share some of the features of what is considered to be "typically" lower-class speech. Obviously then, "typicality," if it has any meaning at all in relatively open societies, must refer largely to repertoire range rather than to unique features of the repertoire.

Misuse of source

(italicized passages indicate direct plagiarism):

In a relatively fluid society many characteristics of lower-class speech will also be found among the working and lower middle classes. Labov's and Fischer's studies show that *there is not a clear-cut cleavage between social classes but only a difference* in the frequency of certain speech modes. All classes share certain speech patterns. The difference among classes would only be apparent by the frequency with which speech expressions or patterns appeared. By this standard, then, Bernstein's distinction between the "restricted code" of the lower-class speakers and the "elaborated code" of middle-class speakers is useful only up to a point, since Bernstein mentions cocktail parties and religious services as examples of "restricted speech" groupings. "Typicality" *refers more to speech "range" than to particular speech features.*

Comment

While this passage contains relatively few direct borrowings from the original source, all its ideas and opinions are lifted from it. The writer hides her dependency on the source by translating its academic terms into more credible language for a novice in sociology. For example, the plagiarist steers clear of sophisticated terms like "phonological features," "morphological units," and "repertoire range." However, her substitutions are in themselves clues to her plagiarism, since they over-generalize the source's meaning. The writer seems to acknowledge secondary sources when she refers to Labov's and Fischer's studies, but she obviously has no first-hand knowledge of their research. If she had consulted these studies, she should have footnoted them, rather than pretending that both she and her audience would be completely familiar with them. She intertwines her own opinions with the source and forms a confused, plagiarized mass.

The writer should have acknowledged her indebtedness to her source by eliminating borrowed phrases and crediting her paragraph as a paraphrase of the original material.

C. PARAPHRASE

Source Material

From: *Cliff's Notes on The Sun Also Rises* by Ernest Hemingway
THE DISCIPLINE OF THE CODE HERO

If the old traditional values are no good anymore, if they will not serve man, what values then will serve man? Hemingway rejects things of abstract qualities courage, loyalty, honesty, bravery. These are all just words. What Hemingway would prefer to have are concrete things. For Hemingway a man can be courageous in battle on Tuesday morning at 10 o'clock. But this does not mean that he will be courageous on Wednesday morning at 9 o'clock. A single act of courage does not mean that a man is by nature courageous. Or a man who has been courageous in war might not be courageous in some civil affair or in some other human endeavor. What Hemingway is searching for are absolute values, which will be the same, which will be constant at every moment of every day and every day of every week.

Ultimately therefore, for Hemingway the only value that will serve man is an innate faculty of self-discipline. This is a value that grows out of man's essential being, in his inner nature. If a man has discipline to face one thing on one day he will still possess that same degree of discipline on another day and in another situation. Thus Francis Macomber in the short story "The Short, Happy Life of Francis Macomber," has faced a charging animal, and once he has had the resolution to stand and confront this charging beast, he has developed within himself a discipline that will serve him in all situations. This control can function in almost any way in a Hemingway work.

Misuse of source:

Hemingway tries to discover the values in life that will best serve man. Since Hemingway has rejected traditional values, he himself establishes a kind of "code" for his heroes. This code is better seen than spoken of. The Hemingway hero doesn't speak of abstract qualities like courage and honesty. He lives them. But this living of values entails continual performance the Hemingway hero is always having his values put to the test.

How can the hero be up to this continual test? Hemingway stresses the faculty of self-discipline as the backbone of all other virtues. Self-discipline places man's good qualities on a continuum. The dramatic change in Francis Macomber in "The Short, Happy Life of Francis Macomber" stems more from his new-found self-control than from any accidental combination of traits.

Comment

This illustrates plagiarism since the writer used the notion of the "Hemingway code hero" presented in Cliff's Notes as the sole basis for his own essay. He has absorbed his source's concepts, re-phrased them, and, perhaps, made them simpler. But there is a one-to-one relationship between the development of ideas in the Cliff's Notes and the plagiarist's rendition. The first two sentences of the plagiarist's are directly borrowed from his source; the remaining sentences are more artfully disguised. The worst feature of this idea-copying is that it seems to be the end product of a close reading of Hemingway's "Short, Happy Life," the writer makes it appear that his comments are based on this short story.

The writing here would be acceptable if he had written the same paraphrase with the proper acknowledgement of his source.

D. INSUFFICIENT ACKNOWLEDGEMENT

Source Material

From: Peter Laven, *Renaissance Italy: 1464-1534* (New York: Capricorn, 1964), pp. 130f.

The tenacious particularism of the Italian state gave rise to a wide variety of constitutional solutions and class structures throughout Italy. Even conquered territories and those swallowed up by bigger neighboring powers often managed to retain much of their internal organization as it had been. If power changed hands, the instruments and forms of power usually remained the same. Since the economic needs of such territories did not suddenly alter with a change of government or master, those classes which had been important before the change tended to continue to be important afterwards as well. Only when the nature of the change was economic and social might there have been a reversal in the relationships of classes; but even in this there was no sudden revolution in the structure of classes.

Misuse of source:

In his comprehensive study, *Renaissance Italy*, Peter Laven discusses the peculiar organization of Renaissance city-states: The tenacious particularism of the Italian states gave rise to a wide variety of constitutional solutions and class structures throughout Italy. Even conquered territories and those swallowed up by bigger neighboring powers often managed to retain much of their internal organization as it had been.¹

This means that if power changed hands, the instruments and forms of power usually remained the same. Since the economic needs of such territories did not suddenly alter with a change of government or master, those classes which had been important before the change tended to continue to be important afterwards as well. Only when the nature of the change was economic and social might there have been a reversal in the relationships of classes; but even in this there was no sudden revolution in the structure of classes.

¹ Peter Laven, *Renaissance Italy*, p. 130-31.

Comment

This half-crediting of a source is a common form of plagiarism. It stems either from a desire to credit one's source and copy it

too, or from ignorance as to where to footnote. The general rule is to footnote after rather than before your resource material. In this case, the plagiarist credits historian Peter Laven with two sentences and then continues using the author without giving acknowledgement. The writer disguises the direct plagiarism as a paraphrase by using the falsely-explanatory phrase "This means that ..." in the third sentence. This example of plagiarism is especially reprehensible because the writer seemingly acknowledges her source--but not enough.

3. How to do it right: examples of the good use of others' work⁹

In all academic work, and especially when writing papers, we are building upon the insights and words of others. A conscientious writer always distinguishes clearly between what has been learned from others and what he or she is personally contributing to the reader's understanding. To avoid plagiarism, it is important to understand how to attribute words and ideas you use to their proper source.

A. QUOTED MATERIAL AND UNUSUAL OPINION OR KNOWLEDGE

Source:

The teenage detective who was once a symbol of spunky female independence has slowly been replaced by an image of prolonged childhood, currently evolving toward a Barbie doll detective. ... Every few pages bring reminders of Nancy's looks, her clothing, her effect on other people. ... The first entry in this series carries a description of Nancy: "The tight jeans looked great on her long, slim legs and the green sweater complemented her strawberry-blonde hair."
Jackie Vivelo, "The Mystery of Nancy Drew," *MS.*, November, 1992, pp. 76-77

Use and Adaptation of the Material:

Nancy Drew has become a "Barbie doll" version of her old self. She has become superficial and overly concerned with her looks. She is described in the new series as wearing "tight jeans [that] looked great on her long, slim legs."¹ She has traded her wits and independent spirit for a great body and killer looks.²

¹ Jackie Vivelo, "The Mystery of Nancy Drew," *MS.*, November, 1992, p. 77.

² Vivelo, pp. 76-77

Explanation:

The writer has paraphrased most of the material, and she has borrowed a few of the author's words. She has also discovered that the paraphrased ideas are unusual (not found in other sources). Therefore, the writer has placed quotation marks around the author's words and has credited the author twice--once directly after the quoted material and once at the conclusion of the author's ideas.

B. INTERPRETATION

Source:

One recent theory, advanced by the physicist Gerald Hawkins, holds that Stonehenge was actually an observatory, used to predict the movement of stars as well as eclipses of the sun and moon. Such a structure would have been of great value to an agricultural people, since it would enable them to mark the changing seasons accurately, and it would have conferred seemingly supernatural powers on the religious leaders who knew how to interpret its alignments.

Stanford Lehmborg, *The Peoples of the British Isles: A New History*, vol. I, (Wadsworth Publishing Company, 1992), p. 9.

Use and Adaptation of the Material:

If Stonehenge was an astronomical observatory which could predict the coming of spring, summer, and fall, this knowledge would have given tremendous power to the priestly leaders of an agricultural community.¹

¹ Stanford Lehmborg, *The Peoples of the British Isles: A New History*, vol. I, (Wadsworth Publishing Company, 1992), p. 9

Explanation:

The writer has appropriately cited this material since the writer is in debt to someone else for the analysis, even though the writer has not used any direct quotations.

⁹ This section is borrowed directly from the Northwestern University website on plagiarism (<http://www.northwestern.edu/uacc/plagiar.html>)

C. PARAPHRASED MATERIAL

Source:

As a recent authority has pointed out, for a dependable long-blooming swatch of soft blue in your garden, ageratum is a fine choice. From early summer until frost, ageratum is continuously covered with clustered heads of fine, silky, fringed flowers in dusty shades of lavender-blue, lavender-pink, or white. The popular dwarf varieties grow in mounds six to twelve inches high and twelve inches across; they make fine container plants. Larger types grow up to three feet tall. Ageratum makes an excellent edging.

How to Grow Annuals, ed. Sunset Books and Sunset Magazine (Menlo Park, CA: Lane Books, 1974), p. 24.

Use and Adaptation of the Material:

You can depend on ageratum if you want some soft blue in your garden. It blooms through the summer and the flowers, soft, small, and fringed, come in various shades of lavender. The small varieties which grow in mounds are very popular, especially when planted in containers. There are also larger varieties. Ageratum is good as a border plant.¹

¹*How to Grow Annuals*, ed. Sunset Books and Sunset Magazine (Menlo Park, CA: Lane Books, 1974), p. 24.

Explanation:

The writer has done a good job of paraphrasing what could be considered common knowledge (available in a number of sources), but because the structure and progression of detail is someone else's, the writer has acknowledged the source. This the writer can do at the end of the paragraph since he or she has not used the author's words.

D. USING OTHER AUTHORS' EXAMPLES

Sources:

The creative geniuses of art and science work obsessively. ... Bach wrote a cantata every week, even when he was sick or exhausted.

Sharon Begley, "The Puzzle of Genius," *Newsweek*, June 28, 1993, p. 50.

Albert Einstein published nearly 250 papers in his life, but a sizeable percentage of them were ignored or even proven wrong.

"What Produces Scientific Genius?" *USA Today*, June 1989, p. 11.

Use and Adaptation of the Material

If there is a single unifying characteristic about geniuses, it is that they produce. Bach wrote a cantata every week. Einstein drafted over 250 papers.¹

¹Sharon Begley, "The Puzzle of Genius," *Newsweek*, June 28, 1993, p. 50; "What Produces Scientific Genius?" *USA Today*, June 1989, p. 11.

Explanation:

Instead of finding an original example, the writer has used an author's example to back up what the writer had to say; therefore the writer has cited it.

E. USING OTHER AUTHORS' CHARTS AND GRAPHS

Chart

Source: Accretion Chart for Illinois tax on OID bond, prepared by John Lindsay, Principal Financial Securities, Inc., 6/12/95.

Use and Adaptation of the Material:

As the following chart indicates, investment in an OID (Original Issue Discount) bond is taxable by the State of Illinois on the accretion and interest.¹

¹Accretion Chart for Illinois tax on OID bond, prepared by John Lindsay, Principal Financial Securities, Inc., 6/12/95.

Explanation:

Instead of creating an original chart or graph, the writer has used one from an outside source to support what the writer has to say; therefore the chart or graph has been cited. If the writer had created an original chart, some of the facts might need citations (see example VIII).

F. USING CLASS NOTES

Source: Lecture Notes

- A. Born in USA--Springsteen's 7th, most popular album
a. Recorded with songs on Nebraska album--therefore also about hardship
1. Nebraska about losers and killers
b. About America today--Vietnam, nostalgia, unemployment, deterioration of family
c. Opening song--many people missed the Vietnam message about how badly vets were treated.
class notes--Messages in Modern Music A05
Professor Mary McKay--March 10, 1995

Use and Adaptation of the Material:

As Professor McKay has pointed out, many of the songs in *Born in the USA* (Springsteen's seventh and most popular album), including the title song, were recorded with the songs on *Nebraska*. Consequently, *Born in the USA* is also about people who come to realize that life turns out harder and more hurtful than what they might have expected. However, while *Nebraska* deals with losers and killers, *Born in the USA* deals more locally with the crumbling of American society--its treatment of returning Vietnam veterans, its need to dwell on past glories, its unemployment and treatment of the unemployed, and the loss of family roots. This is apparent from the opening song of the album "Born in the USA" in which Springsteen sings from the perspective of a Vietnam Veteran.¹

¹Mary McKay, "Messages in Modern Music" A01 (Northwestern University) March 10, 1995.

Explanation:

The writer has acknowledged that these ideas (which are not commonly held or the writer has not investigated to find out if they are commonly held) come from a lecture.

G. DEBATABLE FACTS

In the campaigns of 1915 Russian casualties have been conservatively estimated at more than 2 million.

Gordon Craig, *Europe Since 1815* (Dryden Press, 1974), p. 370.

By the end of the summer [of 1915] in addition to military casualties totalling 2,500,000 men, Russia had lost 15 percent of her territories...

L. S. Stavrianos, *The World Since 1500* (Prentice Hall, 1966), p. 438.

Response to the Material

Estimates of the number of deaths in Russia during 1915 range from over two million¹ to two and a half million.²

¹ Gordon Craig, *Europe Since 1815* (Dryden Press, 1974), p. 370.

² L. S. Stavrianos, *The World Since 1500* (Prentice Hall, 1966), p. 438.

Explanation:

The writer found different facts in different sources; therefore the "facts" needed to be documented.

H. UNUSUAL FACTS

Source:

There also has been a dramatic shift in the percentage of our students whose mothers work outside the home.

Approximately 80% of our entering students in 1994 have mothers who are employed outside the home. In 1967, more than half of our students' mothers were full-time homemakers.

"Characteristics of Northwestern Students: Data from the Cooperative Institutional Research Project," Northwestern University, 1994 p. 2.

Use and Adaptation of the Material:

At Northwestern University, the rise in the number of mothers working outside the home has been dramatic--moving from less than half in 1967 to about 80 percent among the freshman class of 1994.¹

¹"Characteristics of Northwestern Students: Data from the Cooperative Institutional Research Project," Northwestern University, 1994 p. 2.

Explanation:

The writer found this fact in only one source and wants his reader to know where to find it.

Guidelines to avoid and prevent plagiarism¹⁰

¹⁰ US Naval Academy Plagiarism Policy

Take carefully documented notes. Identify your sources by name of author, title of work, place and name of publication, date, and page numbers.

Enclose all borrowed words in quotation marks, and set off longer borrowed passages in an indented block.

Avoid mere paraphrasing, substituting your own words or synonyms for the original work without giving proper credit to your source.

Do not plagiarize your own work by copying from it or submitting it more than once for credit unless specifically authorized by your professor.

Document all figures, charts, statistics, graphs, tables, opinions and conclusions taken or adapted from any source, including electronic media such as CD-ROMs, diskettes or tapes, online resources like the World Wide Web, or computer services such as Nexis and Dialog. *Resist the temptation to cut and paste without attribution.*

Do not use translation software to produce a foreign-language text for submission as your own work. Not only does this constitute misrepresenting another entity's work as your own, it also will be recognizable to your instructor as a machine-produced text.

Do not document facts of common knowledge such as familiar proverbs or well-known quotations ("We shall overcome"), but you must indicate the source of any appropriated material that readers otherwise could mistake for your own. **If in doubt, ask. If still uncertain, err on the side of caution** (*borrowed from USNA statement*).

Within a text, particularly in case of repeated reference to the same source, identify its origin briefly by name or title and page number, enclosed in parentheses, and provide complete documentation of all your sources in an alphabetized list of "Works Cited" at the end of your paper.