

# Master thesis at EPL

## Objectives, rules and organisation

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Since 2015, standardised rules and procedures at EPL for the organisation of master theses in all engineering and computer science masters.

The objectives of the standardisation are

- equal treatment of all EPL students,
- generalisation of “good practices”,
- optimisation of the management and of resources,
- better formulation and perception of the learning outcomes,
- increased visibility of the master thesis and of the educational process at EPL towards industrial and economical actors.

The master thesis is

- the opportunity to acquire transversal competencies not yet or only partially developed previously,
- a project aiming at solving a complex engineering problem by applying competencies previously acquired.

These objectives are translated into learning outcomes (LO's) derived from the EPL competency framework.

At the end of his(her) master thesis, the student should be able ...

- 1 ... to demonstrate he-she masters a **body of knowledge and basic skills in science and/or engineering sciences**, bound about his/her thesis.
- 2 ... to lead to completion a major, in amplitude and spent time, **engineering approach applied to the development of a product, service or facility** referred to the thesis.
- 3 ... to lead to completion a major, in amplitude and spent time, **research work aiming at the understanding and the contribution to the resolution of an original scientific question** of theoretical or physical type.

*LO 2 applies to theses with a major "technological development" component.*

*LO 3 applies to theses with a major "research" component.*

*Both are not exclusive.*

At the end of his(her) master thesis, the student should be able ...

- 4 ... to **organise and plan** the master thesis work on the basis of allocated resources and time constraints, of security (if applicable) and of available competencies.
- 5 ... to efficiently **communicate** both orally and in writing (in French and/or in English) to realise the master thesis.
- 6 ... to take into account the **societal impact** of his/her master thesis (possible economical recovery and/or ethical impact and/or environmental and/or social impact).

*LO's are detailed in a brochure available on the EPL portal.*

# Evaluation of thesis work realisation

Based on grids referring to LO's

Evaluation of the work during the year		Director(s) :	Student(s) :						
Criteria	Letter grades								
C o n t e n t	<b>Appropriation of the objectives, the context and the basis</b>	A	B	C	D	E	F	NA	
	<i>Clear objectives, thesis plan, state of the art and of the resources – wholeness and relevance of the bibliographic study, solid theoretical/experimental basis, identification of the limitations of the work</i>								
	<b>Methodology choices, scientific and technical rigour in the carrying out of the research / developments</b>	A	B	C	D	E	F	NA	
	<i>Choice and precision of the experiments, the modelling, the calculations – validation of the results - experimental or modelling skills, statistical aspect – quality of the developments in laboratory or on softwares</i>								
	<b>Innovation, originality</b>	A	B	C	D	E	F	NA	
	<i>Capacity of innovation, to formulate new ideas, experiments, models or theories</i>								
	<b>Scientific and technical quality of the research</b>	A	B	C	D	E	F	NA	
	<i>Links between results and state of the art, relevance of the technical reasoning, analysis of the scientific and technical productions</i>								
	<b>Application of standards (technical, legal, ethical)</b>	A	B	C	D	E	F	NA	
	<i>Terminology, rules, security, human experimentation, environment, ecology</i>								
A u t o n o m y	<b>Personal involvement and management of evolution</b>	A	B	C	D	E	F	NA	
	<i>Entrepreneurial spirit, proactivity, initiative, adaptability to novelty and changes – continuity in the procedure, adaptation of the objectives and overachievement - objectivity, motivation for research and the subject, curiosity, amount of work realised, assiduity, interest</i>								
	<b>Organisation skills</b>	A	B	C	D	E	F	NA	
	<i>Ability to complying to and adapt a timetable, preparation of meetings with supervisors, setting work objectives, traceability of results and improvements, ability to make choices, capacity to synthesize</i>								
<b>Team working</b>	A	B	C	D	E	F	NA		
<i>Contacts with resource persons (thesis director(s), supervisor(s), colleagues, experts, ...), integration in the research team, communication skills</i>									
Global numeric grade								/20	

# Evaluation of written dissertation

Based on grids referring to LO's

Evaluation of the written dissertation		Reader :	Student(s) :					
Criteria		Lettered grades						
C o n t e n t	<b>Consistency and relevance of the basics and the topic</b>	A	B	C	D	E	F	NA
	<i>Formulation and clarity of the objectives, relevance and completeness of the state of the art, current status, soundness of theoretical/technical foundations, context</i>							
	<b>Appropriate methodology and use of tools</b>	A	B	C	D	E	F	NA
	<i>Adequate choice of experiments, models, computations, simulations, tests, and laboratory works, or software platform</i>							
	<b>Amount of results</b>	A	B	C	D	E	F	NA
	<i>Amount of work, number of results, completeness of the investigation</i>							
	<b>Validity of the produced results</b>	A	B	C	D	E	F	NA
	<i>Norms, rules, accuracy, validation, robustness of the results</i>							
	<b>Innovation, originality</b>	A	B	C	D	E	F	NA
	<i>Novelty, creativity</i>							
F o r m	<b>Scientific quality of the argumentation, critical mind, discussions</b>	A	B	C	D	E	F	NA
	<i>Critical analysis, connection with the literature, perspectives, horizons, meeting or going beyond the objectives, critical view on the contributions</i>							
	<b>Application of norms, rules, and good practice (technical, jurisdictional, ethical)</b>	A	B	C	D	E	F	NA
	<i>Terminology, rules, safety, human experiment, environmental aspects</i>							
	<b>Writing quality</b>	A	B	C	D	E	F	NA
<i>Care, spelling, layout, correct use of the language, conciseness and ability to synthesize, respect of length criteria</i>								
<b>Figures and illustrations (of methodology and results)</b>	A	B	C	D	E	F	NA	
<i>Readability, choice, relevance</i>								
<b>Consistency in writing</b>	A	B	C	D	E	F	NA	
<i>Clear and accurate explanations, consistent structure, adequate scientific / technical guideline, perceivable guideline</i>								
Global numeric grade		/20						

# Evaluation of oral presentation and defence

Based on grids referring to LO's

Evaluation of the oral presentation of the thesis		Director(s):	Student(s):				
<b>Criteria</b>	<b>Lettered grades</b>						
<b>C Knowledge of the subject during the oral presentation</b>	A	B	C	D	E	F	NA
<i>o</i> Presentation of the context, outline of the thesis, synopsis, mastery of the scientific and technical basis, mastery of the state of the art, meeting of the objectives and overachievements							
<b>t Quality of the argumentation, critical mind during the answer to the questions</b>	A	B	C	D	E	F	NA
<i>e</i> Demonstration of understanding and scientific rigour when answering the questions, critical analysis, perspectives, open and critical mind, reflection, possibly highlight of complementary scientific or technical inputs with respect to the written dissertation							
<b>F Oral expression, didactic aspect of the oral presentation</b>	A	B	C	D	E	F	NA
<i>o</i> Fluidity, ease, presence, arouses interest, balance between abstraction and illustration, pertinent scientific / technical vocabulary, consistency and structure of the presentation, understandable presentation, centered on the essential, respect of timing							
<b>r Quality of the supports of the presentation</b>	A	B	C	D	E	F	NA
<i>m</i> Choice of the visual supports, perceivable guideline, schemes, figures, readability							
<b>Global numeric grade</b>	/20						

**A** = excellent ( $\geq 17.2$ )

**B** = very good (15.6 to 17.2)

**C** = good (13.6 to 15.6)

**D** = satisfactory (12 to 13.6)

**E** = sufficient (10 to 12)

**F** = failed (less than 10)

**NA** = not applicable

*Grids are available on the EPL portal.*

Evaluation of the acquisition of the LO's will consist in

- evaluation of the **work during the year**
  - **40% of the final mark,**
  - grid filled in by the **director(s),**
  - sent to the program commission before 1st day of examination session.
  
- evaluation of the **written dissertation**
  - **40% of the final mark,**
  - grid filled in **independently by each jury member,**
  - sent to the program commission 2 days before the oral presentation.
  
- evaluation of the **oral presentation and defence**
  - **20% of the final mark,**
  - grid filled in **collectively by the jury.**

The different steps of the master thesis are

- the selection of the subject (and the director),
- the realisation of the thesis work,
- the constitution of the jury,
- the writing of the dissertation,
- the oral presentation and defence.

Students first prepare and hand in a **thesis plan (roadmap)**

- to his/her director(s) (*and to program commission if requested*),
- 1 or 2 month after starting the thesis work, typically **before the end of October (end of February for student doing 1st semester abroad)**.

The plan contains the following items (*not necessarily all of them*):

- clear statement of the objective(s),
- list of targeted LO's (especially specific ones),
- context (application domain, societal impacts, ...),
- proposed methods (theory, experimental tools, developments, simulation, ...),
- list of available technical (equipments, codes, ...) and human (supervisors, and resource persons for technical aspects) resources,
- first bibliographical research, including technical manuals,
- first schedule of tasks with deliverables.

Master thesis amounts for **28 credits**

- = almost half year working time.
- Requires
  - starting as soon as possible,
  - working constantly (regular presence in the laboratory/office, ...).

During the thesis realisation, the student is responsible for

- the organisation of regular meetings with his/her director(s) (at least every 4 to 8 weeks),
  - director(s) have to accept meeting within a reasonable delay (less than 2 weeks);
- keeping track of his work (labelling of samples, maintaining a laboratory notebook, backing up experimental data or software versions, bibliographic searches, ...);
- the respect of the security rules;
- the respect of the intellectual property;
- ...

The jury constitution is mainly the responsibility of the director(s).

It is composed of

- the director(s),
- at least 3 persons,
- at least one reader who was not directly involved in the thesis supervision (*ideally outside the research team*),
- maximum 5 persons, including the director(s),
- at least 2 academic staff members (*unless dispensation of the PC*).

Students collect and encode the jury composition and the thesis tentative title **before the end of February** on the TFE application:

<http://perso.uclouvain.be/vincent.legat/teaching/memo2990.php>.

Student should start writing his/her dissertation as soon as possible.

- Bibliographic review, experimental parts may be written early.

## Plagiarism

- Definition:
  - Appropriate a work (text or part of text, image, photo, data, idea, ...) directed by someone else.
  - Use that work without specifying that it comes from someone else.
  - Concretely, there is plagiarism when the author does not cite sources that are used.
- **Plagiarism is regarded as cheating**
- Tools to check plagiarism: **Compilatio**, ...  
(see <http://www.uclouvain.be/454282.html>)

## Form, content

- Proposal of table of contents and templates for the cover available on the EPL portal (Word and L<sup>A</sup>T<sub>E</sub>X)
- Writing in English is encouraged but not mandatory (French friendly).



## Submission deadline and method

- Dissertation should be handed in for the **1st Monday following the opening of the examination session** (June 6th or August 22nd)
- Possible exceptions:
  - written agreement of all jury members,
  - exemption from the program commission.
- Depending on the program commission submission may be done electronically or on paper (ask PC).

Oral presentations are organised for all EPL students in principle on the **last Friday and Monday of the examination sessions**

- June: **Fri 24th and Mon 27th** + Tue 28th if necessary
- September: **Fri 2nd and Mon 5th**

All presentations are organised in BARB rooms, with a conference-type setting (program on posters and on EPL-TV, coffee breaks, ...).

Presentation and defence last for **35 min**

- 20 min oral presentation by student(s),
- 15 min questions by jury members,
- + 5 min for transition.

Presentation can be made in English or French.

- **End September:** vice-dean informs students of thesis rules and procedures.
- **Mid October:** reminder is sent to students concerning the thesis plan.
- **End October:** deadline to hand in thesis plan to director(s).
- **February 5th:** vice-dean informs students coming back from Erasmus stay on thesis rules and procedures.
- **February 1st:** starts collecting infos to prepare thesis presentations (titles, jury compositions, ...).
- **End February:** deadline for students coming back from Erasmus to hand in thesis plan.
- **End February:** deadline for students to encode infos for presentations on TFE application.

- **End April:** 1st proposal of presentation time schedule.
- **End May:** director(s) hand(s) in evaluation grids for the work during the year (*mid August for 2nd session*).
- **Monday following the opening of examination session** (June 6th): deadline for students to submit their dissertation (*2nd session: August 22nd*).
- **2 days before presentations:** jury members hand in evaluation grids for the dissertation.
- **Last Friday or Monday of session** (June 24th or 27th): oral presentations and defences (*2nd session: September 2nd and 5th*).