Master's Thesis / Masterproef (B-KUL-T4MPEA)

This is a translated version. Original version in Dutch.

20 ECTS | Dutch | 50 | Both terms | Cannot be taken as part of an examination contract | Cannot be taken as part of a credit contract

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OC Elektronica-ICT - Campus Groep T Leuven

Aims

LEARNING OUTCOMES

(MI1): Problem analysis and solving

(MI2): Design and/or development

(MI3): Application-orientated research

(MI4): Ethical behaviour

(MI5): Entrepreneurship

(MG1): Data collection and processing

(MG2): Communication with colleagues and third parties

(MG3): Critical reflection

(MG4): Teambuilding

(MG5): Professionalism

(MK2): acquire expertise in at least one of the following domains related to electronics and computer sciences, such as embedded systems, distributed systems, Systems programming, Digital Signal Processing, etc.

(MP1) Operationalization

LEARNING GOALS:

By successfully completing the Master thesis, the student demonstrates his/her ability to solve an applied academic research problem independently. The applied research problem, the subject of the thesis, must take the form of an innovative technological solution during which the student acquires new knowledge s/he is able to apply in a creative manner. This implies:

- The student independently understands and conducts research on a complex, scientific and application-orientated problem while simultaneously acquiring a general understanding of the domain in question (MK2, MI1, MG1).
- The student in his/her Master thesis can situate the problem correctly and transform it into a set of scientific research and/or technical requirements (MI3, MG3).
- The student is able to assimilate an appropriate research plan of the problem under scrutiny and follow logical, sequential research steps to resolve the problem (MI1, MI2, MI3).
- The student can gather new knowledge and information and critically process and interpret it. S/he correctly cites the information sources used (MK2, MG1, MG3).
- The student can work out solutions and cope with deadlines, s/he is flexible and demonstrates perseverance insofar as achieving the established goals (MI1, MG5).
- The student can achieve an appropriate solution to the applied research problem that is the subject of the thesis and make a substantial personal contribution (MK2, MI1, MI2, MI3, possibly MP1).
- The student can take the initiative and demonstrate an entrepreneurial spirit (MI4).
- The student can create social relationships and peers within the group in which his/her task belongs and can appropriately communicate concerning the progress of his/her mission and regularly keep contact with all stakeholders involved (MG2, MG4).
- The student considers various environmental aspects and preconditions leading to the research problem’s solution: environmental aspects, managerial aspects , ergonomics , health & safety , ... (MI4, MI5).
- The student is able to describe the results of his Master's thesis in a paper offering clear scientific analysis and critical reflection (MG2, MG3).
- The student is capable of presenting their research results to a jury and can appropriately answer both in-depth and more general questions from the jury (MK2, MG2, MG3, MG5).

Previous knowledge

- The student must have earned a Bachelor's degree or partaking in a transition programme diploma to be able to record the Master thesis in the ISP.
- The Master thesis can only be included in an ISP enables students to graduate during the academic year in question.

The study counsellor may decide differently under certain conditions in accordance with the faculty complement to Art. 4 of the OER.

Order of Enrolment

Mixed prerequisite:
You may only take this course if you comply with the prerequisites. Prerequisites can be strict or flexible, or can imply simultaneity. A degree level can be also be a prerequisite.
Explanation:
STRICT: You may only take this course if you have passed or applied tolerance for the courses for which this condition is set.
FLEXIBLE: You may only take this course if you have previously taken the courses for which this condition is set.
SIMULTANEOUS: You may only take this course if you also take the courses for which this condition is set (or have taken them previously).
DEGREE: You may only take this course if you have obtained this degree level.

NIVEAU (BACHELOR) OR NIVEAU (SCHAKEL) OR NIVEAU(VOORBEREIDING)

The codes of the course units mentioned above correspond to the following course descriptions:

Is included in these courses of study

Master of Electronics and ICT Engineering Technology (Leuven) 60 ects.
Master of Electronics and ICT Engineering Technology (Leuven) 60 ects.

Activities

20 ects. **Master's Thesis / Masterproef** (B-KUL-4sMPEA)

20 ECTS Dutch **Format: Master's thesis** 50 **Both terms**

Van Aken Jeroen | **Cauwerts Yuri** (cooperator) | **Vanderloock Karen** (cooperator)

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Content

The Master thesis is the final and completing work of the Master's program and focuses on the concrete realization of innovation concerning a technological solution. In the context of the Master thesis, the term innovation should be understood as the establishment of a new (or innovative) product, process or service or the application of an optimization process to an existing product, process or service. “New” or “innovative” is to be interpreted here as “new” or “innovative” for the student. The required knowledge should clearly exceed the knowledge considered as already being acquired during the curriculum.

In principle, each student is assigned a different topic for the Master thesis. When specified in the Master thesis proposal the topic may sometimes be studied and/ or researched by two students. Every Master thesis is supervised by a promoter belonging to FIIW. An additional promoter or co-promoter of the company, or a thesis-related research group may be included.

Possible Master thesis topics are proposed by internal research groups linked to the Faculty of Industrial Engineering, by external research, by the industry, by lecturers/professors or by the student himself/herself. There are also possibilities to conduct the Master thesis abroad (such as through the Erasmus exchange programme). Each topic presented must be approved by the campus-related research unit. For the student, the selection process of the subject and/or promoter is initiated during the academic year preceding the Master thesis. For some Master theses the student is offered the opportunity to select and initiate research on the topic during the summer prior to the academic year of the thesis after agreement with the company or the research group promoting the thesis.

After having successfully completed the assignment, the student must scientifically describe the result of the thesis and orally defend it before a jury.

Evaluation

Evaluation: Master's Thesis / Masterproef (B-KUL-T71453)

Type : Partial or continuous assessment with (final) exam during the examination period

Description of evaluation : Paper/Project, Presentation, Process evaluation

Explanation

The Master thesis is evaluated via three subcategories: process (40%), thesis and scientific summary (30%) and presentation and defense (30%). Each of these three subcategories is assessed on ‘form’ and ‘content’.

- Process
  - Process (work ethic): approach, planning, commitment, initiative, communication, professional attitude, etc.
  - Process (methodology & results): quality of the end result, personal contribution, methodology, etc.
- Thesis and scientific summary
  - Paper and scientific summary (form): structure, language, scholarship, etc.
  - Paper and scientific summary (content & product): quality of delivered work, scientific accuracy, personal input, critical analysis.
- Presentation and defense before a jury
  - Presentation and defense (form): slide configuration, language, attitude, time management, etc.
  - Presentation and defense (content & product): quality of the work proposed, of the defense, and of the proficiency in answering questions, etc.

The distribution of marks is divided between three categories: form, content and product, taking into consideration the same three aspects for each category:

- Process: 15/40 for work attitude and 25/40 for methodology & results.
- Thesis and scientific summary: 10/30 for form and 20/30 for content & product

- Presentation and defense: 10/30 for form and 20/30 for content & product

A result of less than 8/20 in any of the three aspects (process, thesis & scientific summary, and presentation & defense) always results in an insufficient grade for the entire Master thesis. The final grade for the Master thesis shall, in this case, not exceed 9/20.

The final grade of the Master thesis is to be written in the form of one decimal place, except for results between 9.0/20 and 10.0/20. If the calculated final mark for the dissertation falls between these two values, the final grade is set at 9.0 and justified in writing unless the jury, based upon its deliberations, decides the student can pass the Master thesis. In such a situation the final grade is set to 10.0/20.

Failure to submit the thesis or failing to show up for its presentation and defense results in the result NA for the Master thesis.

Component marks of at least 10/20 published in the academic progress file are transferred to the next examination period within the same academic year and to the following academic years, except for temporary marks and marks for intermittent tests.

Additional information on the evaluation activities is provided during the lessons and is made available on the toledo pages of the course.

Information about retaking exams

- Possible
- Other terms and conditions apply, different to those during the first period
- The evaluation is similar as in the first examination period, In the case of an insufficient result during the first examination period the necessary additional work is communicated to the student in advance.

Required in stage	Optional in stage	First term	Second term	Both terms
This year	Next year	Alternating years	External	Prerequisites
Taught by	Language of instruction	Duration		

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