

University of Luxembourg – Faculty of Science, Technology and Medicine

Bachelor in Applied Information Technology: <https://binfo.uni.lu>

## Guidelines for the Bachelor project

A-Prof. Volker MÜLLER  
BINFO Programme Director

*volker.muller@uni.lu*

**Edition 2023-2024**

**Version 10.09.2024**

## Table of Contents

I.	Description of the Bachelor project	3
A.	Objectives .....	3
B.	Bachelor project types.....	3
C.	Preconditions.....	4
D.	Application for an external Bachelor project.....	4
E.	Application for an internal Bachelor project .....	6
F.	Progress Reports .....	7
G.	Bachelor project report – Bachelor Thesis.....	7
H.	Bachelor project time table for Academic Year 2023-2024 .....	7
II.	Responsibilities in an Bachelor project	8
A.	The Student .....	9
B.	The Local Responsible.....	10
C.	The Academic Responsible.....	10
D.	The Study Programme Director .....	11
III.	Modalities of the Bachelor project	12
A.	Modalities for the Bachelor Thesis .....	12
B.	Modalities of the Defense .....	13
C.	Modalities of the Bachelor project evaluation .....	13

## I. Description of the Bachelor project

This section describes the Bachelor project in accordance with Title IV, Section III of the Grand-Ducal Regulation of June 27, 2018 on obtaining a Bachelor's degree at the University of Luxembourg.

### A. Objectives

As part of the "Bachelor in Applied Information Technology" program, students in the sixth semester undertake a final Bachelor project. This project allows them to apply the knowledge gained from their courses to real-world IT projects. The project can be carried out either externally with a professional host institution or internally within a research group at the University of Luxembourg. The culmination of the project is the creation of a final project report, referred to as the "Bachelor thesis". In the case of an external project, students actively participate in the practical implementation of an IT project with the host institution, whereas internal projects investigate a specific research-based question from some computer science domain.

### B. Bachelor project types

The Bachelor project consists of the creation of an IT-related “product” as part of the work carried out within a “host institution”. Bachelor projects exist in two variants:

- A **profession-oriented (external) Bachelor project** is done as an internship within a professional partner institution in Luxembourg. In such a project, students shall apply and extend their IT technical expertise and soft skills within a professional environment. This variant of a Bachelor project is strongly recommended for students that plan to start a professional career after graduation.
- A **research-oriented (internal) Bachelor project** is done within a research group at the University of Luxembourg. In such a project, students shall apply and extend their scientific expertise in computer science with work on a research-focused topic in IT. This variant of a Bachelor project is only recommended for students that plan to continue their academic training in a Master study.

For both Bachelor project types, the work must be done in a defined project period, which coincides with the teaching session of the semester and lasts for at least 12 weeks, as defined in Section H.

### **C. *Preconditions***

To be eligible for the Bachelor project, the student must

- 1) be enrolled at the University of Luxembourg for the semester in question;
- 2) have successfully completed all modules of the first two semesters of the programme;
- 3) have validated at least 40 ECTS of modules in other semesters (so, in total, at least 100 ECTS must be validated before the start of the Bachelor project);
- 4) have met the mobility requirement (or been exempted from this obligation).

### **D. *Application for an external Bachelor project***

The realized professional project can consist of developing a new or extending an existing software product (e.g., a prototype / proof-of-concept, (part of) an application, an API, ...), a hardware-related development (e.g., prototype used in a feasibility study, a controller, a data-acquisition device, ...), or a contribution to the management of an IT project (e.g. specifications of technical requirements, study of state-of-the art technology, study of suitable hardware / software for a future system). The project must contain a substantial contribution from the student. Three key elements for an external Bachelor project are:

1. The host institution must be clearly defined. The planned project scope must be fixed before the start of the Bachelor project period as precisely as possible and feasible for a 12-week long work, but adaptations to the scope are possible during the project period based on the progress of the work.
2. The student must be mentored by a “local supervisor” within the host institution. Additionally, an “academic supervisor” from the university supports the scientific learning process of the student in the context of the project, especially giving feedback during the writing of the Bachelor thesis.
3. The work done during the Bachelor project must lead to a Bachelor thesis report, a written report that documents the complete work done and describes the technical background, all IT related aspects (including problem analysis and design, implementation aspects, ....) and the achieved results. This report will be evaluated by a jury (see Section III).

Therefore, before enrolling for an external Bachelor project, the student must find a potential professional host institution. Such host institutions must be companies from the professional world in Luxembourg of any size (from startups to global enterprises), under the rule of the Luxembourg labor law.

If accepted by the host institution, both entities agree on the work to be carried out during the Bachelor project. A draft project specification must be defined in the “**Bachelor project specification**” document available on Moodle and provided to the Study Programme Director for validation. The Study Programme Director might request adaptations to the initial project specification, if he considers the project not feasible within the project period of 12-13 weeks, or not appropriate / too challenging for a Bachelor student. These change proposals must be considered by the student in coordination with the host institution before a request for re-validation.

In addition to the project specification, an “**Internship agreement**” must be signed. This agreement is prepared inside the student management system of the university by the programme secretary, using information provided by the student (on Moodle, a list of required information is given). Note that, based on the revised labor law of 4. June 2020<sup>1</sup>, external Bachelor projects are considered as “internships” (in the wording of the law), introduce a superior-subordinate relationship, and so students must be paid for their work. More details can be found in the text of the law.

The student will carry out the (external) Bachelor project under the direction of a **local supervisor** in the host institution<sup>2</sup>. During the Bachelor project, the student is required to comply with the regulations and working hours of the host institution. The local supervisor is responsible for the smooth running of the Bachelor project at the host institution. Methodological guidance is given by an **academic supervisor** (a UL staff teaching in the BINFO programme). The name of the local and the academic supervisor (after prior agreement of the professor concerned) are included in the internship contract.

The following process must be followed for the definition and authorization of an external Bachelor project:

1. The student must find a partner institution and a potential project topic for the planned Bachelor project.
2. The student sends a draft specification of the planned project to the programme director for validation – using the Bachelor project specification template available on Moodle. The project specification can include a request for a **non-disclosure agreement** for the code and/or the project report.
3. After informal approval by the programme director, the student must find an academic supervisor.

---

<sup>1</sup> The revised labor law is accessible at <https://legilux.public.lu/eli/etat/leg/loi/2020/06/04/a476/jo> .

<sup>2</sup> In the internship agreement document, this role is named “professional supervisor”.

4. All required information required for the “internship contract” (list given on Moodle) is collected by the student and send to the programme secretary, who prepares the contract within the student management system of the university. The secretary also manages the collection of all required signatures and shares the final contract with all involved parties.

### ***E. Application for an internal Bachelor project***

Internal Bachelor projects are done in a research group (typically at the University of Luxembourg or another public research institute in Luxembourg) and are related with research in some specific field of computer science. Therefore, the first step for the definition of such a project is the student’s search for a research topic and a hosting research group. A draft project research specification must be defined together with the chosen research group and documented in the “**Bachelor project specification**” document available on Moodle, then provided to the Study Programme Director for validation. This specification document must also be approved by the supervising UL academic, who will be the **academic supervisor** of the project.<sup>3</sup> Contrary to external Bachelor projects, a research-oriented Bachelor project is an educational activity without any superior-subordinate relationship<sup>4</sup>, which is no “internship” in the sense of the labor law and so unpaid.

The following process must be followed for the definition and authorization of an external Bachelor project:

1. The student must find a research group and a potential research topic for the internal Bachelor project.
2. After validation by an academic supervisor, the student sends a draft specification of the planned research project to the programme director – using the Bachelor project specification template available on Moodle. The student also informs the study director of the main academic supervisor and possibly a second supervisor from the host research group.
3. The programme director validates and approves the Bachelor project.

---

<sup>3</sup> There can be a second “local supervisor” assigned to such a research project by the head of the research group, but such an assignment is not necessary.

<sup>4</sup> Note that the missing superior-subordinate relationship includes the necessity that the research work is done independently by the student. In particular, the university will not provide any office space. The student can contact the supervisor for support in research-related questions, but the initiative for such support must come from the student.

## ***F. Progress Reports***

Once an external Bachelor project has begun, the student must send a progress report **every three weeks** (a template for this report is available on Moodle in the document “Progress-Report.docx”) to the academic supervisor, in which the student informs about the by-products produced during this period as well as the planned work scheduled for the following period. Potential risks which endanger the proper running of the Bachelor project or changes to the original project scope should be clearly indicated in these progress reports. Note that for internal projects these reports are not required since the regular communication between student and supervisor should already ensure that all progress information is known.

## ***G. Bachelor project report – Bachelor Thesis***

After the Bachelor project work has ended, the student must author a dissertation without the unlawful help of others. Note that the university possesses strict regulations against plagiarism<sup>5</sup>, which will be rigorously enforced. The report describes the problem addressed in the Bachelor project, methodologies or work methods used, and the results of the project (or the sub-project, which the student oversaw during the Bachelor project). This report and related documents must be submitted to the programme secretary within the prescribed time-limits. The deadline for submission of the Bachelor thesis is one week after the end of the project work – the precise dates are given in Section H.

The student must personally present the Bachelor project work and the dissertation in an oral form before the Jury of his/her Bachelor project and defend it in the face of the questions of the Jury members. The date and room for the project defense will be published on Moodle in time (at least one week before the defense). In extraordinary situations<sup>6</sup>, the defence can also be done in remote form in a (recorded) WebEx session. Details for the Bachelor thesis and the defense are described in Section III.

## ***H. Bachelor project time table for Academic Year 2023-2024***

Winter Semester 2023-2024

---

<sup>5</sup> See <https://www.uni.lu/en/education/academic-matters/academic-conduct/>

<sup>6</sup> The programme director defines whether such a situation exists where a remote defense should replace a regular on-site defense, based on rules defined by the office of the academic vice rector.

	<b>Deadline</b>
Submission of Bachelor project proposal	11.9.2023
Authorisation of Bachelor project done	17.9.2023
Start of Bachelor project	18.9.2023
End of Bachelor project	22.12.2023
Submission of Bachelor thesis	7.1.2024

Summer Semester 2023-2024

	<b>Deadline</b>
Submission of Bachelor project Proposal	11.2.2024
Authorisation of Bachelor project done	16.2.2024
Start of Bachelor project	19.2.2024
End of Bachelor project	31.5.2024
Submission of Bachelor thesis	9.6.2024

## II. Responsibilities in an Bachelor project

This section describes the responsibilities of the various actors in the Bachelor project. The Bachelor project involves at least five roles, some of which can be jointly assumed by the same person:

- the **student** who proposes and conducts the Bachelor project;
- the institution that hosts the student to carry out the project, represented by the **local responsible**;
- the **academic supervisor** who supervises the student from an academic point of view, during the Bachelor project and especially the writing of the dissertation;
- the **Study Programme Director** who validates and authorizes the proposed Bachelor project and reacts, during the Bachelor project, to potential problems that might cause it to fail, either at the student's and / or one of the two supervisors' request;
- the **Jury** which evaluates the Bachelor thesis and the work done in the Bachelor project.



Each of these roles is associated with responsibilities that are described below.

## **A. *The Student***

- The student is responsible for finding a host institution / UL research group with whom the student negotiates a Bachelor project.
- The student is responsible for the success of the Bachelor project once it has been approved by the Study Programme Director.
- The student must plan the work in consultation with the persons responsible for supervision, with the view to completing it within the prescribed deadlines.
- In case of an external Bachelor project, the student must submit every three weeks a progress report (see Section I.F) to the academic supervisor to document the progress of the project.
- The student is obliged to report any organizational problems to the local responsible so as not to jeopardize the smooth running of the Bachelor project.
- The student must comply with the internal regulations of the host institution and the university.
- The student must respect the confidentiality rules relating to the internal knowledge of the host institution and respect the professional secrecy imposed on persons working in the host institution (even after the end of the Bachelor project). A non-disclosure agreement might be signed with the host institution.
- The student should take the initiative to submit all methodological or technical issues that cannot be solved within the work environment at the host institution to the academic supervisor to find a sound solution.
- The student must write his/her Bachelor project report in accordance with the formal rules on academic writing. The report must be submitted in time as defined in Section I.H.
- The student respects the rules of ethics applicable to professional behaviour. Students must refrain from any act of plagiarism<sup>7</sup>. According to the internal rules of the University, plagiarism is the presentation of another's text as being of its own genius, copying extracts from texts or websites (including code samples), using images without stating the source, summarizing an idea of another person without mentioning the name of that person, and more generally the fact of making unduly usage of passages or ideas derived from the work of another individual. In addition, copying complete sections from external

---

<sup>7</sup> After submission of the Bachelor project report, all documents will be tested for possible plagiarism with an automatic tool.

information sources word by word is also not allowed, even with a given reference to the used source. Applicable sanctions in case of detected plagiarism are defined in the *Règlement Ordre Intérieur* of the University.

### **B. The Local Responsible**

- The local responsible is supporting the smooth running of the Bachelor project at the host institution.
- He/she participates in the definition of the field of study for the Bachelor project and in the elaboration of the proposal of an Bachelor project.
- He/she supports the student in achieving the objectives of the Bachelor project, ensuring that the student has the necessary resources and, if necessary, establishing the internal contacts necessary.
- He/she helps to plan the work of the student and validates / signs the Bachelor project progress reports.
- He/she ensures that the student complies with the institution's internal regulations.
- He/she consults with the academic supervisor if there is a need to re-orient the project.
- After the end of the Bachelor project work, the local responsible evaluates the strengths and weaknesses of the Bachelor project work done by the student and transmits this evaluation to the Study Programme Director (a template for this evaluation will be provided in time by the programme secretary). He/she can also participate in the evaluation of the Bachelor project as member of the jury (delegation of these tasks to a competent alternative host representative is possible).

### **C. The Academic Responsible**

- The academic responsible ensures the scientific and methodological supervision of the student.
- At regular intervals, he/she ensures the student's progress by examining made progress, either by visiting the host institution or, if necessary, in meetings with the student.
- He/she assists, advises, and supports the student whenever necessary.
- He/she informs the Study Programme Director of any serious problems related to an Bachelor project.
- After the end of the Bachelor project, the academic responsible submits an evaluation of the strengths and weaknesses of the achieved result to the Programme Director.

- He/she participates in the evaluation of the Bachelor project as member of the jury.

#### ***D. The Study Programme Director***

- The study programme director is responsible for piloting all Bachelor projects. He develops guidelines for helping the students to succeed in their Bachelor project.
- He validates whether a student is eligible for an Bachelor project based on the academic prerequisites defined in Section I.C. He examines the proposals of Bachelor project specifications submitted by the students and proposes modifications he considers necessary.
- He appoints an academic supervisor to supervise the Bachelor project, based on a proposal made by the student.
- He validates and approves all documents required for the authorization of a Bachelor project.
- In case of a major problem seriously threatening the success of the initial Bachelor project proposal, he decides on a re-orientation of the Bachelor project based on proposals of the local and/or the academic supervisor.
- He tries to resolve disputes between the participants in an Bachelor project.
- He undertakes all organizational measures to coordinate the smooth running of the Bachelor project, especially he organizes the Bachelor project defenses with the support of the programme secretary.

The jury of an Bachelor project is composed of at least three members, at least one of them is a Professor or Associate professor at the University of Luxembourg. The jury may appoint one or more additional members from a professional sector concerned by the project. The default members of the jury are:

1. the local responsible of the Bachelor project;
2. the academic responsible of the Bachelor project;
3. a UL professor teaching one or more courses in the BINFO closest related with the topic of the student's Bachelor project.

The jury is responsible for the final evaluation of the Bachelor project by applying pre-defined evaluation criteria provided before the defense. The jury proposes a first grade for the project work and a second grade for the presentation and answers in the question session. In the case of an insufficient grade, the jury formulates guidelines for a revision of the Bachelor project report (if applicable), or proposes that the student must redo a completely new Bachelor project. The final approval of the two grades for the Bachelor project will be done by the BINFO Examination Board.

### III. Modalities of the Bachelor project

"Evaluating" means measuring to what extent goals have been satisfied. The objectives that a student should achieve during the Bachelor project can be reduced to three basic skills:

1. The student must demonstrate that he/she can manage a project within a set time limit, developing personal initiative and systematically organizing his/her progress;
2. The student must be successful in dealing with IT-based problems and producing results using proven methods. In this activity, he/she must show that he/she has assimilated the knowledge taught in the programme, while also being able to acquire new knowledge on his/her own initiative;
3. The student must be able to correctly formulate the description of the used approach and achieved results, both in writing and in an oral manner, conforming to the formal constraints imposed for the presentation.

#### A. *Modalities for the Bachelor Thesis*

The student must describe the result of the Bachelor project in form of a written report, the **Bachelor thesis**. This document must follow the formal and layout rules defined in a document by the academic vice rector's office<sup>8</sup>. The correct application of these formatting rules will be examined by the jury and will contribute to the project grade. In case that a non-disclosure agreement has been defined for the project, a confidentiality clause must be added to the report, after the two abstracts.<sup>9</sup> Students should send at least one draft version of their report to their academic supervisor for feedback – sufficiently early before the submission deadline. Not doing so might also lead to negative consequences for the project grade. In addition, students must respect the following submission rules for their Bachelor thesis:

Students must provide the Bachelor thesis in **electronic version** (PDF format) without appendices to the program secretary and the study director before the submission deadline (submission per default done per email – in case the file should be too large to be sent per email, upload the file to some public file storage and provide a valid and accessible link in an email to the programme secretary). This version will be used for plagiarism control. If a similarity score of more than 10% is detected,

---

<sup>8</sup> This document is available at <https://www.uni.lu/lle-en/skills-support/academic-writing/>.

<sup>9</sup> A text proposal defined by the university legal service for such a "confidentiality clause" can be found on Moodle.

then the program secretary sends the plagiarism tool output report for manual inspection to the academic supervisor. This electronic version of the report is shared with the jury members.

### ***B. Modalities of the Defense***

The defense will be held on a date which will be communicated in good time to the student by the programme secretary in the presence of the members of the Jury. A priori, the defense is open to the public, whereas the deliberation of the project is done by the jury behind closed doors. On request of the host institution, it is possible to restrict the audience to the members of the jury and the Study Programme Director if confidentiality constraints have been defined; in this situation, all persons present during the defense are bound by professional secrecy.

The student is invited to be present a quarter of an hour before the presentation start to be able to install the equipment necessary for the presentation and to prepare him-/herself. In the first phase of the defense, the student gives an oral presentation (using the available multimedia equipment) of about twenty minutes, relating to the work done during the project and the main results obtained by the student. The student should concentrate on essential points and / or particularly interesting elements of his/her project.

In a second phase of the defense, which covers about 45 minutes, the jury may ask questions about the presentation or the contents of the entire thesis, including the parts that were not exhibited during the presentation. The jury may also enter into an adversarial discussion with the student.

### ***C. Modalities of the Bachelor project evaluation***

The evaluation of the Bachelor project is made by the Jury based on an analysis of the submitted Bachelor thesis report. The evaluation examines whether the thesis follows all formal rules and gives a clear, well-structured, and convincing description of the project work (including correct writing of English language<sup>10</sup>, the quality of the scientific presentation, and the bibliography). In addition, the evaluation of the academic and the local supervisor about the quality of the achieved results and the technical complexity of the project topic will also be considered. The local responsible

---

<sup>10</sup> The default language for the Bachelor thesis and for the presentation is **English**. On explicit request of the external host institution, the language can be changed to any of the official languages of the university.

can provide feedback about on the integration of the student into the team at the host institution and the professional attitude of the student.

The defense of the Bachelor project is carried out orally. A single grade for the project with weight **30 ECTS** describes the quality and clearness of the presentation, the ability of the student to answer to the jury's questions and convincingly defend his/her point of view in face of the jury, the overall technical quality of the project result, and the student behavior during the project expressed by the satisfaction / dissatisfaction of the host institution.