School of Computer Science
University of Galway, Galway, Ireland

CT413 – FINAL YEAR PROJECT 2024/2025

The final year project is a major component of the final year of your degree programme. Important milestones for the final year project are:

Milestone	Due Date
Project Definition Document	8th December 2024
Project Logbook (Notion)[1]	8th December 2024
Final Project Report	6th April 2025 (Tentative)
Project Demonstration and Viva Voce	9th April – 10th April 2025 (Tentative)

Table 1: Key dates and submission deadlines for CT413.

The project assessment and marking are based on a number of project components:

- Project Definition Document
- Project Logbook
- Project Final Report
- Project Demonstration and Viva-Voce (Interview)

In determining the overall project mark, the project examiners will apply the guidelines on project standards (see the final page of this document). Note that projects may take either a research focus and/or a software development focus.

Project Definition Document

This report (about 10 to 12 pages) should outline the project and describe the proposed solution to tackle it. It must be written to a professional standard. This is essentially a "*Requirements Specification*" for the project and should demonstrate that you fully understand the project or research requirements and the technologies that will be used to design and implement the project deliverables.

You should consult with your project supervisor for guidelines on the actual format and layout of this report, as this may vary depending on the individual nature of each project. This document should be submitted via **Canvas by the deadline listed in Table 1. Use the Canvas assignment link to submit your project-definition-document.

Final Report

This should be in the form of a mini thesis with an emphasis on clarity and good presentation. The external examiner may also be interested in reading this report. The quality of the final report submitted often has a significant influence on the final marks awarded for the project. These are the suggested chapter breakdown, although you should discuss the precise format with your supervisor:

Chapter 1	Introduction	Introduce your project, putting the work in its academic or business context. Provide an overview of the work you've done.
Chapter 2	Literature Review	A critical review of literature related to your project topic.

[1] Recommended submission: Zip-folder of HTML exports from Notion.

Chapter 3	Requirements and Methodology	A discussion and justification of your project requirements, positioned with respect to your literature review, where appropriate. A discussion of approaches suitable for addressing your project challenge. This might include a technology review, as well as techniques and methodologies that have been previously used. Your approach should be presented, including how it was influenced by existing approaches.
Chapter 4	Implementation	What you did; Description of the technical issues of your project. Depending on your project, this might include several chapters titled, for example, Design, Implementation, and Testing
Chapter 5	Results and Analysis	Results; what happened, evaluation, final deliverables, etc.
Chapter 6	Conclusion and Future Work	Discussion, conclusion, future work, summary of contribution, putting your results in context.
	Appendices	Including your Standard Operating Procedure (SOP) and Risk Assessment (RA) mentioned below.

Table 2: Key topics and suggested chapters for final report.

The precise format of the report and the way the individual contributions will be identified within the report should be agreed in advance with your Project Supervisor. The final report should normally be about 30 - 40 pages and should be submitted via **Canvas** by the specified deadline (Table 1). Use the Canvas assignment link to submit your final report.

Note: You must consult with your supervisor to determine the appropriate format and scope for your project.

Project Demonstration and Viva Voce

Each student will be required to give a demonstration of their project, the exact date and arrangements for this will be finalised and communicated to you at a later time. The project demonstration will be followed, in the same scheduled session, by a viva voce where the student will be interviewed by their project supervisor and a second marker. This interview will cover the project requirements, research undertaken, technologies used, design and implementation details, your final conclusions and results, and any other details relevant to your project.

Ideally, the project demonstration and viva will take place face to face, but there's a possibility that will not be able to physically conduct them on campus and, in that case, a suitable video conferencing platform like Zoom or MS-Teams will be used to demo the project and participate in the viva voce with your examiners. The specifics may vary from project to project, so you should discuss this directly with your Project Supervisor in due course. A detailed schedule for the demo and viva voce will be drawn up and circulated at a later date. Each project demonstration will be viewed by a minimum of two staff members, the project supervisor and a second marker, who will also read the project reports, participate in the viva voce, and grade the project. Your project will be graded after the viva voce is completed.

Failure to submit the project definition document or the final report, or to participate in the project demonstration and viva voce, without any valid justification, will result in reduced marks and may imply failure of the final year project.

Health and Safety Issues

If applicable to your project, the procedures and regulations for access and safe working in laboratories must be adhered to while working on final year projects. Health and Safety statements and guidelines are displayed, as appropriate, in all laboratories and additional Health and Safety documents are available for inspection on request. For Covid-19 related guidelines, you should follow University of Galway guidelines. If you don't have access to your lab, you can visit the School's Technical Team Office between 11AM -1PM, Monday to Thursday to activate your access.

In addition to adhering to the general regulations for safe working (that all students must adhere to), final year project must explicitly take Health and Safety issues into account in the following way. If you are planning an experimental study of any sort, you must fully document the procedures that you plan to use ("Standard Operating Procedure" – SOP – for your experiment), and conduct a Risk Assessment (RA), before conducting the experiment. The degree of risk involved in a project varies: a pure software development project might carry little risk to you or others, while a project involving high voltages carries a high level of risk. However, while the vast majority of experiments are no doubt quite safe, there is always some risk to health and life, and this must be explicitly considered and documented.

You should consult your Supervisor about the preparation of the SOP and RA for your specific project. Your Supervisor must review and sign-off on your SOP and your Risk Assessment before you commence any experimental work.

Students will be expected to provide documentary evidence that they have completed a SOP and RA by including them in your Final Report as Appendices. These documents also form a useful part of the evidence for the purposes of accreditation by Engineers Ireland, as part of achievement of the programme outcomes related to professional responsibility.

Broader Societal Impact

An important element of all final year projects is assessing the "societal impact" of the project. This can be interpreted quite broadly, and in essence, requires you to consider what impact your project would have if it e.g., formed part of a real-world product, or was something you developed in an industry context. Some things to consider are as follows:

Risk to Life and Limb

Apart from any experimental work you may conduct yourself (outlined above), you should also give consideration to the wider "societal health and safety" concerns associated with your project. In particular, most projects involve the design and development of a prototype of some device or system, or some other process that may have real-world application, so are there any safety considerations that might be associated with that? Some examples:

- If you're designing some "autonomous" system for some real-world application, is it likely to pose a risk to the public if it fails? Has there been existing work done that considers these issues that you can refer to? What would need to be done to reduce the risk of failure in use? What are the potential costs (to life, in economic terms) if it fails?

- Your project may involve the development of software for processing biomedical signals. Even though you may not actually build or test a lab prototype, i.e., the project is only software development, you should still consider the safety and health implications as if your software was actually used in a medical device. What software development standards should it adhere to? What fault tolerance should be built in? If it failed in use, what is the risk to the patient of such failure?

Broader Societal Implications

Apart from the societal health and safety implications of your project outlined above, you are also required to consider broader social impacts, e.g., environmental, economic, educational, etc. Some examples might include the following, these examples are not prescriptive, just intended to get you thinking:

- If your project is a biomedical project involving some new clinical software application or process, how many lives would it save if it was used in practice? If adopted in hospitals or clinical care to replace some existing procedure, how much will it save in healthcare costs? Or, in reducing waiting lists?

- If you're working on a renewable energy project, what impact will that have on the environment? Or, on energy costs?

- You should also consider the possible "negative" impacts of what you're working on. For example, if you're working on a piece of technology for autonomous systems, are there possible negative implications to society of this technology? If more automation is introduced, will it result in job losses?

The main point here is to think broadly about the project, and not to be constrained by any particular points made above. This process of analysing the "societal implications" is largely paper based, nonetheless it is an important component of your project work, and you will be explicitly assessed and awarded marks for it. Much of the information you need is readily available via Internet searching.

Your supervisor should also be able to point you in the direction of getting further information, depending on the specifics of the project. You will be expected to show that you have considered these topics, e.g., by means of material included in your Final Report.

Regular Meetings

Your supervisor will normally be available to meet with you at least once a week and you should contact them to arrange these meetings. Your supervisor may keep a record of your attendance at these meetings.

Final Year Project General Regulations

1. **Plagiarism**: The University defines plagiarism and related misconduct very clearly in the various College statutes and regulations. All project work, written or otherwise, submitted by students (or project groups) to their supervisors, is expected to be the result of their own thought, research, or self-expression. If your project involves the use of existing design ideas, algorithms, source code or other related material, you must clearly acknowledge its use and properly identify the origin of this material. In cases where students feel unsure about a question of plagiarism involving their project work, they are obliged to consult their project supervisor on the matter before submission. If there is evidence of plagiarism in any element of the submitted project work, the student or project group involved will face disciplinary action. **Possible penalties for plagiarism within the final year project range from a failure of the project (the minimum penalty) to expulsion from the University**.

2. **Responsibilities of the Student**: The student's responsibilities include the formulation of detailed project requirements, the transformation of these requirements into a viable project plan, research and synthesis of the current state of the art in the relevant technology / scientific areas and the subsequent design and development of a working project implementation. In the case of a project with a bias towards scientific research, the implementation may take the form of the development or evaluation of experimental case studies or other analytical techniques. The student has primary responsibility for project planning, management and reporting, and is also required to make regular contact with their assigned project supervisor.

3. **Role of the Supervisor and Examiners**: The supervisor will provide direction on the project requirements as well as overall guidance and feedback on the project methodology, progress and deliverables. It is not the responsibility of the project supervisor to conduct research on behalf of the student, or to provide specific advice on the design or implementation technologies that may be used. The project supervisor and secondary marker will subsequently evaluate and mark all elements of project work submitted by the student.

4. **Substantial Working Implementation:** Most of the projects require some element of software or hardware development. In such projects, failure to produce a substantial working implementation of the project will result in the project being failed overall.

Final Year Projects: Descriptive Grading Indicators[2]

		Context: Technical & Problem Domain	Design	Implementation	Process: Requirements & PM*
A+	85+	Indicators as for A, and in addition: should (if primarily a research project) show sufficient originality and depth of analysis to form the core of a peer-reviewed academic publication; or (if primarily a software design & development project) have sufficient technical quality and interface design to form the core of a successful product on public release. The product should also have been comprehensively tested.			
A	70-84	Demonstrates an in-depth knowledge of problem domain and related technologies; clear ability to technically explain and defend approaches taken to an academic well-versed in the domain.	Excellent technical design; evidence of independent thought and innovation.	Excellent, well tested implementation with fully functional demonstration; evidence of independent thought and innovation.	Core requirements fully fulfilled; substantial number of secondary requirements fulfilled; excellent project management and evaluation.
B	60-69	Clearly demonstrates an in-depth understanding of problem domain and relevant technologies; an ability to discuss and defend context and approach with a knowledgeable interviewer.	Strong technical design with evidence of solid design principles.	Good, well tested implementation with fully functional demonstration.	Core requirements fully fulfilled; some secondary requirements fulfilled; evidence of good project management and evaluation.
C	50-59	Demonstrates a solid understanding of problem domain and related technologies; an awareness of project shortcomings and how they might be overcome; an ability to discuss the project in technical detail with a knowledgeable interviewer.	evidence of design principles; consideration of design decisions and their impact on implementation.	Solid, tested functional working demonstration of project.	Core requirements mostly fulfilled; some evidence of project management and evaluation.
D	40-49	Demonstrates some awareness of background: problem domain and related technologies, and an ability to describe the project and technical decisions made.	Weak design; lack of consideration of design decisions and their impact on implementation.	Partially working demonstration of product.	Partial fulfilment of core requirements; poor project management and evaluation.
Fail	<40	Poor understanding of the project area and related technologies.	Failure to make progress in core design.	Failure to make progress in development.	Weak analysis of the area; failure to meet core requirements; lack of project management and evaluation.

Requirements: All project specifications will contain both core and secondary requirements as agreed with supervisor. Achievement of secondary requirements, in addition to fulfilling all core requirements, will normally indicate a higher grade.

[2] ***Under revision*** *– an updated rubric will be made available in Semester II*