Assessment Guidelines — IN5590

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Introduction

IN5590 is a project-based course. The examination consists of two written deliverables and a final demonstration. The examination tasks are listed on the course webpage as *Project 1*, *Project 2*, and *Project 3*. The assessment guidelines below are organized according to these projects.

The course uses a **PASS/FAIL** grading system. All projects must be submitted in order for the candidate to receive a final **PASS** grade. A **PASS** is interpreted as performance equivalent to the letter grade **C** or better, which is described as follows[1]:

> *A good performance in most areas. The candidate(s) demonstrates a reasonable degree of judgement and independent thinking in the most important areas.*

Deliverables are submitted through Devilry[2].

1 Project 1 — CAD and Physical Prototype

1.0 Task 0: Topic, Goals, and Motivation

The candidates must clearly describe the topic, goals, and motivation for the prototype. They may reuse and revise the project description submitted in Assignment 4, including improvements based on feedback from the teaching staff.

This section should be concise and focused.

1.1 Task 1: CAD Files

The CAD files should:

- Be well structured and clearly organized.

[1] UiO grading scale: `https://www.uio.no/english/studies/examinations/grades/index.html`

[2] Devilry: `https://devilry.ifi.uio.no`

- Include a working assembly file with valid references to the relevant part files.
- Clearly align with the topic and goal(s) for the project.
- The `README` file should provide instructions on which files to open to get an overview of the project.

The `README` file should also include images of the fully assembled prototype and an exploded view of the design. The images should be composed in a meaningful way and help illustrate how the prototype operates.

1.2 Task 2: 3D-Printed Physical Prototype

The candidates must provide at least one image of the fully assembled physical prototype. The image should demonstrate convincingly that the prototype is ready to operate in the context of the project goals.

1.3 Task 3: Schematics

The schematics should provide an overview of the essential electronic components in the design and show how they are connected. The schematics should provide sufficient detail to allow the electronic components of the project to be reproduced. Candidates may choose the format of the schematics, provided that it is appropriate for their specific prototype.

1.4 Task 4: Bill of Materials

All essential components should be listed in a bill of materials. Consumable items, such as screws and wires, do not need to be included unless they are particularly important to the design.

1.5 Task 5: Future Work

The candidates should reflect critically on their work and provide clear, concrete suggestions for further improvements.

2 Project 2 — Software and Documentation

2.0 Task 0: Topic, Goals, and Motivation

The candidates must clearly describe the topic, goals, and motivation for the prototype. They may reuse text from Project 1, but they are encouraged to revise it where necessary.

This section should be concise and focused.

2.1 Task 1: Optimization

The candidates must incorporate an optimization component that supports the project goals. They may use existing libraries, pretrained models, or available datasets, provided that these are appropriate for the specific use case and that their use is properly documented.

2.2 Task 2: Firmware and Software for the Prototype

The code is not required to be fully reproducible by the examiner. In many cases, running the code would require access to the physical prototype, which is not available during assessment.

However, the examiner should be able to evaluate whether the implementation is plausible, how well the software is documented, and whether the instructions and code structure are sufficiently clear.

2.3 Task 3: Images and Animations from Testing

The submitted images and animated GIFs should demonstrate the main functionality of the prototype. They should provide relevant evidence that the prototype has been tested and operates as intended.

2.4 Task 4: Poster

The candidates must submit a poster based on the provided template. The poster should communicate:

- The context of the prototype, including its topic, goals, and motivation.
- Concise and relevant information about the core functionality and main components.
- Concise and relevant information about the optimization component and software implementation.
- A conclusion addressing limitations and possible future work.

The candidates are free to arrange the text, figures, and images as they see fit. However, the poster should be clear, visually coherent, and easy to understand for its intended audience.

2.5 Task 5: Prototyping Process

The candidates should document at least three meaningful iterations of the project. The iterations should demonstrate incremental improvements in the development of the prototype.

2.6 Task 6: Future Work

The candidates should reflect critically on their work and provide clear, concrete suggestions for further improvements.

3 Project 3 — Demonstration

The candidates must demonstrate the prototype during the exhibition. The demonstration provides an opportunity for the examiner to ask questions about the mechanical design, electronic components, software implementation, and optimization approach.

The candidates should be able to explain and reflect on their design choices, testing process, results, limitations, and possible future improvements.

4 Overall assessment

All projects are assessed as a whole.

The examiner shall conduct an overall assessment of the deliverables, taking all three projects into consideration. The assessment should focus on the extent to which the candidates demonstrates an understanding of the central issues addressed in the course, as well as the ability to reflect, and make individual assessments.

If individual task requirements are only partially met, strong overall quality and performance in other aspects of the deliverables may compensate for minor shortcomings.