

IN5240 Project Delivery - 2026

Torleif Skår¹, Sumit Bagga²

¹torleisk@student.matnat.uio.no, ²sumitb@ifi.uio.no

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Introduction

For this year's project we are splitting the project up into three different milestones, where each one is:

1. [Passive Filter](#)
2. [Low Noise Amplifier](#)
3. [Final Project](#)

Where each of the milestones has it's own separate delivery, where the timeline (as of now) is:

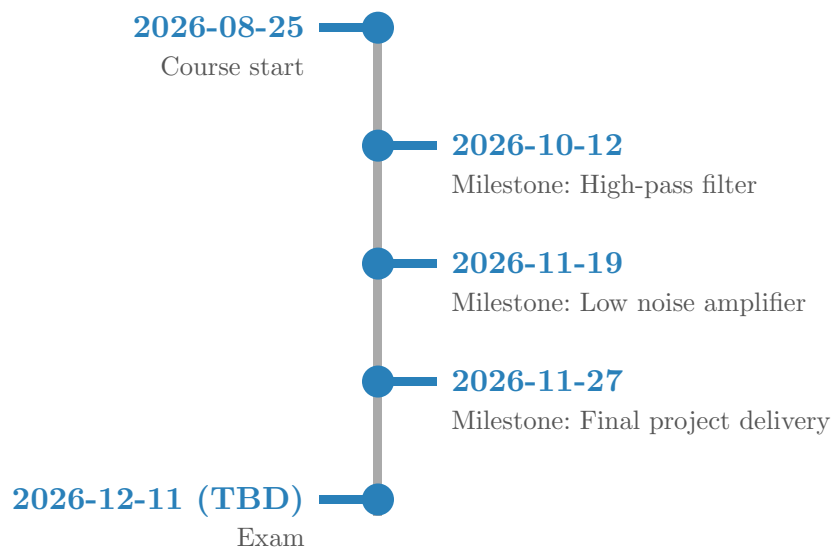


Figure 1: Deliverable timeline

In general, the first two milestones are for us to do a sanity check that you are actively making progress towards the final project deliverable. Hence, the first two ones don't have any (strict) formal requirements in terms of reporting.

For the final project, you **must** review what the project expects in terms for performance metrics, see the project description [1] for more details.

For the actual delivery, please send it to both of us within the specified timeline, and make the **PDF** filename something along the line of:

<course_name>_<username>_filter.pdf, <course_name>_<username>_lna.pdf or something along those lines.

NOTE: If you are working in groups, both of you should deliver it separately, but remember to **clearly** write you who are working with in the author list of your deliverable.

In the next sections, we describe what is **required** from a delivery point of view.

Milestone I: Passive Filter

Design a differential/pseudo differential filter for UWB CH9 centered at 8986.2 MHz w/a bandwidth of 499.2 MHz

Deliverables

For the first milestones, we are a bit relaxed on the “formal requirements”, however you **must** have the following:

- Functionality
 - The filter **must** act as filter for the channel within reasonable margin of error, e.g.
 - OK: High-pass filter where $f_l = 6$ GHz
 - FAIL: Low-pass filter where $f_h = 3$ GHz
- Specifications
 - The most important specifications **must** be shown
 - Matching (S_{11} , S_{22})
 - Insertion loss (S_{21} , S_{12})
 - Ripple (if any)
 - Type of filter
 - Order of filter
- Drawings
 - The schematic **must** be shown
 - Component values **must** be shown/written
 - *OK* if it's a screenshot at this point
 - The testbench schematic **must** be shown
 - Testbench values **must** be shown/written, e.g.
 - Port impedance
 - DC biasing etc.
 - *OK* if it's a screenshot at this point
- Components
 - Using ideal components for *parts* of the design is OK

Due Date

October 12, 2026 (2026-10-12) at 23:59 CEST

Milestone II: Low Noise Amplifier

Design a differential/pseudo differential multi-band low-noise amplifier (LNA) for UWB
CH9

Deliverables

You **must** have the following:

- Functionality
 - The amplifier **must** act as an amplifier for the channel within reasonable margin of error, e.g.
 - OK: Gain within the channel is 6 dB
 - FAIL: There is no gain ($S_{21} < 0$ dB) in the channel
- Specifications
 - The most important specifications **must** be shown
 - Input matching (S_{11})
 - Forward gain (S_{21})
 - Reverse isolation (S_{12})
 - Power consumption
 - Nominal voltage
 - Current consumption
- Drawings
 - The schematic **must** be shown
 - Component values **must** be shown/written
 - Component types (e.g. lvt, svt, hvt) **must** be shown/written
 - OK if it's a screenshot at this point
 - The testbench schematic **must** be shown
 - Testbench values **must** be shown/written, e.g.
 - Port impedence
 - DC biasing etc.
 - OK if it's a screenshot at this point
- Components
 - Using ideal components for *parts* of the design is OK

Due Date

November 19, 2026 (2026-11-19) at 23:59 CEST

Milestone III: Final Project Delivery

Deliverables

You **should** have the following:

- Design choices
 - Expand on why you chose the topology
 - What kind of trade-offs did you do
 - Was there any specification that wasn't *feasible* to achieve with the chosen design
 - Why/Why not?
- Functionality
 - Circuits **must** function as intended
 - The filters filters within the specified frequency
 - The amplifier amplifies within the specified frequency
- Specifications
 - All specifications **must** be achieved within error of margin (e.g. some dB off is OK), **unless**
 - You actively made a design choice to compromise the achieved specification
 - You **must** state the trade-off done.
 - **Remember** to include key specifications for the different design blocks even though they are not explicitly listed in the project description, e.g.
 - Matched bandwidth
 - Channel bandwidth
 - LNA bandwidth
 - Peak gain
 - Attenuation at key frequencies
 - And much more
- Drawings/Plots
 - Schematics **should** be drawn
 - Component values **must** be shown/written
 - Testbench (schematics) **should** be drawn
 - Testbench values **must** be shown/written
 - Plots **should** be done in a separate tool
 - Don't screen dump ViVa
 - If you have scarce amount of data points: **show it**
 - In general: *Please* vectorize your graphics
- Citations
 - Remember that everything that is delivered by you **has to** follow the UiO guidelines when it comes to citations
- AI disclosure
 - **if** you are using any AI/LLM in this project, and are actively taking the results/output from it in your report you need to **properly** disclose it
 - Take a look at [2] for a suggestion of how to do it “properly”

Due Date

≈ 14 days before the final exam (TBD);
November 27, 2026 (2026-11-27) at 23:59 CEST

Bibliography

- [1] S. Bagga, T. Skår, and D. T. Wisland, “Final Project 2026: Passive filter & LNA for UWB CH9.” Aug. 2026.
- [2] KURT – Centre for Teaching and Learning in Science, “Suggestion for declaration of AI usage in assignments.” Accessed: Sep. 16, 2026. [Online]. Available: <https://www.mn.uio.no/kurt/english/artificial-intelligence/templates-for-declaration-of-AI-in-assignments.html>

Changelog

- v1.0.0 - 2026-09-16
 - Initial version