

IDENTIFICATION

Course code : ESI-SPI-CI-IN4-S8-UE2-EC4
ECTS : 3

DURATION

Lectures : 0
Tutorial classes : 0
Labs : 0
Total : 0

Project :
Personnal work :

ASSESSMENT

Report, presentations, project deliverables, completion of the project management tool, grade from the project supervisor.

TEACHING MATERIALS

LANGUAGE

English

CONTACT

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UE : UE8-IOT

COURSE : Project-based learning

SCOPE OF THE COURSE

OBJECTIVES

The aim of this course is to place engineering students in a project-based approach and apply the various concepts studied in the modules of the first year of the engineering cycle.

COMPETENCE AND SKILLS

- Organize the project according to project management methodologies
- Write technical documentation and design presentation materials in French and English
- Apply a methodology and formalism to design and develop an application

PROGRAM

Types of topics

Based on a problem proposed by a partner company or administration of the ESIROI, engineering students must propose a solution addressing the said problem. Students must define a jointly constructed specification with the company, prioritize features, then associate them with tasks, milestones, and deliverables by applying a project management method. Although the existing IS processes of the company must be considered, the proposed topics require the implementation of a complete solution. *E.g.* developing a Moodle QCM plugin is not a topic meeting this criterion, whereas proposing a pervasive object for thermal comfort assessment calls for a much more comprehensive solution including sensor development, data processing, visualization via a web interface, identification of privacy issues, and securing the entire data collection, processing, and storage chain. Thus, students are expected to integrate and articulate elements from each of the domains taught at ESIROI (CYBER, DATA, DEV, SYS/RES, and IOT) and enable the assessment of INF block competencies.

Specification and planning

Based on the specification, students will be able to estimate the cost associated with the development, deployment, and operation of the solution. This cost includes labor (man-months) and materials. The cost may include the carbon footprint across the entire life cycle of the solution according to the methodologies covered in class. The specification and initial cost estimate will be assessed.

Soft skills

Students will interact with the company and must pay particular attention to their communication. In writing, students must ensure the quality of their writing, the clarity of their message, and the use of language appropriate to the professional context. They must also be attentive to the form of their documents, which must be well-presented and structured. Where possible, they will use project tracking tools (e.g., GitLab, GitHub, Jira, etc.) to interact with the company, but they must first adapt to the habits and technical level of the project supervisors. Orally, students must practice presenting their work clearly,

concisely, and convincingly before each meeting. They must also be able to respond to the company's questions in a relevant and professional manner. The student's "soft skills" are assessed throughout the project.

Project management

Students are expected to leverage project management tools to define deadlines, objectives, ongoing tasks, and upcoming tasks. Meetings with partners must be part of well-defined project stages (milestones, features, technical tasks) and have clear objectives, announced in advance, accompanied by documents enabling participants to prepare and be effective during the meeting. The project management tool must be updated following the meeting. Furthermore, each meeting must result in minutes, a clear and concise report, possibly accompanied by detailed technical notes. Students will be assessed on the project management aspect and the quality of their writing in the project management tool.

Group members, roles, and skills

Projects are carried out by groups of first- and second-year engineering students (3A and 4A). Second-year students are expected to take a more leading role in project management. It is their responsibility to act as project manager, although they must still take on technical tasks. First-year students must progressively build their project management skills to eventually become autonomous when second-year students leave 2 to 4 months before the project's end.

Deliverables

Projects are associated with a minimum of four presentations.

- Kick-off presentation (specification, cost estimate, task breakdown, milestones, and schedule)
- Mid-term presentation (mid-December)
- Presentation at the departure of second-year students (end of March)
- Final project presentation (end of May)

These presentations are internal to the ESIROI, but the project supervisor is invited. However, the project supervisor may request additional presentations for the company or a broader audience.

At the end of the project, first-year students must write a report that may be shared within the ESIROI, the company, and, if possible, externally. This report may accompany the student's portfolio.

Support

When concepts necessary for implementing the project have not been covered by previous teaching modules, the teaching team may address this by offering short introductory sessions on the relevant concepts and technologies. The teaching team may also call on external contributors when they are particularly relevant to the use of a tool. The teaching team is not required to address potential technical shortcomings. It is then up to the students to self-train, assess whether they have the time to do so, and, if necessary, evaluate alternatives.

Additionally, students may request support from the teaching team for :

- Technical support

- Support on solution design
- Support on project management
- Support on report writing and presentation materials

The quantity and type of support requested by students will impact the competency levels validated as part of this project.

Competency assessment methods

To be defined.

0.0.1 Workload

An average of 4 hours per week is expected throughout the year. Weeks are identified in the timetable as being predominantly dedicated to projects to minimize context switching between different mandatory or optional activities for students.

BIBLIOGRAPHY

REQUIREMENTS

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