



1SL5000 – "Engineering Skills" Workshops

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Department: DÉPARTEMENT DÉVELOPPEMENT PROFESSIONNEL ET MÉTIERS DE L'INGÉNIEUR

Language of instruction: FRANCAIS

Campus: CAMPUS DE PARIS - SACLAY

Workload (HEE): 80

On-site hours (HPE): 33,00

Description

This course aims at developing the key softskills expected from a CentraleSupélec engineer: teamwork, communication, complex problems solving, project management, and creativity.

The workshops are held in French or in English. Reports and homework may be written in French or in English.

Quarter number

SG1, ST2, SG3 and ST4

Prerequisites (in terms of CS courses)

Syllabus

Key softskills for engineers:

- teamwork: ability to organize and manage a team, understand the roles of the various team members, understand group dynamics
- oral communication : organize and build impactful presentations, increase one's impact in oral communication, improve public speaking skills,
- complex problem solving: ability to pose a problem, make robust assumptions, develop ability to use relevant order-of-magnitude analysis, manage uncertainty and risk
- develop a working knowledge of basic group creativity methods (brainstorming, inversion, bi-sociation, analogy, etc.)

Class components (lecture, labs, etc.)

- Lectures
- Case studies in teams of 5 students
- Application of the acquired experience to an engineering project
- Individual essays to reflect on the acquired experience

API 1 : Introduction to engineer's problems.



API 2 : Complex systemic problem. Climate change, carbon accounting.

API 3 to 5 : Finding creative solutions to a practical problem - Problem framing - Project management - Group dynamics

API 6 and API 7 : Communicating efficiently

Grading

Attendance at the workshops is mandatory. The marks are based on individual participation, individual quizzes and team production during the workshops, as well as individual or team homework. The individual essays are given full credit if they are handed in time and if their quality is sufficient. The grade does not depend on the opinions expressed in the essays as long as these opinions are rigorously argued. The grade of each semester will be based on : Group productions on the cases - Homework - Quality of participation - Result of the mini-quiz if any.

An unjustified absence (ABI) leads to a penalty of 2 points per half-day of absence.

At the end of each semester, validation of some steps of the relevant skills C3, C4, C7 and C8.

Resources

Workshops with groups of 30 to 40 students, each led by two professors

Practical engineering cases

Direct application to a real project

Films, videos, case studies

Work in small groups

Learning outcomes covered on the course

At the end of this course, the student will have understood the basics of:

- teamwork and group dynamics
- project management
- oral scientific communication
- problem solving
- creativity techniques

Description of the skills acquired at the end of the course

At the end of the course, the student will master the first levels of the following skills:

- be proactive, take initiatives, propose new solutions (C3)
- think customer and know how to identify the value brought (C4)
- know how to convince (C7)
- lead a project and work in a team (C8)