CU 9.13: RESEARCH AND DEVELOPMENT AND MANAGEMENT PROJECT

Director of studies: Vincent NICOLAS

General CU objectives:

The end-of-studies project aims to develop the autonomy of apprentices regarding research and development subjects. It makes it possible to put into practice the lessons learned, the knowledge acquired within the company and to take stock of the skills and knowledge acquired on a specific topic.

The subject will be set by the company or proposed by the school and will correspond to a new development that can be applied to it. Starting with the bibliographic part, it will span semester 9. It may be prepared jointly with one of the laboratories present at ENSTIB and will need to satisfy strong scientific, technical and economic criteria for the company.

The proposed subject will be monitored by a teacher-researcher from ENSTIB or the academic tutor in order to supervise the project over the in-person period at school and by the apprenticeship supervisor during the internship in the company. The project may take place partly or entirely at the school, depending on the needs.

Depending on the subject matter and after approval from the apprenticeship supervisor, the research and development project may be carried out in pairs with a student-engineer in initial training.

Student apprentices work independently during the dedicated slots, and regularly report on their work to their academic tutor and their apprenticeship supervisor.

The purpose of the management module is to develop the managerial function of the engineering student through the implementation of basic managerial actions:

- Structure the involvement of people around a project
- Analyse the components of a team and initiate the dynamic
- Identify management styles and tools
- Embed skills into the operation of the company

Consists of:

- Module 1: Skills related to R&D work
- Module 2: Project valuation skills
- Module 3: Knowledge and analysis of the host company
- Module 4: Management– the individual and the organisation, management simulation

Hourly volume

In-person	*Self-directed study*
2.50 H Lectures	**282.00 H**
36.00 H Tutorials	
0.50 H Practicals	

Positioning of the CU in the School reference system:

4-hour presentation
4-hour GP training
2-hour BU tools

Units of skills

In accordance with the RNCP sheet

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Module 1: Skills related to R&D work
Session leaders: Vincent NICOLAS (PRD Manager and Project Management Coordinator), Gérard XOLIN and Denise Choffel (Project Management Coordinator), research and development project supervisors: teacher-researchers and/or manufacturing company representatives, Béatrice AUGIER (BU ENSTIB)
Teaching assistants: Depending on the project
Prerequisites: Teaching Units semester 5 to semester 8
Teaching materials: Reading list– Arche Page– Reference books– Project– project sheet and others depending on the project
Assessment methods: individual and in groups File– Bibliography– Others, depending on the project

Methods for controlling and validating knowledge

	Coefficient in the CU	Observations
WORK GRADE		
Awarded by the teacher-researcher supervising ENSTIB.	**1**	The teacher-researcher supervising ENSTIB assesses the acquisition of domain-specific research and development and project management skills (see work assessment grid).

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Module 2: Project valuation skills
Session leaders: Vincent NICOLAS (PRD Manager and Project Management Coordinator), Gérard XOLIN and Denise Choffel (Project Management Coordinator), research and development project supervisors: teacher-researchers and/or manufacturing company representatives, Béatrice AUGIER (BU ENSTIB)
Teaching assistants: Depending on the project
Prerequisites: Teaching Units semester 5 to semester 8
Teaching materials: Reading list– Arche Page– Reference books– Project– project sheet, others, depending on the project
Assessment methods: individual and in groups Viva – Report– File– Bibliography– Others, depending on the project

Methods for controlling and validating knowledge

	Coefficient in the CU	Observations
REPORT GRADE		
Awarded by the reader of the report (ENSTIB teacher-researcher other than the supervisor)	**1**	The reader is an ENSTIB teacher-researcher and is appointed by the CU supervisor; the reader is required to assess the form of the report.
VIVA GRADE		
Awarded by a jury composed of the CU supervisor, the apprenticeship supervisor and the supervising teacher-researcher or the academic tutor.	**1**	The viva grade is the average of marks given by all the members of the jury. The jury notes the substance and form.
POSTER GRADE		
Awarded by a jury composed of teacher-researchers	**0.50**	A jury composed of several ENSTIB teacher-researchers assesses the ability to summarise the work done as well as the general presentation of the poster.

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Module 3: Knowledge and analysis of the host company	Coefficient 1
Session leaders: Denise CHOFFEL	
Teaching assistants:	
Prerequisites:	
Teaching materials: apprentice's company	
Assessment methods: Oral presentation	

Learning outcomes	Description	Number of student hours (in-person)		
		Lectures	Tutorials	Practicals
Be able to describe and analyse the company as it is. Be able to situate the company in the regional, national and international context given the company's sector: furniture, construction, energy, materials, etc. Be able to understand and analyse the industrial, sales and environmental strategy.	– activity(ies); – legal status; – history; – size criteria: revenue: evolution and prospects, employee numbers (evolution, % of executives...etc.) – know-how and means: classic and specific; – analysis of the organisational chart and internal functioning. – Situation in relation to size – Situation in relation to revenue – Regional, national competition, if applicable, international competition – Porter's five forces analysis; – swot; – value chain; – cost structures; – experience curve; AM41 – economies of scale; – segmentation; – organic or acquired growth.			0.50
		0.00	**0.00**	**0.50**

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Module 4: Management– the individual and the organisation, management simulation	**Coefficient 2**
Session leaders: Valérie LAMBERT, Hélène KOEHLER (Cabinet Zèbre), Jean-Marc CHANAL (Cabinet BLIQUE ACTIMUM), MORIZOT Jean-Noël (JNM Conseil), Dominique LETANG (LTG Logistic)	
Teaching assistants:	
Prerequisites: CU 6.1 and CU 8.5	
Teaching materials: Course notes – Presentation slides – Reading list – Company Visit – Serious game	
Assessment methods: individual and in groups	

Learning outcomes	**Description**	**Number of student hours (in-person)**		
		Lectures	**Tutorials**	**Practicals**
Engineering students should be able to position themselves to adopt a consistent and efficient managerial attitude: – know themselves – integrate communication as one of the essential tools of the manager Engineering students must be able to understand and analyse the human factor as a component of evolution to support management: – Gather and manage information – Explore forms of involvement at work – Find ways to ensure team cohesion – Propose alternatives to manage conflicts Future engineering managers must approach employees as human resources elements in the governance of the organisation. They should be able to: – organise the emergence of skills – support change – examine professional practices – build a development strategy	technique for collecting and transmitting information. The different forms of group work: from meetings to brainstorming, dynamics of small groups and large groups. – Delegation, power, trust. – The manager and their roles: types of management, the characteristics of managerial action, the roles of the manager. – Managers and their style: finding the right distance. – Involve a team in a project. – Manage conflicts at work, social conflicts: risk, anticipation, mediation, non-violent negotiation. – Promote knowledge sharing and collaborative design: the communications process. – Introduction to transactional analytics: auditing and content analytics techniques. – Value systems: personal, work, culture. – Change management: concepts and tools. – Manager indicators, dashboards and checklist. – Introduction to human resources management: identify potentials, manage skills, build and conduct an annual assessment interview. Method: 24 hour simulation 8-hour company visit 4-hour restitution		36.00	
		0.00	**36.00**	**0.00**

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