SYLLABUS

GRANDE ÉCOLE ENGINEERING PROGRAMME

THIRD YEAR - M2 LEVEL

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ACADEMIC YEAR 2026-2027

English version

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Engineering Programme Syllabus: Grande École Programme

TU Title: Oral Communication Tools in English - 3A			
Last updated: March 2026	*National TU Coordinator: Arnaud JEROME (Paris)*		*Year of Study:* Level M2
TU AN9	*Language of Instruction:* French and/or English	*Type:* UEL Mandatory	*Cycle:* 3A
ECTS credits: 1	*Student workload per TU (hours):* 25	*Including face-to-face teaching (hours):* 20	*Semester:* S9/S10
Keywords: oral communication tools in English.			

RNCP 39305 competency blocks linked to this TU

1. Analyse and develop products, systems, goods and services with mechanical, energy and industrial components throughout all stages of their life cycle.	
2. Imagine, design and formalise manufactured products, production systems, and company goods and services.	
3. Manufacture, produce and inspect, within an integrated approach, manufactured products, parts, industrial production systems, and company goods and services.	
4. Organise and optimise industrial production scheduling and management, and the organisation of services.	
5. Foster the development of human, technological, organisational, linguistic and intercultural capabilities, for oneself and one's team, in order to support industrial and socio-environmental changes in organisations.	X

Intended learning outcomes in the CDIO framework

Outcome Group	*Learning Outcomes*	*TU-targeted Outcomes*
Disciplinary knowledge and reasoning	1.1 Knowledge of basic sciences	
	1.2 Core engineering fundamental knowledge	
	1.3 Advanced engineering fundamental knowledge, methods and tools	
Personal and professional skills and attributes	2.1 Analytic reasoning and problem solving	
	2.2 Scientific methods: experimentation, investigation and knowledge discovery	
	2.3 System thinking	
	2.4 Attitudes, thought and learning	X
	2.5 Ethics, professional conduct and professional responsibilities	
Interpersonal skills: Teamwork and communication	3.1 Teamwork and collaboration	X
	3.2 Communications	X
	3.3 Communications in foreign languages	X
Create, design, implement, operate, innovate and undertake in a Corporate Social Responsibility context	4.1 External, societal and environmental context	
	4.2 Enterprise and business context	
	4.3 Creating: from idea to business plan	
	4.4 Designing	
	4.5 Implementing	
	4.6 Operating	
	4.7 Innovating	
	4.8 Engineering entrepreneurship	

Training Pillars

Mechanical Engineering	*Energy Engineering*	*Industrial Engineering*	*Management*
			X



Specific prerequisites

- Common European Framework of Reference for Languages: B2.

General teaching methods

- Tutorials (groups of 24).
- Work in class groups, small groups (4 to 6), or individually, depending on the learning objectives.
- Role-playing and simulations of professional situations (e.g. meetings, recruitment).

Intended learning outcomes

Integrate into an international work environment.

ILO 1. Integrate into and work in an international professional environment, taking cultural differences into account in order to solve problems.

- Prepare for job interviews (including revision of the CV and cover letters) and take part in interview simulations; take intercultural aspects of the workplace into account.

ILO 2. Use scientific English to communicate about one's area of expertise.

- Students must be able to present a project, a method, a problem or a research article using the language of their specialist field.

General assessment methods and criteria

ILO	*Assessment method*	*Assessment criteria*
1	Individual or group simulated recruitment interview.	- Preparation and overall quality of performance. - Detail and clarity of answers to questions. - Phonological aspects. - Use of appropriate vocabulary. - Use of appropriate grammatical structures.
2	- One written assessment: production of a report, article or summary. - One oral assessment: technical/scientific oral presentation, individually graded, with 5 to 10 minutes of individual speaking time.	Written assessment: - Understanding of the scientific/technical issues. - Appropriate, well-structured content and clarity of information. - Use of clear, varied and precise vocabulary. - Use of appropriate grammatical structures. Oral assessment: - Ability to communicate in English fluently, expressively and accurately in one's specialist field. - Persuasiveness of the presentation content; quality of the analysis of results. - Quality of interaction: responses to questions from the audience.

Bibliographic resources

- Resources provided by the lecturer.



Engineering Programme Syllabus: Grande École Programme

TU Title: Student Career Guidance - 3A			
Last updated: March 2026	*National TU Coordinator: Bertrand KRAUSER (Metz)*		*Year of Study:* Level M2
TU APE9	*Language of Instruction:* French and/or English	*Type:* UEA Mandatory	*Cycle:* 3A
ECTS credits: 1	*Student workload per TU (hours):* 25	*Including face-to-face teaching (hours):* 14	*Semester:* S9/S10
Keywords: professional identity, career plan, professional integration.			

RNCP 39305 competency blocks linked to this TU

1. Analyse and develop products, systems, goods and services with mechanical, energy and industrial components throughout all stages of their life cycle.	
2. Imagine, design and formalise manufactured products, production systems, and company goods and services.	
3. Manufacture, produce and inspect, within an integrated approach, manufactured products, parts, industrial production systems, and company goods and services.	
4. Organise and optimise industrial production scheduling and management, and the organisation of services.	
5. Foster the development of human, technological, organisational, linguistic and intercultural capabilities, for oneself and one's team, in order to support industrial and socio-environmental changes in organisations.	X

Intended learning outcomes in the CDIO framework

Outcome Group	*Learning Outcomes*	*TU-targeted Outcomes*
Disciplinary knowledge and reasoning	1.1 Knowledge of basic sciences	
	1.2 Core engineering fundamental knowledge	
	1.3 Advanced engineering fundamental knowledge, methods and tools	
Personal and professional skills and attributes	2.1 Analytic reasoning and problem solving	
	2.2 Scientific methods: experimentation, investigation and knowledge discovery	
	2.3 System thinking	
	2.4 Attitudes, thought and learning	X
	2.5 Ethics, professional conduct and professional responsibilities	X
Interpersonal skills: Teamwork and communication	3.1 Teamwork and collaboration	
	3.2 Communications	X
	3.3 Communications in foreign languages	
Create, design, implement, operate, innovate and undertake in a Corporate Social Responsibility context	4.1 External, societal and environmental context	X
	4.2 Enterprise and business context	X
	4.3 Creating: from idea to business plan	
	4.4 Designing	
	4.5 Implementing	
	4.6 Operating	
	4.7 Innovating	
	4.8 Engineering entrepreneurship	

Training Pillars

Mechanical Engineering	*Energy Engineering*	*Industrial Engineering*	*Management*
			X



Specific prerequisites

- Presentation of student career guidance by the campus APE coordinator (purpose, focus areas, progression, syllabus, framework, charter and quality approach).
- Familiarisation with the Career Plan Radar and Career Logbook.
- Agreement on the learning contract.

General teaching methods

- 12 hours of group sessions in groups of approximately 25 students + 2 hours of individual interviews.
- External lecturers use facilitation techniques drawn from the professional world, with an emphasis on interaction.

Intended learning outcomes

Enter the professional world.

ILO 1. Promote one's career plan in a way that is consistent with one's background, professional identity and labour-market realities.

- Students must be able to clarify their career plan, identify the associated prerequisites and build a structured action plan as part of a career strategy.

ILO 2. Prepare for recruitment.

- Students must be able to assert their professional identity and convince others of their potential.

ILO 3. Envision oneself in a position as a leader in responsible industry.

- Step outside one's comfort zone to discover the role and responsibilities of the engineer as a leader.

General assessment methods and criteria

ILO	*Assessment method*	*Assessment criteria*
1	Practical situations during group work in collective sessions and discussion during individual interviews.	- Positioning in relation to expectations identified through forward-looking analysis of the chosen profession and sector, in connection with major trends in society and the economic and industrial environment. - Compliance with the charter signed at the beginning of the year.
2	Practical situations and case studies handled in groups during collective sessions, plus discussion during the individual interview.	Ability to demonstrate one's added value for the targeted profession by clearly identifying strengths relevant to the role and knowledge of the sector.
3	Case studies and practical situations.	- Ability to assess and self-assess, and to set objectives in the role of engineer-leader. - Compliance with the charter signed at the beginning of the year.

Bibliographic resources

- TEAM shared knowledge base - National APE TU team.
- ONISEP. Découvrir les métiers (http://www.Onisep.Fr/Decouvrir-les-metiers).
- France Travail - Occupational profiles: Répertoire Opérationnel des Métiers et des Emplois (https://www.Francetravail.Org/opendata/repertoire-operationnel-des-meti.Html?Type=article).
- SYNTEC INGÉNIERIE (https://www.Syntec-AXingenierie.Fr/).
- AVENIR INGENIERIE (https://avenir-ingenierie.Fr/).
- CONCEPTEURS D'AVENIR (https://www.Concepteursdavenirs.Fr/decouvrir-les-metiers).
- OPIIEC (https://www.Opiiec.Fr/cartographie_des_metiers).
- IESF (https://www.Iesf.Fr/).
- French Society of Engineers and Scientists - directory.



Engineering Programme Syllabus: Grande École Programme

TU Title: Management Sciences in Society (Expert)			
Last updated: March 2026	*National TU Coordinator: Marc LASSAGNE (Paris)*		*Year of Study:* Level M2
TU SGSE	*Language of Instruction:* French and/or English	*Type:* UEF Mandatory	*Cycle:* 3A
ECTS credits: 5	*Student workload per TU (hours):* 125	*Including face-to-face teaching (hours):* 60	*Semester:* S9/S10
Keywords: management, marketing, strategy, finance, CSR, occupational health and safety, ecological transition, decision-making, humanities and social sciences.			

RNCP 39305 competency blocks linked to this TU

1. Analyse and develop products, systems, goods and services with mechanical, energy and industrial components throughout all stages of their life cycle.	
2. Imagine, design and formalise manufactured products, production systems, and company goods and services.	
3. Manufacture, produce and inspect, within an integrated approach, manufactured products, parts, industrial production systems, and company goods and services.	X
4. Organise and optimise industrial production scheduling and management, and the organisation of services.	
5. Foster the development of human, technological, organisational, linguistic and intercultural capabilities, for oneself and one's team, in order to support industrial and socio-environmental changes in organisations.	X

Intended learning outcomes in the CDIO framework

Outcome Group	*Learning Outcomes*	*TU-targeted Outcomes*
Disciplinary knowledge and reasoning	1.1 Knowledge of basic sciences	
	1.2 Core engineering fundamental knowledge	
	1.3 Advanced engineering fundamental knowledge, methods and tools	
Personal and professional skills and attributes	2.1 Analytic reasoning and problem solving	
	2.2 Scientific methods: experimentation, investigation and knowledge discovery	
	2.3 System thinking	X
	2.4 Attitudes, thought and learning	X
	2.5 Ethics, professional conduct and professional responsibilities	X
Interpersonal skills: Teamwork and communication	3.1 Teamwork and collaboration	
	3.2 Communications	
	3.3 Communications in foreign languages	
Create, design, implement, operate, innovate and undertake in a Corporate Social Responsibility context	4.1 External, societal and environmental context	X
	4.2 Enterprise and business context	X
	4.3 Creating: from idea to business plan	X
	4.4 Designing	
	4.5 Implementing	
	4.6 Operating	
	4.7 Innovating	
	4.8 Engineering entrepreneurship	

Training Pillars

Mechanical Engineering	*Energy Engineering*	*Industrial Engineering*	*Management*
			X



Specific prerequisites

- TUs SGSA and SGSI.

General teaching methods

Lectures, tutorials, case studies and simulations.
THE MODULES AS A WHOLE MUST NOT EXCEED 60 HOURS OF FACE-TO-FACE TEACHING, DISTRIBUTED AS FOLLOWS:
- Strategic Management and Finance module: 16 to 20 hours.
- Marketing module: 12 to 16 hours.
- Occupational Health and Safety Management and Psychosocial Risks module: 2 to 6 hours.
- CSR and Ecological Transition module: 12 to 16 hours.
- Humanities module: 8 to 12 hours.

Intended learning outcomes

Make responsible engineering decisions in the operation of a company, drawing on tools, methods and concepts from the humanities, social sciences and management sciences, in order to act in an informed and committed manner in a world undergoing transitions, particularly in response to the challenges of ecological transition and sustainable development (TEDS).

ILO 1. Contribute to determining a company's strategy while taking its financial dimension into account.
- Students must be able to formulate a strategic diagnosis and a strategy proposal, and assess the financial impact of that proposal.

ILO 2. Identify needs and design a marketing offering.
- Students must be able to use marketing tools to identify needs and design a proposal.

ILO 3. Integrate the management and prevention of psychosocial risks into company operations.
- Students must be able to integrate the psychosocial dimensions of management into their practices and propose an appropriate prevention policy.

ILO 4. Make ethical choices within a sustainable-development approach.
- Students must be able to integrate sustainable-development and CSR concepts to guide their choices and contribute to company operations from this perspective.

ILO 5. Make better engineering decisions informed by an understanding of current social issues.
- Students must be able to identify the parameters, issues and constraints associated with a decision, integrate the societal dimension into their choices, and draw on appropriate tools and general knowledge.

General assessment methods and criteria

ILO	*Assessment method*	*Assessment criteria*
1	Case study.	- Analyse the situation using appropriate tools. - Justify choices and recommendations with appropriate arguments.
2	Case study.	- Analyse the situation using appropriate tools. - Justify choices and recommendations with appropriate arguments.
3	INRS e-learning programme "Management and Prevention of Psychosocial Risks". Case studies and/or practical cases.	- Analyse the situation presented using the concepts studied in the INRS "Management and Prevention of Psychosocial Risks" programme. - Identify and formulate solutions appropriate to the context. - Justify choices and recommendations with appropriate arguments.
4	Case study.	- Analyse the situation using appropriate tools. - Justify choices and recommendations with appropriate arguments.
5	Case study.	- Analyse the situation using appropriate tools. - Justify choices and recommendations with appropriate arguments.

Bibliographic resources

- Gerry Johnson, Richard Whittington, Kevan Scholes, Duncan Angwin, Patrick Regnér, Frédéric Fréry. Stratégique, Pearson, 2020.



- Alain Goudey, Gaël Bonnin. Marketing pour ingénieurs. Paris : Dunod, 2010.
- A. Crane, D. Matten, L.J. Spence, S. Glozer, Business Ethics – Managing Corporate Citizenship and Sustainability in the Age of Globalization, 5th Edition, Oxford (Oxford University Press) 2019.



Engineering Programme Syllabus: Grande École Programme

TU Title: Oral and Written Communication in a Foreign Language - 3A			
Last updated: March 2026	*National TU Coordinator: Julia Camarero ()*		*Year of Study:* Level M2
TU LVS9	*Language of Instruction:* French and/or the chosen foreign language	*Type:* UEL Mandatory	*Cycle:* 3A
ECTS credits: 1	*Student workload per TU (hours):* 25	*Including face-to-face teaching (hours):* 20	*Semester:* S9/S10
Keywords: professional integration, multilingualism in an international environment.			

RNCP 39305 competency blocks linked to this TU

1. Analyse and develop products, systems, goods and services with mechanical, energy and industrial components throughout all stages of their life cycle.	
2. Imagine, design and formalise manufactured products, production systems, and company goods and services.	
3. Manufacture, produce and inspect, within an integrated approach, manufactured products, parts, industrial production systems, and company goods and services.	
4. Organise and optimise industrial production scheduling and management, and the organisation of services.	
5. Foster the development of human, technological, organisational, linguistic and intercultural capabilities, for oneself and one's team, in order to support industrial and socio-environmental changes in organisations.	X

Intended learning outcomes in the CDIO framework

Outcome Group	*Learning Outcomes*	*TU-targeted Outcomes*
Disciplinary knowledge and reasoning	1.1 Knowledge of basic sciences	
	1.2 Core engineering fundamental knowledge	
	1.3 Advanced engineering fundamental knowledge, methods and tools	
Personal and professional skills and attributes	2.1 Analytic reasoning and problem solving	
	2.2 Scientific methods: experimentation, investigation and knowledge discovery	
	2.3 System thinking	
	2.4 Attitudes, thought and learning	X
	2.5 Ethics, professional conduct and professional responsibilities	
Interpersonal skills: Teamwork and communication	3.1 Teamwork and collaboration	X
	3.2 Communications	X
	3.3 Communications in foreign languages	X
Create, design, implement, operate, innovate and undertake in a Corporate Social Responsibility context	4.1 External, societal and environmental context	
	4.2 Enterprise and business context	
	4.3 Creating: from idea to business plan	
	4.4 Designing	
	4.5 Implementing	
	4.6 Operating	
	4.7 Innovating	
	4.8 Engineering entrepreneurship	

Training Pillars

Mechanical Engineering	*Energy Engineering*	*Industrial Engineering*	*Management*
			X



Specific prerequisites

- Level A, basic user: introductory or discovery level (Ax) and intermediate or everyday level (A2).
- Level B, independent user: threshold level (Bx) and advanced or independent level (B2).
- Level C, proficient user: autonomous level (Cx) and mastery (C2).

*Depending on the assigned group.

General teaching methods

- Tutorials (groups of 24).
- Work in class groups, small groups (4 to 6), or individually, depending on the learning objectives.
- Role-playing and simulations of professional situations (e.g. meetings, recruitment).

Intended learning outcomes

Integrate into an international work environment.

ILO 1. Finalise one's career plan in line with the search for a first international position.

- Update technical and professional documents (CV, cover letter, etc.) and develop a coherent, structured argument around the different stages of an application (developing a professional profile, preparing for a job interview, etc.), according to the level and progression of the group.

ILO 2. Describe a technical process related to one's area of expertise.

- Present and write technical and specialist projects using the language of the relevant field. Apply strategies and methodological approaches for written and oral communication in order to refine writing skills and oral communication skills, according to the level and progression of the group.

ILO 3. Communicate and interact on topics related to the engineering profession, particularly ethics and sustainable development.

- Analyse, formulate and defend a reasoned viewpoint on ethical, societal and environmental issues in an engineering context, both orally and in writing, in formal or collaborative communication situations.

General assessment methods and criteria

ILO	*Assessment method*	*Assessment criteria*
1	- Oral production: individual interview (guided conversation) + prepared oral production (presentation + answers to questions), 5 to 20 minutes. - Written production: functional, narrative or argumentative text (60 to 300 words).	Oral criteria: - Intelligibility - Vocabulary - Grammar - Fluency - Interaction Written criteria: - Compliance with the instructions. - Vocabulary - Grammar / Spelling. - Coherence / Cohesion. - Readability - Argumentation (advanced level).
2	- Oral production: individual interview (guided conversation) + prepared oral production (presentation + answers to questions), 5 to 20 minutes. - Written production: functional, narrative or argumentative text (60 to 300 words).	Oral criteria: - Intelligibility - Vocabulary - Grammar - Fluency - Interaction Written criteria: - Compliance with the instructions. - Vocabulary - Grammar / Spelling.



		- Coherence / Cohesion. - Readability - Argumentation (advanced level).
3	- Oral production: individual interview (guided conversation) + prepared oral production (presentation + answers to questions), 5 to 20 minutes. - Written production: functional, narrative or argumentative text (60 to 300 words).	Oral criteria: - Intelligibility - Vocabulary - Grammar - Fluency - Interaction Written criteria: - Compliance with the instructions. - Vocabulary - Grammar / Spelling. - Coherence / Cohesion. - Readability - Argumentation (advanced level).

Bibliographic resources

- Resources provided by the lecturer.



Engineering Programme Syllabus: Grande École Programme

TU Title: Industrial Management and Operations Control (Expert)			
Last updated: March 2026	*National TU Coordinator: Thècle ALIX (Bordeaux)*		*Year of Study:* Level M2
TU GIPEX	*Language of Instruction:* French and/or English	*Type:* UEF Mandatory	*Cycle:* 3A
ECTS credits: 5	*Student workload per TU (hours):* 125	*Including face-to-face teaching (hours):* 60	*Semester:* S9/S10
Keywords: modelling, simulation, optimisation, performance, Industry 4.0, Industry 5.0, industrial maintenance.			

RNCP 39305 competency blocks linked to this TU

1. Analyse and develop products, systems, goods and services with mechanical, energy and industrial components throughout all stages of their life cycle.	
2. Imagine, design and formalise manufactured products, production systems, and company goods and services.	
3. Manufacture, produce and inspect, within an integrated approach, manufactured products, parts, industrial production systems, and company goods and services.	
4. Organise and optimise industrial production scheduling and management, and the organisation of services.	X
5. Foster the development of human, technological, organisational, linguistic and intercultural capabilities, for oneself and one's team, in order to support industrial and socio-environmental changes in organisations.	X

Intended learning outcomes in the CDIO framework

Outcome Group	*Learning Outcomes*	*TU-targeted Outcomes*
Disciplinary knowledge and reasoning	1.1 Knowledge of basic sciences	
	1.2 Core engineering fundamental knowledge	
	1.3 Advanced engineering fundamental knowledge, methods and tools	
Personal and professional skills and attributes	2.1 Analytic reasoning and problem solving	X
	2.2 Scientific methods: experimentation, investigation and knowledge discovery	
	2.3 System thinking	X
	2.4 Attitudes, thought and learning	
	2.5 Ethics, professional conduct and professional responsibilities	
Interpersonal skills: Teamwork and communication	3.1 Teamwork and collaboration	
	3.2 Communications	
	3.3 Communications in foreign languages	
Create, design, implement, operate, innovate and undertake in a Corporate Social Responsibility context	4.1 External, societal and environmental context	X
	4.2 Enterprise and business context	X
	4.3 Creating: from idea to business plan	
	4.4 Designing	
	4.5 Implementing	X
	4.6 Operating	
	4.7 Innovating	
	4.8 Engineering entrepreneurship	

Training Pillars

Mechanical Engineering	*Energy Engineering*	*Industrial Engineering*	*Management*
		X	



Specific prerequisites

- TUs GICI, GIPI, GIPA and GICA.

General teaching methods

Knowledge inputs, tutorials and case studies, all contextualised through examples drawn from the lecturers' industrial experience or based on the ELF platforms.

Intended learning outcomes

Analyse, model, implement and optimise an Industry 5.0 organisation within a high-performing supply chain, integrating technical, economic, environmental and societal constraints (TEDS) in order to deliver an innovative, sustainable solution suited to current challenges.

ILO 1. Identify and simulate the different flows associated with a supply chain.

- Students must be able to identify logistics flows (physical, information and financial flows) and simulate them in order to analyse the operation and performance of a supply chain, identify critical points and propose optimisations.

ILO 2. Identify the different actors and stakeholders in a supply chain.

- Students must be able to identify all internal and external actors in a supply chain and understand their roles, relationships and impact on logistics flows.

ILO 3. Manage the overall supply chain by ensuring alignment between the Supply Chain, marketing needs and changes in demand.

- Students must be able to manage a Supply Chain consistently with marketing strategy and demand dynamics, anticipating variations, balancing constraints and ensuring a service level aligned with market expectations.

ILO 4. Propose a comprehensive project-management approach in the context of company digitalisation.

- Propose a comprehensive project-management approach in the context of company digitalisation.

ILO 5. Define, size and implement a maintenance plan shared by all stakeholders at a production site.

- Students must be able to design, size and deploy an effective, safe maintenance plan shared by maintenance teams, production teams and other site stakeholders, ensuring coordination, monitoring and continuous improvement.

ILO 6. Select the most appropriate digital technologies associated with Industry 4.0.

- Students must be able to analyse an industrial need and select the most suitable digital technologies from among Industry 4.0 solutions, taking into account their added value, feasibility and integration constraints [source text ends here: "d'inté…"].

General assessment methods and criteria

ILO	*Assessment method*	*Assessment criteria*
1	Individual assessment (case study, implementation of a method); one individual assessment and one group assessment.	- The analysis and action plan draw on industrial engineering principles. - Additional information is researched. - The request is correctly understood. - The response to the specifications is supported by sound reasoning. - Proposals in the case study are clear. - The tools and techniques used are appropriate and justified. - The approach is structured. - The limitations of the approach are addressed. - Methods taught or covered in class are implemented. - Ability to synthesise and present results. - CSR is integrated into the approach.
2	Individual assessment (case study, implementation of a method); one individual assessment and one group assessment.	- The analysis and action plan draw on industrial engineering principles. - Additional information is researched. - The request is correctly understood. - The response to the specifications is supported by sound reasoning. - Proposals in the case study are clear. - The tools and techniques used are appropriate and justified.

		- The approach is structured. - The limitations of the approach are addressed. - Methods taught or covered in class are implemented. - Ability to synthesise and present results. - CSR is integrated into the approach.
3	Individual assessment (case study, implementation of a method); one individual assessment and one group assessment.	- The analysis and action plan draw on industrial engineering principles. - Additional information is researched. - The request is correctly understood. - The response to the specifications is supported by sound reasoning. - Proposals in the case study are clear. - The tools and techniques used are appropriate and justified. - The approach is structured. - The limitations of the approach are addressed. - Methods taught or covered in class are implemented. - Ability to synthesise and present results. - CSR is integrated into the approach.
4	Students must be able to build and justify a complete and coherent project-management approach that integrates the human, technical and organisational issues of a digital transformation and enables effective management of a project from diagnosis through to final evaluation.	- The analysis and action plan draw on industrial engineering principles. - Additional information is researched. - The request is correctly understood. - The response to the specifications is supported by sound reasoning. - Proposals in the case study are clear. - The tools and techniques used are appropriate and justified. - The approach is structured. - The limitations of the approach are addressed. - Methods taught or covered in class are implemented. - Ability to synthesise and present results. - CSR is integrated into the approach.
5	Individual assessment (case study, implementation of a method); one individual assessment and one group assessment.	- The analysis and action plan draw on industrial engineering principles. - Additional information is researched. - The request is correctly understood. - The response to the specifications is supported by sound reasoning. - Proposals in the case study are clear. - The tools and techniques used are appropriate and justified. - The approach is structured. - The limitations of the approach are addressed. - Methods taught or covered in class are implemented. - Ability to synthesise and present results. - CSR is integrated into the approach.
6	Individual assessment (case study, implementation of a method); one individual assessment and one group assessment.	- The analysis and action plan draw on industrial engineering principles. - Additional information is researched. - The request is correctly understood. - The response to the specifications is supported by sound reasoning. - Proposals in the case study are clear. - The tools and techniques used are appropriate and justified. - The approach is structured. - The limitations of the approach are addressed. - Methods taught or covered in class are implemented. - Ability to synthesise and present results. - CSR is integrated into the approach.

Bibliographic resources

- MARTIN. Logistics and Supply Chain Management: Building Competitive Advantage Through Effective Supply Chain Management.



Financial Times / Prentice Hall, 2016.
- LE MOIGNE. Supply chain management : achat, production, logistique, transport, vente. Dunod, 2025.
- CHOPRA, MEINDL. Supply Chain Management: Strategy, Planning, and Operation. Pearson, 2019.
- SAMII. Stratégie logistique – Supply Chain Management : Fondements, Méthodes, Applications. Éditions d'organisation, 3è édition (année révisée).
- STADTLER. Supply Chain Management and Advanced Planning: Concepts, Models, Software and Case Studies. Springer, 2005.
- SANDERS. Supply Chain Management: A Global Perspective. Wiley, 2024.
- VARAN NATH, DUNKIN, CHOWDHARY, PATEL. Industrial Digital Transformation: Accelerate Digital Transformation with Business Optimization, AI, and Industry 4.0. BookAuthority, 2025.
- USTUNDAG, CEVIKCAN. Industry 4.0: Managing the Digital Transformation. Springer International Publishing, 2018.
- CRESPO MARQUEZ. Digital Maintenance Management: Guiding Digital Transformation in Maintenance. Springer International Publishing, 2022.
- JULIEN. L'usine du futur : stratégies et déploiement : industrie 4.0, De l'IoT aux jumeaux numériques. Dunod, 2021.
- SALGUES. Société 5.0 - Industrie Du Futur, Technologies, Méthodes Et Outils. Iste Editions, 2018.



Engineering Programme Syllabus: Grande École Programme

TU Title: Expertise Project			
Last updated: Sept. 2021	*National TU Coordinator: Anne MOREL (DGAF)*		*Year of Study:* Level M2
TU PJ9	*Language of Instruction:* French and/or English	*Type:* UEP Mandatory	*Cycle:* 3A
ECTS credits: 5	*Student workload per TU (hours):* 125	*Including face-to-face teaching (hours):* 12	*Semester:* S9/S10
Keywords: project lifecycle management: initiate, plan, execute, monitor, control and close a project.			

RNCP 39305 competency blocks linked to this TU

1. Analyse and develop products, systems, goods and services with mechanical, energy and industrial components throughout all stages of their life cycle.	
2. Imagine, design and formalise manufactured products, production systems, and company goods and services.	
3. Manufacture, produce and inspect, within an integrated approach, manufactured products, parts, industrial production systems, and company goods and services.	
4. Organise and optimise industrial production scheduling and management, and the organisation of services.	
5. Foster the development of human, technological, organisational, linguistic and intercultural capabilities, for oneself and one's team, in order to support industrial and socio-environmental changes in organisations.	X

Intended learning outcomes in the CDIO framework

Outcome Group	*Learning Outcomes*	*TU-targeted Outcomes*
Disciplinary knowledge and reasoning	1.1 Knowledge of basic sciences	
	1.2 Core engineering fundamental knowledge	
	1.3 Advanced engineering fundamental knowledge, methods and tools	
Personal and professional skills and attributes	2.1 Analytic reasoning and problem solving	
	2.2 Scientific methods: experimentation, investigation and knowledge discovery	
	2.3 System thinking	X
	2.4 Attitudes, thought and learning	X
	2.5 Ethics, professional conduct and professional responsibilities	X
Interpersonal skills: Teamwork and communication	3.1 Teamwork and collaboration	X
	3.2 Communications	X
	3.3 Communications in foreign languages	
Create, design, implement, operate, innovate and undertake in a Corporate Social Responsibility context	4.1 External, societal and environmental context	
	4.2 Enterprise and business context	
	4.3 Creating: from idea to business plan	
	4.4 Designing	
	4.5 Implementing	
	4.6 Operating	
	4.7 Innovating	
	4.8 Engineering entrepreneurship	

Training Pillars

Mechanical Engineering	*Energy Engineering*	*Industrial Engineering*	*Management*
X	X	X	X



Specific prerequisites

- TUs PJ5, PJ6, PJ7 and PJ8, or equivalent validated experience.

General teaching methods

Practical project situation.

Intended learning outcomes

Manage and implement a complex project autonomously, under the supervision of a teaching team from the institution and in interaction with multiple stakeholders.

ILO 1. Take part in developing a new project or a new phase of a project, defining its main outline and securing approval for implementation.
ILO 2. Plan and carry out the actions required to achieve the project objectives, allocating the necessary resources.
ILO 3. Monitor the progress of the project or a project phase and respond to deviations by implementing corrective actions.
ILO 4. Finalise the project by completing and formalising the product or service developed.

Teaching unit (TU) description:
- The project will be carried out over the semester as independent work.

General assessment methods and criteria

ILO	*Assessment method*	*Assessment criteria*
1		
2		
3		
4		

Assessment by the teaching team:
- Ability to address all dimensions of a complex issue.
- Overall progress during dedicated TU sessions (attendance, perseverance, autonomy, distribution of roles, etc.).
- Application within the project of academic knowledge and the technical or scientific approach adopted.
- Project report.
- Project defence.

Bibliographic resources

- A Guide to the Project Management Body of Knowledge (PMBOK Guide) - (ISBN 978-1933890654).
- Gestion de Projet. Techniques de l'Ingénieur, reference T7700 Vx, January 1997.

Arts et Métiers Sciences et Technologies



Engineering Programme Syllabus: Grande École Programme

TU Title: End-of-Studies Internship			
Last updated: March 2026	*National TU Coordinator: Anne MOREL (DGAF)*		*Year of Study:* Level M2
TU SFE	*Language of Instruction:* French and/or English	*Type:* UEP Mandatory	*Cycle:* 3A
ECTS credits: 30	*Student workload per TU:* 24 weeks	*Including face-to-face teaching:* 24 weeks	*Semester:* S9/S10
Keywords: professional placement, entry-level engineer with full responsibilities.			

RNCP 39305 competency blocks linked to this TU

1. Analyse and develop products, systems, goods and services with mechanical, energy and industrial components throughout all stages of their life cycle.	X
2. Imagine, design and formalise manufactured products, production systems, and company goods and services.	X
3. Manufacture, produce and inspect, within an integrated approach, manufactured products, parts, industrial production systems, and company goods and services.	X
4. Organise and optimise industrial production scheduling and management, and the organisation of services.	X
5. Foster the development of human, technological, organisational, linguistic and intercultural capabilities, for oneself and one's team, in order to support industrial and socio-environmental changes in organisations.	X

Intended learning outcomes in the CDIO framework

Outcome Group	*Learning Outcomes*	*TU-targeted Outcomes*
Disciplinary knowledge and reasoning	1.1 Knowledge of basic sciences	
	1.2 Core engineering fundamental knowledge	
	1.3 Advanced engineering fundamental knowledge, methods and tools	
Personal and professional skills and attributes	2.1 Analytic reasoning and problem solving	
	2.2 Scientific methods: experimentation, investigation and knowledge discovery	
	2.3 System thinking	X
	2.4 Attitudes, thought and learning	X
	2.5 Ethics, professional conduct and professional responsibilities	X
Interpersonal skills: Teamwork and communication	3.1 Teamwork and collaboration	X
	3.2 Communications	X
	3.3 Communications in foreign languages	
Create, design, implement, operate, innovate and undertake in a Corporate Social Responsibility context	4.1 External, societal and environmental context	X
	4.2 Enterprise and business context	X
	4.3 Creating: from idea to business plan	
	4.4 Designing	
	4.5 Implementing	
	4.6 Operating	
	4.7 Innovating	
	4.8 Engineering entrepreneurship	X

Training Pillars

Mechanical Engineering	*Energy Engineering*	*Industrial Engineering*	*Management*
X	X	X	X



Specific prerequisites

- All TUs from the first two years of the Arts et Métiers Grande École Programme, or equivalent validated experience.

General teaching methods

Professional placement of the student as an entry-level engineer under the supervision of a senior engineer and an academic supervisor.

Intended learning outcomes

During a professional placement in France or abroad, apply the competencies required to work as an engineer, including those relating to environmental transition and social responsibility.

ILO 1. Within a CSR framework, apply technical, organisational and interpersonal competencies to solve one or more problems forming all or part of a project at the host company.

ILO 2. Apply technical, organisational and interpersonal competencies to analyse and address one or more issues using an engineering approach (analysis, structuring, proposing and justifying solutions, decision-making).

ILO 3. Critically analyse one's competencies and engineering approach against professional expectations, integrating CSR and environmental-transition issues, and report on them through a structured report combining technical content and reflective analysis, as well as through an oral presentation to a panel of experts.

The TU is organised around two complementary dimensions:

- a project-assignment dimension focused on the student's contribution to an activity or issue within the host company.
- a professional-development dimension enabling the student to test their engineering approach and reflect critically on their competencies.

Expected requirements:

- Search for the internship and signature of a tripartite agreement (student/school/company).
- Placement of the student as an entry-level engineer with responsibilities in a company for at least 24 consecutive weeks.

General assessment methods and criteria

ILO	*Assessment method*	*Assessment criteria*
1	Assessment of the company assignment by the industrial supervisor using a criterion-based assessment grid provided by the School.	- Ability to analyse an issue in a real-world context. - Implementation of an engineering approach (analysis, structuring, proposing solutions, decision-making). - Application of technical, organisational and interpersonal competencies. - Contribution to the company's results and relevance of the proposed solutions.
2	Assessment of the technical report by the industrial supervisor using a criterion-based assessment grid provided by the School.	- Quality of writing and document structure. - Usability of the results for the company. - Clarity of the presentation of technical, organisational, human and environmental dimensions.
3	Assessment by a panel (expert committee) using a criterion-based assessment grid provided by the School: - a written report supported by a portfolio - an oral defence	- Ability to frame a company assignment as an engineering problem in an industrial context. - Implementation of an engineering approach (analysis, structuring, choices, decision-making). - Relevance of the results and quality of their critical analysis. - Ability to explain and substantiate the competencies applied. - Ability to reflect critically on the approach and professional posture.

Bibliographic resources

- Sauvayre, Romy. Trouver facilement un stage, un premier emploi. Paris: L'Étudiant éditions Les Éditions de l'Opportun, 2021.
- Fayet, Michelle, et Jean-Denis Commeignes. Rédiger des rapports convaincants. 6e édition. Malakoff: Dunod, 2024