2A FISA	CU 8.3
Semester 8	3 School ECTS - 3 Company ECTS

CU 8.3: MANUFACTURING 4.0 & INDUSTRIALISATION (Innovation)

Director of studies: Pierre-Jean MÉAUSOONE

General CU objectives:

- Know and apply creativity methods
- Know how to apply a scientific research approach
- Carry out a scientific and technological bibliographic search
- Manage a project from the idea to the industrial prototype
- Manage the industrialisation of products during their transformation
- Check manufactured products
- Manage a team

The timber product design approach will be the basis for the work carried out on the different sessions.

Respecting an eco-responsible approach, students will work within the CU in order to understand, prepare and draft the design files of the products to be developed for the timber industry.

The first two stages of the project approach, as well as the final stage will be studied: creativity and bibliographic research in the first place, then the manufacture of industrial products and the BIM approach in the second place. Approaching the project from the beginning and on the end will give students what they need for the design phase.

These products will be designed within CU 8.3, relying inter alia on value analysis methods.

Consists of:

- Module 1: Innovation and design
- Module 2: Industrialisation
- Module 3: Not applicable
- Industrial assessment

Hourly volume

In-person		*Self-directed study*
24.50 H	**Lectures**	**82.00 H**
48.00 H	**Tutorials**	
0.00 H	**Practicals**	

Positioning of the CU in the School reference system:

Units of skills
In accordance with the RNCP sheet

Updated on 25 April 2025

CU 8.3: MANUFACTURING 4.0 & INDUSTRIALISATION (Innovation)

Module 1: Innovation and design	**Coefficient 1**
Session leaders: Pierre-Jean MÉAUSOONE, CADWORK company, DIETRICH company	
Teaching assistants:	
Prerequisites: none	
Teaching materials: Course notes – Presentation slides – Reference book - Project	
Assessment methods: in groups Viva– Report– Bibliography	

Learning outcomes	**Description**	**Number of student hours (in-person)**		
		Lectures	**Tutorials**	**Practicals**
Know and apply creativity methods. Specify requirements. Work in a creativity group. Know how to apply a scientific research approach. Carry out a scientific and/or technological bibliographic search.	Creative thinking and creativity techniques (the fundamental tools of creativity– Design thinking).	3.50		
	Collective creativity methods.	1.75	4.00	
	The five stages of the process of an R&D (Research & Development) project: – The French CIR (Research Tax Credit) approach for companies. – Frascati criteria – Technology watch in a company. – Analyse a scientific document. – Apply a literature search to a topic in connection with the design project developed in CU 8.3.	3.50	12.00	
Know and understand a BIM glossary: – Know the levels of geometric detail and information. – Know the general features of a collaborative platform. – Knowledge of exchange formats and interoperability. – Know the standard codifications and their specificities. – Interpret a charter, a specification and a BIM agreement. – Know and understand a BIM glossary.	BIM approach Case study Testimonials from manufacturers.	7.00	16.00	
		15.75	**32.00**	**0.00**

Updated on 25 April 2025

CU 8.3: MANUFACTURING 4.0 & INDUSTRIALISATION (Innovation)

Module 2: Industrialisation	**Coefficient 2**
Session leaders: Marc JAFFRES, Pierre-Jean MÉAUSOONE, Alain RENAUD, Nicolas MAILLY	
Teaching assistants:	
Prerequisites: CU 5.1, CU 5.5, CU 6.5, CU 7.3	
Teaching materials: Course notes – Presentation slides – Reading list - Project	
Assessment methods: individual and in groups Report - Practical examination	

Learning outcomes	**Description**	**Number of student hours (in-person)**		
		Lectures	**Tutorials**	**Practicals**
Define specifications. Specify requirements. Anticipate the safe operation of the product. Define, test and choose technical solutions. Apply ecodesign to the product being studied. Design a product respecting its life cycle (material, assembly, packaging, etc.). Design and validate technical solutions based on innovative proposals. Check the technical-economic feasibility of the product. Design and validate technical solutions based on innovative proposals. Propose and argue constructive technical solutions for a pre-series. Integrate environmental constraints into the choice of processes and procedures.	Value analysis.	1.75	4.00	
	Ecodesign: how to integrate environmental protection from the design of goods or services / product life cycle management to packaging.	1.75	4.00	
	Simultaneous engineering, basic principles.	1.75		
	Introduction to project management in the method function.	3.50		
	Creation / preparation of the manufacturing file (machining, assembly ranges): – Choice of raw materials and calculation of material cost. – BOMs (flat, by mounting level, tree structure). – Plan the operations.		4.00	
	Operating ranges / Machine tools.		2.00	
	Technical feasibility and production costs from existing solutions (choice of raw materials, production, assembly).		2.00	
		8.75	**16.00**	**0.00**

CU 8.3: MANUFACTURING 4.0 & INDUSTRIALISATION (Innovation)

Industrial **assessment**
Session leaders: Apprenticeship supervisor (in company), academic tutor, Pierre-Jean MÉAUSOONE
Teaching assistants:
Prerequisites:
Teaching materials: Reading list– Reference book– Project– Tutorial– Company data
Assessment methods: Individual File

Learning outcomes	Description	Number of student hours (in-person)		
		Lectures	Tutorials	Practicals
Implement course outcomes, methods and tools. Define and choose creative solutions. Generate and assess technical solutions based on innovative proposals. Pre-organise constructive technical solutions for a pre-series.	Based on an industrial project (apprentice's company, company's customers), this project will put into practice on a concrete example the skills acquired during this teaching unit. Using an innovation approach, create a product that meets the company's expectations. Develop a design file (Structuring of final digital models / Development of 3D digital mock-up. Carry out the product industrialisation file (Choice of raw materials / Calculation of material cost / BOM / Plan operations / Plan transformation operations / Assembly and installation sheets / Evaluation of solutions).			
		0.00	**0.00**	**0.00**