CU 9.6: ENVIRONMENT

Director of studies: Caroline SIMON

General CU objectives:

Recognise and know how to apply the multiple environmental regulations allowing an adapted management of resources and end-of-life products integrating the notion of recycling, reuse and treatment, be able to qualify and quantify the environmental quality of products and buildings as well as their environmental impacts.

• Construction and environment: (class + practical)
Know and identify comfort parameters and indoor air pollutants: measurement metrology of indoor air pollutants and comfort parameters; FDES; estimate the environmental quality of a building, apply RE2020.

• Recovery of end-of-life products: (classes/lectures and visit) Know the sectors and networks for the treatment and recovery of industrial waste and timber products in particular, know the regulations and the issues.

• LCA, FSC / PEFC certifications: (class + practical)
Understand and know how to conduct a life cycle analysis on any type of product (building, manufactured product, etc.), case studies on software. Know and know how to set up an FSC and/or PEFC and EUTR certification.

• Missions and tools of the environmental engineer: (class + tutorial)
Through case studies, understand the missions of an environmental engineer (QEMS, Regulated Facilities for Environmental Protection, QSHE, etc.). Conduct an environmental safety quality audit in the timber industries. Know the missions of the environmental engineer. Promote re-use and promote its development in renovation and rehabilitation.

Consists of:

- Part 1: Construction and environment
- Part 2: Recovery of end-of-life products
- Part 3: LCA, FSC / PEFC, EUTR certifications
- Part 4: Missions and tools of the environmental engineer

Hourly volume

In-person		*Self-directed study*
19.25 H	**Lectures**	**50.00 H**
74.00 H	**Tutorials**	
0.00 H	**Practicals**	

Positioning of the CU in the School reference system:

after semester 8

Units of skills
In accordance with the RNCP sheet

Updated on 31 March 2025

CU 9.6: ENVIRONMENT

Part 1: Construction and environment	Coefficient 1
Session leaders: (1) Arnaud BESSERER, (2 & 3) Caroline SIMON, (3) Vincent NICOLAS	
Teaching assistants:	
Prerequisites: CU 8.1	
Teaching materials: Course notes – Presentation slides – Project	
Assessment methods: individual Report - Practical examination	

Learning outcomes	Description	Number of student hours (in-person)		
		Lectures	Tutorials	Practicals
Know and identify comfort parameters and indoor air pollutants: measurement metrology of indoor air pollutants and comfort parameters; FDES; estimate the environmental quality of a building, apply RE2020.	1/ Air quality and mould in the home: • Identity and conditions of mould development in the home • Air quality impact and health risks		6.00	
	2/ Completion of an FDES (Environment and Health Declaration Sheet): • Case study: inventory, data collection, modelling		8.00	
	3/ Environmental quality of the building: • Software modelling (INDALO/PLEIADES) • Carbon impact in the design and evaluation phase		8.00	
		0.00	**22.00**	**0.00**

CU 9.6: ENVIRONMENT

Part 2: Recovery of end-of-life products	**Coefficient 1**
Session leaders: (1) Jean-Dominique HORY (AJir Environnement, 16H), (2) Caroline SIMON (2H) et Jean-Dominique HORY (4H)	
Teaching assistants:	
Prerequisites: CU 7.4– CU 8.1	
Teaching materials: Course notes – Presentation slides	
Assessment methods: Case study	

Learning outcomes	**Description**	**Number of student hours (in-person)**		
		Lectures	**Tutorials**	**Practicals**
Know the sectors and networks for the treatment and recovery of industrial waste and timber products in particular, know the regulations and the issues.	1/ Waste management: • Regulation / Classification • Organisation of sectors • Processing • Recovery • Site visit • Case study	5.25	10.00	
	2/ Site visits (material recovery/recycling, energy recovery)		6.00	
		5.25	**16.00**	**0.00**

Updated on 31 March 2025

CU 9.6: ENVIRONMENT

Part 3: LCA, FSC / PEFC, EUTR certifications	Coefficient 1
Session leaders: (1) Caroline SIMON (16H), (2) & (3) Pierre-Marie OBACZ (HAPAX Conseils, 8H)	
Teaching assistants:	
Prerequisites: CU 5.1, CU 7.4	
Teaching materials: Course notes – Tutorial presentation slides	
Assessment methods: individual Class assignment	

Learning outcomes	Description	Number of student hours (in-person)		
		Lectures	Tutorials	Practicals
Understand and know how to conduct a life cycle analysis on any type of product (building, manufactured product, etc.), case studies on software. Know and know how to set up an FSC and/or PEFC and EUTR certification.	1/ Life cycle analysis: • Advanced LCA modelling functions (in Sima pro software). • Methodology for modelling an FDES according to NF EN 15804 +A2/CN: special case of Module D, taking into account biogenic carbon, specificities of bio-based products).	3.50	12.00	
	2/ FSC, PEFC certifications: • Context • Regulation • Implementing the approach	1.75	2.00	
	3/ EU Timber Regulation (EUTR): • Regulation • Case study	1.75	2.00	
		7.00	**16.00**	**0.00**

CU 9.6: ENVIRONMENT

Part 4: Missions and tools of the environmental engineer	**Coefficient 1**
Session leaders: (1) Pierre-Marie OBACZ (HAPAX Conseils, 8H), (2) Emilie LEMOINE (REMISE), Sandra GAIGNET (BOMA), Maxence LEBOSSÉ (MAP-CRAI ENSA Nancy), Odran LEMAITRE (LERMAB / VOSGELIS) (20H)	
Teaching assistants:	
Prerequisites: CU 7.4, CU 8.1	
Teaching materials: Course notes – Presentation slides	
Assessment methods: individual Case study	

Learning outcomes	**Description**	**Number of student hours (in-person)**		
		Lectures	**Tutorials**	**Practicals**
Conduct an environmental safety quality audit in the timber industries. Know the missions of the environmental engineer.	1/ Quality Safety Environment: • Context • Environmental regulation • Engineering tools • Assignments / Methodology • Audit	3.50	4.00	
Promote re-use and promote its development in renovation and rehabilitation.	2/ Reuse: • Context, regulations, EPR sector • The different diagnostics • Case studies: architects' and engineers' perspectives • Site visits	3.50	16.00	
		7.00	**20.00**	**0.00**

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