LEARNING AGREEMENT – 5TH YEAR
(semesters 9 and 10)

Academic year 2020/21

LAST NAME		**FIRST NAME**			
NAME OF THE SENDING INSTITUTION					
SENDING INSTITUTION SUPERVISOR'S NAME AND EMAIL					
ENSCL SUPERVISOR					
PLANNED PERIOD OF THE MOBILITY	**FROM**		**TILL (MONTH/YEAR)**		

It is strongly recommended that you select "Teaching Units" as they are groups of classes when choosing courses.
You must choose one Area of Study (O).

Area of study	Teaching Units	Modules	Code	Semester	ECTS	Select your courses by ticking the boxes below	Language
O **Area A : Chemistry and sustainable process for industry**	**Sustainable resources**	Polymers and biosourced composites	9.1.A.1	S9	4		F
		Recycling of polymer materials	9.1.A.2	S9			F
		Bioenergies	9.1.A.3	S9			F
		Rare earths and metals recovery	9.1.A.4	S9			F/E
	Clean processes	Bioprocesses	9.2.A.1	S9	4		F/E
		White biotechnologies	9.2.A.2	S9			F/E
		Reactors engineering - Future Reactors / Clean Technologies	9.2.A.3	S9			F
		Modeling of engineering processes	9.2.A.4	S9			F/E
		Green polymer processes	9.2.A.5	S9			F/E
	Environment	Treatment of gases	9.3.A.1	S9	4		F
		Water treatment	9.3.A.2	S9			F
		Contaminated Soils treatment	9.3.A.3	S9			F
		Analytical techniques associated with the environment	9.3.A.4	S9			F
	Experimental practice	Scientific cross interdisciplinary project	9.4.A.1	S9	3		F
		Advanced life cycle analysis	9.4.A.2	S9			F
O **Area B : Formulation Chemistry**	**Formulation physical chemistry**	Colloïds (physical-chemistry and industrial applications)	9.1.B.1	S9	5		F
		Surfactants (physical-chemistry and functional properties)	9.1.B.2	S9			F
		Microemulsions (Formulation with the HLD method)	9.1.B.3	S9			F
		Emulsions (formulation, preparing method and characterisation)	9.1.B.4	S9			F/E
		Experimental colloidal physico chemistry	9.1.B.5	S9			F
	Strategies in formulation et coatings	Experimental design of mixtures	9.2.B.1	S9	3		F
		Advanced experimental designs and principal component analysis	9.2.B.2	S9			F/E
		Rheological agents	9.2.B.3	S9			F
		Paints and varnishes formulation	9.2.B.4	S9			F/E
		Polymers in formulation - experimentation.	9.2.B.5	S9			F
	Formulation Process	Complex fluids rheology	9.3.B.1	S9	4		F
		Engineering of mixtures	9.3.B.2	S9			F
		Powder technology	9.3.B.3	S9			F
		Conferences (detergents, cosmetics, silicones, sensorial analysis; microfluidics)	9.3.B.4	S9			F
	Transversal project	Advanced experimental formulation chemistry	9.4.B.1	S9	3		F/E
		Scientific transversal project	9.4.B.2	S9			F
O **Area 3: Optimisation and reliability of materials**	**Materials' behaviour**	Damage and reliability of materials	9.1.C.1	S9	3		F/E
		End of life materials	9.1.C.2	S9			F
	The "material solution	Metallic and multimaterial alloys	9.2.C.1	S9	6		F/E
		Powders technologies and methods for shaping solids	9.2.C.2	S9			F
		Surface treatments	9.2.C.3	S9			F/E
		Glasses	9.2.C.4	S9			F
		Polymers	9.2.C.5	S9			F/E
	Investigation methods	Numerical tools of materials selection	9.3.C.1	S9	3		F/E
		Practical use of finite elements method	9.3.C.2	S9			F/E
		Advanced analysis techniques.	9.3.C.3	S9			F
	Project	Scientific cross interdisciplinary project	9.4.C.1	S9	3		F/E

Languages	**Languages**	LV 1 – English	9.5.1	S9	4		
		LV 2 – German	9.5.2	S9			
		LV 2 – Spanish	9.5.3	S9			

		French as a foreign language	9.5.4	S9			
		Optional: 3rd language	9.5.5	S9			
Entreprise et Management Responsable	**Quality, Hygiene and Security**	Sustainable development	9.6.1	S9	3		F
		Industrial security	9.6.2	S9			F
		Toxicology	9.6.3	S9			F
		Cross interdisciplinary project in securit	9.6.4	S9			F
	Economy,Management	Business simulation project	9.7.1	S9	2		F/E
		Cross interdisciplinary project in economy	9.7.2	S9			F
	Company	Legal environment and company life.	9.8.1	S9	6		F
		Project management	9.8.2	S9			F/E
		Strategic and operational marketing	9.8.3	S9			F
		Production management	9.8.4	S9			F/E
		Management – integration into a company	9.8.5	S9			F
		Written communication (2nd year internship report)	9.8.6	S9			F

Placement	Internship – Final year project (6 months) (*)	10.1.1	S10	30		

** Only the MOOC course is available online in English*
(*): 30 ECTS validated by the internship supervisor

Research project in ENSCL Laboratory	***Subject or area***..... ..... ***Supervisor/Researcher***.....	**ECTS** **Credits According to the duration**		F/E

EXCHANGE STUDENT

Date: .....

SENDING INSTITUTION (We confirm that the proposed programme of study/learning agreement has been approved)

Date: .....

Supervisor's name and signature

Date: .....

Coordinator's name and signature and **Stamp**

HOST INTITUTION (We confirm that the proposed programme of study/learning agreement has been approved)

Date: .....

ENSCL Supervisor's name and signature

Date: .....

ENSCL Director of Studies - C. DUJARDIN

IMPORTANT (for the students in S9 Area "Sustainable Chemistry and processes for the industrial World":

You must partake in an intensive preparatory class in organic chemistry (9h) at the beginning of the school year.