Coefficients and ECTS Credits
Third year of the Engineering master degree
2023 - 2024

Curriculum unit	Courses	Coeff. S9	Coeff. S10	Credits S9	Credits S10
HUMANITIES AND BUSINESS TRAINING (C. Nugier)	Cost and financial accounting	3		5	
	Decarbonization of industry	0,5			
	Business plan and international development for engineers	0,5			
	Attendance and conduct	1			
	Occupational integration	1			
	Communication	0,5			

MAJOR CTV "CHEMISTRY & TECHNOLOGIES FOR THE LIVING WORLD "– CHOICE 1

TRACKS	Curriculum unit	Courses	S9	S10	S9	S10
	CTV COMMON CORE (L. Lemiègre)	Toxicology	1		10	
		Scale-up	1			
		Powder rheology	0,5			
		Regulatory affairs	0,5			
		3rd year Projects (pair-work, literature review)	8			
	WORK PLACEMENT	min 18 weeks research work placement introducing to Engineer activities		12		30
		Attendance and conduct		1		
Choice 1.1 BIOTECHNOLOGIES	Choice A BIOLOGICAL ENGINEERING (C. Nugier)	Microbiological engineering	0,75		5	
		Molecular Genetics and Genetic Engineering	1,5			
		Bioconversions	0,75			
		Metabolic Biochemistry	1			
		Biological processes : industrial developments	1			
	Choice B CHEMISTRY AND BIOTECHNOLOGIES FOR AGRI/AGROCHEMISTRY AND HEALTH	Bio-analytical methods	1		5	
		Processes of valorisation for Agro/Agri and Health	1			
		Industrial enzymes and molecular modeling	1			
		Formulations and Nanotechnologies for Health	1,6			
		Food dispersions	0,4			
Choice 1.2 FORMULATION	Choice C FORMULATION & CHARACTARIZATION (E. Le Fur)	Characterization (microscopy, zetametry, rheology...)	2		5	
		Thermal analysis	1			
		Detergency and cosmetics	1			
		Cosmetics regulation	0,2			
		Powder management and formulation	0,8			
	Choice D FORMULATION: COLLOIDS & INTERFACES (P. Méléard)	Surfactants and Polymers	1		5	
		Advanced characterization of soft matter	0,5			
		Support for the R&D formulation project	0,5			
		Microencapsulation	1			
		Emulsions and foams	1			
		Applied rheology	1			
Choice 1.3	Choice E GREEN CHEMISTRY (C. Crévisy)	Circular bioeconomy	0,25		5	
		Medium and solvents	1,25			
		Renewable raw materials_Green Chemistry	1,5			
		Flow chemistry	0,75			
		Life cycle assessment	1,25			
Choice 1.4 DIGITAL TECHNOLOGIES	Choice F CTV & Numerical sciences (R. Gautier)	Data Science	2		5	
		Bioinformatics	1,5			
		Molecular modelling	1,5			
	Choice L (EPA)	Digital sciences for Environment, Process and Analysis	5		5	
Choice 1.5 : RESEARCH MASTER DEGREE/ MOLECULAR CHEMISTRY			12		10	
Choice 1.6 : RESEARCH MASTER DEGREE / SOLID AND MATERIAL CHEMISTRY			12		10	
Choice 1.7 : BLOCK RELEASE TRAINING						
TOTALS for an Engineering student		**31,6**	**13**	**30**	**30**

MAJOR EPA "ENVIRONMENT, PROCESSES AND ANALYSIS "– CHOICE 2

TRACKS	Curriculum unit	Courses	S9	S10	S9	S10
	EPA COMMON CORE (A. Bouzaza)	Traceability and validation of the analytical methods	0,75		10	
		Life cycle analysis	1			
		Innovations in the field of the environment	0,25			
		Energy issue	1			
		Third year projects (bibliography, binomial project)	8			
	WORK PLACEMENT	min 18 weeks research work placement introducing to Engineer activities		12		30
		Attendance and conduct		1		
Choice 2.1 PROCESS ENGINEERING & ENVIRONMENT	Choice G PROCESS ENGINEERING (A. Bouzaza)	Heterogeneous Catalytic Reactors	1,8		5	
		Biodegradation and Process Microbiology	1,2			
		Process Intensification	1,1			
		Process Oxidation	0,9			
	Choice H ENVIRONMENTAL ENGINEERING (A. Couvert)	Biological treatments	0,9		5	
		Water distribution and collection networks	0,9			
		Principles of design for water treatment plants	1,1			
		Water chemical treatment and water softening	1,1			
		Colloidal material treatment	1			
Choice 2.2 ANALYSIS & ENVIRONMENT	Choice I ANALYSIS (D. Hauchard)	Raman spectroscopy and coupled analysis techniques	0,9		5	
		Analytical applications of radionucleids	1,1			
		Near infrared Spectroscopy	0,8			
		Natural isotopic ratios in analysis	1			
		Gas analysis	1,2			
	Choice J ENVIRONMENTAL ANALYSIS (K. Hanna)	Analysis of trace elements and compounds	1,4		5	
		Water Cycle and Chemistry	1,2			
		Speciation and trace analysis in soils	1,2			
		Fate and transport of contaminants in the environment	1,2			
Choice 2.3	Choice K MANAGEMENT AND SUSTAINABLE DEVELOPMENT (V. Alonzo)	Systems of environmental management	0,8		5	
		The environment and sustainable development	0,3			
		Materials and durability	1			
		Renewable raw materials_MSD	1			
		Environmental risk assessment	1,3			
		Series of lectures	0,6			
Choice 2.4 DIGITAL TECHNOLOGIES	Choice L Digital sciences for EPA (D.Wolbert)	Data management and analysis	2		5	
		Information system and simulation software	1,5			
		Ubiquitous computing tools (macros, android/arduino,…)	1,5			
	Choice F (CTV)	Digital sciences for chemistry and biotechnologies	5		5	
Choice 2.5 : RESEARCH MASTER DEGREE / WATER QUALITY AND TREATMENTS			12		10	
Choice 2.6 : BLOCK RELEASE TRAINING						
TOTALS for an Engineering student			**30**	**13**	**30**	**30**