

3rd Academic Year

5th and 6th semesters

Semester S5

TU 5.1	Academic subjects	Number of hours			ECTS	Exam
		L	CW	LW		
Molecular Chemistry 1	General Organic Chemistry L + CW (<i>Ms. Serein-Spirau</i>)	10,5	6		1,5	1h15
	Functional Reactivity I L + CW (<i>M. Campagne</i>)	21	10,5		2	2h
	Quantum Mechanics Particle Wave Duality L + CW (<i>M. Lung</i>)	15	7,5		1,5	1h30
	Organic Chemistry LW (<i>Ms. Carcel</i>)			30	2	ca

TU 5.2	Academic subjects	Number of hours			ECTS	Exam
		L	CW	LW		
Material and Solution chemistry	Introduction to Hybrid and Inorganic Materials L + CW (<i>Ms. Condom</i>)	13,5	3		1,5	1h30
	Organic Materials : generalities L (<i>M. Boutevin</i>)	13,5			1	1h
	Solution Chemistry L + CW (<i>M. Cretin</i>)	16,5	12		2	2h
	Materials Chemistry LW (<i>Ms. Condom - Joly Duhamel</i>)			40	3	ca

TU 5.3	Academic subjects	Number of hours			ECTS	Exam
		L	CW	LW		
Systems 1	Thermodynamics - Ideal and Real Fluids L + CW (<i>M. Trens</i>)	15	7,5		1,5	1h30
	Chemical kinetics and Heterogeneous Catalysis L + CW (<i>M. Trens</i>)	21	10,5		2	2h
	Mass and energetic balances Fluid Mechanics L + CW (<i>Ms. Paolucci</i>)	16,5	6		1,5	1h30
	Physical Chemistry LW (<i>Ms. Marcotte, M. Rivallin</i>)			40	3	ca

Semester S5

TU 5.4	Academic subjects	Number of hours			ECTS	Exam
		L	CW	LW		
Methodology, Human and social Sciences	Experimentation Methodology L (Ms. Druon)	9	1,5		0,5	1h
	Sustainable Development L (M. Auvergne, David)	9			0,5	1h
	Introduction to Bibliography L + LW (M. Drone)	3		6,5	1	ca
	Safety and from perception to Stress L (M. Bret)	7,75	1,75	1,5	1	ca
	Languages CW + Self-learning + LV3 Optional LV1 compulsory (English) LV2 compulsory (Spanish or German)		15 15 15	15 15 15	3,5	ca
	Knowledge on chemistry industry (Conferences)	9			0,5	1h
	Discovery of the Corporate world L + CW (M. Chantreux)	12			1	1h

Semester S6

TU 6.1	Academic subjects	Number of hours			ECTS	Exam
		L	CW	LW		
Molecular Chemistry 2	Functional Reactivity II L + CW (M. Pirat)	21	12		2	2h
	Enzymologic and Metabolic Biochemistry L + CW (M. Bakalara)	19,5	9		1,5	2h
	Stereochemistry L (Ms. Carcel)	12			0,5	1h30
	Organic Chemistry LW (Ms. Carcel)			30	2	ca
	Quantum mechanics Atoms and Molecules L + CW (M. lung)	15	7,5		1,5	1h30

Semester S6

TU 6.2	Academic subjects	Number of hours			ECTS	Exam
		L	CW	LW		
Systems 2 and materials	Heat and Mass Transfer L + CW (<i>Ms. Paolucci</i>)	15	6		1,5	1h30
	Polymer chemistry L (<i>M. Boutevin</i>)	15			1	1h
	Inorganic chemistry and inorganic functional materials L (<i>M. Cornu</i>)	9			0,5	1h
	Thermodynamics Chemical Potential Open Systems L + CW (<i>M. Trens</i>)	15	7,5		1,5	1h30
	Polymer Synthesis LW (<i>M. Auvergne</i>)			20	1	ca
	Physical Chemistry LW (<i>Ms. Marcotte</i>)			40	2,5	ca

TU 6.3	Academic subjects	Number of hours			ECTS	Exam
		L	CW	LW		
Methods analysis	Introduction to Mass spectrom and NMR spectroscopies L (<i>M. Campagne</i>)	15	7,5		1,5	2h
	Analytical chemistry and Chromatographic L + CW (<i>M. Cretin</i>)	16,5	6		1,5	1h30
	Analytical Chemistry LW (<i>M. Cretin</i>)			40	2,5	ca

Semester S6

TU 6.4	Academic subjects	Number of hours			ECTS	Exam
		L	CW	LW		
Computer science, Human and Social Sciences	Computer Sciences L + CW + LW (<i>Ms. Druon</i>)	10,5	7,5	20	2,5	ca
	Project Management L + CW (<i>Ms Aguilar</i>)	6	9		1	ca
	Oral expression techniques to convince and to seek Internships L + CW (<i>Ms Ducotey</i>)	7	7		0,5	ca
	Languages CW + Self learning LV1 compulsory (English) LV2 compulsory (Spanish or German)		15 15 15	15 15 15	3,5	ca
	Knowledge on chemistry industry Conferences	9			0,5	1h
	Quality, Environment, Standards L + CW (<i>Ms. Cauvel</i>)	10,5	6		0,5	1h

4th Academic Year

7th and 8th semesters

Semester S7

TU 7.1	Academic subjects	Number of hours			ECTS	Exam
		L	CW	LW		
Organic and Biological Chemistry	Organic Synthesis General principles and Tools L + CW (<i>M. Virieux</i>)	22,5	12		2	2h
	Biological Macromolecules and Molecular Biology L + CW (<i>M. Bakalara</i>)	18	9		2	2h
	Biochemistry LW (<i>Ms. Fabre</i>)			40	2	ca
	Organic Chemistry LW (<i>M. Volle</i>)			60	3	ca

Semester S7

TU 7.2	Academic subjects	Number of hours			ECTS	Exam
		L	CW	LW		
Material chemistry and spectroscopies	Structure of materials and heterogeneous systems L + CW (<i>Ms Cerneaux, M Cornu</i>)	15	6		1	1h30
	Theoretical Chemistry and Molecular Modelling L + LW (<i>M. Deabate</i>)	3		32	2	ca
	Vibrational and Electronic Spectroscopies L + CW (<i>Ms Marcotte</i>)	21	6		1,5	2h
	Organic functional materials L (<i>M. Boutevin</i>)	9			0,5	1h
	Industrial application of materials L (<i>M. Boutevin, M. Cornu</i>)	10,5			0,5	1h
	Materials LW (<i>Ms Cerneaux</i>)			40	2	cc

TU 7.3	Academic subjects	Number of hours			ECTS	Exam
		L	CW	LW		
Processes and Electrochemistry	Electrochemistry L + CW (<i>M. Deabate</i>)	21	12		2	2h
	Unit Opérations L + CW (<i>Ms. Paolucci</i>)	18	12		1,5	2h
	Electrochemistry LW (<i>M. Robitzer</i>)			30	1,5	ca
	Chemical Engineering LW (<i>M. Cambedouzou</i>)			40	2	ca

TU 7.4	Academic subjects	Number of hours			ECTS	Exam
		L	CW	LW		
Management and Communication	Management L + CW (<i>M. Perotin</i>)	6	9		1	1h
	Safety L + CW (<i>M. Cazaux</i>)	3		8	0,5	ca
	Project Management L + LW (<i>M. Coquelet</i>)	1,5		4	0,5	ca
	Management and communication Internships (<i>Ms. Kabbara</i>)	5,25	5,25		0,5	ca
	Knowledge on chemistry industry (Conferences) <i>M. Bret</i>	9			0,5	1h
	Languages CW + Self-learning + LV3 Optional LV1 compulsory (English) LV2 obligatory (Spanish or German)			15 15 15	15 15 15	3,5

TU 8.1	Subjects of common core	Number of hours			ECTS	Exam
		L	CW	LW		
Advanced chemistry and analysis	Chemical Reaction Engineering L + CW (<i>Ms. Paolucci</i>)	16,5	7,5		2	2h
	Organometallic compounds Synthesis applications L + CW (<i>M. Moreau</i>)	19,5	6		2	2h
	NMR Spectroscopy L + CW (<i>M. Jarrosson</i>)	13,5	7,5		1,5	2h
	Green chemistry and its Regulations L (<i>M. Auvergne</i>)	12			1	1h
TU 8.2	Subjects of common core	Number of hours			ECTS	Exam
		L	CW	LW		
Human and social Sciences 4	Job Competency assesment and professional Career project L + CW (<i>M. Guthert</i>)	7,5	8		1	ca
	Factorial analysis and Methodologies L (<i>Ms. Druon</i>)	9			0,5	1h
	Supply chain management L (<i>M. Perotin</i>)	15			1	1h
	Knowledge on chemistry industry Conferences (<i>M. Guthert</i>)	9			0,5	1h
	Languages CW + Self-learning + LV3 Optional LV1 compulsory (english) LV2 compulsory (Spanish or German)		15	15		3,5

Semester S8 Common Core

Semester S8 Options

TU 8.3	Subject - Major CBH	Number of hours			ECTS	Exam
		L	CW	LW		
Chemistry - Biology - Health	Physiology / Pharmacology L (<i>M. Vignon</i>)	20			2	1h
	Cellular Biology L (<i>Ms. Fabre</i>)	25,5			2	3h
	Advanced Organic Synthesis L + CW (<i>M. Virieux</i>)	17,5	8,5		2	2h
	Advanced Functional Reactivity L + CW (<i>M. Pirat</i>)	17,5	8,5		2	2h
	Molecular Biology Methodological Basics L (<i>M. Bakalara</i>)	17,5			2	2h
	Protein Functions and Structure L (<i>M. Bakalara</i>)	17,5			2	2h
	Bibliography L + CW (<i>M. Niel</i>)			12	1	ca
	Projects - Designing and a protocol CW + LW (<i>M. Bakalara</i>)		10	70	4	ca

TU 8.4	Subject - Major FOC	Number of hours			ECTS	Exam
		L	CW	LW		
Fine Organic Chemistry	Advanced Organic Synthesis L + CW (<i>M. Virieux</i>)	18	9		2,5	2h
	Specific Reaction Mechanisms L + CW (<i>M. Pirat</i>)	18	9		2,5	2h
	Advanced Functional Reactivity L + CW (<i>M. Pirat</i>)	18	9		2,5	2h
	Heterochemistry and Natural Products L + CW (<i>Mme Serein-Spirau</i>)	18	9		2,5	2h
	Heterocyclic Chemistry Exposés (<i>M. Pirat</i>)	9	4,5		1,5	2h
	Bibliography L + CW (<i>M. Niel</i>)			12	2	ca

Supervised Synthesis Projects Account (<i>M. Jarrosson</i>)		70	3,5	ca
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Semester S8 Options

TU 8.5	Subject - Major MAT	Number of hours			ECTS	Exam
		L	CW	LW		
Material Chemistry	Polymers and control polymer structures L (<i>M. Boutevin</i>)	33			2,5	2h
	Membranes processes L + CW (<i>Ms. Condom</i>)	24	7		2,5	2h
	Mechanics and Rheology L (<i>Ms. Joly-Duhamel</i>)	19			2	2h
	Colloidal Chemistry L (<i>M. Cornu</i>)	21,5			2,5	2h
	Materials Characterization and Observation L (<i>Ms. Condom , Joly-Duhamel</i>)	12			1,5	2h
	Bibliography L + CW (<i>Ms Cerneaux, M. Rivallin</i>)			12	2	ca
	Material Chemistry LW (<i>M. Rivallin, M. David</i>)			70	4	ca

TU 8.6	Subject - Major CDE	Number of hours			ECTS	Exam
		L	CW	LW		
Clean up and management of the environment	Catalytic Materials and Catalysis L (<i>M. Hulea</i>)	23,5			2	2h
	Catalysis LW			36	2,5	ca
	Photochemistry and the Environment L (<i>Ms. Marcotte</i>)	19			1	2h
	Biotechnology and the Environment L (<i>M. Drone</i>)	19			1	2h
	Environmental Analysis L (<i>M. Cretin</i>)	18			1	2h
	Environmental Analysis LW (<i>M. Cretin</i>)			36	2,5	ca
	Environmental Chemistry L (<i>M. David</i>)	9,5			1	1h
	Introduction to Nuclear Chemistry L (<i>M. Boullis, M. Poinssot</i>)	28,5			2,5	2h
	Bibliography L W (<i>M. Cretin</i>)			12	2	ca
	Guided self Learning LW (<i>M. David</i>)			20	1,5	ca

5th Academic Year

9th and 10th semesters

TU 9.1	Subjects of Common Core	Number of hours			ECTS	Exam	
		L	CW	LW			
Common Core	Management and Communication	Team management CW (<i>Ms. Kabbara</i>)	7	7		1	ca
		Introduction to legal issues Industrial Propriety and case L + CW (<i>M. Coquelet, M. Touche</i>)	4		26,5	2	ca
		Labour Law L (<i>M. Errera</i>)	12			1	1h
		Job Hunting and professional Insertion Techniques L (<i>M. Guthert</i>)	19			1,5	ca
		Languages CW + LV3 Optional LV1 compulsory (English) LV2 compulsory (English or German)			15 15 15 15 15 15	3,5	ca
		Marketing L (<i>M. Pouget</i>)	12			1	1h

TU 9.2	Subject - Major EH	Number of hours			ECTS	Exam
		L	CW	LW		
Engineering of Health	Amino acids peptids and sugars Sugars L (<i>M. Campagne, Vrancken</i>)	18			1,5	2h
	Proteomic and Mass spectrometry L (<i>M. Jouin</i>)	20			2	2h
	Stereoselective Syntheses L (<i>M. Virieux</i>)	18			1,5	2h

TU 9.3	Subject - Major EH	Number of hours			ECTS	Exam
		L	CW	LW		
Engineering of Health	Master's in Biology and Health	20			2	4h
	2 UE parmi TC1, TC2, TC3 et	20			2	4h
	Master's in Biology and Health with Bio Med Speciality Medicine Track					
	Pharmacochimistry L (<i>M. Pin</i>)	40			4	4h
	Vectorization	40			4	4h

D	Engin	L (<i>M. Devoisselle</i>)				
		Toxicologic and Cinetic Pharmacology L (<i>Ms. Vian, Bressolle</i>)	30			3

TU 9.4	Subject - Major FOC	Number of hours			ECTS	Exam
		L	CW	LW		
Fine Organic Chemistry	Stereoselective Syntheses L (<i>M. Virieux</i>)	18			1,5	2h
	Multi-step synthesis L (<i>M. Campagne</i>)	18			1,5	2h
	Organometallic reagents in organic synthesis L (<i>Ms. Serein-Spirau</i>)	18			1,5	1h30
	Graduate Major projects Animator (<i>M. Virieux</i>)			70	3	ca
	Heteroatom chemistry in organic synthesis L (<i>Mme Serein-Spirau</i>)	18			1,5	1h30
	Amino acids, peptides and carbohydrate chemistry L (<i>M. Campagne, Vrancken</i>)	18			1,5	1h30

TU 9.5	Subject - Major COSA	Number of hours			ECTS	Exam
		L	CW	LW		
Fine Organic Chemistry	Vectorization and Targeting L (<i>M. Morère, Perottes</i>)	24			1,5	1h30
	Supported syntheses and Combinatorial chemistry L (<i>Ms. Parrot, M. Subra, M. Lamaty</i>)	24			1,5	1h30
	Molecular Materials L (<i>Ms. Serein-Spirau, Larionova</i>)	18			1,5	1h30
	Biocatalysis L (<i>M. Drone</i>)	9			1	1h
	Crop protection Agrochemistry L and Conferences (<i>M. Volle</i>)	12			1	1h30
	Mass Spectrochemistry L (<i>Ms. Enjalbal</i>)	9			1	1h30
	Perfumes and Cosmetology L and Conferences (<i>M. Pirat</i>)	9			1	1h30
	Aromatic Heterocyclic chemistry Self-learning (<i>M. Pirat</i>)	12			1	Oral

Chemistry - Health

TU 9.6	Subject - Major IPAN Extraction and Purification of active principles	Number of hours			ECTS	Exam
		L	CW	LW		
Engineering of natural active Principles	Active Molecules Originating Vegetal World & their L + Self-training (<i>M. Baccou</i>)	20,5			2	ca
	Supercritical fluid & Solvant extraction L (<i>Ms. Paolucci</i>)	10,5			1	1h
	Other Separation techniques L (<i>Ms. Paolucci</i>)	34,5			2,5	ca

TU 9.7	Subject - Major IPAN Application of active principles	Number of hours			ECTS	Exam
		L	CW	LW		
Engineering of natural active Principles	Graduate Major Projects : Active molecule Applications (self-learning on-site visits) Quizmaster (<i>Ms. Paolucci</i>)			110	7	ca
	Physico-chemistry of Colloids and interfaces L (<i>M. Toquer</i>)	30			2,5	1h30
	Forms & Processes in Pharmaceutical & Cosmetic L (<i>M. Devoisselle</i>)	63,5			5	2h

Main focus on Chemical Materials and Environment

Chemistry - Materials - Environment

TU 9.8	Subject - Major MAT	Number of hours			ECTS	Exam
		L	CW	LW		
Materials	Composite materials L (<i>M. Cornu, M. Boutevin</i>)	19			1,5	2h
	Ceramic materials L (<i>M. Cornu</i>)	19			1,5	2h
	Future and degradation of polymer materials L (<i>M. Boutevin</i>)	19			1,5	2h
	Molecular materials L (<i>Ms. Spirau</i>)	23,5			2,5	1h30
	Metalic materials L (<i>Ms. Miele</i>)	19			1,5	2h

Chemistry - Materials - Environment

TU 9.9	Subject - Major MAT	Number of hours			ECTS	Exam
		L	CW	LW		
Materials	Materials for sustainable energy and development L (M. Cornu, Ms Joly-Duhamel)	19			1,5	2h
	Coatings, surface and adhesion L (M. Cornu, M. Boutevin)	19			1,5	2h
	Elaboration & use of polymer materials L (Ms. Joly - Duhamel, M. Auvergne)	19			1,5	2h
	Major Project Initiation to research Animator (M. Cornu, Ms. Joly-Duhamel)			70	4	ca
	Industrial polymers and their applications L (Ms Joly-Duhamel)	19			1,5	2h
	Elaboration Processes of Materials pollution treatment L (M. Rivallin)	19			1,5	2h

Chemistry - Materials - Environment

TU 9.10	Subject - Major Env. Treatment of pollution	Number of hours			ECTS	Exam
		L	CW	LW		
Cleanup and management of environment	Solid waste Treatment and valorisation L (M. Auvergne)	18			2	2h
	Major projects Green Plan Animator (M. David)			70	4	ca
	Membrane Processes L (Ms. Paolucci)	12			1,5	1h30
	Liquid Effluent Treatment L (Ms. Winiewsky)	14			1,5	2h
	Air treatment L (M. Cornu)	28,5			3	2h

TU 9.11	Subject - Major Env. Management of Environment	Number of hours			ECTS	Exam
		L	CW	LW		
Cleanup and management of environment	Heterogenous Catalysis & Environment Protection L (M. Huléa)	24			3	3h
	General Ecology L (M. Thorin)	10,5			1	1h
	Environment Management L (M. David)	43,5			2	ca
	Eco-conception L (M. Auvergne)	3	3	22	2	1h30

Chemistry - Materials - Environment

TU 9.12	Subject - Major CBSD Chemistry Agro-based	Number of hours			ECTS	Exam
		L	CW	LW		
Chemistry, biotechniques and sustainable development	Knowledge of Raw Materials L (<i>M. Davidian</i>)	22		6	2	1h
	Agroresource Improvement and L (<i>M. Berthomieu</i>)	13	5	8	1,5	1h
	Enzymatic & Microbial Biotech L (<i>M. Bakalara, M. Dubreucq</i>)	26			2	1h
	Energy and Biofuels L (<i>M. Hulea</i>)	24			2	1h
	Biomolecules Polymers - Biofuels L (<i>M. Auvergne</i>)	14			1,5	1h
	Separation and reaction L (<i>Ms. Paolucci, M. Dubreucq</i>)	33			1	1h

TU 9.13	Subject - Major CBSD Industrial environment Knowledge	Number of hours			ECTS	Exam
		L	CW	LW		
Chemistry, biotechniques and sustainable development	Regulation & Socio-economics L (<i>M. Dubreucq</i>)	21			1,5	1h
	Industrial Performances L (<i>M. Bottega</i>)	25	5	5	1,5	1h
	Production Management or sustainable management L (<i>M. Bottega</i>)	25	5	5	1,5	1h
	Ecological Assessment & Life cycle analysis L (<i>M. Helias</i>)	3		12	1,5	ca
	Tutored Major Projects CW (<i>M. Dubreucq</i>)		70		4	ca

Chemistry - Materials - Environment

TU 9.14	Subject - Major CNE	Number of hours			ECTS	Exam
		L	CW	LW		
Chemistry of nuclear technology and environment	Thermodynamics & Kinetics Liquid-Liquid Extraction L (<i>M. Dinh</i>)	12			1	1h30
	Solution chemistry Applied to Actinides L (<i>M. Moisy</i>)	24			2	1h30
	Radio-activity Basics Elements L (<i>M. Dacheux</i>)	20			2	2h
	Desmantling Engineering L (<i>M. Mahé, M. Boya, M. Valentin</i>)	24		6	2,5	2h
	Waste conditioning & Treatment Processes L (<i>M. Dacheux, Faure, Fournel, Poinssot</i>)	24			2	1h30

TU 9.15	Subject - Major CNE	Number of hours			ECTS	Exam
		L	CW	LW		
Chemistry of nuclear technology and environment	From the solution to the oxyde Sol-Gel Processes, Hydro L (<i>M. Vioux, Di Renzo</i>)	24			2	1h30
	Long-term behaviour CLT: Vitreous Matrices L (<i>M. Gin</i>)	23			2	1h30
	Confinement Materials L (<i>MM. Pauchon, Dussossoy</i>)	24			2	1h30
	Membrane Separation Processes L (<i>Ms. Druon</i>)	12			1	1h30
	Analytical strategy for actinides L (<i>M. Dacheux</i>)	20			2	1h30
	Self-learning L (<i>M. Girard</i>)			30	1,5	ca

PFE

TU 10.1	Industrial Project duration 4 months	Number of hours			ECTS	Exam
		L	CW	LW		
PFE	Bibliography Report or Research Project Guardians School and Firms				7,5	ca
	Industrial Internships Guardians School and Firms				15	ca
	Internship Report & its Oral Defence Guardians School and Firms				7,5	Oral

TU : Teaching Unit

L : Lectures

CW : Class Work

LW : Laboratory Work

ca : continuous assessment

ECTS : European Credit Transfer System



I

