

Scientific Teaching (1st year of master, 1st semester)

The student will have to choose a set of courses for a total of 10 ECTS

Teachings may also be chosen from the teaching list of the 2nd year of master, 1st semester.

Lieu de l'enseignement	Spécialité	Title of the teaching (hourly volume)	ECTS
ENSICAEN	Organic chemistry	Stereochemistry-Aromatic compounds (14h CM + 10h TD) (J. Rouden)	3
		Chemistry of carbonyl compounds (14h CM + 10h TD) (J. Rouden)	3
Caen	Organic chemistry	Bibliography (10h) (S. Gaillard)	1
		Chemistry of aromatic and heteroaromatic compounds (12h CM + 8h TD) (T. Lequeux, E. Pfund)	2
		Frontier orbitals in organic chemistry (6h CM + 4h TD) (T. Lequeux)	1
		Nitrogen chemistry (16h CM + 4h TD) (J. Baudoux)	2
		Organic synthesis (12h CM + 8h TD) (J.-L. Renaud)	2
		Natural products (5h CM + 5h TD) (N. Bar)	1
		Introduction to conjugated polymers (10h) (C. Lemouchi)	1
Rouen	Organic chemistry	Radical Chemistry (6h CM + 6h TD)	1
		Carbonyl chemistry (6h CM + 6h TD)	1
Rouen	Analysis	Chromatography (6h CM/ 6h TD)	1
	Analysis	NMR / Mass Spectrometry (15 h CM/ 16h TD)	3
Caen	Analysis	Mass Spectrometry / molecular spectroscopy (20h CM/TD)	2
	Analysis	Structural determination structurale + LCS (30h CM/TD)	3
Rouen	Polymers	Thermal behaviour of polymer materials (4h CM + 4h TD)	1
	Polymers	Polymer thermodynamics (4h CM + 4h TD)	1
	Polymers	Polymer rheology (6h CM + 6h TD)	1
	Analytical chemistry	Electrochemical process (12h CM/ 12h TD)	2
	Analytic chemistry	Computational chemistry (8h CM)	1
Le Havre	Aromas, perfumes and cosmetics	Mass Spectrometry (4hCM/8hTD)	1
	Aromas, perfumes and cosmetics	NMR (4hCM/8hTD)	1
	Aromas, perfumes and cosmetics	Physicochemistry of Polymers (7hCM/14hTD)	2
	Aromas, perfumes and cosmetics	Polymers Characterisation (5hCM/9hTD)	1
	Aromas, perfumes and cosmetics	Gaseous Phase Chromatography (5hCM/9hTD)	1
	Aromas, perfumes and cosmetics	Liquid Phase Chromatography (5hCM/9hTD)	1
	Aromas, perfumes and cosmetics	Functional Chemistry (8hCM/12hTD)	2
	Aromas, perfumes and cosmetics	Extraction techniques (3hCM/5hTD)	1
	Aromas, perfumes and cosmetics	Olfactive Psychophysiology (4hCM/8hTD)	1

Rouen	Solid state chemistry / Materials	Properties of inorganic solids (9h CM +6h TD)	2
	Solid state chemistry / Materials	Solid state description (12h CM +12h TD)	3
	Solid state chemistry / Materials	Solid state thermodynamic (6h CM +6h TD)	1
Rouen, Caen ou Le Havre		Courses by foreign teachers (20h CM/TD)	2

Scientific Teaching (1st year of master, 2nd semester)

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Location	Specialty	Title of the teaching (hourly volume)	ECTS
ENSICAEN	Organic chemistry	Multi-step organic synthesis	2
Caen	Organic chemistry	Insecticides and drugs (10h CM) (T. Lequeux)	1
		Radical Chemistry (12h CM + 8h TD) (J.-L. Renaud)	2
		Heteroelement (16h CM/TD) (A.C. Gaumont)	2
		Retrosynthesis (22h CM + 13h TD) (T. Lequeux)	4
		Introduction to organometallic chemistry (12h CM + 13h TD) (J.-L. Renaud et J. Baudoux)	3
		Nucleoside, nucleotide and oligonucleotide chemistry (15h CM) (E. Pfund)	2
Rouen	Organic chemistry -URN	Organometallic chemistry (6h CM + 3h TD)	1
		Heterocycles and silicium (9h CM + 6h TD)	2
		Natural products: sugars and terpenes + amino acids and nucleosides (26h CM + 10h TD)	3
	Organic chemistry - Insa	heterocycles (6h CM + 3h TD) + Organometallic (9h CM + 3h TD)	2
		Heterochemistry and Asymmetric Synthesis (16,5 h CM + 4,5 TD)	2
		Advanced Organic Chemistry (10h CM + 4,5 h TD)	1
	Analysis	NMR (20h CM) /Mass spectrometry (20 h CM)	4
Caen	Polymers	Emulsion and formulation of soft matter (8h CM/4 h TD) (Luc Picton)	1
Rouen	Polymers	Formulation (8h CM + 4h TD) (Luc Picton)	1
	Polymers	Polymer processing / rheology at melt state (6h CM/ 3h TD) (Nadège Follain)	1
	Polymers	Diffusion in dense materials (7h CM/ 2h TD) (Stéphane Marais)	1
	Polymers	Spectral methods for polymers (4h CM/4h TD) (Laurent Lebrun)	1

	Polymers	Polysaccharides :structures and properties(8h)	1
	Polymers	Antibacterial properties (6h CM) (Pascal Thébault) + Biomaterial and biocompatibility (3h CM) (Anthony Duncan)	1
Le Havre	Aromas, perfumes and cosmetics	Basics of Formulation (3hCM/6hTD)	1
	Aromas, perfumes and cosmetics	Olfactive Sensory Analysis (6hCM/12hTD/12hTP)	3
	Aromas, perfumes and cosmetics	Tactile Sensory Analysis (6hCM/12hTD/12hTP)	3
	Aromas, perfumes and cosmetics	Analysis of Formulated Products ARPA (5h CM / 10hTD)	1
	Aromas, perfumes and cosmetics	Cosmetic Formulation and Specific Legislation (11hCM/13hTD)	2
	Aromas, perfumes and cosmetics	Aroma-Perfumes Formulation and specific Legislation (11hCM/13hTD)	2
	Aromas, perfumes and cosmetics	Analysis of Formulated Products COSMET (5h CM / 10hTD)	1
	Aromas, perfumes and cosmetics	Colloids - Texturing Agents ARPAC (10 h CM/14h TD)	2
	Aromas, perfumes and cosmetics	Raw Materials Aroma/Perfumes (8h CM/12h TD)	2
Rouen	Solid state chemistry / Materials	Theory of crystallization (nucleation/germination/growth) (16h)	1
	Solid state chemistry / Materials	Phase diagrams applied to crystallization (16h)	1
	Solid state chemistry / Materials	Characterization of the crystallized solid (16h)	1
	Solid state chemistry / Materials	crystallized solids (organic and inorganic compounds) (16h CM + 12h TD)	3
Caen	Medicinal chemistry	Introduction to drug Design (25h CM et 15 h TD)	4
Rouen, Caen ou Le Havre		Courses foreign teachers (20h CM/TD)	2

Scientific Teaching (2nd year of master, 1st semester)

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Teachings may also be chosen from the teaching list of the 1st year of master, 1st semester.

Location	Specialty	Title of the teaching (hourly volume)	ECTS
Caen	Organic chemistry	Industrial products (15h) (J. Rouden, O. Delacroix, T. Lequeux)	2
		Heterocycles (20h) (S. Gaillard et T. Lequeux)	2
		Organocatalysis and enzymatic catalysis (20h) (J.-L. Renaud et N. Bar)	2
		Catalysis (15h CM) (J.-L. Renaud)	2
		Heteroelements (20h) (S. Perrio, A.-C. Gaumont, T. Lequeux)	2
		Strategies in organic synthesis (20h) (J. Rouden)	2
		Selectivity control (20h) (A.C. Gaumont)	2
		Synthesis analysis (10h) (J.L. Renaud)	1
		Strategies in organic syntheses applied to conjugated polymers (10h CM) (C. Lemouchi)	1
		From radical chemistry to photoredox chemistry (15h) (J.-L. Renaud)	1
		Energy transition (15 h) (S. Gaillard)	2
Rouen	Organic chemistry	Heterocycles + Functionalizations (30h = 24h CM + 6h TD) (Christine Baudequin, Jean-Philippe Bouillon, Cédric Schneider, Tatiana Besset)	4
		Heterochemistry (14h CM + 6h TD) (Jean-Philippe Bouillon, Thomas Poisson)	2
		Stereoselectivity (8h CM + 2h TD) (Michael De Paolis)	1
		Retrosynthesis (16h CM + 6h TD) (Michael De Paolis et Xavier Franck) +	3
		Organometallics (10h CM + 2h TD) (Christophe Hoarau)	1
		Innovative and specific methods (9h CM) (Muriel Durandetti, Julien Legros, Thierry Besson, Cyrille Sabot)	1
		Therapeutic chemistry and drugs (14h CM + 6h TD) (Thierry Besson, Thomas Poisson)	2
		Bioconjugaison (10h CM) (Pierre-Yves Renard)	1
		Advanced glycochemistry (14h CM) (Thomas Lecourt)	2
Health Imaging (16h CM) (Pierre Bohn, Alexandre Haefelé)	2		
Rouen	Analytical chemistry	Structural determinations and analytical methods (30h dont 10h CM RMN, 10h CM SM et 10h CM chromatographie)	4
		Separation methods (10h CM + 6h TD) (Pascal Cardinaël)*	2
		Advanced NMR Analytical Chemistry (20h CM + 12h TD)*	3

		Advanced SM analytical chemistry (20h CM + 12h TD)*	3
Caen	Polymers	Biopolymers (15h)	1
Rouen	Glycobiology	Glycobiology and Plant Extracellular Matrix (30h)	3
Rouen	Polymers	Plasma (4h CM) (Kateryna Fatyeyeva) + Adhesion (10h CM) (Kateryna Fatyeyeva)	2
	Polymers	Adaptative polymers (5h CM) (Luc Picton) + Modification of polymers (6h CM) (Louise Hespel)	1
	Polymers	Solid state polymers (8h CM) (Nadège Follain)	1
	Polymers	Advanced thermal analysis of polymers (15h CM) (Allison Saiter et Eric Dargent)	2
	Polymers	Polymers and applications (11h CM) (Laurent Lebrun et Nadège Follain)	1
	Polymers	Biofilms (6h CM) (Pascal Thébault)	1
	Polymers	Light scattering (4h CM) (Luc Picton) + Mass spectroscopy of polymers (6h CM) (Julie Hardouin) + QCM-D (4h CM) (Guy Ladam)	2
	Polymers	Diffusion in polymers (7h CM) (Stéphane Marais)	1
Le Havre	Aromas, perfumes and cosmetics	Physico-chemical analyses of cosmetic formulated products (15hCM/17hTD) : Rheology/ Thermal and instrumental texture analysis/ Tensiometry	3
	Aromas, perfumes and cosmetics	Analysis of aromatised/perfumes formulated products (15hCM/17hTD) : Applied Chromatography	3
	Aromas, perfumes and cosmetics	Applied Tools - Packaging (4hCM/6hTD)	1
	Aromas, perfumes and cosmetics	Formulation of aromatised/perfumed products (12h CM/16 h TD)	2
	Aromas, perfumes and cosmetics	Cosmetic Formulation (12h CM/16hTD)	2
	Aromas, perfumes and cosmetics	Tactile Sensory Analysis (5h CM/5hTD)	1
	Aromas, perfumes and cosmetics	Olfactive sensory analysis (5h CM/5hTD/12hTP)	2
	Aromas, perfumes and cosmetics	Phytochemistry (4hCM/6hTD)	1
	Aromas, perfumes and cosmetics	Biogenese of natural products (4hCM/6hTD)	1
	Aromas, perfumes and cosmetics	Complex natural products (5hCM/7hTD)	1
Rouen	Solid state chemistry / Materials	Industrial crystallization (14h CM + 13h TD)	4
	Solid state chemistry / Materials	Nucleation/growth/defective crystals (19h CM + 11h TD)	4

	Solid state chemistry / Materials	Crystalline and molecular symmetry (9h CM + 6h TD)	2
	Solid state chemistry / Materials	Specific and molecular solids (16h CM + 16h TD)	4
	Solid state chemistry / Materials	Characterization of molecular crystals (10h CM + 10h TD)	3
Rouen, Caen ou Le Havre		Courses foreign teachers (20h CM/TD)	2