

Le Mans Université - Faculty of Science &
Technology

BACHELOR

Chemistry
(Physics-Chemistry major)



Faculté des Sciences
& Techniques

Le Mans Université



How does the Licence work?

The Bachelor's degree is open to students holding a Baccalaureate (scientific recommended), or, after examination by a validation committee, to holders of any other French or foreign diploma of equivalent (high school) or higher level. Registration details are available on the University website and from the Registrar's Office.

The Bachelor's degree is constituted by 6 semesters organized into teaching units (UE), also known as modules. Each UE comprises lectures, tutorials and practical work. Each semester is validated by the awarding of 30 ECTS credits (European Credit Transfer System), with a bachelor's degree being awarded on the basis of 180 credits. A semester is obtained by capitalizing or offsetting the UEs that make it up (average $\geq 10/20$). Passage to the following year is conditional on validation of the 2 semesters. In certain cases of non-validation of a semester (in L1 and L2), and on the advice of the jury, repeat students may be authorized to take certain UEs of the following year in advance.

Training objectives

The aim of the Bachelor's degree in Chemistry is to provide the theoretical and practical foundations needed for further study in a Master's degree in Chemistry (Bac+5 level), or even a Doctorate (Bac+8 level). For students who cannot or do not wish to go beyond the Licence, the courses on offer allow them to opt for a Licence Professionnelle (based on their applications) at the end of the second year.

At the end of L3, graduates have the following skills (among others):

- Identify and independently carry out the various stages of an experimental approach;
- Use the most common laboratory measuring devices and techniques;
- Master methodologies for the synthesis of innovative molecules and materials;
- Study the properties of materials and their shaping ;
- Mastering characterization techniques and tools, etc.



Training organization

Semester S1 is a common gateway to the Physics, Chemistry and Mathematics fields, providing the basic knowledge required by all scientists, whatever their future specialization. It enables students to confirm or reject their choice of major.

Common first year Physics-Chimistry

Semester 1			Semester 2		
Module title	hours	ECTS	Module title	hours	ECTS
Mathematical calculations	45	5	Mathematics for physics 1	30	3
Algorithms and programming 1	30	4	Algorithms and programming 2	30	3
Maths 1: function study, integration...	31	2	Chemical bonding and stacking	30	3
Maths 2: polynomials, differential equations.....	18	2	Chemical equilibria in solution	30	3
Chemistry 1: structure and properties of the atom	22	3	Organic chemistry 1	30	3
Chemistry 2: the chemical reaction	36	3	Thermodynamics 1	24	3
Physics 1: Optics 1	29	3	Mechanics 2	29	3
Physics 2: Mechanics 1	24	3	Electronics 1	21	3
Ecrire pour communiquer 1 (French)	15	1	Ecrire pour communiquer 2 (French)	15	2
English 1	20	2	English 2	20	2
Project	10	2	Personal Professional Project (PPP)	10	2

Second common year Physics-Chemistry

Semester 3			Semester 4		
Module title	hours	ECTS	Module title	hours	ECTS
Mathematics for Physics 2	28	3	Optics 2	26	2,5
Electronics 2	24	2,5	Thermodynamics 2	29	2,5
Electrostatics and magnetostatics	36	3	Thermochemistry and kinetics	28	3,5
Electromagnetism	36	3	Organic chemistry 3	27,5	3
Simulation in the physical sciences	28	3	Polymers and biopolymers	27,5	3
Solid state chemistry	29	3,5	Material characterization	28	3
Inorganic chemistry 1	35,5	3,5	1 EU at choice Wave physics/modern	25	3
Organic chemistry 2	35	4,5	at Mechanics 2	30	3
Opening teaching unit (UE)	20	2	choice Fluid mechanics	30	3
English 3	20	2	Digital tool certifications (PIX)	29	2
			Opening UE	20	2
			English 4	20	2

Third year

Semester 5			Semester 6		
Module title	hours	ECTS	Module title	hours	ECTS
Reaction kinetics and catalysis	24	2,5	In-depth organic chemistry	49	6
Solution chemistry	24	2,5	Descriptive chemistry - properties of elements	25	3
Coordination chemistry	24	3	Crystallochemistry of materials	25	3
Great mechanisms of orga. chemistry	49	6	Chemical thermodynamics	25	3
Analytical chemistry	48	6	Atomistics and molecular modeling	24	3
Spectroscopies	24	3	Polymers: from molecule to object	25	3
Industrial inorganic chemistry	18	3	2 EUs at choice Natural organic substances	24	3
Simulation in chemistry	10	1	at Design of experiments	25	3
English 5	15	2	Colloids and interfaces	23	3
Preparing for the internship search	15	2	English 6	15	2
			1 EU at choice Internship or tutored project	25	2
			at Knowledge of the professional environment	15	2