



Degree **Sciences, technologies, health**
Specialisation **Engineering Sciences**
Specialisation **Physics and applications course / Material Sciences**

Aims

The engineering sciences degree is a scientific course giving students solid bases in the fields of Physics, Chemistry and Engineering Sciences by introducing and developing concepts, together with the skills in mathematics and I.T. that are required for model design. It provides students with a practical course enabling them to master a whole series of measuring devices. Special course units provide an opening onto the world of work.

Access to the courses in the first year is via the general and multidisciplinary portal course Mathematics-Computer Sciences-Physics-Chemistry, which takes place over the first two terms of the Engineering Sciences degree. It is organised identically in the Sciences and Techniques Faculty (FST) and the Centre Universitaire Roannais (CUR).

Through a clearly interdisciplinary orientation, this gateway course aims to help students acquire and reinforce the fundamental scientific skills and knowledge needed to go on to a specialisation from the second year.

Admission

§ Baccalaureate, preferably scientific.

Skills

Physics and applications

- § Deploying and applying the principles of a scientific approach
- § Choosing and applying methodologies to describe physical phenomena
- § Providing models of physical phenomena and using different computer applications
- § Writing texts summarising scientific documents

Material Sciences

- § Carrying out work describing matter (choice and application of methodologies)
- § Defining and applying forms of experimentation
- § Interpreting experimental results, writing documents summarising them
- § Deploying and applying the principles of a scientific approach
- § Providing models of physical phenomena and using different computer applications

After the course

Continuing studies

- § Vocational degrees
- § Engineering schools
- § Master's degrees in the field of Sciences, Technologies, Health
- § MEEF primary education degree
- § MEEF secondary education degree
- § Physical and chemical sciences

Job openings

After a specialisation at master's degree or doctorate level, the course provides job openings in a range of sectors:

- § Industry and services: Engineering (R&D, production, quality control, etc.)
- § Research and Teaching: Research engineers (CNRS, University), lecturer-researchers, professors in physics/chemistry, school teachers

Contact

School

+33 (0) 4 77 48 51 02

Tuition fees

Fees 2017/2018

Main registration:	€184
Preventive medicine:	€5.10
Social security:	€217

Courses

term 1 - Maths, Engineering Sciences, Chemistry	Hours	ects
CU MATHEMATICS	60	6
CU I.T.	60	6
CU PHYSICS	60	6
CU CHEMISTRY	60	6
CU MATHEMATICAL TOOLS	30	3
CU METHODOLOGICAL AND SCIENTIFIC TOOLS		3
Expression and communication in languages	16	1
Textual tools	1	1
Digital tools and culture	14	1

term 3 - Engineering Sciences	Hours	ects
CU FUNDAMENTALS OF PHYSICS 1	81	8
CU MATHEMATICAL TOOLS 3	50	5
CU COMPUTER SCIENCES	50	5
CU GENERAL ENGLISH B2	18	2
CU PERSONAL CAREER PROJECT	20	2
CHOICE OF SUBJECTS - 1 CU FROM:		8
CU Chemistry III	8	8
CU Applied Physics I (St Etienne)	8	8
CU Industrial Engineering I (Roanne)	8	8

term 5 - Physics and applications course	Hours	ects
CU ENGLISH AND SCIENTIFIC COMMUNICATIONS	24	3
CU FUNDAMENTALS OF PHYSICS 3	70	7
CU OPTICAL PHYSICS	60	6
CU DIGITAL METHODS FOR ENGINEERS	60	6
CU ENGINEERING SCIENCES	60	6
CAREER PREPARATION 1 - 1 CU FROM:		2
CU Preparation for continuing studies or employment	20	2
CU Engineer Design Project	20	2
CU Introduction to primary-school teaching	20	2
CU ASTEP: Support in science and technology in primary school 1	25	2

term 5 - Material Sciences course	Hours	ects
CU ENGLISH AND SCIENTIFIC COMMUNICATIONS	24	3
CU FUNDAMENTALS OF PHYSICS 3	70	7
CU GENERAL CHEMISTRY 1	50	5
SET OF SUBJECTS - 1 SET FROM: Physical and chemical sciences set - 2 mandatory CUs:		13
CU Optical physics	60	6
Physical and chemical sciences I	70	7
Material Sciences set - 2 mandatory CUs:		
CU Engineering sciences	60	6
CU Chemistry and material sciences I	70	7
CAREER PREPARATION 1 - ONE CU FROM:		2
CU Preparation for continuing studies or employment	20	2
CU Engineer Design Project	20	2
CU Introduction to primary-school teaching	20	2
CU Introduction to secondary-school teaching	20	2
CU ASTEP: Support in science and technology in primary school 1	25	2

term 2 - Physics, Chemistry	Hours	ects
CU MATHEMATICAL TOOLS 2	50	5
CU I.T. TOOLS	52	5
CU PHYSICS 2	60	6
CU CHEMISTRY 2	60	6
CU PRACTICAL PHYSICS AND CHEMISTRY	60	6
UE GENERAL ENGLISH B2	18	2

term 4 - Engineering Sciences	Hours	ects
CU FUNDAMENTALS OF PHYSICS 2	102	10
CU MATHEMATICAL TOOLS 4	50	5
CU OPEN CREDITS	20	2
CU GENERAL ENGLISH B2	24	3
CHOICE OF SUBJECTS - 1 CU FROM:		10
CU Chemistry IV		10
CU Applied Physics II (St Etienne)		10
CU Industrial Engineering II (Roanne)		10

term 6 - Physics and applications course	Hours	ects
CU ENGLISH AND SCIENTIFIC COMMUNICATIONS	24	3
CU OPEN CREDITS	20	2
CU FUNDAMENTALS OF PHYSICS 4	110	11
CU FUNDAMENTALS OF MODERN PHYSICS	50	5
CU APPLICATION AND INSTRUMENTATION IN PHYSICS	60	6
CAREER PREPARATION 2 (SUPPORTED PRACTICE) - 1 CU FROM:		3
CU internship in a company or laboratory		3
CU Guided thematic project or research project	20	3
CU Internship in primary school	10	3
CU ASTEP: Support in science and technology in primary school 2		3

term 6 - Material Sciences course	Hours	ects
CU ENGLISH AND SCIENTIFIC COMMUNICATIONS	24	3
CU OPEN CREDITS	20	2
CU FUNDAMENTALS OF PHYSICS 4	110	11
CU GENERAL CHEMISTRY 2		
CHOICE OF SUBJECTS - 1 UE FROM:		6
CU Physical and chemical sciences II	60	6
CU Chemistry and material sciences II	60	6
CAREER PREPARATION 2 (SUPPORTED PRACTICE) - 1 CU FROM:		3
CU internship in a company or laboratory		3
CU Guided thematic project or research project	20	3
CU Internship in primary school	10	3
CU Internship in secondary school	10	3
CU ASTEP: Support in science and technology in primary school 2		3