

# ENGINEERING COURSES TAUGHT IN ENGLISH AT INSA LYON

**FOR EXCHANGE  
STUDENTS**



2025-2026

## INTRODUCTION

INSA Lyon offers a wide range of courses in Science & Technology, from undergraduate level up to PhD. High proficiency in Science and Technology combined with a humanistic lens and openness to the society are key values of the INSA education model. More than 1,000 students graduate every year from INSA Lyon, hired by companies worldwide.

The INSA curriculum is a 5-year program and leads to the « Diplôme d'ingénieur », equivalent to a Master of Science. It is divided into two tracks:

- Year 1 and 2: a common track for all engineering students to ensure strong fundamental knowledge
- Year 3, 4 and 5, organized in **9 Engineering Departments**.

Exchange students are welcome to all INSA Lyon Departments. A majority of courses have to be taken in one of the 9 Departments, then additional courses can be chosen in another. One semester cannot exceed 30 ECTS credits. On average 1 ECTS credit= 20 hours of lectures in-class and personal work.

**Exchange students can simulate their choice of courses prior to coming to INSA Lyon on : [exchange-student.insa-lyon.fr](http://exchange-student.insa-lyon.fr)**

Internship are following one academic semester. The internship is carried out under the supervision of a Department with international students keeping their exchange student status and visa. Each Department has its own organization and network among the numerous global companies and SMEs located in our region, ranking first for industry in France.

INSA Lyon is also **a research center** with more than 700 researchers working in 22 laboratories, combining education activities and close links with companies and public authorities. Research activities at INSA Lyon are linked to 5 main societal challenges:

- Digital Society and Information
- Energy for a Sustainable Development
- Environment: Natural, Industrial, and Urban Environments
- Global Health and Bioengineering
- Transport: Structures, Infrastructures, and Mobilities

[www.insa-lyon.fr/en/education](http://www.insa-lyon.fr/en/education)

[www.insa-lyon.fr/en/research](http://www.insa-lyon.fr/en/research)

### INSA Lyon in rankings

QS World University 2024:  
#392 over 1500 institutions (top 30%)

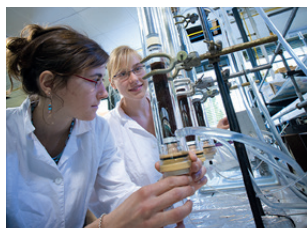
Times Higher Education (THE)  
Impact 2024:

Within the world's top 300 institutions committed to Sustainable Cities and Communities, Reduced Inequalities and Affordable and Clean Energy.

### French as a Foreign language

INSA Lyon has a Humanities Center. Among 10 languages, French as a Foreign language (FLE) is taught by a professional team. Summer schools and semester courses are available for international students and are strongly recommended even though they choose courses taught in English.

## BIOTECHNOLOGY AND BIOINFORMATICS



The Department of Biosciences trains multidisciplinary engineers, intended to be project managers, specialized in Healthcare, Agro-food and Environmental industries.

2 main training programmes are offered in the Department:

**Biochemistry and Biotechnologies** provides engineers with a solid scientific and technical background in Life Sciences and Healthcare; shapes them to work in Environmental, Pharmaceutical, Agro-Food and various other fields of chemistry; trains them for management positions, quality control and consulting in industries.

Bio-Informatics and Modeling, designed in collaboration with the University Claude Bernard Lyon 1, trains engineers to be interfaces between biologists, mathematicians and computer scientists; analyze and process biological data, extract relevant information and model biological systems in order to understand the processes of life.



### SEMESTER 1 (SEPTEMBER - JANUARY)

General Microbiology	2 ECTS
Population Genetics and Dynamics	3 ECTS
Biomathematics 1: Modelling Biological dynamics by ordinary differential equation	2.5 ECTS
Biomathematics 4: Differences Equations and Partial Differential Equations	4 ECTS
Object-oriented programming	3 ECTS
Computer 6: Artificial Intelligence	3 ECTS
Signal and image analysis	2 ECTS
Structural Virology and Antiviral strategies	2 ECTS
5BB Project	5 ECTS
Immunology	3 ECTS
Modeling of biological networks	2 ECTS



### SEMESTER 2 (FEBRUARY - JUNE)

Biomathematics 2: Linear Algebra	2 ECTS
Biomathematics 3: Advanced Ordinary Differential Equations	3 ECTS
Biomathematics 5: Stochastic Processes	2 ECTS
Computer 2: Local and remote Linux	2 ECTS
Computer 3: Algorithmics and programming	3 ECTS
Computer 4: Databases	2 ECTS

#### > Associated labs

**BF2I** – Functional Biology, Insects and Interaction  
<http://bf2i.insa-lyon.fr/en/>

**ICBMS** – Institute for Molecular and Supramolecular Chemistry and Biochemistry  
<http://www.icbms.fr/>

**MAP** – Microbiology, Adaptation and Pathogenesis Laboratory  
<http://map.univ-lyon1.fr/>

> Contact : [ri-bs@insa-lyon.fr](mailto:ri-bs@insa-lyon.fr)





## CIVIL ENGINEERING AND URBAN PLANNING



Vinci Construction : visite Musée de la Confluence 15 mai 2012

The Department of Civil Engineering and Urban Planning provides education in the scientific and technical fields of civil engineering and urban planning:

- Building Design, Construction and Management
- Infrastructure Design, Construction and Management
- Urban Development and Renovation.

Major scientific fields addressed: Geotechnics; Material and Structural Analysis; Heat and Mass Transfer; Indoor and Outdoor Acoustics and Lighting; Heating, Ventilation, and Air Conditioning (HVAC); Building Energy Management; Water Management and Hydraulics.

A particular attention is paid to cross-disciplinary fields of study: Engineering and Management Tools; Environmental Science; Humanities; Economics and Social Science.



COURSE	SEMESTER	NUMBER OF ECTS
Mathematics	S1	2
Urban drainage	S1 or S2	1,5
<b>CHOICE OF 4 MODULES OUT OF 5</b>		<b>S2</b>
Adapting cities for climate change	S2	5
Numerical modelling in geomechanics	S2	5
Energy management in Buildings	S2	5
Building design: multidisciplinary approach	S2	5
Integrated urban water management	S2	5



**SEMESTER 1 (SEPTEMBER - JANUARY), SEMESTER 2 (FEBRUARY - JUNE)**

### INDIVIDUAL PROJECT

**15 ECTS**

#### Bachelor degree level

The topic and program are defined with a mentor from the Department and are related to Civil Engineering.

### RESEARCH AND DEVELOPMENT PROJECT

**FULL TIME 26 ECTS / HALF TIME 13 ECTS**

#### Master degree level

The project aims at developing the following knowledges and abilities:

- Understand the nature of R&D activities and challenges for innovation;
- Acquire advanced knowledge in some fields of civil engineering and urban planning, and/or acquire knowledge in complementary fields;
- Discover the limits between well founded knowledge and incomplete/uncertain knowledge;
- Implement scientific principles and methods on a specific research project;
- Develop general abilities (project management, writing reports and scientific papers, oral communication, etc.)

The subject and program are defined with a mentor from the Department and are related to :

- Heat & Mass Transfers in Buildings
- Materials and Structures
- Soils, Geo-materials
- Urban Techniques & Society (a good level of French can be required - for this domain only)
- Urban Water Management

#### > Associated labs

**CETHIL** - Energy and Thermal Engineering  
cethil.insa-lyon.fr

**DEEP** - Waste Water Environment Pollutions  
deep.insa-lyon.fr

**EVS** - Environment City Society  
umr5600.cnrs.fr

**GEOMAS** - Geomechanics, Materials and Structures  
geomas.insa-lyon.fr

**LIRIS** - Computer Science Laboratory for Image Processing and Information Systems  
liris.cnrs.fr

**MATEIS** - Materials Science Laboratory  
mateis.insa-lyon.fr/en

**TRIANGLE** - Action, discourses, economic and political thought  
triangle.ens-lyon.fr

> Contact: [gcu-ri@insa-lyon.fr](mailto:gcu-ri@insa-lyon.fr)

# ELECTRICAL ENGINEERING



The Department of Electrical Engineering trains multidisciplinary engineers in the field of electrical systems. This training provides students with theoretical and practical knowledge in Electronics, Electrotechnical engineering, Automation, Industrial Informatics and Telecommunications (EEAIIIT). Activities related to EEAIIIT include: electronic systems for professional and public environments, integrated circuit design, energy production and management, control and supervision of production systems, information technology, telecommunications equipment, network operators...



## SEMESTER 1 (SEPTEMBER - JANUARY)

Transmission Lines	2 ECTS
Electronics and sensors - Part 1	4 ECTS
Electronics and sensors - Part 3 (VHDL)	4 ECTS



## SEMESTER 2 (FEBRUARY - JUNE)

Heat transfer	2 ECTS
Electronics and sensors - Part 2	4 ECTS



## SEMESTER 2

### TECHNICAL PROJECT

3 ECTS

The project is carried out by a group of students (2 or 3) and covers various aspects of Electrical Engineering. The aim is to design, carry out, test and validate a device or an electrical system defined by a customer. Through this project, students develop initiative and autonomy skills but also their ability to defend their choices and results.

> Contact : [ge-ri@insa-lyon.fr](mailto:ge-ri@insa-lyon.fr)

### > Associated labs

**AMPERE** - Electrical engineering, electromagnetism, automation, environmental microbiology and applications  
[ampere-lab.fr](http://ampere-lab.fr)

**CITI** - Center of Innovation in Telecommunications and Integration of Services  
[citi-lab.fr](http://citi-lab.fr)

**CREATIS** - Biomedical Imaging Research Lab  
[creatis.insa-lyon.fr](http://creatis.insa-lyon.fr)

**ICJ** - Institut Camille Jordan, Mathematical Sciences  
[math.univ-lyon1.fr](http://math.univ-lyon1.fr)

**INL** - Lyon Institute of Nanotechnology  
[inl.cnrs.fr](http://inl.cnrs.fr)

**LGEF** - Electrical Engineering and Ferroelectricity Lab  
[lgef.insa-lyon.fr](http://lgef.insa-lyon.fr)





## ENERGY AND ENVIRONMENTAL ENGINEERING



The Department of Energy and Environmental Engineering (GEn) of INSA Lyon offers training opportunities for future professionals, operating in the fields of energy and environmental sciences.

The multi-skill academic program enables our students to work in various sectors including energy production and supply, energy efficiency, HVAC and building energy performance, energy consulting, process engineering, waste management, etc.



### SEMESTER 1 (SEPTEMBER - JANUARY)

Challenges and opportunities in environmental management	4 ECTS
Energy transition and circular economy: waste & biomass resources	5 ECTS
Energy transition: from fossil fuel to renewable energy	8 ECTS
Wastewater treatment	5 ECTS
Energy optimisation	2 ECTS
Numerical methods	2 ECTS
Research and development project	25 or 30 ECTS



### SEMESTER 2 (FEBRUARY - JUNE)

Computational fluid dynamics software	2 ECTS
Chemical engineering simulation software	2 ECTS
Multiphysical modeling	2 ECTS
Research and development project	25 or 30 ECTS

> Contact: [gen-welcome@insa-lyon.fr](mailto:gen-welcome@insa-lyon.fr)

#### > Associated labs

**AMPERE** - Electrical engineering, electromagnetism, automation, environmental microbiology and applications  
[ampere-lab.fr](http://ampere-lab.fr)

**CETHIL** - Energy and Thermal Engineering  
[cethil.insa-lyon.fr](http://cethil.insa-lyon.fr)

**DEEP** - Waste Water Environment Pollutions  
[deep.insa-lyon.fr/en](http://deep.insa-lyon.fr/en)

# INDUSTRIAL ENGINEERING



Industrial engineering concerns production systems, supply and/or distribution of goods or services, their design, implementation, management and improvement with a systemic vision. Industrial engineers are multidisciplinary.

They are production managers, able to design, implement and manage complex industrial systems while considering all the technical, organizational, financial and human factors. They are involved in organising the company in accordance with the principles of sustainability. They apply their skills to improve performance, quality and safety.



## SEMESTER 1 (SEPTEMBER - JANUARY)

Probability, statistics, design of experiments	4 ECTS
Operational research and optimization	2 ECTS
Scheduling	2 ECTS
Quality	1 ECTS
Business Intelligence	2 ECTS
Industrial ecology and circular economy	2 ECTS
Introduction to scientific research	2 ECTS
Internal Supply chain and facility design	3 ECTS
Data science	3 ECTS
Research in Industrial Engineering	3 ECTS
Data-Driven decision making	2 ECTS
Introduction to data science	2 ECTS
Strategic Supply chain	3 ECTS



## SEMESTER 2 (FEBRUARY - JUNE)

Materials for engineers	2 ECTS
Lean	3 ECTS
Flow management	2 ECTS
Introduction to data science	1 ECTS
Internship	15 ECTS or 30 ECTS



## SEMESTER 1, SEMESTER 2

### RESEARCH PROJECT

### FULL TIME 30 ECTS / HALF TIME 15 ECTS

The reception and supervision of students takes place in a scientific laboratory. The student works on a well-defined scientific problem, following a project approach, which requires managing objectives, planning, monitoring and deliverables. The host laboratories are DISP and AMPERE. Available on application and selection, and depending on subject availability.

> Contact: [gi@insa-lyon.fr](mailto:gi@insa-lyon.fr)

#### > Associated labs

**AMPERE** - Electrical engineering, electromagnetism, automation, environmental microbiology and applications  
[ampere-lab.fr](http://ampere-lab.fr)

**DISP** - Decision and Information Systems for Production systems  
[disp-lab.fr](http://disp-lab.fr)

#### > Associated labs

**LAMCOS** - LaMCoS - Contacts and Structures Mechanics Laboratory  
[lamcos.insa-lyon.fr](http://lamcos.insa-lyon.fr)

**LIRIS** - Computer Science Laboratory for Image Processing and Information Systems  
[liris.cnrs.fr](http://liris.cnrs.fr)





## MECHANICAL ENGINEERING



The Department of Mechanical Engineering aims to train mechanical engineers in the fields of innovation, R&D and product design and manufacturing. They develop the capacity to carry out major projects, from an original idea to an end product.

Areas of activity : energy, transports, biomedical and health, sports and leisure, mechatronics and robotics, luxury industry, mechanical constructions and industrial machinery, eco-industry, buildings, plastics processing...



### SEMESTER 1 (SEPTEMBER - JANUARY)

3 GM	Lagrangian mechanics and dynamics of mechanical systems	5 ECTS
	Order of magnitude and physical sense	5 ECTS
	Design and analysis of mechanical systems	5 ECTS
	Ecological and Systemic Engineering	5 ECTS
	Mathematics	5 ECTS
	Data Processing	5 ECTS
	Scientific and technical projects	6 ECTS
4 GM	Rheology and polymer processing	5 ECTS
	Manufacturing processes and thermomechanical behaviour of metallic alloys	5 ECTS
	Finite element analysis of structures	5 ECTS
	Heat transfer	5 ECTS
	Machines and power transmissions	5 ECTS
	Mechanical design group project	8 ECTS
	Life cycle analysis	4 ECTS



### SEMESTER 2 (FEBRUARY - JUNE)

3 GM	Vibration mechanics	5 ECTS
	Control of Linear Systems	5 ECTS
	Mechanics of deformable solids	5 ECTS
	Fluid Mechanics	5 ECTS
	Numerical Methods	5 ECTS
	Instrumentation Engineering Projects	4 ECTS
	Mechanical design of machine elements	5 ECTS



### SEMESTER 1, SEMESTER 2

#### RESEARCH/ENGINEERING PROJECTS

**FULL TIME 30 ECTS / HALF TIME 16 ECTS**

The exchange students will work closely with a faculty member on a project which is related to industrial or academic research activities, in one of the associated labs to the Department listed below.

> **Contact : gm-direction@insa-lyon.fr**

#### > Associated labs

**AMPERE** - Electrical engineering, electromagnetism, automation, environmental microbiology and applications  
ampere-lab.fr

**CETHIL** - Energy and Thermal Engineering  
cethil.insa-lyon.fr

**CREATIS** - Research Centre for Image Acquisition and Processing for Health  
creatis.insa-lyon.fr

**DISP** - Decision and Information Systems for Production systems  
disp-lab.fr

**IMP** - Polymer Materials Engineering  
imp.cnrs.fr

**LAMCOS** - Contacts and Structures Mechanics Laboratory  
lamcos.insa-lyon.fr

**LMFA** - Fluid Mechanics and Acoustics Laboratory  
lmfa.ec-lyon.fr

**LVA** - Vibrations and Acoustics Laboratory  
lva.insa-lyon.fr

**MATEIS** - Materials Science Laboratory  
mateis.insa-lyon.fr/en

# COMPUTER SCIENCE



The Department of Computer Science (IF) offers a general and wide-ranging training recognized among the best in the field in France. All the IT areas are covered (industry, management and science) with emphasis on engineering activities, modelling and integration of complex systems.

According to INSA Lyon model core values, students also acquire the foundations of complementary disciplines like teamwork, project management, customer relation and proficiency in foreign languages.

Each promotion is sponsored by a large company. IT graduates work in many sectors such as consulting and software firms, software publishing, large companies in the tertiary sector, computer hardware, etc. They generally occupy positions as research engineers, project managers, experts, consultants, architects or entrepreneurs.



## SEMESTER 1 (SEPTEMBER - JANUARY)

PERIOD A	
Foundation of data engineering	6 ECTS
Machine learning and data analytics	6 ECTS
Text Mining	6 ECTS
Parallel and GPU computing	6 ECTS
PERIOD B	
Blockchain and decentralized application development	6 ECTS
Cloud computing for distributed big data	6 ECTS
Cybersecurity	6 ECTS
Privacy and ethics	6 ECTS
Data Mining	2 ECTS
PROJECT-BASED MODULES	
Scientific and Technical Synthesis (PSAT)	7 ECTS

Note: The courses in each period run in parallel, therefore you may select only one course in period A and one course in period B. / PSAT is a research-oriented project-based module. Most of the time is dedicated to a project, though there are few taught courses on Information search that are proposed in French.



## SEMESTER 2 (FEBRUARY - JUNE)

Data management for the web	2 ECTS
Security and networks	2 ECTS
Software engineering and UML	3 ECTS
Machine Learning	2 ECTS
PROJECT-BASED MODULES	
AGIR Project on high impact subjects (Tech for Good).	2 ECTS
SMART Technical project. Focus on societal impacts.	4 ECTS

Note: Both projects are held in groups of students on the topics of your choice that should be validated by the teaching team.



## SEMESTER 1 & 2

Research project	4 ECTS
Research project	6 ECTS
Research project	10 ECTS

> Contact : [if.direction@insa-lyon.fr](mailto:if.direction@insa-lyon.fr)

### > Associated labs

**CITI** - Center of Innovation in Telecommunications and Integration of Services  
Citi-lab.fr

**LIRIS** - Computer Science Laboratory for Image Processing and Information Systems  
[liris.cnrs.fr](http://liris.cnrs.fr)

**DISP** - Decision and Information Systems for Production systems  
[disp-lab.fr](http://disp-lab.fr)  
[liris.cnrs.fr](http://liris.cnrs.fr)

ECTS = European Credits Transfer System



## INFORMATION SCIENCES AND TECHNOLOGY



The Information Science and Technology program is designed for bachelor students and provides them the fundamentals of information technology. Courses are a mix of classes, laboratory works, and projects. Students will develop knowledge and technical skills in programming, databases, operating systems, computer networks, and wireless telecommunications.

A full IST semester program is composed of 6 scientific courses (to be chosen out of 12) associated to a research project, conducted in one of the 3 research laboratories and which develops high level research in the fields covered by the IST semester. Note that, the French language course (2 hours per week) is given all throughout the semester in parallel to these courses and projects.

**SEMESTER 1 (SEPTEMBER - DECEMBER)****TELECOMMUNICATIONS**

Signal and Image Processing Part 1 - Signal Processing	3 ECTS
Signal and Image Processing Part 2 - Image processing	3 ECTS
Transmission lines and RF systems	3 ECTS
Wireless Communication Basics	3 ECTS

**IT**

Java Programming: Object oriented programming	3 ECTS
Distributed System and Middleware Design	3 ECTS
Assembly Programming	3 ECTS
Operating Systems	3 ECTS
Data bases and data mining Part 1 - Data Bases	3 ECTS
Data bases and data mining Part 2 - Data Mining	3 ECTS

**NETWORKS AND SERVICES**

Computer Networks Part 1: LAN & IP Networks	3 ECTS
Computer Networks Part 2: Advanced Notions	3 ECTS

**RESEARCH PROJECT****10 ECTS**

The students will choose a subject and work within a research team. They will have to build up a bibliographic study in order to develop their own contributions which will be presented in a final report and during an oral presentation. This research project can finish at the end of January.

**SEMESTER 2 (FEBRUARY - JUNE)****RESEARCH PROJECT****30 ECTS**

The students can lead a research project during a whole semester and thus have enough time to deepen a project and develop a complex and elaborated contribution. A publication and/or a bachelor thesis can be validated at the end of this period.

Subjects cover a wide range of IT fields

Examples of defended thesis:

- Initiation to Arduino
- Simulation of dense Wifi networks
- Implementation of data transmission simulator in the FM radio band.

> **Contact :** [ist@listes.insa-lyon.fr](mailto:ist@listes.insa-lyon.fr) - [www.insa-lyon.fr/en/ist](http://www.insa-lyon.fr/en/ist)

**> Associated labs**

**CITI** - Center of Innovation in Telecommunications and Integration of Services  
[citi-lab.fr](http://citi-lab.fr)

**CREATIS** - Research Centre for Image Acquisition and Processing for Health  
[creatis.insa-lyon.fr](http://creatis.insa-lyon.fr)

**LIRIS** - Computer Science Laboratory for Image Processing and Information Systems  
[liris.cnrs.fr](http://liris.cnrs.fr)

# MATERIALS



The Department of Materials Science and Engineering (SGM) trains general engineers whose competencies range from the conception to the manufacturing of built-up products in advanced technology industries.

Those industries concern the fields of advanced materials (semiconductors, metals and alloys, polymers, composites, ceramics) and micro and nano-technologies components.

Materials engineers take part in research and development, design, production, quality in different fields such as the industry of electronic components, petrochemistry, iron and steel industry, automotive, aeronautics, construction, energy, packaging, biomedical, cosmetics etc.



## SEMESTER 1 (SEPTEMBER - JANUARY)

### LECTURES

Microscopic solid state physics - MT-3-S1-EC-PHYMIC	6 ECTS
Electronic circuits / system / signals - MT-3-S1-EC-ELESSY	4 ECTS
Microstructures, diffusion and equilibrium diagrams - LT-3-S1-EC-MICRODD	4 ECTS
Mechanical behaviour of materials - MT-4-S1-EC-COMPMM	6 ECTS
Materials for energy - MT-5-S1-EC-MATERNER	4 ECTS

### LECTURES FOR MASTER STUDENTS

Emerging technologies in advanced CMOS nanoelectronics - MT-5-S1-EC-EMERTEC	2 ECTS
Numerical Methods of the Mechanics of Architectural Materials - MT-5-S1-EC-MATARCHI	2 ECTS
Materials for photonics - MT-5-S1-EC-MATPHOT	2 ECTS

### LAB WORKS

Materials - Measurements - Electronics - MT-3-S1-EC-TPMES	3 ECTS
Chemical-physics and mechanics of materials - MT-4-S1-EC-TPPCMM	4 ECTS
Semiconductor materials and devices - MT-4-S1-EC-MADISC	4 ECTS

### PROJECTS

Characterization of semiconductor materials and electronic devices - MT-5-S1-EC-PRO-SCM1	2,5 ECTS
Fabrication and simulation of electronic devices - MT-5-S1-EC-PRO-SCM2	2,5 ECTS
Processing and characterization of polymer materials and composites - MT-5-S1-EC-PRO-PPF	2,5 ECTS
Physics and mechanics of inorganic materials - MT-5-S1-EC-PRO-MSD	2,5 ECTS

<b>HALF-TIME RESEARCH PROJECT - MT-5-S1-EC-PFE</b>	<b>15 ECTS</b>
--	----------------



## SEMESTER 2 (FEBRUARY - JUNE)

### LECTURES

Microstructural characterization techniques of introduction to plasticity - MT-3-S2-EC-CARPLAS	4 ECTS
Mechanics : introduction to elasticity - MT-3-S1-EC-MECA	6 ECTS
Finite elements - MT-4-S2-EC-ELEFIN	4 ECTS
Semi-conductor materials - MT-3-S2-EC-MATSC	3 ECTS

### LAB WORKS

Sensors and semiconductors - MT-3-S2-EC-TPCAP	2 ECTS
Caracterisation of semi-conductor components - MT-4-S2-EC-TPCCSC	1 ECTS
Preparation and characterization of Macromolecular materials MT-4-S2-EC-TPELACARM	3 ECTS
Cristallography - engineering materials - MT-3-S2-EC-TPCRIST	2 ECTS

### PROJECTS

Collective project on materials - Management support project teams -MT-4-S2-EC-PCOMAT	3 ECTS
---	--------

**FULL TIME RESEARCH PROJECT.** The research internship take place in a laboratory associated with the Materials Science and Engineering. The student will be mentored by an experienced teacher. Topics are mostly suggested by a company. **30 ECTS**

> Contact: [mt-echanges@insa-lyon.fr](mailto:mt-echanges@insa-lyon.fr)

### > Associated labs

**IMP** - Polymer Materials Engineering  
imp-umr5223.fr

### > Associated labs

**INL** - Lyon Institute of Nanotechnology  
inl.cnrs.fr

**MATEIS** - Materials Science Laboratory  
mateis.insa-lyon.fr



## TELECOMMUNICATIONS



Telecommunications are at the heart of contemporary human activity. The Telecommunications department (TC) covers all the telecoms professions, from signal processing, to connected objects, the development of Web applications, and the setting up of digital networks. Our future engineers contribute to the development of the internet of tomorrow with societal issues related to security, respect for privacy and respect of the environment. The courses listed below are taught at a Master degree level and they aim the acquisition of advanced skills, taught as part of 32-hour options covering various themes such as robotics, quantum computing or 5G.



### SEMESTER 1 (SEPTEMBER - JANUARY)

Content Delivery Network	2 ECTS
Satellites and Localisation	2 ECTS
Satellites and Localisation Project	2 ECTS
Quantum Communications	2 ECTS
Quantum Communications Project	2 ECTS
AI and Computer Vision	2 ECTS
AI and Computer Vision Project	2 ECTS
Security and Privacy	2 ECTS
AI for Robotics	2 ECTS
Multi-Robot Systems	2 ECTS
Robotics Project	2 ECTS

### LEAN START-UP INNOVATION PROJECT (PILS)

12 ECTS

Master degree level

The objective of the PILS project is to allow the students of the Telecommunications department to set up, execute and present an innovative project carried out during the whole first semester of their 5th year. The team is a group of 5-7 students that follows LeanStartup methodology. (Some project meetings may be in French).



### SEMESTER 2 (FEBRUARY - JUNE)

#### RESEARCH PROJECT

30 ECTS

Master degree level

The students will work closely with a faculty member on a project related to the research activities in one of the associated labs listed below. The student works on a well-defined scientific problem by building a bibliographic study and developing his contribution. A publication and/or a master thesis can be validated at the end of this period.

Examples of defended thesis :

- Measurement and modelling of energy consumption in cellular networks
- Machine learning solutions for pollution monitoring
- Simulation and analysis of direct-to-satellite Internet of Things

> Contact : [tc.ri@insa-lyon.fr](mailto:tc.ri@insa-lyon.fr)

#### > Associated labs

**CITI** - Center of Innovation  
in Telecommunications and Integration of Services  
[citi-lab.fr](http://citi-lab.fr)

**CREATIS** - Research Centre for Image  
Acquisition and Processing for Health  
[creatis.insa-lyon.fr](http://creatis.insa-lyon.fr)

**LIRIS** - Computer Science Laboratory for Image  
Processing and Information Systems  
[liris.cnrs.fr](http://liris.cnrs.fr)

## INSA SHORT PROGRAMS

<https://www.insa-lyon.fr/en/short-programs>

INSA Lyon offers international students the possibility of a short stay on its vibrant campus, located in Lyon which has won several titles as the best city in France in 2022. Through the programs students gain experience in innovative scientific fields, develop social science skills and learn French. Immersed in a multicultural environment, participants agree that INSA Lyon short programs are a stepping stone for further studies and a boost for their career.



### SMART LYON - MARCH

2 weeks | 1 US / 2 ECTS credits

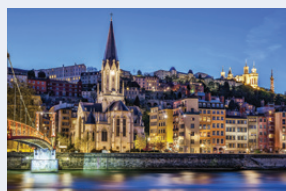
#### • COURSES (30 CONTACT HOURS)

1. Smart Cities
2. French as a foreign language



#### • ACTIVITIES

Cultural visits in Lyon and surroundings, social activities organised by students associations.



> For further information: [www.insa-lyon.fr/en/smart-lyon](http://www.insa-lyon.fr/en/smart-lyon)

## INSA SHORT PROGRAMS



### INNOV@INSA - MAY-JUNE

**4 weeks | 6 US / 12 ECTS credits**

#### • COURSES (90 CONTACT HOURS)

Prerequisites: algorithmics and any programming language.

1. Connected devices and Smart devices
2. Management and Innovation in Europe
3. French language, cross-cultural communication, industry and society

Note: Students have to choose between track 1 or 2. Track 3 is mandatory.



#### • ACTIVITIES

Cultural visits in Lyon and surroundings, social activities organised by students associations.



## INSA SHORT PROGRAMS



### HUMAN\*INSA - JUNE-JULY

3 weeks | 3 to 4 US / 6 to 8 ECTS credits

#### • COURSES (65 CONTACT HOURS)

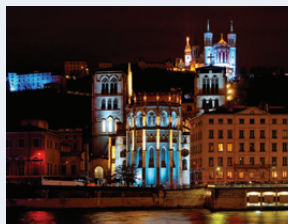
1. Humanitarian Engineering\*

*\*This track includes preparatory online (live) sessions in May/June.*

2. Artificial Intelligence

3. French Language and Cross-Cultural Communication

Note : Students have to choose between track 1 or 2. Track 3 is mandatory



#### • ACTIVITIES

Cultural visits in Lyon and surroundings, social activities organised by student associations.

> For further information : <https://www.insa-lyon.fr/en/human-insa>

**INSA LYON EUROPEAN  
AND INTERNATIONAL RELATIONS  
OFFICE**

34 avenue des Arts  
69621 Villeurbanne CEDEX - France

Tél : + 33 (0)4 72 43 83 91

Email : [dri@insa-lyon.fr](mailto:dri@insa-lyon.fr)

**[www.insa-lyon.fr/en/](http://www.insa-lyon.fr/en/)**



**INSA** | INSTITUT NATIONAL  
DES SCIENCES  
APPLIQUÉES  
LYON

