



International Master's program **Telecommunications and Networks**

- CNAM Presentation
- National Pedagogical Teams 3 and 5
- Electronics and Automatics activities
- International Master's : Telecommunications and Networks
- Logistic aspects
- Discussion





“Education for everyone everywhere”

A unique higher education institution dedicated to lifelong learning in France



Founded in 1794 by Abbott Henri Grégoire in order to “improve the national industry”, CNAM continues the legacy of the Enlightenment. It has welcomed many famous thinkers since it first opened its doors, including the academic Le Roy, the mathematician Charles Dupin, the economist Jean-Baptiste Say, and Sadi Carnot, the founder of thermodynamics.

Grégoire



Under the Ministry for Higher Education, CNAM fulfils three main missions

Lifelong learning

- 557 full and contract professors; 1 964 professional instructors; 1 100 administrative staff
- 52 000 students (46 000 in continuing education and 6 000 in initial education), 18 000 students in Paris, 27 000 students in regional centers and around 7 000 students overseas
- 682 **curricula** from baccalaureate to bac+8 level in 40 disciplines, for 450 professions divided to 67 subgroups
- Diplomas and certifications up to PhD-level

Research

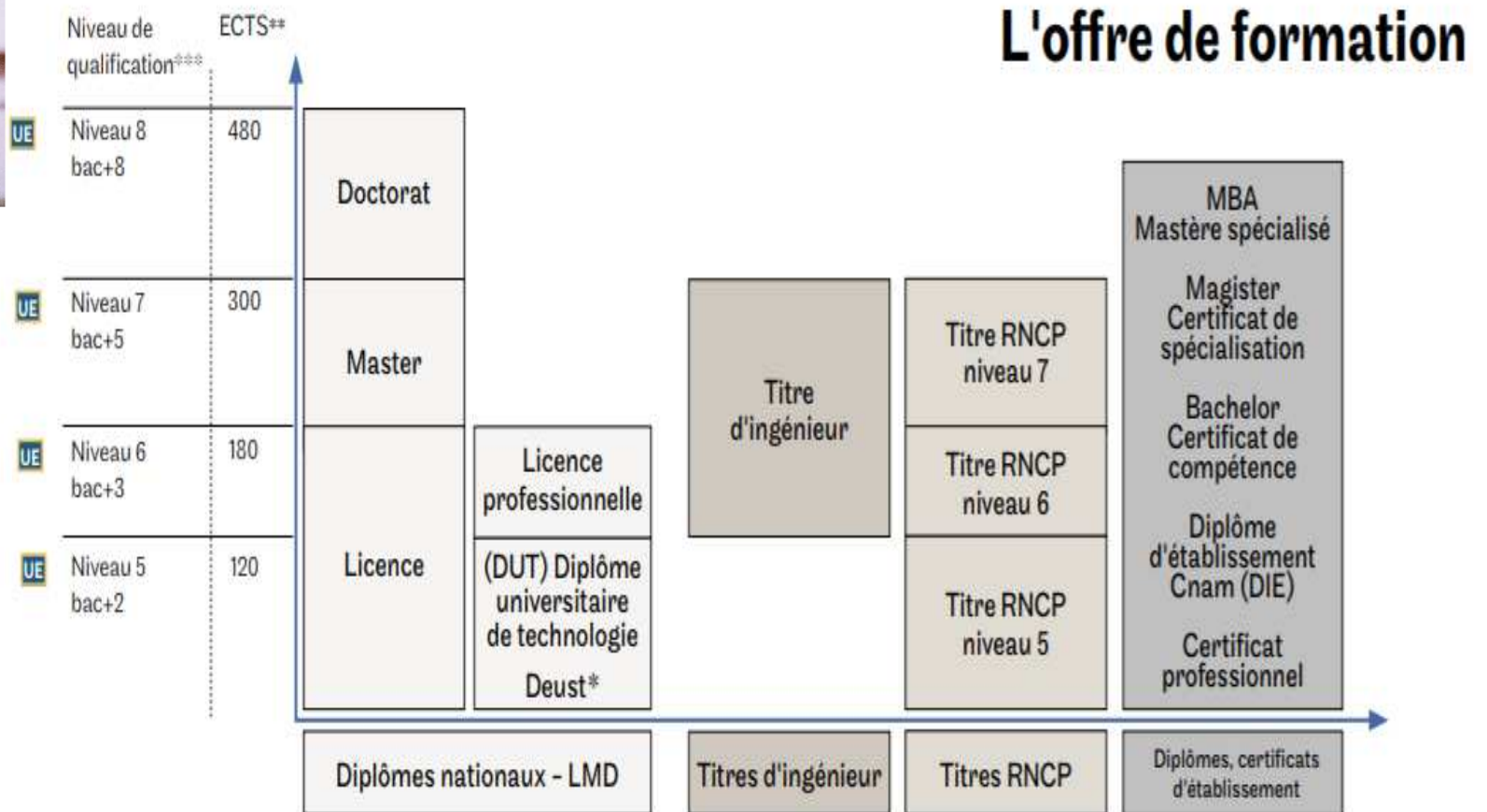
- 21 research laboratories
- 340 PhD students, 50 graduate annually

Dissemination of technical and scientific culture

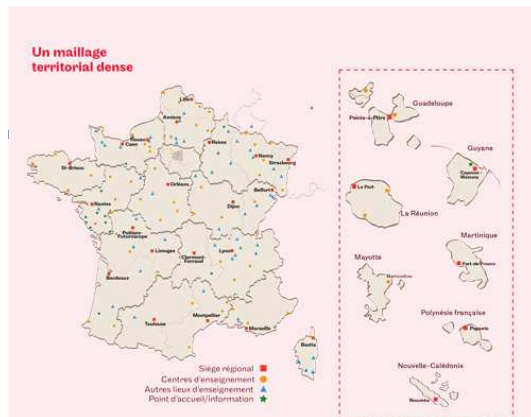
- The Museum “Musée des Arts & Métiers”
- Central library, digital library, and events program
- Public services: Expertise and accompaniment activities
- Corporate services: “Cnam for enterprises”, Cnam Incubator



Diagram of the Cnam certification offer



* Diplôme d'études universitaires scientifiques et techniques ** Crédits européens du schéma LMD *** CEC: Cadre Européen des Certifications pour l'éducation et la formation tout au long de la vie, élaboré par la Commission européenne en lien avec le processus de Bologne. Le CEC est un système commun de référence qui permet aux pays européens d'établir un lien entre leurs systèmes de certifications.



The power of a network **le cnam**

In France

- More than **200** training sites including **20** regional centers
- **18 000** students in Paris
- **43 000 students** in France mainland
- **2 000 students** in France overseas

Worldwide

- **5** overseas centres (Lebanon, Morocco, Madagascar, Côte d'Ivoire, China) and soon 2 more (Tunisia and Senegal)
- **40** partner countries (including China, Brazil, Lebanon, Morocco, Côte d'Ivoire...)
- More than **100** active cooperation agreements
- **6 800** students abroad





Multidisciplinary fields - 1

Economics, Commerce, Law, Management

- Territory Development
- Bank - Insurance - Actuarial
- Commerce - Marketing
- Accounting - Corporate Finance
- Business and activity creation
- Law
- Economy
- Continuing and professional training
- Real estate
- Innovation - Research and Development
- Management and strategy
- Mathematics and statistics
- Fashion
- Human Resources and Organization
- Health: Management
- Tourism
- Transport - Logistics

Human & Social Sciences, Communication

- Information and orientation
- Communication - Documentation
- Criminology
- Scientific and technical culture
- Social economy
- Environment and risk prevention
- Languages
- Psychology of work - Psychoanalysis
- Health: Practices
- Safety - Working conditions - Ergonomics
- Sociology of work - Social intervention
- Scientific and technical culture



Multidisciplinary fields - 2



Industrial Science & Technology

- Acoustic
- Agribusiness – Biology
- Construction - Geology – Geomatics
- Chemistry
- Electronics – Electrical Engineering
- Energies – Physics
- Environment and risk prevention
- Process Engineering
- Instrumentation – Metrology
- Materials
- Mechanical, automatic and production
- Safety - Working conditions - Ergonomics

Mathematics, Informatics & Networks

- Computer Science – Computer Networks
- Mathematics and statistics
- Networks and telecommunications

- From the 1st of September 2016
- 16 National Pedagogic Teams (NPT)
- NPT 3 : Electronics, Electrotechnics, Automatics, Measures (EEAM)
 - Electronics systems
 - **Telecommunications and Networks**
 - Mechatronics
 - Electrical systems
 - Automatics and Robotics
 - Measure
- NPT 5 : Computer Science (CS)
 - Engineering and information systems
 - Architecture and integration of software systems
 - **Networks, Systems and Multimedias**
 - Modelization and optimization
 - Computer science security



Electronics and Automatics Activities

-

Ex – EASY Department

*Oriented toward trade areas associated to **electronics, automatics/robotics and telecommunications systems and networks.***

*Expertise areas of EASY departement find applications in trades related to **Information and Communication Technology, car industry, aeronautics and defence, medicine and in all areas of measure instrumentation and environmental systems of energy management.***

*Formations with diploma through courses in the evening, apprenticed with companies, continuous formation from **Bac to Bac+6.***

34 permanent members

BAC to BAC + 2

Professional certificate of electronics technician

Professional certificate of industrial systems automatic

Establishment Diploma (BAC + 2) of upper technician in electronics, electrotechnics and automatic

DUT (GEII) in electrical and industrial computer engineering (HTT ou FIP)

BAC 2 to BAC + 4

General Licence in electronics

General Licence in automatic

COSYPE Professional Licence (Designer in embedded programmable digital systems)

RNCP title, Level II, operational responsible in automatism

RNCP title, Level II, operational responsible in electronics

ENGINEER DIPLOMAS

HTT

Electronics systems (Electronics, Digital Architectures, Telecommunications)

Automated systems (Systems Control, Robotics)

Telecommunications and Networks

*Mechatronics (Mechanics, Automatics, Electronics, Computer science)
partnership with l'ITII of Poitou Charentes (Poitiers)*

TRAINING (BAC + 3 to BAC + 5)

Electronics systems, Telecommunications, Computer Sciences

Electronics systems, Rail Signalling

Mechatronics

BAC + 4 to BAC + 6

Master1/Master2 in High Rate Telecommunications

Master1/Master2 in RF Communications Systems

International Master Sciences and Technology (Telecommunications and networks)

Specialised Mastere en Radiocommunications

Specialised Mastere in Mechatronics systems and Robotics

MOOC

Introduction to Signal Processing

RESEARCH

3 Teams

LAETITIA (in CEDRIC Laboratory): Digital Electronics, Signal Processing for Radiocommunications, Systems Control, Functioning safety. 11 permanent members. Between 5 and 10 PHDs students.

ESYCOM : Antennas, Circuits, micro waves and Optoelectronics

SATIE : Automatic and Systems

**International Master
Telecommunications and Networks**

- Entitled by French Government
- Public
 - Chinese Universities and other universities (CNAM partnership)
 - Autonomous candidates (Campus France)
- Structure
 - Master 1 at CNAM
 - 1 year of courses + Practical Works + Projects
 - Master 2 at CNAM with 5 to 6 months of professional work experience
 - 1 semester of courses
 - 5 to 6 months of professional work experience in a compagny
- Obtention of a double diploma
- Objectives
 - Potential insertion in french companies set up in China or foreign countries
 - Potentiel function : Bi-cultural project responsible
 - Potential PHD



- Aim at obtaining skills in 3 transversal functions
 - Equipment development to build networks or to access to networks
 - Management of Telecoms/Networks projects
 - Networks Exploitation
- Organisation
 - Master 1 : 600 h
 - 400 h of technical courses
 - 120 h of foreign languages
 - 40 h of engineer trade
 - 40 h of management and corporate organization
 - Master 2 : 600 h
 - 390 h of courses/project
 - 10 h of scientific communication
 - 200 h of professional work in a compagny

- Master 1
 - 8 technical courses
 - 20 h of magistral courses / Practical or directed works
 - 2 courses of foreign languages
 - 60 h of French language
 - 60 h of English language
 - 1 course about the engineer job or trade
 - 40 h
 - 1 course about management and corporate organization
 - 40 h

- Master 1 : Technical Courses
 - MAA 104 : Random Signals (D. Ghorbanzadeh)
 - ELE 102 : Digital Signal Processing (H. Shaiek, M. Terre)
 - ELE 103 : Basis of Signal Processing (D. Roviras)
 - ELE 112 : Basis of digital transmissions (1) (D. Le_Ruyet)
 - ELE 113 : Basis of digital transmissions (2) (R. Zayani, R. Zakaria)
 - RSX 101 : Telecommunications and Networks (S. Secci)
 - RSX 103 : Networks – Complements and Applications (S. Secci)
 - RSX 116 : Mobile Wireless Networks (S. Bouzefrane)
- Master 1 : Language Courses
 - FLE 100 : French language (E. Chachkine)
 - ANG 200 or 300 : English language (C. Fairet)
- Master 1 : Engineer job courses
 - ENG 210 : The Engineer Job (M. Himbert)
- Master 1 : Management and Corporate organization courses
 - USAL1E : Management and Corporate Organizatiuon (P. De Rozario)

- Master 2 (Nominal = Telecommunications and Networks)
 - 2 technical courses of 20 h and 30 h
 - magistral courses
 - practical or directed works
 - 3 technical courses of 60 h
 - 30 h of magistral courses
 - 30 h of practical or directed works
 - 2 courses of foreign languages
 - 60 h of french language
 - 60 h of english language
 - 1 course of scientific communications
 - 10 h
 - 1 project of 40 h
 - Professional work in a compagny
 - 200 h

- Master 2 : (Nominal = Telecommunications and Networks) Technical Courses
 - ELA 130 : Antennas and Diversity (P. Chevalier, D. Le_Ruyet)
 - ELE 208 : Radiocommunications (M. Terre)
 - ELE 209 : Technologies of Transmitters/Receivers (Project – P. Chevalier))
 - RSX 2017 : Business Networks Engineering (S. Secci)
 - RSX 112 : Network Security (N. Pioch)
 - IOT : Internet of things (I. Ahriz)
 - SC : Scientific Communicationns (S. Secci)
- Master 2 : Language Courses
 - FLE 100 : French language (E. Chachkine)
 - ANG 200 or 300 : English language (C. Fairet)
- Master 2 : Internship in a company

Logistics

- Sites for courses
 - Paris and St-Denis
- Transports
 - Metro & RER B
- Rooms
 - Affordable rooms available in Paris with Crous
- Head of the program:
 - Pascal CHEVALIER
- Administrative manager:
 - Kim Anh NGUYEN

Conservatoire National des Arts et Métiers
International Master in Computer Science

International Master « Computer Networks and IoT Systems »

Coordinator: Stefano Secci

stefano.secci@lecnam.net

Computer Science Department (NPT 5)

Master website: <https://master.roc.cnam.fr>

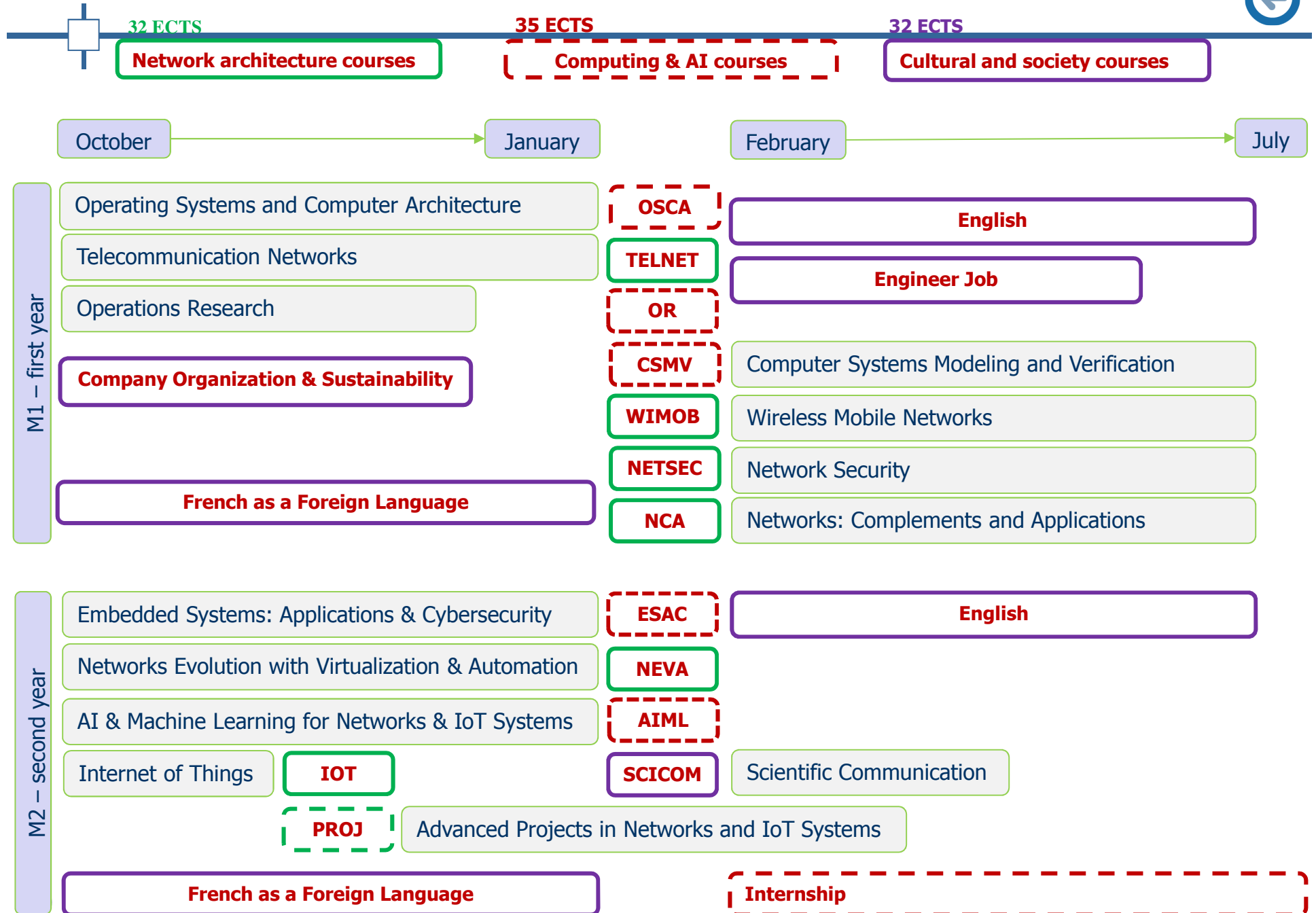


The master is at [Conservatoire national des arts et métiers \(Cnam\)](#), Paris downtown, France, in the heart of the Ville Lumière, [Marais district](#), in a vibrant multi-cultural international and stimulating environment.

The master training program covers:

- basics about **network architectures and operating systems**;
- advanced technologies related to the design **IoT computing systems, protocols and applications**;
- novel network architectures emerging with network virtualization (NFV), edge computing (MEC) and softwarization (SDN, SD-x).
- **modeling and performance evaluation** of networks and computing systems, including 5G and beyond 5G systems.
- integration of **artificial intelligence** and novel decision-making frameworks for the operations and **automation of communication networks and IoT Systems**.

The master teachers include world-class academics and industry experts active in the master technical areas on international, European and national collaborative and industrial research projects (H2020, ANR), standardization and open-source bodies (ONF, IETF, ETSI).



32 ECTS

Network architecture courses

35 ECTS

Computing & AI courses

32 ECTS

Cultural and society courses



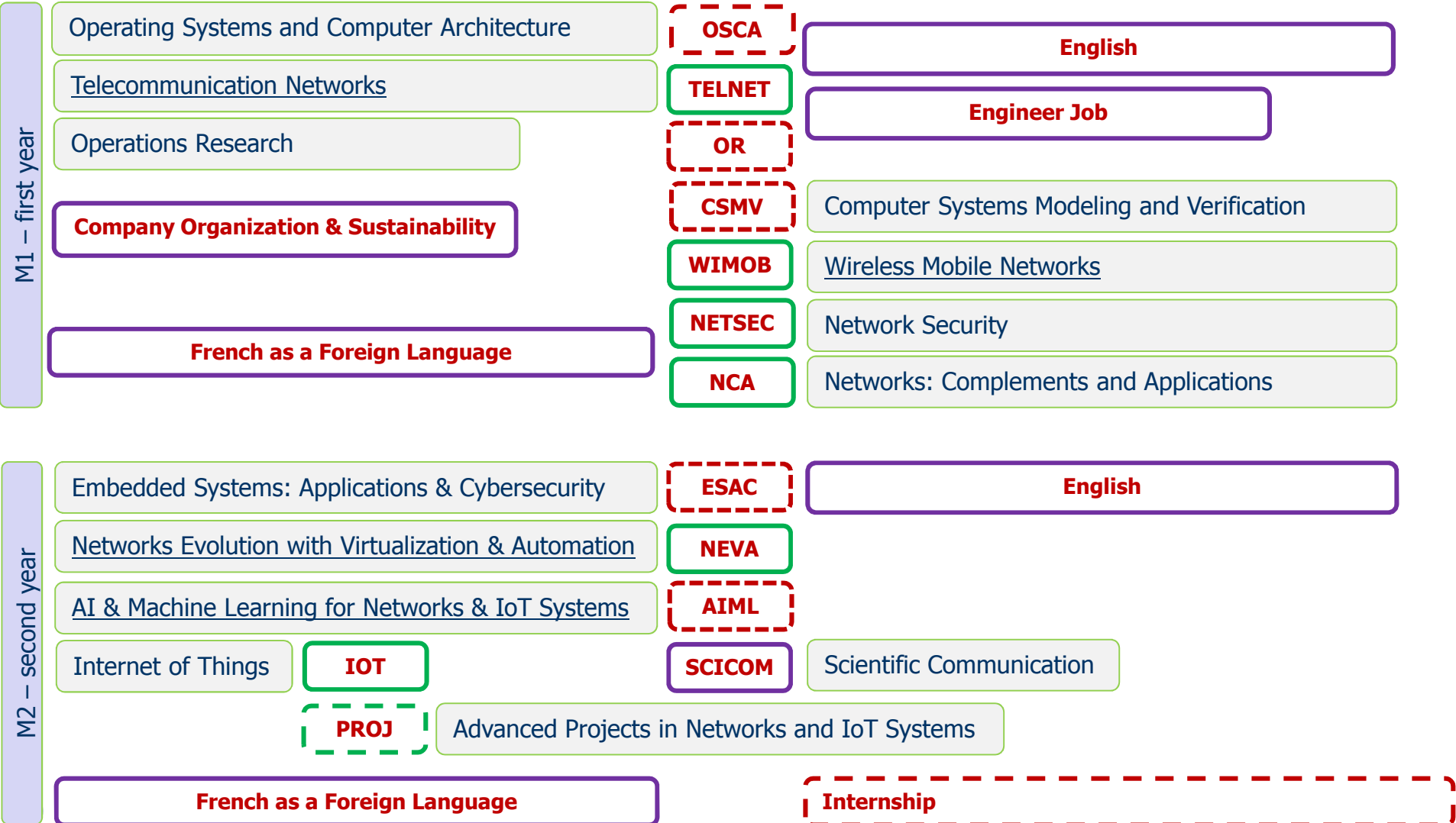
Underlined courses : done (all/part) at Sorbonne University, Jussieu Campus (5th arrondissement)

October

January

February

July



Iness Ahriz, Didier Le Ruyet

M2. Internet of Things – 2 ECTS

Nicolas Pioch

M1.S2. Network Security (NETSEC) – 6 ECTS

Sami Taktak, Samia Bouzefrane & industrial teachers (from SMILE, Airbus, Safran, Orange)

M1.S1. Operating Systems and Computer Architecture (OSCA) – 6 ECTS

M2. Embedded Systems: Applications and Cybersecurity (ESAC) – 6 ECTS

Selma Boumerdassi, Françoise Sailhan

M1.S2. Wireless Mobile Networks (WIMOB) – 6 ECTS

M2. Scientific Communications (SCICOM) – 1 ECTS

Stefano Secci & Sorbonne University teachers & industrial teachers (from Orange, Thales, Huawei, Nokia)

M1.S1. Telecommunication Networks (TELNET) – 6 ECTS

M1.S2. Networks: Complements and Applications (NCA) – 6 ECTS

M2. Artificial Intelligence & Machine Learning for Networks and IoT (AIML) – 6 ECTS

M2. Network Evolutions with Virtualization and Automation (NEVA) – 6 ECTS

Tristan Crolard & Pierre Courtieu, Matthias Puech

M1.S1. Computer Systems Modeling and Verification (CSMV) – 6 ECTS

Safia Kedad-Sidhoum & Eric Soutil & Daniel Porumbel

M1.S2. Operations Research (OR) – 4 ECTS

All (+Jean-Axel Ullern)

M2. Advanced Projects in Networks and IoT (PROJ) – 6 ECTS

M2. Internship – 21 ECTS

Teachers – extra-curricular Courses



Caroline Fairet

M1. English – 6 ECTS

M2. English – 6 ECTS

Elsa Chachkine

M1. French – 6 ECTS

M2. French – 6 ECTS

Marc Himbert

M1. Engineer Job – 4 ECTS

Pascale De Rozario

M1. Company Organization and Sustainability (COS) – 4 ECTS

Venues

- 4 days per week at Cnam, Paris – 292 rue Saint Martin, 75003
- 1 day per week at Sorbonne University – 4 place Jussieu, 75005

Welcome week

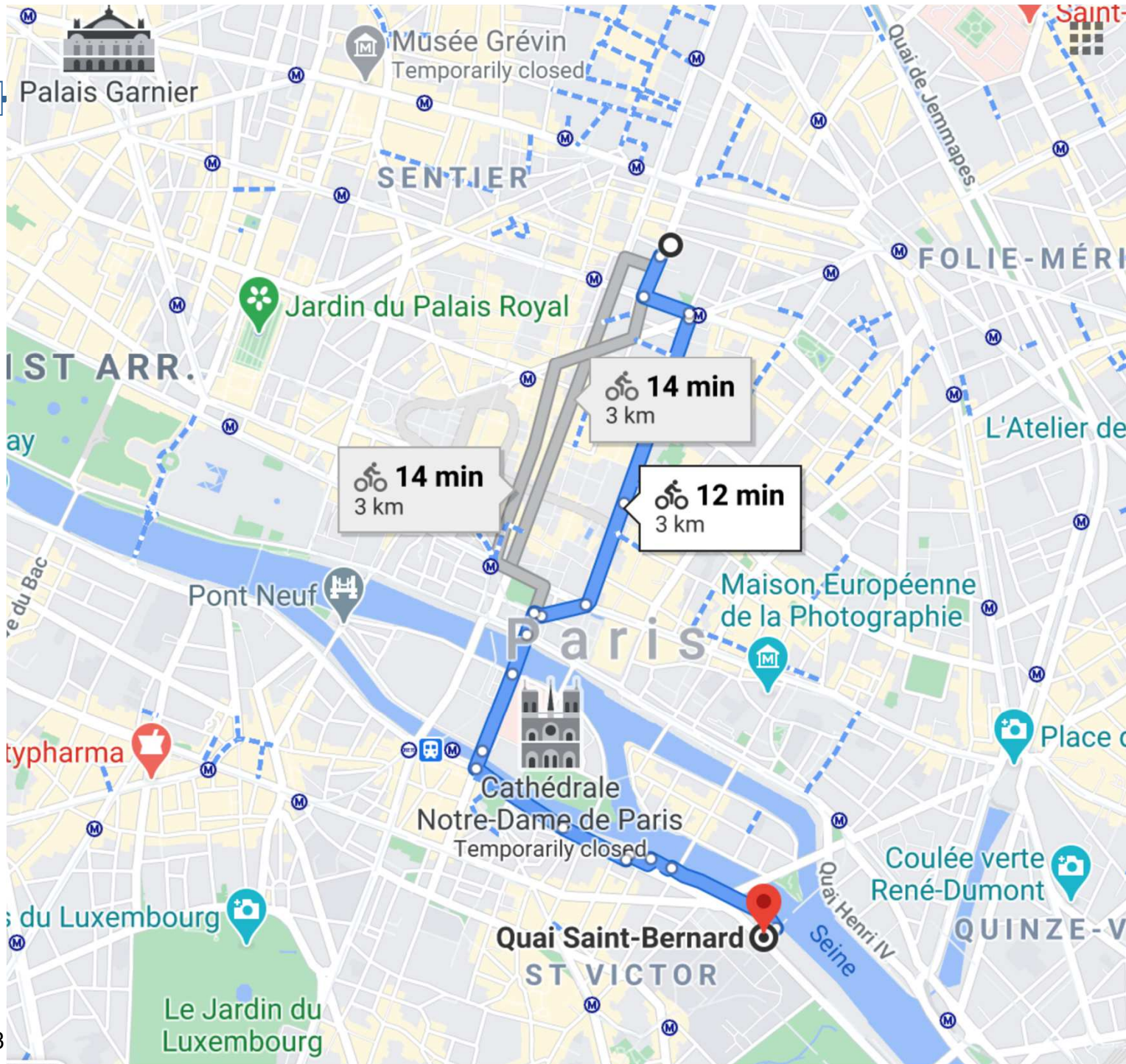
- Organized in the second half of september
- Visit of Paris downtown most important scientific gathering centers

Scientific week

- Organised at the beginning of the second semester
- Participation to international workshops and an international conference
- ICIN (Innovations in Cloud, Internet and Networks) conference, taking commonly place at Orange Labs

Helpdesk

- Two half-days per week of on-site coaching for every-day logistical and practical issues
- One half-day at Cnam and one half-day at Sorbonne University



Write us at master-roc@cnam.fr

More details at <https://master.roc.cnam.fr>