



# Information Systems Networked Computer Systems

at Télécom Paris

## KEYWORDS

High Speed Networks / Mobile Networks / Network Architecture / Distributed Systems / Real-time Systems / Services / Security

## OBJECTIVES

This program is designed for graduate students seeking employment in the fields of networks, distributed systems and services architectures with emphasis on cross-qualification in these subjects. It provides advanced theoretical and practical experience in these fields, complemented with management courses related to IT and programs in modern languages. At least 30% of the technical courses are done in English; the remainder in French. A Master's thesis is required for graduation (the thesis work may be done in collaboration with an industrial partner).

## ENVIRONMENT

Pervasive computing systems, distributed processes, 24 hours a day access, seamless communications while moving, security challenges, time to market these are the keywords

in the environment of information technology today.

Networks and computer science are, more than ever, intimately linked disciplines: applications and services are often distributed, involving audio, video and data communication; users have become mobile and require seamless service operation. They expect to access the services from a variety of access networks (e.g. bluetooth, 802.11, gsm, gprs), using a variety of terminal devices ranging from full power workstations to mobile phones with very constrained resources. The information technology field therefore requires engineers with expertise in a variety of domains including mobile networks, high speed networks, distributed systems, real time and embedded systems, service architecture and design, network and distributed systems architecture and security. Engineers therefore more than ever need cross-qualification in distributed systems and networks to follow developments in the rapidly changing field of IT technologies.

## BACKGROUND

General background in mathematics and computing is needed.

## PROGRAM

The program includes courses over 3 quarters and a one semester internship with industry or in a research laboratory. Core courses are taught in English in the fall quarter and subsequent courses related to the chosen area of concentration are conducted in French. Core courses include "Computer Science Introductory Course" and "Foundation of Communication Networks".

The proposed area of concentration are the following:

### Network architectures

- New Infrastructures and Services
- Mobile Radio Networks
- High Speed Networks and New IP Technologies
- One course to be chosen among:
  - Broad Band Local Loops
  - Telecommunication Network Management
- Project

### Networks and security

- Security : Concepts and Methods
- Computer and Network Security
- Mobile Radio Networks
- High Speed Networks and New IP Technologies

## Real-time, multimedia and embedded systems

- Middleware, Distributed Systems and Algorithms
- Systems, Interfaces and Programming
- One course to be chosen among:
  - High Speed Networks and New IP Technologies
  - Security: Concepts and Methods
  - Object-oriented Software Engineering
- One course to be chosen among:
  - Real-time and multimedia systems
  - Web Sites Architecture
- Multimedia: Interactivity, Composition and Synchronisation

## Networks and services

- Engineering of Protocols and Services
- Network Architectures and Applications
- Systems, Interfaces and Programming
- High Speed Networks and New IP Technologies
- Middleware, Distributed Systems and Algorithms

## TELECOM PARIS

Télécom Paris was founded more than a hundred years ago and is classed among the Grandes Écoles d'Ingénieurs. Because of its high scientific standard and the extremely competitive admission procedures, Télécom Paris can be compared to the highest level engineering schools and universities that one would find abroad.

Télécom Paris today has a faculty of about 150 full-time staff (full professors, associate and assistant professors), over 200 part-time lecturers and a student body of about 1000 students (including 750 in the three-year diploma program, and more than 200 PhD students. Télécom Paris's four departments carry out research and teaching activities in the school's central areas of expertise:

- Department of Communications and Electronics (Comelec).
- Department of Computer Science and Networks (Infres).
- Department of Signal and Image Processing (TSI).
- Department of Economics and Social Sciences (EGSH).

## LOCATION

Télécom Paris is located in the southern part of Paris, home to headquarters of major companies and near a very picturesque area called the "Butte aux Cailles".

## ENTRY REQUIREMENTS

Entry requirements include a four-year degree in the engineering fields covered by the Master program of Télécom Paris.

## LANGUAGE PROFICIENCY

English: when applying, students must provide evidence of proficiency in the English language. This could include:

- having English as your mother tongue;
- studies in an English-speaking country;
- acquisition of an English Language qualification (TOEFL: 550 / IELTS: 5.5 / TOEIC: 750 / Cambridge CAE).

French: when applying, applicants for the Master Networked Computer Systems are required to have the TEF II level or equivalent (pre-intermediate) as a minimum.

*Nota: The program includes French courses for pre-intermediate and advanced level students throughout the whole program.*

## WEBSITE

[http://www.enst.fr/en/post\\_graduate/msci/ncs.php](http://www.enst.fr/en/post_graduate/msci/ncs.php)