

## ParisTech Master of Science

# Networked Computer Systems (Master of Science)

Ecoles de ParisTech partenaires et responsables dans ces écoles:

- **Télécom ParisTech**, Isabelle Demeure

Keywords: Networks (Internet, high-speed, wireless, radio) - Distributed systems - ICT - Service - Systems architecture -Modelling - Performance.

**Program Language:** French

## Context:

The disciplines of networks and computer science are more than ever extremely closely linked: the applications and services offered to users often bring into play the communication of data, audio and video over a network. The field of the Information and Communication Technologies (ICT) therefore requires engineers with expertise in various fields including mobile networks, high speed networks and distributed systems and services.

## Objectives:

This Master's degree is intended for those people wishing to specialise in the design, development, evaluation and more generally acquire expertise in networked computer systems. It provides theoretical and practical experience in the fields of networks and distributed systems and also training in the field of management of information technologies. The programme is for students of any nationality and aims to give them intercultural awareness and a good knowledge of French culture.

## Content:

The programme is composed of two semesters of classes and a one semester internship. The introductory classes are taught in English during the first semester.

The other classes are taught in French and organised in two specialised subject areas of 360 hours.

•«Networks» specialisation: competition and communications, new IP technologies and Internet in the future, routing and optical access for innovative operator services, fundamentals of security, access to the medium: control and scheduling, traffic flows, queues and networks, switched and signalling networks, mobile radio networks, project.

Examples: provisioning of optical networks; Study of interdomain traffic on the Internet.

•«Distributed systems and networks» specialisation: competition and communications, new IP technologies and Internet in the future, routing and optical access for innovative operator services, switched and signalling networks, distributed systems, traffic flows, queues and networks, modelling and design of distributed software and services, project.

Examples: Inter-layer routing adapted to detecting intrusion based on a network of sensors; Middleware for ad-hoc mobile networks.

The programme also includes classes in economics, international management and French as a foreign language.

The third semester is reserved for an internship in a company or a research laboratory.

Examples: Network architectures for the security of large critical infrastructures; How to offer better support and better products in «triple play» implementations; Mobile voice over IP; Multiple criteria research on structured peer-to-peer networks; Upgrades and maintenance of an operator's billing system; Study and development of a cellular/WLAN handover system.

## Skills acquired:

- Understanding of the concepts, the architectural elements, the algorithms and the protocols used in networks and distributed systems.
- Modelling the protocols, the algorithms and the architectural elements of networks and distributed systems.
- Analysing the performance of protocols, the algorithms and the architectural elements of networks and distributed systems.
- Developing the software elements for networks and distributed systems.
- Designing new network and distributed systems architectures.
- Leading the development and extension of distributed systems and network architectures.

## Professional openings:

The master's degree opens up prospects in a number of companies such as:

- Telecommunication operators
- IT consultancies
- Computer and telecommunication equipment manufacturers
- Information system and telecommunication system integrators
- Banks and insurance companies

The master's degree also opens up possibilities for a career in the research field; in particular, at the end of the master's degree, theses are offered by ParisTech, the Institut Telecom, INRIA, CNRS and French universities.

## Professions:

The master's degree is a preparation for professions such as:

- Computer systems architect, network architect
- Computer systems, networks software engineer
- Computer systems, networks administrator
- Computer systems, networks consultant

With a natural progression towards positions such as:

- Computer systems, networks project leader
- Scientific director, technical director
- Systems and network expert

## Assets:

- Teaching backed by research laboratories spear-heading innovation.
- Leading industrial partners involved in the training programme.
- An international programme open to cultural interaction.

## Admission:

Deadline for the applications: beginning of June.

Selection by application submission (studies, work experience, personal commitment, etc.)

## Calendar:

15 months :

2 semesters of classes (September to June).

1 semester of internship (July to December).

## Validation:

90 ECTS credits for the validation of personal work, project reports and oral exams.

**ECTS Credits:** 90

## Student Life:

Telecom ParisTech has accommodation reserved for the school's students. Reasonable rents are charged and students may qualify for a housing benefit. Social, cultural and sports events are organised by the student association of Telecom ParisTech.

## Contacts:

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