

Computer Networking & Distributed Applications (without project)

Subject area: Computer Science/ICT

University: L'X
Level: BA all years, MA1, MA2
Teaching mode: completely online, not time-specific
Instructor(s): Thomas Heide Clausen

Short description

This course will introduce students to the architectures, theory, and practice required for implementing communicating, Internet-connected, systems — as well as provide students with the necessary understanding of “how the Internet Works”. The course will be available asynchronously, fully on-line, or on-side, through learning flows with short videos, quizzes, homework, lab exercises.

Full description

During this course, your teaching staff will be accompanying you in discovering how to conceive, and construct, “networked systems”.

That implies, of course, discovering how the net works (pun intended), what a protocol is, what a system is, and what the different acronyms that you might encounter really means: TCP/IP, SMTP, NAT, NAPT, etc. It also implies writing programs which communicate over the Internet — who knows, maybe you will be getting the impulse to starting the next Google or FaceBook during this course?

This course will consist of 2 parallel activities, through which your teaching staff (which you can see to the right) will accompany you:

- Basic video modules, which introduce key technological concepts for conceiving network systems
- Lab Exercises, which will take you "from neophyte" to a competent networker, and which will teach you how to write communicating programs, and have them talk to each other across the Internet.

The key activities of the course will be as follows:

- Video modules and accompanying quizzes, which serve to provide an abstract "programmers overview of computer network principles and architectures", and will cover topics such as:

- How does the Net Work?
- Network Programming
- Network Configuration
- Components of a Computer Network
- The Domain Name System
- NAT, NAPT, ...

...

-Lab Exercises, which serve to give you practical experiences in computer networking - in particular, but not exclusively, in how to write programs that communicate over the network. They will be of one of two distinct forms:

Tutorials serve to help you acquire a certain set of skills, in a very guided step-by-step fashion. This may be, for example, how to write a program that communicates over the network, or how to set up a small computer network.

Assignments are (graded) more independent and less guided activities, where you will be told what the end-result of your work should be, but not be given a step-by-step tutorial to follow. While you will be working independently, of course your teachers will be present to help you in your design, and implementation, of a communicating system. Assignments will be graded.

-The Final Exam is, in part, a way to evaluate what you have retained from the course, and to give you a final grade. However more significantly, it is also there to aid your revising of the course material, and thus to reinforce your learning process. The final exam will be a multiple-choice questionnaire, and will - in a nutshell - be a longer version of the quizzes that you have seen during the lab exercise sessions. Thus, if you've prepared continuously for the weekly quizzes, if you've done well in those, and you review the course material diligently, then you should be well prepared also for the final exam.

Learning outcomes

The course will provide students with an abstract "programmers overview of computer network principles and architectures", and will cover topics such as:

How does the Net Work?

Network Programming

Network Configuration

Components of a Computer Network The Domain Name System

The lab exercises will, additionally, give students practical experiences in computer networking - in particular, but not exclusively, in how to write programs that communicate over the network.

General information

Contact hours per week: 2 hours

Total workload: 20 hours + personal work (in student hours for the whole course)

ECTS credits: 3

Language: English

Course start date: 03 January 2023

Course end date: 03 June 2023

Add. info about start date: Individualised, can be any date, between Jan 3 and April 1, 2023. Please note that the intended start-date must be communicated to Ecole Polytechnique at the time of registration. The course end date should be exactly 10 weeks after the start-date.

Weekly teaching day/time: Available fully asynchronous

Time zone: CET (Denmark, Germany, France, Netherlands, Switzerland, Czech Republic)

Further information: Interested EuroTeQ students are welcome to, at any time, to come discuss their course choices in chat, or in visio, with the instructors from Ecole Polytechnique who will be teaching the classes. To this end, a dedicated WebEx space is permanently available here: <https://eurl.io/#fCk0f6iWF>.

Prerequisites: Any “introduction to computer programming” course.
Please note that the courses on Computer Networking & Distributed Applications with and without project are not compatible. EuroTeQ student can not be enrolled in both courses.

Activities and methods: The course will be available asynchronously, fully on-line, or on-side, through learning flows with short videos, quizzes, homework, lab exercises / tutorials — as well as office-hours via Webex with professors and instructors. While being asynchronous, each student is expected to check in with an instructor over Webex, weekly, following the chosen start-date.

Presence on campus: no

Final examination

Form: Final exam, weekly quizzes, graded assignments

Date:

Location/format: online

Re-sit possibility: no

Transcript available: end of the semester and generally 8 weeks after the exam.

Add. info/requirements:

Registration

To register for this course, follow the registration requirements of your **home university** as specified here: www.euroteq.eu/courses-registration.

Administration

Number of places: 24-30

Minimum participants:

Internal course code:

Contact: euroteq-mobility@polytechnique.fr

This course is part of the EuroTeQ Engineering University joint course catalogue 2023. This is a collaborative activity of the partner universities DTU, L'X, TU/e, TalTech, CTU, TUM as well as Technion. Students from these universities can participate in the offered courses. It is the responsibility of the student to check if you fulfil the requirements to participate in a specific course. Students are also advised to check with their home institution how to get recognition of the ECTS credits gained in courses of the EuroTeQ course catalogue. For further information about EuroTeQ Engineering University, visit www.euroteq.eu or get in touch with the above-mentioned point of contact.