

# From Fundamentals to Reality: How The Internet Really Works — And How To Make It Better

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**Subject area:** Computer Science/ICT

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

## Short description

Armed with the fundamentals and theory behind modern networking technology, this course plunges into the reality of how the Internet really works, and how it came to be the resilient, yet in many ways quite fragile, world-wide system it is today. The course will be available asynchronously, fully on-line, or on-site, through learning flows with short videos, quizzes, homework, lab exercises.

## Full description

<https://synapses.polytechnique.fr/catalogue/2021-2022/ue/450/INF566-from-fundamentals-to-reality-how-the-internet-really-works-and-how-to-make-it-better?from=P1272>

## Learning outcomes

This course will provide students, who have a basic understanding of computer networking, with in-depth knowledge about computer networking protocols and architectures as used on the Internet. This includes aspects such as OSPF, BGP, The Internet Peering Ecosystem, “modern” transport protocols, such as MP-TCP and QUIC — as well as a thorough understanding of how Internet standards are developed and maintained.

## General information

**Contact hours per week:** 2 hours  
**Total workload:** 40 hours + personal work (in student hours for the whole course)  
**ECTS credits:** 5  
**Language:** English

<b>Course start date:</b>	01 September 2022
<b>Course end date:</b>	03 June 2023
<b>Add. info about start date:</b>	Individualised, can be any date, between Sept. 1, 2022 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.
<b>Weekly teaching day/time:</b>	Available fully asynchronous
<b>Time zone:</b>	CET (Denmark, Germany, France, Netherlands, Switzerland, Czech Republic)
<b>Further information:</b>	
<b>Prerequisites:</b>	Any “introduction to networking” course
<b>Activities and methods:</b>	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.
<b>Presence on campus:</b>	no

## Final examination

<b>Form:</b>	Final exam, weekly quizzes, graded assignments
<b>Date:</b>	
<b>Location/format:</b>	online
<b>Re-sit possibility:</b>	yes
<b>Transcript available:</b>	end of the semester and generally 8 weeks after the exam.
<b>Add. info/requirements:</b>	

## Registration

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

## Administration

<b>Number of places:</b>	24 - 30
<b>Minimum participants:</b>	

**Internal course code:** INF566

**Contact:** 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>.

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*This course is part of the EuroTeQ Engineering University joint course catalogue 2022/2023. 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](http://www.euroteq.eu) or get in touch with the above-mentioned point of contact.*