



5G AND BEYOND MASSIVE OPEN ONLINE COURSE TO THE WORLD

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6G

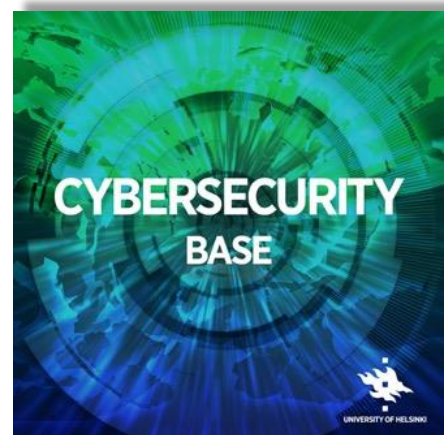
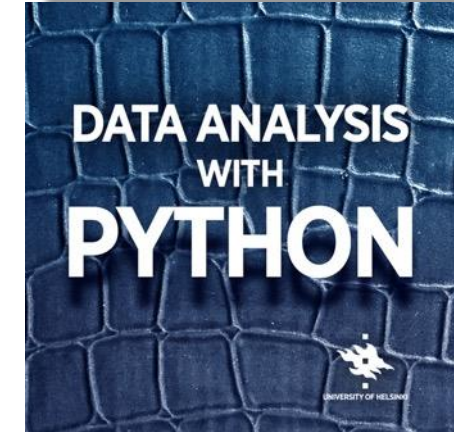
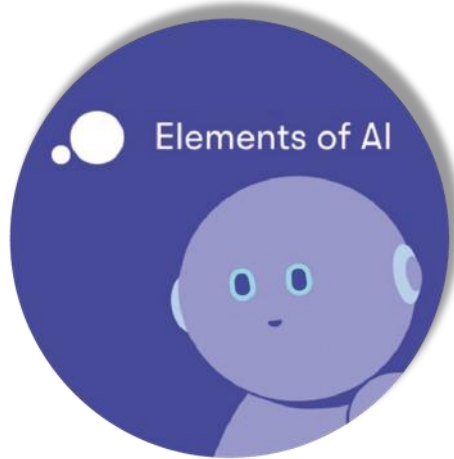
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Explaining 5G and beyond.
Raising interest in technology.
For creating a safer, more
sustainable and connected
planet.**



Core 5G and Beyond

In this University of Helsinki open online course, you learn the fundamental concepts behind mobile networks, focusing in particular on 5G and the envisioned future 6G networks.

START COURSE



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FREE MOOC COURSE, OPEN TO ALL

Introduction to 5G and beyond including new applications

It is useful for anyone interested in understanding how mobile networks work, and how mobile technologies are expected to change our lives.

COURSE OVERVIEW

MOOC course, open to all

Aims introduce 5G and 6G including new applications

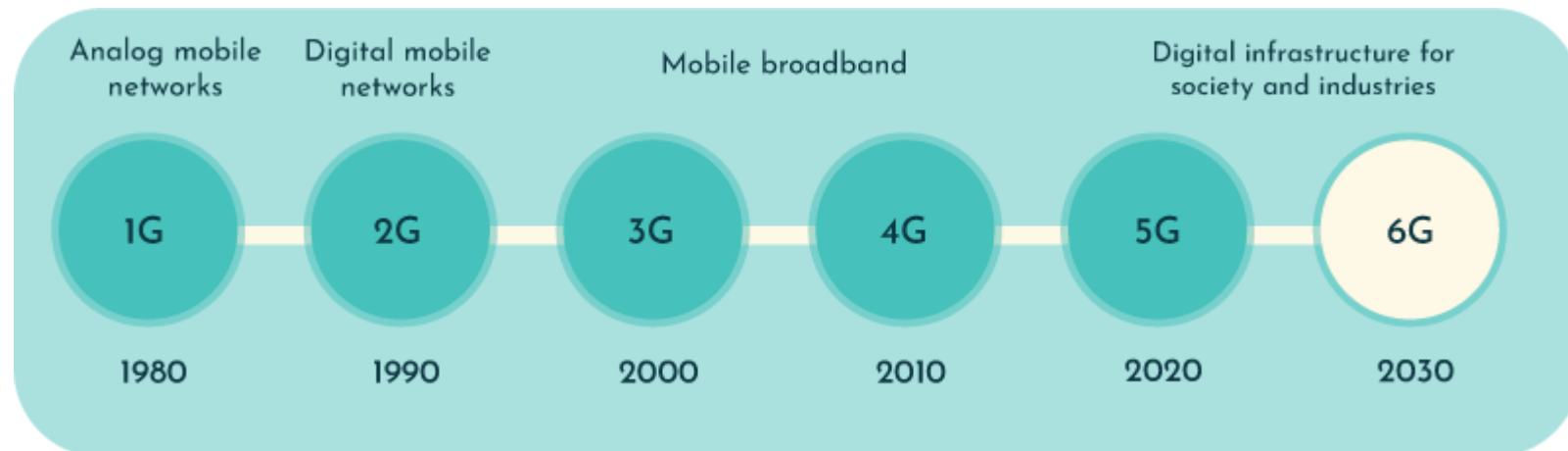
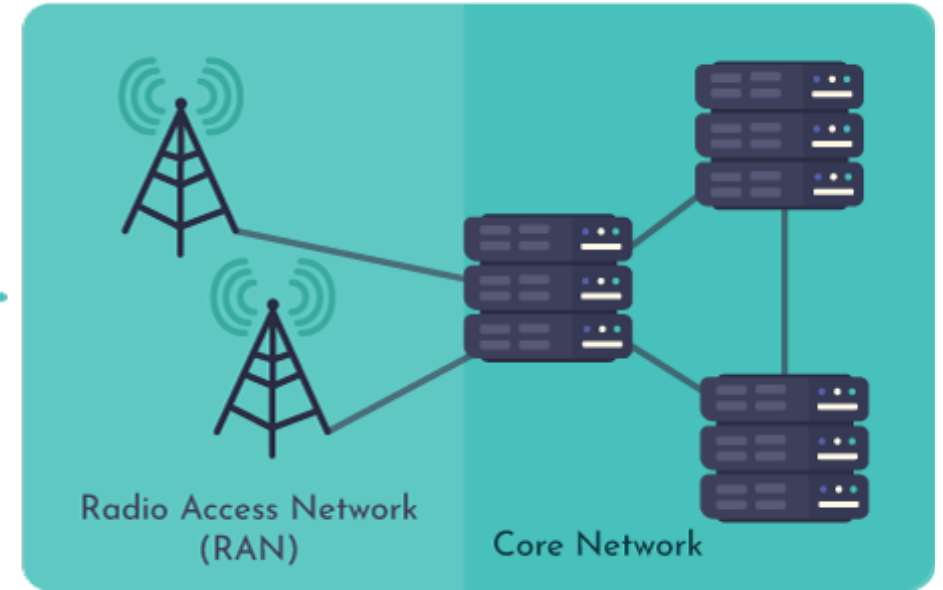
2 ECTS credit point course, can be started at any time

Four chapters with learning goals and in-chapter exercises

Text-based course

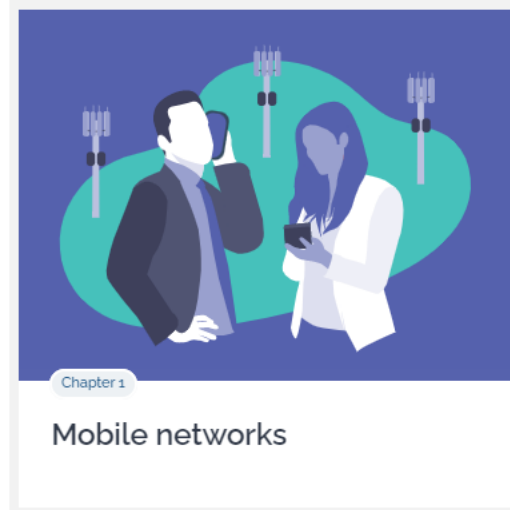
Highly accessible on any device

Pointers to follow-up courses



Chapter 1: Mobile Networks.

We give an overview of the structure of mobile networks, their creation and standardization, and key services provided by mobile networks.



Chapter 2: 4G Networks. To fully understand 5G and beyond, we revisit the 4G architecture that exemplifies crucial design principles and patterns in mobile networks. Many of the mechanisms introduced in 4G can be found in 5G.

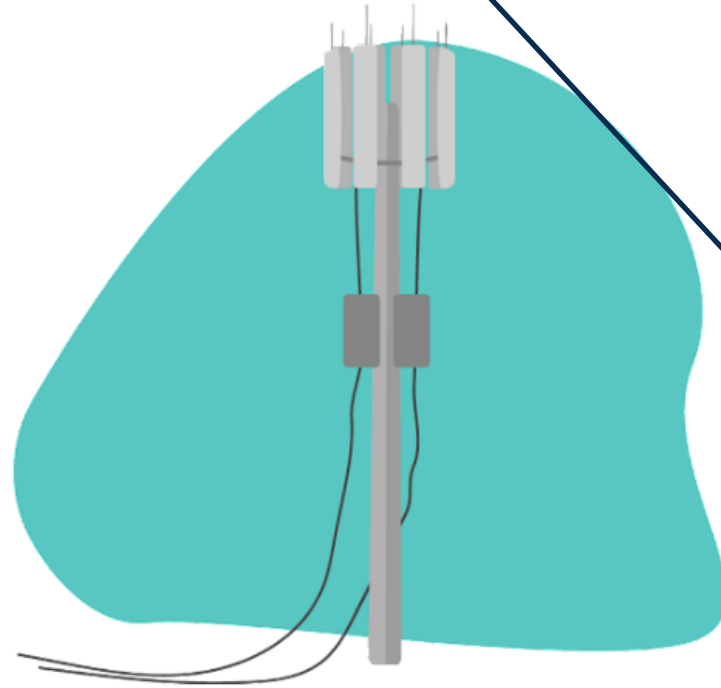
Chapter 3: 5G Networks. We present the key principles and design factors for 5G and illustrate how the 5G networks work.



Chapter 4: Towards 6G Networks. After investigating 4G and 5G networks in detail, we set to discuss the design and standardization of the next mobile network architecture: 6G. This chapter concludes the course.

Main text

Mobile networks advertise their presence by broadcasting information from antenna systems called base stations that form the RAN. The figure below shows an example base station, which you might have seen yourself when moving around where you live.



Example of a base station. These structures are fairly easy to find and identify.

When we switch our mobile phone on, the phone listens for base station advertisements and then connects to the appropriate mobile network by exchanging signals with one of the surrounding base stations.

In this page

A high-level view of mobile networks

Radio Access Networks

RAN structure: front haul and back haul

Putting things in perspective

Key takeaway

Chapter structure

Acronyms are explained with mouse over

Course feedback

GIVE FEEDBACK

EXERCISES WITHIN CHAPTERS

Exercise: TA Points: 0/1

What is the purpose of the Tracking Area (TA)?

The TA is a set of mobile devices having similar phone numbers

The TA consists of multiple base stations, which can be used to track mobile devices in a coarse-grained manner within the cluster of base stations

The TA is not needed if the mobile device is idle

The TA is a list of base stations that are near a given mobile device

SUBMIT

In this page →

- Architecture
- Did you say tunnel?
- Signalling for calls and multimedia
- Hierarchy of identifiers and tracking areas**
- Key takeaway

31 in-chapter exercises and online exam

EXAMPLE 6G SKILLS MOOC COURSES

Core 5G and beyond 2 ECTS

Cyber security base 2-10 ECTS

Full stack mooc 5 ECTS

Devops with docker 1 ECTS

Introduction to sustainability 3 ECTS





THANK YOU

MORE INFORMATION

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