

BIO-512

Digital epidemiology

Salathé Marcel

Cursus	Sem.	Type
Life Sciences Engineering	MA2, MA4	Opt.

Language of teaching	English
Credits	4
Session	Summer
Semester	Spring
Exam	During the semester
Workload	120h
Weeks	14
Hours	4 weekly
Lecture	2 weekly
Exercises	2 weekly
Number of positions	

Summary

Epidemiology is a cornerstone of public health. Understanding the distribution and dynamics of diseases is critically important to manage or prevent them. Modern digital approaches are used increasingly in epidemiology. This course teaches both the basics of epidemiology as well as those approaches.

Content

Digital epidemiology is an incredibly active field, both practically and academically, and it will grow alongside the general growth of technology adoption worldwide - in other words, massively and rapidly in the coming years and decades. However, one cannot understand digital epidemiology without understanding epidemiology. That's why the course teaches both the basics of epidemiology, infectious disease dynamics, and modern digital approaches to epidemiology. It is intended to introduce the learner to digital epidemiology, and to give an overview of the field, including its most recent and exciting developments.

Topics include:

- Introduction to epidemiology
- Testing and diagnostics
- Study types
- Infectious disease dynamics
- Infectious disease models
- Network models
- Digital health surveillance
- Digital contact tracing
- Digital cohorts
- Privacy & ethics
- and more

The topics may change.

Keywords

Epidemiology
Digital
Public Health
Infectious Diseases
Cohorts

Learning Prerequisites

Important concepts to start the course

Students are expected to know how to program, and to have some Python knowledge. They are further expected to understand the basics of biology, particularly also with respect to pathogens and the immune system.

Teaching methods

Ex cathedra; discussion of relevant publications; exercises

Expected student activities

Participating students are expected to engage in this course by attending lectures, reading additional material, understanding and presenting recent state-of-the-art publications, and completing exercises.

Assessment methods

Written exam held in week 14

Resources**Notes/Handbook**

Will be provided

Moodle Link

- <https://go.epfl.ch/BIO-512>