

**Module Description, available in: EN**

## *Digital health systems*

**General Information****Number of ECTS Credits**

3

**Module code**

TSM\_DigHealth

**Valid for academic year**

2024-25

**Last modification**

2022-10-21

**Coordinator of the module**

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**Explanations regarding the language definitions for each location:**

- Instruction is given in the language defined below for each location/each time the module is held.
- Documentation is available in the languages defined below. Where documents are in several languages, the percentage distribution is shown (100% = all the documentation).
- The examination is available 100% in the languages shown for each location/each time it is held.

	Lausanne			Lugano	Zurich	
<b>Instruction</b>					X E 100%	
<b>Documentation</b>					X E 100%	
<b>Examination</b>					X E 100%	

**Module Category**

TSM Technical scientific module

**Lessons**

2 lecture periods and 1 tutorial period per week

**Entry level competences****Prerequisites, previous knowledge**

This course requires knowledge about

- the electronic - also sensor-based - structured data acquisition,
- user centered design,
- a good understanding
  - of database-concepts,
  - of information systems and
  - of general data analysis.

## Brief course description of module objectives and content

This course provides an in-depth overview of data management in digital healthcare.

First, the special features and challenges of medical documentation will be discussed followed by the underlying ontologies, classifications and scoring systems. Particular emphasis will be placed on a deeper understanding of different dimensions of interoperability. This knowledge will be used to address exemplary specific medical information systems. Challenges for software development in the context of the Medical Device Regulation ("MDR") are covered.

Digitalization considerations will then open the next section which deals with the particular challenges of digital transformation in healthcare. In particular, the inclusion of patients in future data collection will be discussed and demonstrated, as well as the potential of the merging of lifestyle data, vital data and medical documentation. The topic of data reuse from the different medical applications combined with security issues within the emerging data science centers is also a subject of this module.

## Aims, content, methods

### Learning objectives and competencies to be acquired

The aim of this lecture is to understand,

- how Data are collected in medicine,
- how these data are organized in a structured and interoperable way,
- the importance of information systems in this context,
- the role of these systems as a basis for digital transformation in the healthcare sector,
- how information systems can be linked with eHealth, mHealth ("mobile Health"), pHealth ("personalized Health")
- how future active assisted living can be supported
- and the impact of MDR on the professionalization of medical software and apps.

### Module content with weighting of different components

First Part (6 weeks):

- Medical & Health Data Documentation (1 week)
- Hospital & Health Care Information Management Systems (1 week)
- Medical Ontologies and Classification (2 weeks)
- Dimensions of Interoperability in Health Care Systems (2 weeks)

Second Part (8 weeks):

- Device Connectivity, FHIR, MDR for software (1 week)
- Digitalization & Transformation in Treatment Pathways (1 week)
- mHealth & App – Ecosystems (1 week)
- eHealth & EPD (1 week)
- pHealth and Data Science Center (1 week)
- From Data to Predictive Models (2 weeks)
- Home Monitoring (1 week)

### Teaching and learning methods

Lectures and practical work on computer.

### Literature

Slides and lecture notes will be available in addition to recommended book chapters.

## Assessment

### Certification requirements

Module does not use certification requirements

### Basic principle for exams

**As a rule, all standard final exams are conducted in written form. For resit exams, lecturers will communicate the exam format (written/oral) together with the exam schedule.**

### Standard final exam for a module and written resit exam

#### Kind of exam

Written exam

#### Duration of exam

120 minutes

**Permissible aids**

*Aids permitted as specified below:*

**Permissible electronic aids**

examination on laptop, Moodle

**Other permissible aids**

No further aids permitted

**Special case: Resit exam as oral exam**

**Kind of exam**

Oral exam

**Duration of exam**

30 minutes

**Permissible aids**

No aids permitted