**EPFL**

CS-411

# Digital education & learning analytics

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| Cursus | Sem. | Type |
|---|---|---|
| Computer science | MA1, MA3 | Opt. |
| Data Science | MA1 | Opt. |
| Digital Humanities | MA1, MA3 | Opt. |
| SC master EPFL | MA1, MA3 | Opt. |

| | |
|---|---|
| Language of teaching | English |
| Credits | 4 |
| Session | Winter |
| Semester | Fall |
| Exam | Oral |
| Workload | 120h |
| Weeks | 14 |
| **Hours** | **4 weekly** |
| Courses | 2 weekly |
| Project | 2 weekly |
| **Number of positions** | |

## Summary

This course addresses the relationship between specific technological features and the learners' cognitive processes. It also covers the methods and results of empirical studies on this topic: do student actually learn due to technologies?

## Content

*Learning theories and learning processes. Instructional design: methods, patterns and principles. Orchestration graphs. On-line education. Effectiveness of learning technologies. Methods for empirical research. Learning analytics. History of learning technologies.*

## Keywords

*learning, pedagogy, teaching, online education, MOOCs*

## Learning Prerequisites

**Recommended courses**

One of these courses is recommended:
- Machine Learning (Jaggi / Urbanke)
- Applied Data Analysis (West)

## Learning Outcomes

By the end of the course, the student must be able to:
- Describe the learning processes triggered by a technology-based activity
- Explain how a technology feature influences learning processes
- Elaborate a study that measures the learning effects of a digital environment
- Select appropriately a learning technology given the target audience and the expected learning outcomes
- Apply machine learning methods to educational traces

## Transversal skills

- Set objectives and design an action plan to reach those objectives.

## Teaching methods

The course will combine participatory lectures with a project around learning analytics

**Expected student activities**

The project will include several milestones to be delivered along the semester.

**Assessment methods**

- Project + exam
- 50 / 50

**Supervision**

Office hours      No
Assistants        Yes
Forum             Yes

**Resources**

**Moodle Link**

- http://moodle.epfl.ch/course/view.php?id=14248