CS-411  
Digital education & learning analytics  
Dillenbourg Pierre, Jermann Patrick

<table>
<thead>
<tr>
<th>Cursus</th>
<th>Sem.</th>
<th>Type</th>
<th>Language</th>
<th>Credits</th>
<th>Session</th>
<th>Semester</th>
<th>Exam</th>
<th>Workload</th>
<th>Weeks</th>
<th>Hours</th>
<th>Lecture</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cybersecurity</td>
<td>MA1</td>
<td>Opt.</td>
<td>English</td>
<td>4</td>
<td>Winter</td>
<td>Fall</td>
<td>Oral</td>
<td>120h</td>
<td>14</td>
<td>4 weekly</td>
<td>2 weekly</td>
<td></td>
</tr>
<tr>
<td>Data Science</td>
<td>MA1, MA3</td>
<td>Opt.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humanités digitales</td>
<td>MA1, MA3</td>
<td>Opt.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informatique</td>
<td>MA1, MA3</td>
<td>Opt.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC master EPFL</td>
<td>MA1, MA3</td>
<td>Opt.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 students actually learn due to technologies?

Content

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