

HUM-433

**How people learn: Designing Learning Tools II**

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Cursus	Sem.	Type
Humanities and Social Sciences	MA2	Obl.
Learning Sciences		Opt.

Language of teaching	English
Credits	3
Withdrawal	Unauthorized
Session	Summer
Semester	Spring
Exam	During the semester
Workload	90h
Weeks	14
<b>Hours</b>	<b>3 weekly</b>
Project	3 weekly
<b>Number of positions</b>	<b>60</b>

**Il n'est pas autorisé de se retirer de cette matière après le délai d'inscription.**

**Remark**

Une seule inscription à un cours SHS+MGT autorisée. En cas d'inscriptions multiples elles seront toutes supprimées sans notification.

**Summary**

The students will understand the cognitive and social factors which affect learning - particularly in science and engineering. They will be able to use social research techniques as part of the design process to understand end users.

**Content**

General Aim: To enable participants to understand the ways in which professionals learn their profession - with a particular focus on learning in scientific and engineering domains.

General Description of Material: Learning is partially a psychological concept, but professionals operate in social contexts and so an understanding of professional learning also draws on sociological research. Therefore understanding professional learning will involve a multi-disciplinary approach. Learning is also messy - multiple difference concepts can apply in different ways at different times. One way of deepening an understanding of the conceptual complexity of learning is to apply them to the real world through designing a tool that can be used to support learning.

You will need to work in a small team to design a learning object that will integrate concepts of ethics or sustainability into engineering education.

Plan of the course: Students will design a learning object in small diverse teams. This will require carrying out a review of literature, generating ideas, making choices in situations where there is no perfect solution, developing and testing prototypes, and report writing. It will also require working effectively in a team (managing communication, managing conflict, managing priorities and work distribution).

**Keywords**

Learning Sciences, Education, Social and Behavioural Science Research, Interdisciplinary Studies, prototyping process

**Learning Outcomes**

By the end of the course, the student must be able to:

- Design in a team, an object that supports learning in a specified domain
- Search for relevant literature
- Interpret literature and data from empathy studies to decide on their design specifications
- Conduct a design tasks (empathy studies, brainstorming, multi-criteria decision making, risk analysis, user impact analysis, prototyping) to produce an appropriate educational artefact

- Assess / Evaluate the effectiveness of their own design

### Transversal skills

- Plan and carry out activities in a way which makes optimal use of available time and other resources.
- Set objectives and design an action plan to reach those objectives.
- Evaluate one's own performance in the team, receive and respond appropriately to feedback.
- Identify the different roles that are involved in well-functioning teams and assume different roles, including leadership roles.
- Keep appropriate documentation for group meetings.
- Resolve conflicts in ways that are productive for the task and the people concerned.
- Take account of the social and human dimensions of the engineering profession.
- Respect relevant legal guidelines and ethical codes for the profession.

### Teaching methods

Supervised team work sessions, mini-lectures

### Expected student activities

Students will participate in a design team to design an object that can be used to support learning, with a given goal and within a given set of constraints.

Students will both participate in their design team and, using the portfolio, will reflect upon the working of their team. They will therefore both (a) learn how to apply concepts and design tools from the first semester in a given circumstances and (b) will learn about how to manage design projects and team work.

### Assessment methods

80% Written report

20% Portfolio

### Resources

#### Bibliography

- Tormey, R and Isaac, S. with Hardebolle, C. and LeDuc, I. (2021) Facilitating Experiential Learning in Higher Education; Teaching and Supervising in Labs, Fieldwork, Studios, and Projects. London: Routledge
- Bransford et al. (2000) How People Learn: Brain, Mind, Experience and School. Washington D.C.: National Academy Press.
- Illeris, K. (2009) Contemporary Theories of Learning; learning theorists ... in the own words. London: Routledge.
- Jarvis, P. et al. (2003) The Theory and Practice of Learning, 2nd Edition. London: Routledge.

#### Ressources en bibliothèque

- Illeris, K. (2009) [Contemporary Theories of Learning](#)
- Tormey, R and Isaac, S. with Hardebolle, C. and LeDuc, I. (2021) [Facilitating Experiential Learning in Higher Education](#)
- Jarvis, P. et al. (2003) [The Theory and Practice of Learning](#)
- Bransford et al. (2000) [How People Learn](#)

#### Moodle Link

- <https://go.epfl.ch/HUM-433>