

ENG-637

Coordinator Supervising Students in Interdisciplinary Projects (projects approved by the MAKE committee)

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Cursus	Sem.	Type
EDOC General and external courses		Obl.

Language of teaching	English
Credits	2
Session	
Exam	Multiple
Workload	60h
Hours	56
Courses	9
Exercises	6
TP	41
Number of positions	10

Frequency

Every year

Remark

Only one coordinator per project is identified - please ensure your participation is validated by the DLL interdisciplinary project coordinator before registering for this course.

Summary

This applied course engages teaching assistants in coordinating interdisciplinary projects. This role of coordinating an industry like project will on one hand, inherently develop leadership and transversal skills for the participants, and on the other hand, broaden their teaching portfolio.

Content

Definition:

Hereafter,

- "participants" refer to PhD students coordinating interdisciplinary projects : go.epfl.ch/interdisciplinary-projects
- "students" refer to bachelor or master students involved in interdisciplinary projects for education (MAKE)
- "teachable moments" refer to identified moments during a project dedicated to making the students reflect on their learnings
- "reflection questions" are referred to the questions, asked to the students during the teachable moments, allowing to trigger a reflection and deepen the learning for the students. These questions can be related to either, purely technical skills (for example how to properly solder an electrical component on a PCB), or to transversal skills (for example how to properly plan a project).

Introduction:

Project-based learning is recognized as a beneficial educational setting where students can improve their academic achievement and develop not only content learning, but also transversal skills. The scientific literature on the topic highlights the importance of this pedagogy for promoting integration of theoretical knowledge and practical skills. International research recognizes the value of interdisciplinary projects for helping students to develop a wide range of important skills including technical and transversal skills. Also, projects where students can use knowledge from different disciplines may be leveraged to promote interdisciplinary knowledge, a highly valued element in the job market. However there is evidence that learning these skills only happens when students are driven to reflect and step back from the task to think explicitly about the process. This course will provide numerous prompts and tasks that will stimulate evidence-informed, data-driven reflection for the participants. Participants will also create a short resource to support the development of targeted skills by the students in their project. Using evidence from research in learning sciences, this course will introduce participants to teaching techniques that address these challenges and specifically apply to large-scale, open ended, interdisciplinary projects. Participants will be prompted to apply relevant techniques with their students, to collect data on the effectiveness and to begin to develop a reflective record for future use in a teaching portfolio.

Not only participants will broaden their teaching portfolio, but they will inherently develop themselves these transversal skills of interest by carrying the responsibility of a leader in the project.

Outline (see document in attachement):

Feb 2020 -> 1 day interactive lecture and skills lab

- support students facing typical difficulties of real-life open-ended projects such as working with incomplete data or coping with risk and uncertainty
- guide students through project phases while ensuring that they develop professional skills such as project management and solution design skills
- help students work together collaboratively on projects
- organize project guidance and supervise several students teams
- assess students learning based on reports or presentations while taking into account both individual and group contributions

Feb-June 2020 -> supervising the students and coordinating the project, run an independent study, online submissions, individual coaching (on request) + 2 coordination meetings.

- supervise the student team, ensure the quality of the work produced and the integration of the technical, domain specific skills.
- supervise integration of the transversal skills for the students.
- identifying the teachable moments and the reflection questions associated to it.
- collecting data (questionnaire) related to the progression and integration of these skills, run an independent study.
- develop a teaching resource.
- participate to the two coordination meeting for follow up and to benefit from peer feedbacks.

15 August 2020 -> project report due

The report must contain

- Introduction of the project supervised including a timeline with the main milestones and a description of the final product/prototype developed by the students.
- Based on the project timeline and product developed, description of the identified teachable moments and the associated reflection questions.
- Presentation of the independent study run, including analysis of the data collected, description of the teaching resource developed and a conclusion/discussion.

Assessment:

- Online exercises 40%
- Project Report 60%

Keywords

teaching; supervising projects; pedagogy; leadership and professional skills

Learning Outcomes

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

- Identify achievable/ambitious learning outcomes in practical learning contexts
- Recognize the uniqueness of interdisciplinary projects and the leadership and professional skills required to supervise such project
- Identify the learning needs of students and provide appropriate coaching in practical learning contexts
- Design practical learning situations allowing students to reach these learning outcomes
- Organize Organize and facilitate meetings with student groups
- Design assessment criteria (rubrics) for generating consistent, fair grades for written work and presentations by teams
- Develop strategies to distinguish individual and group contributions to collaborative work

Resources

Bibliography

Cohen, Elizabeth (1994) Designing groupwork, 2nd edition.

Crawley, Edward et al. (2014) Rethinking engineering education, the CDIO approach, 2nd edition
 Entwistle, N (2009) Teaching for understanding at university, deep approaches and distinctive ways of thinking. Basingstoke, UK: Palgrave Macmillan.
 Kober, N. (2015). Reaching Students: What Research Says about Effective Instruction in Undergraduate Science and Engineering. Washington, DC: National Academies Press.
 Nilson, L. B. (2010) Teaching at its best: a research-based resource for college instructors. Hoboken, NY: John Wiley & Sons, Inc.
 Stevens, Dannelle and Levi, Antonia (2005) Introduction to rubrics.
 Svinicki, M.D. & W. J. McKeachie (2013) McKeachie's teaching tips, 14th edition. Independence, KY: Cengage Learning.
 Wakeford, Richard (2003) 'Principles of student assessment' in Fry, Heather et al. (eds.) A handbook for teaching and learning in higher education, enhancing academic practice, 2nd edition.

Ressources en bibliothèque

- [Cohen, Elizabeth \(1994\) Designing groupwork, 2nd edition.](#)
- [Crawley, Edward et al. \(2014\) Rethinking engineering education, the CDIO approach, 2nd edition](#)
- [Entwistle, N \(2009\) Teaching for understanding at university, deep approaches and distinctive ways of thinking. Basingstoke, UK: Palgrave Macmillan.](#)
- [Kober, N. \(2015\). Reaching Students: What Research Says about Effective Instruction in Undergraduate Science and Engineering. Washington, DC: National Academies Press.](#)
- [Nilson, L. B. \(2010\) Teaching at its best: a research-based resource for college instructors. Hoboken, NY: John Wiley & Sons, Inc.](#)
- [Stevens, Dannelle and Levi, Antonia \(2005\) Introduction to rubrics](#)
- [Svinicki, M.D. & W. J. McKeachie \(2013\) McKeachie's teaching tips, 14th edition. Independence, KY: Cengage Learning.](#)
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Notes/Handbook

Other Learning Outcomes:

- Facilitate student work in practical contexts to maximize the development of technical and professional skills using one-to-one interaction techniques
- Support students to explicitly develop inquiry and design skills
- Support students to explicitly develop team work and project management skills