MGT-555

Innovation & entrepreneurship in engineering

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Cursus	Sem.	Type
Electrical and Electronical Engineering	MA1, MA3	Opt.
Management, Technology and Entrepreneurship minor	H	Opt.
Managmt, tech et entr.	MA1, MA3	Opt.
Materials Science and Engineering	MA1, MA3	Opt.
Mechanical engineering	MA1, MA3	Opt.

Language of teaching	English
Credits	10
Withdrawal	Unauthorized
Session	Winter
Semester	Fall
Exam	During the semester
Workload	300h
Weeks	14
Hours	**10 weekly**
Courses	2 weekly
Project	8 weekly
Number of positions	**50**

It is not allowed to withdraw from this subject after the registration deadline.

Remark

Inscription nécessitant l'autorisation préalable des enseignants

Summary

This course is a joint initiative between the School of Engineering and the College of Management to encourage and promote entrepreneurship and management skills, engineering design, hands-on experience, teamwork, and awareness of social and ethical implications in engineering and management.

Content

The material is taught in four modules, including Systems Engineering, Product Design Principles, Business Economics, and Prototyping Practice. A key component of the course consists of a team project, usually conducted in collaboration with an industry partner, addressing a significant commercial need and/or societal issue. Lectures will be given by domain experts. The first part of the course focuses on product design. Students will be working in multidisciplinary teams to define a product concept, draft a prototype and propose a plan for product commercialization. At the conclusion of the course, the projects will be entered in a prize competition, judged by a panel of industry experts and faculty.
Topics include: Design Criteria * Modularity * Project Planning * Lifecycle Analysis * Investment Criteria * Real Options * Electric Circuits * Reliability Engineering * Materials * Robotics * Software Development * Intellectual Property * Machining, 3D printing and Assembling a Prototype * Environmental Sustainability * Ergonomics

Keywords

Business economics, product design, systems engineering, technology commercialization, hands-on practice

Learning Prerequisites

Required courses

To be able to register for this course, instructor permission is required. For this, students are asked to prepare a 1-page motivation statement, to be sent per email **by September 5** at the very latest to the course coordinator (ru.zhang@epfl.ch).

Learning Outcomes

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

- Translate specifications into product design
- Assess / Evaluate the economic viability of product at different development phases
- Manage the production of a prototype
- Develop a plan for the commercialisation of the product
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Transversal skills

- Communicate effectively, being understood, including across different languages and cultures.
- Evaluate one's own performance in the team, receive and respond appropriately to feedback.
- Set objectives and design an action plan to reach those objectives.

Assessment methods

- 40% Presentation
- 50% Report/prototype
- 10% Collaboration

Supervision

Office hours	No
Assistants	Yes
Forum	Yes

Resources

Virtual desktop infrastructure (VDI)

No

Moodle Link

- https://go.epfl.ch/MGT-555