

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 | Obl. |

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

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

**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 15** to the course coordinator (myrna.flores@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

### 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 |