Innovation & entrepreneurship in engineering

Michaud Véronique, Weber Thomas

<table>
<thead>
<tr>
<th>Cursus</th>
<th>Sem.</th>
<th>Type</th>
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<tbody>
<tr>
<td>Electrical and Electronical Engineering</td>
<td>MA1, MA3</td>
<td>Opt.</td>
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<tr>
<td>Management, tech et entr.</td>
<td>MA1, MA3</td>
<td>Opt.</td>
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<tr>
<td>Materials Science and Engineering</td>
<td>MA1, MA3</td>
<td>Obl.</td>
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<tr>
<td>Mechanical engineering</td>
<td>MA1, MA3</td>
<td>Opt.</td>
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Language: English  
Credits: 10  
Withdrawal: Unauthorized  
Session: Winter  
Semester: Fall  
Exam: During the semester  
Workload: 300h  
Weeks: 14  
Hours: 10 weekly  
Lecture: 2 weekly  
Project: 8 weekly  
Number of positions: 50

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 21 at the very latest to the course coordinator (philipp.schneider@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