MGT-409   **D. Thinking: real problems, human-focused solutions**

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Cursus	Sem.	Type
Energy Management and Sustainability	MA1, MA3	Opt.
Management, Technology and Entrepreneurship minor	H	Opt.
Managmt, tech et entr.	MA1, MA3	Opt.
Minor in Engineering for sustainability	H	Opt.

Language of teaching	English
Credits	5
Withdrawal	Unauthorized
Session	Winter
Semester	Fall
Exam	During the semester
Workload	150h
Weeks	14
Hours	**5 weekly**
Courses	3 weekly
Exercises	2 weekly
Number of positions	**50**

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

Summary

This course aims to engage students into multidisciplinary collaboration to tackle real world problems with a human centered approach. It will also provide knowledge about the role of design in innovation.

Content

With a human centered creative approach, students are encouraged to discover through observation what is meaningful and to whom, generate empathy with users, find a specific focus to the challenge and ideate on possible solutions. These must then be quickly prototyped, tested and iterated based on results. Students will work in teams to address a challenge. During the course of these challenges, students will learn the different tools and exercises to generate insights, collaborative working, idea building, rapid prototyping, and iterative testing. They will also get a global vision about how design impacts innovation: major trends, specific role of Design Thinking, insights in design research from different point of views, design, psychology and engineering. The course will include a first phase of 4 weeks dedicated to basic knowledge, tools appropriation and definition of the challenge by each team. The second phase of 8 weeks is focused on providing possible solutions for a different defined challenge.
This semester we will encourage the application of the design thinking approach to design new services enabled by digital technologies for citizen-engagment and co-creation of sustainability strategies on a local level.

Keywords

innovation, design thinking, rapid prototyping, user empathy, ideation, service design, digital technologies

Learning Prerequisites

Required courses
None

Important concepts to start the course
Empathy, User perception, Innovation, Design

Learning Outcomes

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

- Analyze product and service offerings in a market
- Conduct Interviews with users
- Demonstrate Protoypes
- Explore Multiple solutions
- Report All findings and innovations
- Develop Product and service innovations
- Present Findings to partners
- Design Real products, processes, and services
- Apply design thinking and service design methodologies

Transversal skills

- Assess progress against the plan, and adapt the plan as appropriate.
- Set objectives and design an action plan to reach those objectives.
- Communicate effectively with professionals from other disciplines.
- Communicate effectively, being understood, including across different languages and cultures.
- Demonstrate a capacity for creativity.
- Collect data.
- Use a work methodology appropriate to the task.
- Plan and carry out activities in a way which makes optimal use of available time and other resources.
- Evaluate one's own performance in the team, receive and respond appropriately to feedback.

Teaching methods

Lectures, guest lectures, case method, building things, online tools

Expected student activities

Group work, ideation / brainstorming, building prototypes, going into the field, talking with users and customers.
Expect a higher than usual workload for this course.
A maximimum number of 50 students will be accepted in this course, however students are encouraged to attend the first two classes even if there are no spaces left on IS Academia. Please note that those students that have not attended since the first class will not be accepted.

Assessment methods

Presentation of the challenge definition, prototypes and documentation of the project will be graded as follow:

- Four-week project: 30%
- Eight-week challenge: 70%

Supervision

Office hours	No
Assistants	Yes
Forum	No
Others	Office hours TBD, exercises