PRODUCT AND SERVICE DESIGN

ENGIN654	3 Credits
Profesor (es)	*Pedro Antunes*
Ayudantes	-

COURSE DESCRIPTION

This course teaches fundamental principles and methods of effective product and service design. The main focus is on the capacity to quickly generate effective, innovative and useful solutions to wicked problems. Teaching and learning fosters reflection-in-action, creativity, exploration, prototyping, open exchange of ideas, and collaboration. The course is project oriented. The project assignments are open, creative, and will be defined in collaboration with students. The focus is on agile development of solutions with demonstrable business or social value.

I.- COURSE LEARNING OBJECTIVES

The course is organized around the realization of a design project, which considers the identification of value, problem and solution framing, empathizing with users, rapid prototyping, lightweight validation, and communication of the solution to the stakeholders.

1. Develop knowledge about methodologies, processes and tools that generate effective, innovative and useful products and services.
2. Solve complex problems and explore creative solutions through reflection-in-action.
3. Use techniques for active solution exploration supported by rapid prototyping tools.

II.- CONTENTS

Topic	Content	Activities /Reading
1	**Wicked problems**: sensemaking, cynefin framework, opportunity space. **Reflection in action**: exploration cycle, frames, anomalies, knowledge moments, reflection-in-action, reflection-on-action. **Design thinking**: iteration, satisficing, utility, design knowledge, meta-design.	Snowden & Boone (2007). A leader's framework for decision making. Harvard business review, 85(11), 68.

2	**Problem framing**: problem-solution cycle, conflict-consensus cycle, problem frameworks, building a problem framework. **Empathizing**: empathy maps, affinity maps. **Solution framing**: reframing, solution framework.	
3	**Evaluation**: ex ante and ex post evaluation, naturalistic and artificial evaluation. **Evaluation**: evaluation methods, peer reviews.	
4	**Prototyping:** why, when, how.	
5	**Storytelling:** storytelling theory, anatomy of a story. **Storyboarding**: visual narrative.	Denning, S. (2006). Effective storytelling: strategic business narrative techniques. Strategy & Leadership.
6	**Design science**: design framework, design cycles, rigor and relevance, project ability. **Design artifacts**: technical, social, socio-material, meta-artifacts. **Design processes:** google design sprints, innovation sprints.	
7	**DesignOps**: Agile, DevOps, BizDevOps, DesignOps, DesignOps pipeline, practices, tools. **Design projects:** decisions, information, choice, innovation, cost.	Samset, K. and Volden, G.H., 2016. Front-end definition of projects: Ten paradoxes and some reflections regarding project management and project governance. International journal of project management, 34(2), pp.297-313.

III.- METODOLOGÍA, EVALUACIÓN Y NORMATIVA BÁSICA

3.1.- Metodología:

The course is organized around the realization of a design project, which considers problem framing, empathizing with users, solution framing, lightweight evaluation, rapid prototyping, and communication of the solution.

3.2.- Evaluation

- 100% project

3.3.- Basic Regulation

1. Students must have at least 75% attendance in the course to pass it.
2. Classes will be on the days and times indicated by the program management.
3. For each class, students must have read and studied the corresponding bibliography in advance.
4. The grading of all evaluations will be done with a grade from 1 to 7.
5. The professor reserves the right to add, delete or replace bibliography during the course of the program if he/she deems it appropriate for the proper progress of the subject.
6. The unjustified absence of a student from a requirement will be graded 1.
7. It is important to emphasize that each student must assume his or her own responsibility in completing the program, especially in relation to:
    a. Be up to date on the development of the subject and the various instructions given by both the teacher and the course coordination. For example, absence from a class session does not exempt you from the academic obligations established that day.
    b. Ensure faithful compliance with the dates and deadlines established for the different evaluation activities. Once set and known, they will not be modified.
    c. Obtain the support material indicated for the chair when applicable.
8. All works presented during the program will only have value to the extent that their author is able to explain and support them personally. Deliveries that contradict the above are not accepted. Any medical justification corresponding to non-attendance to a requirement must be presented through the regular channels established by the University.
9. Any form of copying and/or plagiarism is penalized and if this situation is identified, the respective disciplinary procedure will be followed.

IV.- BIBLIOGRAPHY

- Thuan, N., and Antunes, P. 2022. "Positioning Design Science as an Educational Tool for Innovation and Problem Solving." Communications of the Association for Information Systems (51:1). ISSN: 1529-3181. DOI: https://aisel.aisnet.org/cais/vol51/iss1/1/.
- Thuan, N., Tate, M., Drechsler, A., and Antunes, P. 2023. "Introduction to Design Science Education." Journal of Information Systems Education, Special Issue on Design Science Education (34:3). pp. 256–263. ISSN: 2574-3872.
- Lauff, C. et al. 2021. Design Innovation (DI) Methodology Handbook Embedding Design in Organisations. Singapore University of Technology and Design-Massachusetts Institute of Technology International Design Centre.
- Brenner, W. and Uebernickel, F. 2016. Design thinking for innovation: Research and Practice. Springer.
- Kelly, T. 2001. The Art of Innovation: Lessons from IDEO, America's Leading Design Firm.
- Quensenbery, W. and Brooks, K. 2010. Storytelling for User Experience. Rosenfeld Media.

*Syllabus can be changed