

Innovation and Design Thinking

- 1. Course number and name:** 020INDES2 Innovation and Design Thinking
- 2. Credits and contact hours:** 2 ECTS credits, 1x1:15 contact hours
- 3. Instructor's or course coordinator's name:** Ursula Elhage
- 4. Text book:**
 - a. Other supplemental materials:**
 - Where good ideas come from, Steven Johnson
 - The ten faces of innovation, Tom Kelley
 - Blue Ocean Strategy, W. Chan Kim
 - Design Thinking, Tim Brown, Harvard Business Review, June 2008
 - Don't Let the Minimum Win over the Viable, David Aycan, Harvard Business Review, May 2012
 - Human Centered Design Toolkit, IDEO
 - IDEO's Culture of Helping, Teresa Amabile, Colin M. Fisher and Julianna Pilemenr, Harvard Business Review, January 2014
 - IDEO's Tim Brown on Using Design to Change Behavior, Reena Jana, Harvard Business Review, March 2010
 - Playing Around with Brainstorming, Michael Schrage, Harvard Business Review, March 2001
- 5. Specific course information**
 - a. Catalog description:**

In a rapid changing and complicated world with fast evolving products and business models, innovation has become a must for every professional especially in engineering. Innovation and Design Thinking focuses on the leader's role as an innovator and facilitator of innovation. This course allows students to develop basic skills in innovation and creative problem solving. Innovation can be applied to any discipline, and a special focus would be to search for innovative solutions for daily social problems.

Innovation is a practical transformation of ideas to new products, services, processes, systems and social interactions. It creates new added values that satisfy interest groups and drive sustainable growth, improve the quality of living and promote a sustainable society. Innovation isn't only technology; it develops in all the economy and society dimensions. (EFQM framework for Innovation). The term was created in 1980s at Stanford to characterize the approach designers, architects or artists use to solve problems. The approach is users' centered, focusing on their needs. Considering that the approach is based in the design world, it uses tools like look/ask/try and visual thinking to understand and communicate ideas. Even though Innovation and Design Thinking have been related to product design, they can be applied to all kind of problem solving including business modeling and processes.

b. Prerequisites or co-requisites:

c. Required: Required for CCE students

6. Specific goals for the course

a. Specific outcomes of instruction:

The main objective of this course is to help students develop creative thinking, which is the key skill for innovation. Creative thinking includes the ability to understand the user and his/her needs, to be able to see different perspectives of a problem, define and reframe it, and finally to generate alternative new solutions more effective than the ones used till now.

The course considers that innovation and creative thinking can be learned through practice. For this reason students will be working on different projects and exercises to explore the various methods to creative problem solving and innovation. At the end of the course, students will have a toolbox of techniques that with repeated use will help them think more creatively through their future projects.

b. KPI:

KPI	e1	h1	j1
Covered	x	x	x
Assessed	x	x	x

7. Brief list of topics to be covered

Introduction to Innovation: Process Overview

Clarify: Look-Ask-Try

Using Frameworks

Problem Framing and Definition

Language, Framing and Ideation

Systematic Inventive Thinking

Ideation: Approaches and Tools

Concept Development

Prototyping

Business Modeling