
University of Engineering and Technology

Course Syllabus – Semester 2017-1

- 1. Course Code and Name: EG0004 - Global Challenges**
- 2. Credits: 3 Credits**
- 3. Hours per session (theory and laboratory): 2 – T (Auditorium); 2 – Lab (Classroom)**
Total number of sessions per type: Theory 14; Laboratory 12
- 4. Name, e-mail and office hours of the Instructor or Course Coordinator**

Coordinator:

Marita Ibañez

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Teachers:

- Leonardo Camacho Carhuaz
- Marita Ibañez Sandoval
- Iris Vaneza Caycho
- Cesar Lucho Lingan
- Melanie Cornejo Germer
- Enrique Mayorga
- Juan Del Aguila Bartra
- Gabriela Pella Fernández
- Gilda Díaz Martínez
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5. Bibliography

- Curedale, R. (2012) “Design methods 1: 200 ways to apply design thinking” E.E.U.U.: Design Community College Inc.
- Curedale, R. (2013) “Design Methods 2: 200 more ways to apply Design Thinking (Volume 2)” E.E.U.U.: Design Community College Inc.
- Upton, E. (2015) “Intuición, acción, creación: Graphic Design Thinking” México: Editorial Gustavo Gili
- Munari, B. (2004) “¿Cómo nacen los objetos?” México: Editorial Gustavo Gili
- Gasca, J; Zaragoza, R. (2014) “Designpedia” España: LID Editorial Empresarial, S.L.

6. Course Information

a. Brief description of course content

- During the plenary sessions, lectures will be given related to the methodology of Design Thinking as well as its use and importance in the processes of creation in engineering. Also, during these sessions we will have presentations about entrepreneurship and startups related to engineering and technology.
- During the laboratory sessions, students will form groups which they will keep for the semester. With the guidance of the professor and through the Design Thinking methodology developed in the full sessions, students must propose innovative solutions to real problems inspired by the “Global Challenges” of the United Nations.
- Students will have a “Digital Blog” that will be constantly reviewed by professors in charge. It will contain the advances, processes, and references of the group project.

The course culminates with group presentations of the proposals raised.

b. Prerequisites or corequisites: None

c. Course mandatory or elective : Mandatory

7. Course Objectives

a. Competencies

- b2: Capability to analyze information
- d1: Capability to work in a team
- d2: Capability to lead a team
- g1: Capability of oral communication
- h1: Understand the impact of engineering solutions in a global, economic, environmental context and in society.
- j1: Have an interest to know more about current themes of society in Peru and in the world.

The course addresses the following student outcomes ICACIT/ABET: b, d, g, h, j.

b. Learning Outcomes

- During the development of the course, students generate projects which seek to solve real problems, analyzing the social context and needs of the probable users, and using the methodology of Design Thinking. This is how the Global Challenges course will progress: Global Awareness, Critical Thought, and Problem Solving.
- On completing the course, students will have done communication exercises and collaboration which allows the development and reinforcement of their abilities and knowledge relevant to oral and written expression. In this class students receive both peer and professor feedback. (**S.M.A.R.T Criteria) ***Specific, Measurable, Achievable, Relevant, Time-related.*
- Flexibility and Adaptability: Students learn to work in a team in a flexible and variable environment with constant challenges.

- Students understand the importance and effectiveness of teamwork both in academic and professional life. During the semester students do group and individual exercises with the common objective of generating a solution to a problem presented in the course.

8. Brief list of study subjects during the course

- Methodology of *Design Thinking* (DT):
- DT Steps
- Technique and use of *Brainstorming*
- Knowledge of the user, empathy and use of archetypes
- Types of research, differences and uses.
- Strategies for gathering from Insights
- Ideation methods
- Introduction tool Prototyping
- Introduction to User Experience
- Testing and Iteration Strategies
- Uses of *Storytelling*

9. Methodology and method of evaluation

Methodology

- The theory and plenary sessions of the course are to be held in the auditorium where professors and guests will present diverse phases of the design process of an engineering project using *Design Thinking*, as a master class.
- During the plenary sessions we will have the participation of leaders in *startups*, or from the world of entrepreneurship. The objective of these sessions is to students of Global Challenges to successful experiences that use a methodology of project innovation and generation similar to that seen in the course, and also a general view of what is happening in Peru and the World.
- The workshop sessions are to be held in the classrooms where students are divided in groups and work in teams to apply Design Thinking methodology to generate innovative solutions to real problems.

System of Evaluation: Permanent Evaluation and Final Presentation

$$\text{Final Grade} = (0.75 \sum \text{PEv} / 6) + (0.25 \text{PF})$$

PEv1 = Permanent Evaluation - Week 2
PEv2 = Permanent Evaluation - Week 3
PEv3 = Permanent Evaluation - Week 5
PEv4 = Permanent Evaluation - Week 7
PEv5 = Permanent Evaluation - Week 10
PEv6 = Permanent Evaluation - Week 12
FP = Final Presentation - Week 14

Course evaluations cannot be taken again. Failure to attend or to present the progress indicated for a given session will result in the loss of grade for that session.



The only acceptable reason for being considered for a late grade will be documented medical reasons with previous authorization from the professor in charge.