

Academic Year: ( 2021 / 2022 )

Review date: 04-06-2021

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: DIAZ PEREZ, MARIA PALOMA

Type: Electives ECTS Credits : 6.0

Year : 4 Semester :

## OBJECTIVES

CB2, CB4, CG4, CT3, CE9

## DESCRIPTION OF CONTENTS: PROGRAMME

1. Creativity and democratization of innovation
2. Introduction to product and process design
  - 2.1 Design research
  - 2.2 Action research
  - 2.3 Participatory design and codesign
  - 2.4 Emotional and semantic design
3. Design process
  - 3.1. Problem Inquiry
  - 3.2. Divergent and convergent design
  - 3.3. Design thinking techniques
  - 3.4. Design artefacts, patterns and guidelines
  - 3.5. Prototyping
  - 3.6. Usability, utility, acceptance and uX validation
4. Group Design project
  - 4.1. Problem definition
  - 4.2. Ideation and convergent design
  - 4.3. Design artefacts and prototypes
  - 4.4. Validation

## LEARNING ACTIVITIES AND METHODOLOGY

AF1, AF2, AF3

The teaching methodology will combine lectures, hands-on exercises and a collaborative project in which design techniques will be applied to envision, design and validate innovative digital solutions.

One of these activities will be a group project consisting in proposing a digital solution to a socially relevant problem following the processes and techniques introduced in the lectures and practiced in the hands-on exercises.

Tutorship will follow the UC3M regulations and available slots will be published at Aula Global. Follow-up meetings to check the collaborative project and the contribution of each member will be assessed in meetings held in the classroom. Attendance to such meeting is mandatory for all members of the team.

## ASSESSMENT SYSTEM

20% of the final grade is based on an individual test performed at the end of the course.

80% of the final grade is based on practical activities related to the course contents. A 10% is assessed through the exercises done at practical/lab classes. The remaining 70% is a collaborative project evaluated on an individual basis. The project has three milestones that imply meetings with the teachers to evaluate its evolution. All members of the team must attend such meetings that will be held during the regular classes. Each student individual contribution will be evaluated through individual questions during follow-up meetings

<b>% end-of-term-examination:</b>	20
<b>% of continuous assessment (assignments, laboratory, practicals...):</b>	80

## BASIC BIBLIOGRAPHY

- Bruce Hanington Universal Methods of Design: 100 Ways to Research Complex Problems, Develop Innovative Ideas, and Design Effective Solutions, Rockport Publishers , 2012
- Koskinen, I., Zimmerman, J., Binder, T., Redstrom, J., & Wensveen, S. Design research through practice: From the lab, field, and showroom, Elsevier, 2011
- Kumar, V. 101 design methods: A structured approach for driving innovation in your organization. , John Wiley & Sons., 2012

#### ADDITIONAL BIBLIOGRAPHY

- 101 design methods: A structured approach for driving innovation in your organization. Kumar, V., John Wiley & Sons., 2012

#### BASIC ELECTRONIC RESOURCES

- Paloma Diaz, Ignacio Aedo, Andrea Bellucci, Teresa Onorati . Interactive systems design: <http://spoc.uc3m.es>