Fundamentals of Software Production for Digital Business

Academic Year: (2022 / 2023) **Review date: 21-03-2022**

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: GOMEZ BERBIS, JUAN MIGUEL

Type: Compulsory ECTS Credits : 6.0

Year : 2 Semester : 2

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Basics of Information Technologies (Course: 1 / Semester: 1)
Programming for Business (Course: 1 / Semester: 2)
Digital Business (Course: 2 / Semester: 1)

DESCRIPTION OF CONTENTS: PROGRAMME

I Software concepts, principles, processes and roles involved and the way of thinking in the digital age
1. Understand the concepts of software product, software service and software system
2. Understand the main processes and the principles that guide the software production
3. Understand the roles of a digital business professional
4. Know thinking approaches for solving existing and emerging systems problems in an interconnected world
II - Envisioning software systems for the digital age
1. Understand the need to envision software systems as part of an interaction ecology whose center are users and their goals
2. Know creativity and participatory design methods to design successful products and user experiences
III Define user needs of digital products / services
1. Know and understand the importance of defining correct, consistent and complete specifications for digital products and services
2. Know and understand the need of creating digital products and services from existing software components
IV Methodologies and processes for the management of digital products development
1. Functions of the software/service product owners in the architectural design and testing
2. Know the philosophy and fundamentals of effective and agile digital product management
3. Understand the importance of the testing process of digital products and services within an agile product delivery

LEARNING ACTIVITIES AND METHODOLOGY

AF1. THEORETICAL-PRACTICAL CLASSES. The professor will present the knowledge that students should acquire. They will receive the class notes and will have basic texts of reference to facilitate the follow-up of the classes and the development of the subsequent work. Exercises, practical problems on the part of the student will be solved and workshops and evaluation tests will be carried out to acquire the necessary skills.
AF2. TUTORIALS. Individualized assistance (individual tutorials) or group (collective tutorials) to students by the teacher.
AF3. INDIVIDUAL OR GROUP STUDENT WORK.
MD1 THEORY CLASS. Exhibitions in the teacher's class with the support of computers and audiovisual media, in which the main concepts of the subject are developed and the materials and bibliography are provided to complement the students' learning.
MD2. PRACTICES. Resolution of practical cases, problems, etc. raised by the teacher individually or in groups.
MD3. TUTORIALS. Individualized assistance (individual tutorials) or group (collective tutorials) to students by the teacher. For subjects of 6 credits, 4 hours will be dedicated with 100% of attendance.

ASSESSMENT SYSTEM

SE1. FINAL EXAM. In which the knowledge, skills and abilities acquired throughout the course will be assessed globally.
SE2. CONTINUOUS ASSESSMENT. In it, work, presentations, debates, exhibitions in class, exercises,

practices and work in the workshops throughout the course will be evaluated.

% end-of-term-examination:	0
% of continuous assessment (assigments, laboratory, practicals…):	100

BASIC BIBLIOGRAPHY

- UC3M The Software Architect Code: Building the Digital World, edX, 2017

ADDITIONAL BIBLIOGRAPHY

- Bass, L. Software architecture in practice., Pearson Education, 2015

- Cross, N. Design thinking: Understanding how designers think and work., Berg, 2011

- Gharajedaghi, J. Systems Thinking - Managing Chaos and Complexity: A Platform for Designing Business Architecture, Elsevier Inc., 2012

- Hanington, B. and Martin, B. Universal Methods of Design: 100 Ways to Research Complex Problems, Develop Innovative Ideas, and Design Effective Solutions., Rockport Publishers, 2012

- Kulak, D., & Li, H. The Journey to Enterprise Agility, Springer, 2017

- Sommerville, I. Software engineering., Pearson, 2015

- Sterman, J. Business Dynamics: Systems Thinking and Modeling for a Complex World, McGraw-Hill, 2000

BASIC ELECTRONIC RESOURCES

- UC3M . The Software Architect Code: Building the Digital World: https://www.edx.org/es/course/the-software-architect-code-building-the-digital-world