Software development and operation

Academic Year: (2023 / 2024) **Review date: 17-01-2024**

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: LLORENS MORILLO, JUAN BAUTISTA

Type: Compulsory ECTS Credits : 6.0

Year : 5 Semester : 2

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Software engineering (Course: second - semester: first)
Software Development (Course: second - semester: second)
Software development projects management (Course: fourth - semester: first, recommended)

OBJECTIVES

The subject objetive i to obtain the necessary knowledge and skills to design, plan, build, deploy and operate a software system, ensuring the quality requirements in the different environments and architectures defined for its construction.

DESCRIPTION OF CONTENTS: PROGRAMME

- Basis and concepts withing the development and operation of software systems
-Planification of software systems
-Architecture and development of software systems
-Deployment of software systems
-Operation and monitoring of software systems
-Quality assurance of software systems

LEARNING ACTIVITIES AND METHODOLOGY

Theoretical-Practical Lectures: 1 ECTS
- Review of contents before class

Practical Lectures: 1 ECTS
- Exercise resolution
- Partial oral presentation of the project

Team Work: 1 ECTS
- Project development
- Project review

Individual Work: 1 ECTS
- Contribution to team project
- Individual practical exercises
- Study and preparation of theoretical exams

Tutoring: 1ECTS
-Individual or group based tutorship sessions with the professor

ASSESSMENT SYSTEM

CONTINUOUS EVALUATION (70%)
-Tasks and presentations
-Discussions and oral debate
-Lab exercises

FINAL EVALUATION (30%)
- Final exam

% end-of-term-examination:	30
% of continuous assessment (assigments, laboratory, practicals…):	70

BASIC BIBLIOGRAPHY

- Christof Ebert; Gorka Gallardo; Josune Hernantes; Nicolas Serrano DevOps, IEEE Software, 2016
- D. Farley Modern software engineering: doing what really works to build better software faster, Addison-Wesley, 2021
- G. Kim, K. Behr, and G. Spafford The phoenix project: a novel about IT, DevOps, and helping your business win, Portland, OR: IT Revolution, 2018
- J. Davis and K. Daniels Effective devOps: building a culture of collaboration, affinity, and tooling at scale, O¿Reilly, 2016
- M. Richards and N. Ford Fundamentals of software architecture: an engineering approach, O¿Reilly Media, 2020
- Martin Eigner System Lifecycle Management, Springer, 2021
- N. Ford, M. Richards, P. J. Sadalage, and Z. Dehghani Software architecture: the hard parts: modern trade-off analysis for distributed architectures, O¿Reilly Media, 2021
- N. Forsgren, J. Humble, and G. Kim Accelerate: the science behind DevOps: building and scaling high performing technology organizations, Portland, Oregon: IT Revolution, 2018
- R. C. Martin and R. C. Martin Clean architecture: a craftsman¿s guide to software structure and design, Prentice Hall, 2018
- Thomas M. Shortell INCOSE Systems Engineering Handbook: A Guide for System Life Cycle Processes and Activities, Willey, 2015

ADDITIONAL BIBLIOGRAPHY

- B. Beyer, C. Jones, J. Petoff, and N. R. Murphy Site reliability engineering: how Google runs production systems, O'Reilly, 2016
- C. Rosenthal and N. Jones Chaos engineering: system resiliency in practice, O¿Reilly Media, 2020
- K. Morris Infrastructure as code: managing servers in the cloud, O¿Reilly, 2016
- M. T. Nygard Release it! design and deploy production-ready software, Pragmatic Bookshelf, 2007

BASIC ELECTRONIC RESOURCES

- Amazon AWS . DevOps on AWS Specialization: https://www.coursera.org/specializations/aws-devops
- IBM . IBM DevOps and Software Engineering Professional Certificate: https://www.coursera.org/professional-certificates/devops-and-software-engineering
- Microsoft . Microsoft Certified: DevOps Engineer Expert: https://learn.microsoft.com/en-us/certifications/devops-engineer/