

ARCHITECTURE AND SYSTEMS INTEGRATION

Master in Engenharia Informática

Code: 28502

Main Scientific Area: Information Systems and Artificial Intelligence

Lecturer: Óscar Rafael da Silva Ferreira Ribeiro

Language of Instruction: Portuguese

Regime: S1

Contact Hours: 30h Total Workload: 138h

ECTS: 6,0

Objectives

This course aims to understand the concept of Systems Architecture and its importance within organizations, and to be able to develop solutions tailored to the business strategy.

Learning Outcomes

The curricular unit Architectures and Systems Integration proposes to provide students with:

- Understand the concept of System Architecture and its importance within organizations
- Know how to use methods and tools for obtaining the various architectures involved in system architecture (business, data, applications , technology, security)
- Know some of the applications development trends in order to facilitate information exchange and interoperability
- the design of robust integration architectures to the constant technological update;
- the description and specification of systems that support the operation in the proposed scenario;
- the implementation and testing of standards to be applied to the solution.

Course Contents

1. Fundamentals of System Architecture

Information Systems Architectures (Enterprise)

Service Oriented Architectures

Application Interoperability Standards

Technologies for Systems Integration

Designing System Architectures

2. Microservices-based architectures

Microservices Development

Design and conception

Communication between services

Development on node.js platform

Microservices provisioning

API Configuration

One case study

Recommended Bibliography

Len Bass, Paul Clements, Rick Kazman (2012), Software Architecture in Practice, Addison-Wesley Professional; ISBN: 978-0321815736

Robert C. Martin (2018), Clean Architecture A CRAFTSMAN'S GUIDE TO SOFTWARE STRUCTURE AND DESIGN, ISBN-13: 978-0-13-449416-6

K. Indrasiri, P. Siriwardena (2018) Microservices for the Enterprise: Designing, Developing, and Deploying, ISBN: 978-1484238578 Apress

Sam Newman, (2019) Monolith to Microservices: Evolutionary Patterns to Transform Your Monolith, O'Reilly Media; 1st edition, ISBN: 978-1492047841

David Herron (2020) Node.js Web Development, Packt Publishing 5th Edition ISBN13: 978-1838987572

Mardan, Azat (2014), Practical Node.js, Building Real-World Scalable Web App, Apress

Martin Fowler (2002) Patterns of Enterprise Application Architecture, Addison-Wesley Professional, ISBN: 978-0321127426

Learning and Teaching Methods

The program of the course introduces the key concepts that allow understanding the scope and context in which an information system architecture is developed.

To develop skills in this field, students should be familiarized with the standards, technologies and tools that guarantee the interoperability between applications, know how to develop service-oriented solutions in a programming language, and know methods for the coordination of services through business processes

Assessment Methods

Learning outcomes will be assessed through continuous assessment component and a practical assessment component.

Continuous Assessment component (15%) resolution of proposed work

Practical Assessment component (15%) : consists on the making one practical work in group

The evaluation of the practical work is individual and will be done on the written report and the implementation of the solution. It also includes a presentation and discussion.

Only students who have defended the work in the regular exam period can improve the work.

Only students who defended their work in the regular season can improve their work in the exam season.