Informatics systems integration

Academic Year: (2019 / 2020) **Review date: 04-04-2019**

Department assigned to the subject:

Coordinating teacher: GONZALEZ CARRASCO, ISRAEL

Type: Compulsory ECTS Credits : 6.0

Year : 1 Semester : 1

OBJECTIVES

Specific Competences:
CE1: Capacity to integrate computer science technologies, applications, services and systems in different contexts with a multidisciplinary approach.
CE4: Capacity to model, design, define a service oriented system architecture and supervise its deployment, management, operations, administration and maintenance.
CE8: Capacity to analize information needs in an specific environment and to develop the different phases of an information system construction computer.
CG11: Ability to communicate results and conclusions (in oral an written manner) in precise way.

DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction to the problem of integration. Evolution of computational and data information storage models
2. Integration of data sources
   2.1Heterogeneous Data. Mediated Schema. Semantic matching and mapping.
   2.2 Obtaining data. Crawlers. Wrapprs. Integration case in web. Obtención de datos.
   2.3 Big Data and distributed architectures for integrating and analyzing data.
      NoSQL Databases. Big Data Tecnologies
      Programming models: map-reduce framework
   2.4 Data visualization
3. Functional Integration
   3.1 Software architectures and technological frameworks
   3.2 Techniques for Systems of Systems design.
   3.3 Technologies for managing Service Oriented Architectures (SOA)
   3.4 Integrating Systems with web services.
   3.5 Technologies for the development of Web APIs.

LEARNING ACTIVITIES AND METHODOLOGY

- Theory lectures with the objective of acquiring specific competences. Slides and other material as well as reference books will be provided to students in order to complete knowledge of subjects. Moreover, standards and technology documentation concerning systems integration will also be provided. Inthis lectures, studentes will do talds about specific contents from complementary readings.
- Practical cases performed working cooperatively to complement theory lectures. Among other activities students will develop a solution to integrate applications using service oriented architectures.
- Academic activities guided by the teacher to solve specific problems about data and functional integration.
- Individual work consisting on developing solutions to exercises posed by the teacher as well as complementary readings

ASSESSMENT SYSTEM

In addition to serve as formative activity, the practical work and complementary readings serve to be used as evaluation measure. Students will develop in groups of two people a practical case about an integration problem in a particular domain.
The assessment is:
Practical Case about applications integration:90%
Complementary Readings Presentation: 10%
Practical Case is mandatory

The extraordinary call is an exam with the 100% of subject grade

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

BASIC BIBLIOGRAPHY

- Judith R. Davis and Robert Eve Data Virtualization Going Beyond Traditional Data Integration to Achieve Business Agility, Composite Software. , 2011
- AnHai Doan, Alon Halevy, and Zachary Ives Principles of Data Integration. , Morgan Kaufmann., 2012.
- AnHai Doan, Alon Halevy, and Zachary Ives. Principles of Data Integration. , Morgan Kaufmann., 2012.
- Gavriel Salvendy, Waldemar Karwowski. Introduction to Service Engineering,, John Wiley and Sons, 2010.
- James Governor, Duane Nickull, Dion Hinchcliffe. Web 2.0 Architectures,, O'Reilly Media, Inc., 2009.
- Kevin Roebuck Storing and Managing Big Data - NoSQL, Hadoop and More, EMEREO PTY LTD. , 2012
- Russell Jurney Agile Data Science: Building Data Analytics Applications with Hadoop, O´Reilly., 2013.
- Tom White. Hadoop: The Definitive Guide. 4th edition, O´Reilly., 2015
- Trovati, M., Hill, R., Anjum, A., Zhu, S.Y., Liu, L. (Eds.) Big-Data Analytics and Cloud Computing, Springer, 2015
- Waseem Roshen, SOA-Based Enterprise Integration,, McGraw Hill Professional, 2009.

ADDITIONAL BIBLIOGRAPHY

- Benatallah and Nezhad, Service Oriented Architecture: Overview and Directions,, Lecture Notes in Computer Science, Volume 5316, 2008, Springer.
- Jin Yu , et al. Understanding Mashup Development,, IEEE Internet Computing, Vol 12:5, 2008, page:44-52.
- Matjaz, B. Juric et al. SOA Approach to Integration: XML, Web Services, ESB, and BPEL in Real-World SOA Projects,, Packt Publishing, 2007.
- Philip Bernstein and Laura Haas, Information integration in the enterprise,, Communications of the ACM Vol 51, N 9, September 2008, Pages 72-79.