

COURSE DESCRIPTION – ACADEMIC YEAR 2016/2017

Course title	Requirements and Design of Software Systems
Course code	72016
Scientific sector	INF/01
Degree	Master in Computer Science (LM-18)
Semester	1
Year	1
Credits	8
Modular	No

Total lecturing hours	48
Total lab hours	--
Total exercise hours	24
Attendance	Not compulsory
Prerequisites	Basic courses on Software Engineering and Data Bases, familiarity with UML modeling and Object-Oriented development
Course page	https://ole.unibz.it

Specific educational objectives	The course belongs to the type "caratterizzanti – discipline informatiche" in the curriculum "Software Engineering and IT Management". The course objective is to familiarize students with tools and techniques to acquire and analyze software requirements, and to define and design a software system. Emphasis is given to traceability of requirements to architecture, to justification of design decisions based on collected requirements, to consequences of design decisions.
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Lecturer	Gabriella Dodero
Contact	Piazza Domenicani 3 , Room 2.18, gabriella.dodero@unibz.it , 0471-016136 (answering machine when out of office)
Scientific sector of lecturer	INF/01
Teaching language	English
Office hours	During the lecture time span, as communicated via course website
Lecturing Assistant (if any)	--
Contact LA	--
Office hours LA	--
List of topics	• Requirements elicitation and specification • Requirements management • Traceability and validation of requirements • Quality measures of software requirements • Non-functional requirements • Architectural Patterns • Design Patterns
Teaching format	Frontal lectures (flipped classroom approach), exercises; team projects.

Learning outcomes	Knowledge and understanding • Know the main methods and techniques for designing, creating, and maintaining software products and services. • Know the main techniques and tools for modelling business processes in line with business strategy and in alignment with the underlying technology infrastructure. Applying knowledge and understanding • Be able to design and implement information systems in vertical sectors of applications according to technical, functional and organizational requirements. • Be able to apply methods of verification and validation of software. • Be able to identify new needs and business opportunities in the field of software technology and services. Making judgments • Be able to plan a technical project activity aimed at building requirements and design documents for an information system, and to bring it to completion by meeting the defined deadlines and objectives • Be able to identify reasonable work goals and estimate the resources required to achieve the objectives. Communication skills • Be able to structure and prepare scientific and technical documentation describing project activities • Be able to interact and collaborate with peers and experts in the realization of a project Ability to learn • Be able, in the context of a problem-solving activity, to extend even incomplete knowledge taking into account the objectives of the project
Assessment	The assessment of the course consists of two parts: • Project (group activity), assessed as: solution of a problem, critical discussion of the state of the art, written report and oral presentation. • Final oral exam (individual activity), containing verification questions and transfer of knowledge questions. In case of a positive mark the project will count for all 3 regular exam sessions. Project written documents have to be delivered at least one week before the final oral exam, otherwise they cannot be assessed, and the exam cannot be registered.
Assessment language	English
Evaluation criteria and criteria for awarding marks	• Project assessment (50% of exam mark) : project requirements and project design size, internal coherence and completeness of the documents, adequateness and mastery of techniques, assessed on the written document (this mark is the same for all group participants); awareness and personal contribution to group work, assessed at project presentation (this mark is individual, it confirms or decreases the group mark up to 1/3)

	Final oral exam assessment (50% of exam mark) : clarity of answers, knowledge of the proposed topics both as definitions and as examples, use of adequate technical terminology, ability to summarize, evaluate, and establish relationships among topics.
Required readings	- Lauesen, Software Requirements, Styles and techniques. Addison Wesley, available in the library, code ST 230. Plus selected chapters from the following ebooks (available with unibz credentials from the library website) - Bass, Clements, Katzan, Software Architecture in practice, http://proquest.safaribooksonline.com/book/software-engineering-and-development/9780132942799 - Pattern oriented software architecture for dummies, http://proquest.safaribooksonline.com/book/information-technology-and-software-development/9781119963998
Supplementary readings	Open educational resources, representing alternative or supplementary materials, shall be linked to the course website.
Software used	Word processing software, like for example LibreOffice. UML editing tools, e.g. Argo http://argouml.tigris.org/ Concep map editors, eg. http://cmap.ihmc.us/