



# UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Ingegneria
ACADEMIC YEAR	2017/2018
MASTER'S DEGREE (MSC)	COMPUTER ENGINEERING
SUBJECT	ARCHITECTURES AND DESIGN OF WEB SYSTEMS
TYPE OF EDUCATIONAL ACTIVITY	B
AMBIT	50369-Ingegneria informatica
CODE	13581
SCIENTIFIC SECTOR(S)	ING-INF/05
HEAD PROFESSOR(S)	LA CASCIA MARCO      Professore Ordinario      Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	6
INDIVIDUAL STUDY (Hrs)	96
COURSE ACTIVITY (Hrs)	54
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	1
TERM (SEMESTER)	2° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	LA CASCIA MARCO Monday    15:00    17:00    Microsoft Teams Codice: wztkv0u

**DOCENTE:** Prof. MARCO LA CASCIA

<b>PREREQUISITES</b>	Basic Java programming skills. Basic knowledge of TCP/IP protocol.
<b>LEARNING OUTCOMES</b>	<p>- Knowledge and understanding The student will acquire knowledge about web application architecture and design and related technologies both client-side and server-side. To achieve this goal, the course will include: lectures; class discussions about existing web applications and analysis of sample code.</p> <p>- Applying knowledge and understanding The student will be able to design and implement simple web applications and to work in team under the supervision of a senior developer. To achieve this goal, the course will include sessions in classroom discussing code and autonomous writing of simple applications.</p> <p>- Making judgements The student will acquire the capabilities to evaluate different technologies and choose the most appropriate for the project at hand. To achieve this goal the course will include: analysis and discussion of case studies; analysis of several technologies with focus on advantages and disadvantages of their use.</p> <p>- Communication skills The student will acquire the skills needed to discuss problems related to web application architectures and design and effectively interact with teammates and customers. To achieve this goal the course include sessions where students explain how they solve the assignments and the difficulties encountered.</p> <p>- Learning skills The student will be able to deepen autonomously the topics of the course and understand advanced books and documentation. To achieve this goal the course include: exercises to solve autonomously; discussion on difficulties encountered.</p>
<b>ASSESSMENT METHODS</b>	<p>Assessment methods will focus on the evaluation of learning outcomes of the course (see below) according to the Dublin descriptors. The final grade will be from 18/30 to 30/30 cum laude.</p> <p>- Evaluation of knowledge and understanding This objective will be assessed by an oral discussion concerning the topics of the syllabus. This objective will count as 25% of the final grade.</p> <p>- Evaluation of applying knowledge and understanding This objective will be assessed by developing a complete web application based on a textual description of the functionalities to implement. The web application is developed at home by a single student or a team of students at the end of the course. A live demo of the web application will have to be shown by the student or team during the exam. This objective will count as 25% of the final grade.</p> <p>- Evaluation of making judgements This objective will be assessed by developing a complete web application. In developing the program the student has to perform design choices autonomously. The objective will be assessed by discussing design choices. This objective will count as 20% of the final grade.</p> <p>- Evaluation of communication skills This objective will be assessed by the oral discussion concerning the topics of the syllabus and the description of the web application developed. This objective will count as 10% of the final grade.</p> <p>- Evaluation of learning skills This objective will be assessed by means of the discussion of topics introduced in class but requiring a significant independent study from the student. In particular the objective will be assessed by discussing how the techniques deepened autonomously have been used in the web application development. This objective will count as 20% of the final grade.</p>
<b>EDUCATIONAL OBJECTIVES</b>	<p>The goal of the course is the study of web technologies and possible web applications architectures.</p> <p>We will discuss XML as a general markup language and techniques for validation, manipulation, presentation and transformation.</p> <p>Front-end technologies will be presented referring to HTML, CSS, Javascript and the document object model of XML (DOM). AJAX technology will also be discussed. The jQuery library will be outlined including animations and AJAX support.</p> <p>Back-end technologies based on Java, JDBC, Servlet, JSP and JSF will be reviewed in some detail.</p>

	Based on the technologies studied possible web applications architecture will be shown.
<b>TEACHING METHODS</b>	Lectures, sections showing and discussing web applications sample code.
<b>SUGGESTED BIBLIOGRAPHY</b>	Note fornite dal docente. Deitel, Deitel, Nieto, Lin, Sadhu. XML Corso di programmazione. Apogeo, 2002. Peter-Paul Koch, "Javascript secondo Peter-Paul Koch" Ed. Pearson Education Italia, 2007. Deitel, Deitel. Java How to Program 9th Edition. Prentice Hall, 2012. Java Platform, Enterprise Edition: The Java EE Tutorial ( <a href="http://docs.oracle.com/javase/7/tutorial/">http://docs.oracle.com/javase/7/tutorial/</a> )

## SYLLABUS

Hrs	Frontal teaching
2	Web application basic architecture: client-server model, web services.
4	HTML language. Introduction to CSS.
2	Introduction to XML: structure of an XML document, XML tree, namespace XML, XML applications.
4	XML validation: regular expressions, DTD (Document Type Definition), XML Schema.
2	XPath: path of an element in an XML document, syntax shortcut, data types, operators and XPath expressions.
2	XSL transformation (XML Stylesheet Language): pattern, transformation sequences on elements, attributes, text, instructions, iterative and conditional processing.
4	XHTML and CSS: XHTML document structure, block and inline elements, paragraph, list, image, form, frame, applet and multimedia objects, CSS in XHTML documents, identifier, class, complex selectors and rule priority, box model.
6	Javascript core language: variable, type, control flow, predefined object, string, array, date. Javascript BOM: window management, document and navigator objects, cookies. Javascript event. Form validation: regular expressions. CSS modification in Javascript: hide and show elements, animating elements.
4	DOM manipulation in Javascript(Document Object Model): finding an element in XML document, getting node information, creating and cloning nodes, innerHTML. AJAX: request server data asynchronously using XMLHttpRequest, response handling. Exchanging data using JSON and XML.
2	jQuery library fundamentals.
2	Accessing databases using JDBC.
6	Web application: servlet and JSP, Basic JSF and AJAX support.
2	Web service: framework JAX-WS 2.0, SOAP protocol, UDDI and WSDL languages.

  

Hrs	Practice
2	Web page writing using HTML and CSS.
1	Writing XML files and validating using DTD.
2	XML validation using XML Schema. Simple XSLT transformations.
1	Writing simple web pages using Javascript.
2	Writing simple web pages using javascript and DOM.
1	Writing simple web pages using jQuery.
3	Developing a simple web application using servlet and JSP.