



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Ingegneria
ACADEMIC YEAR	2022/2023
MASTER'S DEGREE (MSC)	COMPUTER ENGINEERING
SUBJECT	WEB SYSTEMS DESIGN AND ARCHITECTURE
TYPE OF EDUCATIONAL ACTIVITY	B
AMBIT	50369-Ingegneria informatica
CODE	21500
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

PREREQUISITES	Basic knowledge of HTML and CSS. Java programming skills. Basic knowledge of TCP/IP protocol stack.
LEARNING OUTCOMES	<ul style="list-style-type: none">- 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.- 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.- 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.- 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.- 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.
ASSESSMENT METHODS	<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> <ul style="list-style-type: none">- 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.- 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.- 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.- 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.- 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.
EDUCATIONAL OBJECTIVES	<p>The goal of the course is the study of web technologies and possible web applications architectures.</p> <p>We will discuss XML 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, MVC approach and JSF will be reviewed in some detail. Java EE security will also be introduced. Based on the technologies studied possible web applications architecture will be shown.</p>
TEACHING METHODS	Lectures, practical sessions showing and discussing web applications sample code.
SUGGESTED BIBLIOGRAPHY	<p>Note fornite dal docente.</p> <p>http://w3schools.com</p> <p>Java EE 8 Tutorial. https://javaee.github.io/tutorial/toc.html</p>

SYLLABUS

Hrs	Frontal teaching
2	Web application basic architecture: client-server model, web services.
2	HTML language. Introduction to CSS.
2	Introduction to XML: structure of an XML document, XML tree, namespace XML, XML applications.
2	XML validation: regular expressions, DTD (Document Type Definition), XML Schema.
2	XPath. XSL transformation (XML Stylesheet Language): pattern, transformation sequences on elements, attributes, text, instructions, iterative and conditional processing.
4	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	XML DOM manipulation in Javascript. AJAX: using XMLHttpRequest, response handling. Exchanging data using JSON and XML. jQuery library.
4	Introduction to Java EE platform: servlet, JSP and AJAX support.
4	Use of Java beans in servlet and JSP. MVC approach.
4	JavaServer Faces Technology. Introduction to Facelets. Using JavaServer Faces Technology in Web Pages. Using Ajax with JavaServer Faces Technology. Bean validation. Contexts and Dependency Injection for Java EE.
4	Introduction to Angular
4	Object oriented architecture and relational databases. Data persistence. Brute force approach (JDBC). The DAO pattern.
4	Persistence in Java EE. Introduction to Security in the Java EE Platform.
2	Wrap-up.
Hrs	Practice
2	Writing XML files and validating using DTD.
2	Writing simple web pages using Javascript and jQuery.
2	Development and use of simple server-side components in Java EE.
2	Developing a simple web application accessing a DB using servlet and JSP.
2	Developing a simple web application using MVC approach.