UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Culture e società
ACADEMIC YEAR	2017/2018
MASTER'S DEGREE (MSC)	COMMUNICATION THEORIES
SUBJECT	WEB DESIGN AND PROGRAMMING
TYPE OF EDUCATIONAL ACTIVITY	B
AMBIT	50653-Teorie e tecniche dell'informazione e della comunicazione
CODE	19058
SCIENTIFIC SECTOR(S)	ING-INF/05
HEAD PROFESSOR(S)	PIRRONE ROBERTO Professore Ordinario Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	9
INDIVIDUAL STUDY (Hrs)	165
COURSE ACTIVITY (Hrs)	60
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	1
TERM (SEMESTER)	1° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	**PIRRONE ROBERTO** Wednesday 11:30 13:00 Studio del docente, Edificio 6, terzo piano, stanza 3025

PREREQUISITES	Basic knowledge of computer science and web programming with a minimum degree as the knowledge acquired in the course "Principles of Computer Science" in the degree course of "Communication Science for Media and Institutions".
LEARNING OUTCOMES	Knowledge and understanding After completing the course, students will possess both knowledge and advanced methods to understand and manage all the aspects involved in carrying on a communication design relying on web technologies. Students will have a basic but clear knowledge of the theoretical issues related to the software architecture of a modern web application. Moreover, they will learn all the foundational concepts involved in using ICT in digital multimedia communication, that is digital TV, IP TV, Web radio. Students will possess a deep knowledge of the design aspects of a complex website, including usability and accessibility issues. Such knowledge will be verified thorough both a written test aimed at implementing a whole dynamic web page by integrating all the front-end web technologies, and an oral examination aimed at assessing the knowledge about the theoretic issues dealt with during the course. Applying knowledge and understanding After completing the course, students will know advanced HTML5, CSS, Javascript, and XML that are the suite needed to implement front-end web software. They will know the Bootstrap environment, which is used to develop multi-platform dynamic web pages for both desktop and mobile devices. They will know how the web back-end and front-end communicate. He will be able to act as the head of a communication design team, and he will interact with IT professionals also as regards general aspects of digital multimedia communication. Such abilities will be elicited through continuous debate between students about the course topics, and in the written test. Making judgements Students will be able to make judgements about both the arrangement of a web artifact's user interface and the need of applying particular technologies in designing the architecture of a web system or not. Such ability will be elicited through continuous debate between students about the course topics, in the computer practice sessions, and during the whole exam. Communication Students will deep their computer science lexicon; particularly, they will acquire the proper terminology for developing web application, and software architectures for digital multimedia communication. They will be able to interact at a professional level with IT experts inside a mixed design team. Such abilities will be elicited through continuous debate between students about the course topics, and during the oral examination. Lifelong learning skills Students will be able to deepen autonomously all the technologies for building web contents. They will be able to read whatever IT related documentation, and to capture its basic meaning even if they will not be able to fully exploit all the theoretic aspects dealt with. Such abilities will be elicited through continuous debate between students about the course topics, in practical exercises using duties to be developed time by time, and reviewed at and during the oral examination.
ASSESSMENT METHODS	Final exam is made by a programming test, and an oral discussion. Programming test is aimed at verifying if students acquired the technologies presented during the course, and they are able to integrate such technologies while developing a dynamic web page. Oral discussion is aimed at assessing theoretic knowledge about both web software architectures and web design techniques. Students are not allowed to access oral discussion if their programming test is graded less than 18/30; the oral discussion also has to be graded at least 18/30 to allow students passing the whole exam. As the course is aimed mainly at achieving the ability of using web technologies, evaluation of the programming test is much more relevant than oral discussion. As a consequence, the whole mark is obtained by a weighted average of the two parts using an approximate weighting of 2/3 and 1/3 respectively; approximate weighting depends on actual preparation. Students will be rewarded when using original coding solutions in the programming test, and when they will prove to be able at accounting for their arguments in oral discussion.
EDUCATIONAL OBJECTIVES	The course "Web Design and Programming" is aimed at providing students with advanced competencies on web technologies as regards both content presentation and the architecture of a web application, taking into account also back-end technologies. Moreover, the course deals with professional web design topics; particularly it is devoted to usability and accessibility. Finally, the course faces also the basic concepts underlying the software technologies for

	multimedia digital communication that is internet broadcasted digital radio and TV.
	The knowledge acquired in the course "Principles of Computer Science", which is taught in the L20 class first cycle courses, forms the natural prerequisite of this course.
	Students will start by reprising the study of HTML5. CSS topics will be deepened to achieve dynamic web content creation, while Javascript will be studied as regards the Browser Object Model (BOM), image management, events, and consistency checking of user data in a form.
	Next, XML will be introduced as a general markup language along with the main validation, managing, and presentation of a XML document. Both the XML and HTML Document Object Model (DOM) will be introduced, and DOM manipulation via CSS and Javascript will be detailed. AJAX technique will be introduced to enable user requested modifications to a HTML5 document.
	The previous arguments will be used to present the basics of the software web architectures, and web services.
	Basic Human Computer Interaction (HCI) and Information Architecture (IA) for web design will be introduced. Next, user centered design techniques for web design will be introduced, that are based on the User Experience.
	Finally, the main software technologies for digital multimedia communication will be presented: audio/video streaming, podcasts, web radio, digital TV, and interactive services in a digital TV channel.
TEACHING METHODS	Lessons and practice.
SUGGESTED BIBLIOGRAPHY	Anders Møller, Michael Schwartzbach, "Introduzione a XML", Ed. Pearson Addison wesley, 2007, ISBN: 978-88-7192-373-4, costo orientativo € 36,00
	Shelley Powers, "Programmare in Javascript" Ed. Tecniche Nuove, 2007, ISBN: 978-88-481-2058-6, costo orientativo € 29,90
	Gianluca Troiani, "CSS Guida Completa III edizione", Ed. Apogeo, 2011, ISBN: 9788850330256, costo orientativo € 35,00
	Materiale didattico in forma elettronica disponibile sul portale di Ateneo
	Siti web con manuali di riferimento per le esercitazioni ed i testi: http://www.w3schools.com/ http://www.web-link.it/ http://www.html5today.it/ http://www.brics.dk/ixwt/ http://www.constile.org/

SYLLABUS

Hrs	Frontal teaching
1	Introduction.
3	Computer networks: transmission media, LAN, WAN, Internet protocols suite, DNS, client-server and peer-to-peer communication. Cloud computing.
2	Web applications: client-side and server-side computing. Applet, servlet, JSP, PHP and the LAMP model. Web services: SOAP, UDDI, and WSDL.
3	Digital multimedia communication: audio and video streaming, podcast, web radio, IP TV, digital TV and interactive services.
2	XML basics: XML documents, syntax for tags, elements, and entities, XML Document Object Model (DOM), namespaces, and applications.
2	XML document validation: regular expressions, Document Type Definition (DTD), XML Schema basics.
2	XML technologies: browsing a XML document using XPath/Xquery, XML Stylesheet Language Transformations (XSLT).
2	HTML5 basics: main features, new HTML tags, audio, video, canvas management, SVG basics.
3	Enhanced CSS: pseudo-classes, complex selectors and their application rules, horizontal and vertical popup menus, CSS for dynamic page contents.
4	Javascript basics. Classes, objects, and their properties. Variables, datatypes, operators, flow control, functions, arrays, and user defined objects.
2	Javascript Browser Object Model (BOM): managing windows, the document and navigator objects, cookies.
3	Managing the DOM in Javascript: finding an element, retrieving information about a node, modifying the DOM by creating, and duplicating a node, innerHTML property, using the DOM for enhanced HTML5 management.

SYLLABUS

Hrs	Frontal teaching
2	Javascript events: event types, registering an event manager, the event object, target element for an event; data consistency checking in a form: regular expressions.
3	Modifying CSS using Javascript: the style property, changing CSS classes and ids, writing CSS in a page, dynamic stylesheet changing, show and hide an element, animations, JQuery basics.
3	AJAX basics: sending asynchronous requests to the server using the XMLHttpRequest object, managing the answer and its formats: plain text, XML, JSON.
4	HCI basics. Web usability and accessibility: usability best practices, Web Accessibility Initiative (WAI) and basic accessibility rules. Information Architecture.
4	Web design according to the User Experience.

Hrs	Practice
2	XAMPP basics. Configuring MySQL, Apache, and Tomcat.
2	Bootstrap basics: installing and configuring Bootstrap, main CSS and Javascript components, plug-ins, using the development environment.
3	Developing dynamic web pages in Bootstrap with multimedia components, and different user interaction models.
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