

Course unit title:	Web Engineering			
Course unit code:	WSS502			
Type of course unit:	Compulsory			
Level of course unit:	Master (2nd Cycle)			
Year of study:	1			
Semester when the unit is delivered:	1 (Fall)			
Number of ECTS credits allocated :	10	Lectures:	3	Labs: 1*
Name of lecturer(s):	Dr Achilleas Achilleos			
Aim of the Course	<p>The aim of this course is to provide students with critical understanding on how to productively engineer Web Applications. The course addresses the concepts, methods and technologies for developing Web applications. Topics covered include evolution of the Internet and the Web, Web technologies, the basic models and architectures in a Web environment, requirements engineering for Web applications, analysis and design methods and technologies, testing and project management of Web applications. The course has a theoretical underpinning but provides also practical examples on how to engineer Web application projects using respective analysis and implementation methods, techniques and tools.</p>			
Learning outcomes of the course unit:	<p>Upon successful completion of the course students will be able to:</p> <ul style="list-style-type: none"> • Understand the concepts, principles and methods of Web engineering. • Gain sufficient theoretical knowledge and analytical skills to develop Web applications. • Apply the described concepts, principles and methods to development of Web applications. • Familiarize with current Web technologies and programming languages in theory and through practical exercises. • Model, visualize and document the analysis and design of Web applications. 			
Mode of delivery:	Face-to-face			
Prerequisites:	None		Co-requisites:	None
Course contents:	<ol style="list-style-type: none"> 1. Overview and Evolution of Web Engineering <ul style="list-style-type: none"> • Simple and Static Hypermedia Documents • Multi-domain platform for Dynamic Web Applications • Enterprise Driven Web-Enabled Applications 2. Web Technologies <ul style="list-style-type: none"> • HTTP: Enabling Content (HTML) and Design (CSS) • Dynamic HTML and Client-Side Business Logic • Dynamic Web Pages and Server-Side Business Logic • Overview of eXtensible Markup Language (XML) • Overview of Web Services and Remote Business Logic 			

	<ol style="list-style-type: none"> 3. The Development Process <ul style="list-style-type: none"> • Decomposing the Software Development Process • Structuring the Software Development Process • Web-Specific Software Development Processes • Examples of Web- Specific Development Processes 4. Requirements Engineering <ul style="list-style-type: none"> • Web Requirements Engineering Concepts • Organization Requirements Analysis • Application Domain Analysis • Navigation and Interaction Analysis 5. Web Application Design <ul style="list-style-type: none"> • Design Concepts: Principles and Process • Design Types and Models: Workflow Design, Data Design, Navigation Design, Presentation Design, Architecture Design • Model-Driven Engineering and Web Engineering 6. Implementation, Deployment, and Maintenance <ul style="list-style-type: none"> • Implementing the Presentation Layer • Deployment and Installation • Maintenance and Evolution: The Role of Model-Driven Design and Industry Solutions 7. Quality Assessment <ul style="list-style-type: none"> • Quality Models • Testing and Usability Evaluation • Web Design Methods and Quality Assessment • Automatic Tools for Testing and Usability evaluation
Recommended and/or required reading:	
Textbooks:	<ul style="list-style-type: none"> • Sven Casteleyn, Florian Daniel, Peter Dolog, Maristella Matera, "Engineering Web Applications", Book: Data-Centric Systems and Applications, 2009, ISBN: 978-3-540-92200-1 (Print) 978-3-540-92201-8.
References:	<ul style="list-style-type: none"> • S Murugesan, Y Deshpande, S Hansen, A Ginige, "Web engineering: A new discipline for development of web-based systems", Web Engineering, 2001 – Springer. • A Ginige, S Murugesan, "Web engineering: an introduction", IEEE MultiMedia, 2001. • E Mendes, N Mosley, S Counsell, "The need for web engineering: an introduction", Web Engineering, 2006 – Springer. • Roger S Pressman, "Can Internet Applications be Engineered?" IEEE Software, Vol. 15, No. 5, Sep/Oct 1998, pp 104-110 • Roger S Pressman, "What a Tangled Web we Weave," IEEE Software, Jan/Feb 2001, Vol. 18, No.1, pp 18-21. • San Murugesan, Yogesh Deshpande, Steve Hansen and Athula Ginige, "Web Engineering: A New Discipline for Development of Web-based Systems," Proceedings of the First International Conference of Software Engineering (ICSE) Workshop on Web Engineering, Los Angeles, USA, 1999. • Athula Ginige and San Murugesan, "Web Engineering: An Introduction,"

	<p>IEEE Multimedia, Vol. 8, No. 1, January 2001, pp 14-18.</p> <ul style="list-style-type: none"> • Gerti Kappel, Birgit Proll, Siegfried, and Werner Retschitzegger, "An Introduction to Web Engineering," in Web Engineering, Gerti Kappel, et al. (eds.) John Wiley and Sons, Heidelberg, Germany, 2003. • Yogesh Deshpande, and Steve Hansen, "Web Engineering: Creating Discipline among Disciplines," IEEE Multimedia, Vol. 8, No. 1, January 2001, pp 81-86.
Planned learning activities and teaching methods:	<p>The method used to conduct the course is structured around presentations and/or lecture notes. In addition, programming examples and literature readings are used wherever appropriate, so as to respectively educate students when and how to best apply the method and tools in real-world web engineering projects and to further nurture understanding of this course module. Laboratories will include demonstrations of taught concepts and experimentation with related technologies.</p> <p>The marked assignments should be completed and submitted using the e-learning platform following the clearly stated instructions. The submission deadline for the assignment will be also clearly stated. As part of the evaluation students will also undertake a midterm test.</p> <p>One week is provided for revising the material for this module. There will be a 3-hour closed-book examination for this module. All units will be examined and the exam paper will consist of three sections. You will have to answer all multiple choice questions from Section A, all free-text form questions from Section B and all practical programming questions from Section C.</p>
Assessment methods and criteria:	<p>The formal assessment of this module consists of</p> <ul style="list-style-type: none"> • Assignments (30%) • Midterm Test (20%) • One closed-book, three-hour examination (50%)
Language of instruction:	English
Work placement(s):	No