Course Title	Web technologies and development
Course Code	CSC660
Course Type	Elective
Level	Master (2nd cycle)
Year / Semester	2nd year /1st semester
Teacher's Name	TBA

ECTS	10	Lectures / week	3 hours / 14 weeks	Laboratories / week	N/A

Course Purpose and Objectives	The purpose of this course is to introduce student to principles and practical aspects relating to the design, implementation and maintenance of websites. The first aspect is to introduce Web Engineering; a systematic, disciplined and quantifiable approach towards successful development of high-quality, ubiquitously usable web-based systems and applications. Emphasis will be given on latest trends on Web engineering through research literature The aspect is to introduce web development using HTML5, CSS and JavaScript programming. This will introduce students to the possibilities that exist with using the latest HTML5 draft and manipulating the content by means of CSS and/or JavaScript.
Learning Outcomes	After competing this course students should be able to: • Describe the web engineering process • Explain how to gather requirements for the design of web-apps • Recall the modelling activity, analyze the importance of design elements and quality. Compare various technologies and tools for developing web-apps • Describe the process of creating a packaged app, Manage application state and manipulate application data storage • Select and configure HTML5 tags to display text, graphics or play media files; Build a user interface using HTML5 • Use cascading style sheets to: a) control content positioning, flow and overflow; b) arrange user interface content; c) manage the flow of text content; d) manage the graphical interface • Use JavaScript to: a) update the user interface; b) animate pages; c) access data; d) program touch enabled interfaces and e) access resources of the device of the operating system • Work with additional HTML5 APIs such as: a) geolocation; b) web workers; c) websockets; and d) file API

Prerequisites	CSC650	Co-requisites	None

Course Content	Web Engineering
	The course of Web programming involves the understanding of key elements such as, Internet technologies, system components as well as programming a dynamic, flexible, robust Web system. Particularly the course includes:
	The web engineering process, web-based systems and modelling
	Discussion and contextualizing web-based systems in an ever evolving Web. Process and progressive steps for modeling various aspects of Web-based systems
	Design and design patterns
	Understanding Web application design, conceptualizing interaction design, organizing information and structure design and identifying and proposing requirements for functional design. Identifying and recommending patterns for designing Web-based systems.
	Construction and Deployment
	Constructing activities for Web-based systems based on functional requirements and design. Identifying the steps required for deployment and effective use of Web-based systems.
	Technologies and Tools
	Familiarization with the availability of a variety of tools (proprietary and/or open source) that are used in the industry for the development and implementation of Web-based systems.
	Testing web-apps, change and content management
	Standard and practical methods and steps in ensuring the correctness of operation and adherence to specification requirements. Managing and manipulating information and its change after the deployment and utilization of the system.
	Web development
	The class will have extensive usage of CSS and JavaScript to manipulate HTML5 content pages and applications.
	Understanding and managing the application life cycle
	Creating apps; the run-time environment; app-package; app-container; application states; understanding touch interface and gestures; debugging HTML5 apps;

	Using HTML5 to build the interface Attributes; elements; nesting; text elements, graphics; the canvas object; using SVG for graphics; media tags (audio, video). Structuring and HTML document (header, selection, nav, article, aside); creating tables and lists; input and forms, validation of input Using CSS Linking CSS to HTML; separating content from style; selectors; fonts; positioning; content flow and overflow; simple layouts; using flexible boxes; grid layouts; using grid template; using regions for text flow management; creating graphic effects (round corners, shadows and more); transformations (2D & 3D); SVG filters Using JavaScript Basics, functions, methods, jQuery and other 3rd party libraries; accessing page element; responding to event; showing and hiding elements; adding and updating content; creating animations; working with images and shapes; sending and receiving data; reading and writing files; input validation; using cookies; working with the touch interface; additional HTML5 APIs (geolocation, web workers et. al.); accessing system resources (memory, location, camera)
Teaching Methodology	Face-to-Face
Bibliography	- Pressman R.; Maxim B.; WEB ENGINEERING: A PRACTISIONER'S APPROACH; McGraw-Hill Higher Education - Felke-Morris T, WEB DEVELOPMENT AND DESIGN FOUNDATION WITH HTML5, Pearson - Kappel G., Proll B., Reich S., Retshitzegger W.; WEB ENGINEERING: THE DISCIPLINE OF SYSTEMATIC DEVELOPMENT OF WEB APPLICATIONS; Wiley & Sons - Mendes E. – Mosley N. (Eds.); WEB ENGINEERING; Springer - Casteleyn S., Daniel F., Dolog P., Matera M.; ENGINEERING WEB APPLICATIONS, Springer
Assessment	Examinations 60% Coursework 30% Class participation and Attendance 10% 100%
Language	English