INSTITUTION	NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS

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SCHOOL	SCHOOL OF SCIENCE					
DEPARTMENT	INFORMATICS AND TELECOMMUNICATIONS					
COURSE LEVEL	UNDERGRADUATE					
COURSE TITLE	**Internet Application Technologies**					
COURSE CODE	**ΥΣ14**		**Semester**	6	**ECTS**	6
TEACHING HOURS per week	**THEORY**	2	**SEMINAR.**	1	**LABORATORY**	1
COURSE TYPE	**Select one of the following and delete the rest** Electives (ΠΜ)					

K	**E1**	**E2**	**E3**	**E4**	**E5**	**E6**
A B			B		B	

URL	https://eclass.uoa.gr/courses/D53/
EXPECTED PRIOR KNOWLEDGE/ PREREQUISITES AND PREPARATION:	K10 Object-oriented programming
TEACHING AND EXAMINATIONS LANGUAGE:	GREEK
THE COURSE IS OFFERED TO ERASMUS STUDENTS	NO

COURSE CONTENT
The course focuses on the design and development of internet applications with emphasis on web applications. The course presents the architecture and the infrastructure of the World Wide Web as well as the architecture of client/server applications with emphasis on the architecture of multi-tier web applications. The covered topics include the following knowledge areas and technologies: Functionality of Web servers and browsers. HTTP protocol. HTML5/CSS languages. Javascript/Typescript languages. Relational Database Management Systems with internet access (MySQL) NoSQL database systems (MongoDB). Backend technologies: Servlets, RESTful Web Services, Object-relational mapping software frameworks, Connection Pooling. Frontend technologies: Javascript, Angular 5. Web Architectural Models (Model 1, Model-View

Controller). Web Security (SSL/TLS, JSON Web Token). Programming Project: Design and Development of a complete Web Application including a subsystem for the provision of personalized recommendations.

STUDENT LEARNING OBJECTIVES
Expected Learning Outcomes Upon successful completion of the course the student will be able to: • Describe the functionality of web servers, web browsers and of the HTTP protocol. • Describe the architecture and functionality of multi-tier internet applications with emphasis on web applications. • Install and manage web servers (Apache Tomcat / TomEE) and RDBMS systems (MySQL). • Program backend software components (Servlets, RESTful Web Services, Object-relational mapping components) with the Java programming language. • Program web pages and frontend software components with HTML5, CSS, Javascript and Angular 5 languages. • Design and develop web applications through the use of backend and frontend technologies. • Utilize the data collected by web applications to develop a subsystem of personalized recommendations.

TEACHING AND LEARNING METHODS - ASSESSMENT	
TEACHING METHOD	In Class (Face to Face)
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	Learning process supported by the e-class platform (Course description, Material Provision, Announcements, Calendar, Student Teams, Assignments, Discussion forum, External links) Email communication Live transmission of lectures Ability to track recorded lectures Utilization of Integrated Development Environments (IntelliJIdea / Eclipse / Netbeans / MySQL Workbench).
TEACHING ORGANIZATION *Describe in detail the way and methods of teaching:* *Enhanced Lectures,* *Online Lectures,* *Seminars,* *Tutorial,* *Laboratory,* *Laboratory Exercise,* *Study & analysis of literature,* *Practice (Positioning),* *Interactive teaching,* *Developing a project,* *Individual / group work* *Telework (reference to tools) etc.*	Theory is presented in lectures through pdf / powerpoint presentations. IDEs, programming languages and web technologies are presented in laboratory demonstrations. Tutorials are organized for the resolution of technical issues around the development of web applications and for responding to student questions. A project for the design and development of a web application including a recommender subsystem is assigned to student teams of 2-3 members. Support is provided for the implementation of the programming project through the discussion forum of the eclass platform.

Details of the student's study hours for each learning activity and hours of non-guided study are shown to ensure that the total workload at the semester corresponds to the ECTS	**Activity** / ***Student Workload*** *(hours)* Lectures: 26 Tutorial: 13 Laboratory: 13 Project development (per person): 60 Study for the familiarization with web app technologies: 20 Study for the final written examination / Implementation of additional advanced requirements: 18 ***Total Course (25 hours of workload per unit of credit)***: ***150***
ASSESSMENT OF STUDENTS *Description of the assessment process* *Assessment Methods, Formative or Concluding, Multiple Choice Test, Quick Response Questions, Test Development Questions, Problem Solving, Written Work, Report / Report, Oral Examination, Public Presentation, Laboratory Work, Other / Other* *Fully defined evaluation criteria are mentioned and if and where they are accessible to students.*	Students are evaluated through a written examination and a programming project. Knowledge of the theoretical aspects of the course is assessed by the written examination. The programming aspects of the course are assessed through the programming project on the basis of graded criteria. Students are given the opportunity to request an analysis of their evaluation regarding both the written examination and the programming project. The evaluation is corrected in case of an error. Also, students have the possibility to be exempted from the written examination by implementing additional advanced requirements in the programming project.

Assessment methods	***Number***	***Percentage***
Written examination	1	20%
Project	2	80%

LITERATURE AND STUDY MATERIALS / READING LIST

Official course textbooks (Eudoxos)

1. R. Connoly, R. Hoar, Web Programming, M. Γκιούρδας, 2015.
2. H.M. Deitel, P.J. Deitel, JAVA Programming, 10th edition, Εκδόσεις M. Γκιούρδας, 2015.

Additional sources (in English):

1. L. Shklar, R. Rosen, Web Application Architecture: Principles, Protocols and Practices, 2nd Edition, Wiley, 2009.
2. N.S. Williams, Professional Java for Web Applications, Wrox, 2014.
3. Angular Development guise (https://angular.io/guide)

Powerpoint / pdf presentations are provided for all the technologies taught in the course.