

COURSE OUTLINE

GENERAL

SCHOOL	Sciences and Engineering		
ACADEMIC UNIT	Computer Science		
LEVEL OF STUDIES	1 st Cycle		
COURSE CODE	COMP-470	SEMESTER	Fall, Spring
COURSE TITLE	Internet Technologies		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		WEEKLY TEACHING HOURS	CREDITS
		2.5	6
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Specialization		
PREREQUISITE COURSES:	COMP-212, COMP-358		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	English		
IS THE COURSE OFFERED TO ERASMUS STUDENTS			
COURSE WEBSITE (URL)			

LEARNING OUTCOMES

<p>Learning outcomes</p> <p><i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> • <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i> • <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> • <i>Guidelines for writing Learning Outcomes</i>
<p>After completion of the course students are expected to be able to:</p> <ul style="list-style-type: none"> • Analyze communication protocols used in web technologies. • Evaluate Internet infrastructure, underlying protocols, and services (e.g., World Wide Web). • Critically assess TCP/IP architecture and application interfaces. • Compare and contrast HTTP Protocol components (servers/clients, SSL, state management) against RFC standards. • Investigate state-of-the-art research in Web caching, client-side caching control, and proxy technologies. • Design and implement web applications using modern technologies (HTML, XHTML, DHTML,

.NET).

- Develop N-tier web applications applying usability principles, Unicode, and methodology evaluation.
- Research caching techniques for streaming media in contemporary Internet architectures.
- Implement APIs for front-end/back-end mediation in application development.
- Construct RESTful APIs using modern tools and web standards.
- Research Semantic Web advancements and develop resource-constrained client applications.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

.....

Others...

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Project planning and management

Criticism and self-criticism

Production of free, creative and inductive thinking

SYLLABUS

- Nature of the Internet. Internet Services and Protocols. World-Wide-WEB
- Review of TCP/IP and application interface
- HTTP Protocol. HTTP servers and clients, Hypertext Reference Model/RFC2965 - HTTP State Management Mechanism, HTML5, CSS, CSS Fundamentals, Specifications, CSS Versions, visual representation of the CSS, Frameworks, Abstractions, etc.
- Web Technologies and JavaScript, client-side scripting.
- Web Sockets and Client/Server structures and client-side scripting using State management.
- Sockets and Client/Server structures, N-tier architecture of the global internet. Servers and State management, Usability Principles, Methodologies & Evaluation, Unicode
- TCP/IP stack and protocols (TCP/IP Tutorial, RFC 1180) and application interface
- Architecture of the World Wide Web. Using a Uniform Resource Identifier (URI) to Access a Resource, Representation Management, URI persistence, Linking and access control
- Web caching. Client site caching control. WEB Proxies. Web caching include additional configuration and administration of Squid Cache

- Markup language using the XML & Web Technologies. Briefly cover the Web Programming: HTML, XHTML, Object Models, Styles, Dynamic content, DHTML
- Programming the WEB: Client scripting. JavaScript, Jscript, VB Script
- TCP/IP Protocol. Socket Programming paradigms using Java (Unix, Winsock, .NET)
- System issues related to Internet programming and performance: protocols, client and servers, WWW interactivity, RESTful APIs examples, API as mediators for back-end and front-end application development, user semantic demands, Internet-based distributed systems
- Peer-to-Peer Content Networks and Caching Techniques for Streaming Media/Acquire the knowledge about the RESTful APIs/A survey of current research on the reflective services

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face-to-face														
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	<i>Use of ICT in teaching / Χρήση ΤΠΕ</i> <i>Communication with students / Επικοινωνία με Φοιτητές</i>														
TEACHING METHODS <i>The manner and methods of teaching are described in detail.</i> <i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i> <i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i>	<table border="1"> <thead> <tr> <th>Activity</th><th>Semester workload</th></tr> </thead> <tbody> <tr> <td>Lectures</td><td>35</td></tr> <tr> <td>Preparation, homework, quizzes</td><td>52</td></tr> <tr> <td>Projects</td><td>38</td></tr> <tr> <td>Exam preparation</td><td>23</td></tr> <tr> <td>Final Exam</td><td>2</td></tr> <tr> <td>Course total</td><td>150</td></tr> </tbody> </table>	Activity	Semester workload	Lectures	35	Preparation, homework, quizzes	52	Projects	38	Exam preparation	23	Final Exam	2	Course total	150
Activity	Semester workload														
Lectures	35														
Preparation, homework, quizzes	52														
Projects	38														
Exam preparation	23														
Final Exam	2														
Course total	150														
STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i> <i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i> <i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	Tests/Quizzes, Design project, Homework, Project, Mid-Term, Final Exam														

ATTACHED BIBLIOGRAPHY

Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Web Programming. Step by Step (2nd edition)	M. Stepp, J. Miller and V. Kirst	lulu.com	2018	ISBN-10:110557878X ISBN-13:978-1105578786
Interact with Web Standards. A Holistic Approach to Web Design	E. Anderson et al.	New Riders Pub	2021	ISBN-10:0321703529 ISBN-13:978-0321703521
New Perspectives on HTML 5 and CSS: Comprehensive	Patrick M. Carey	Cengage, 8th Edition	2022	ISBN 9780357107140

Recommended Textbooks* / Readings:

Title	Author(s)	Publisher	Year	ISBN
Core Web Programming	M. Hall and L.Brown,	Prentice Hall	2017	0-13-089793-0
Web Technology: Theory and Practice	M. Srinivasan	Pearson	2018	ISBN-13: 9788131774199
Web programming and Internet technologies	P. Lingras and P. Scobey	Jones & Bartlett Learning; 2nd edition (Sept. 2016)	2016	ISBN-10: 9781284070682 ISBN-13:978-1284070682

*From the above recommended textbooks specific parts will be used during lecture sessions that will be specified by your lecturer.