

INSTITUTION	NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS																			
SCHOOL	SCHOOL OF SCIENCE																			
DEPARTMENT	INFORMATICS AND TELECOMMUNICATIONS																			
COURSE LEVEL	UNDERGRADUATE																			
COURSE TITLE	Digital Accessibility and computer-based Assistive Technologies																			
COURSE CODE	ΥΣ22	Semester	7	ECTS	6															
TEACHING HOURS per week	THEORY	2	SEMINAR.	0	LABORATORY	2														
COURSE TYPE	<p>Select one of the following and delete the rest Compulsory (YM) / Optional Lab (EP) / Track Compulsory (EYM) / Project / General education (ΓΠ) / Electives (ΠΜ)</p> <table border="1"> <thead> <tr> <th>K</th> <th>E1</th> <th>E2</th> <th>E3</th> <th>E4</th> <th>E5</th> <th>E6</th> </tr> </thead> <tbody> <tr> <td>A, B</td> <td>E</td> <td>E</td> <td>E</td> <td>E</td> <td>E</td> <td>E</td> </tr> </tbody> </table> <p><i>Fill the table as in the curriculum: Track (A-Computer Science, B- Computer Engineering) / Specialization Compulsory (Y) / Core Specialization (B)/ Elective Specialization (E)</i></p>						K	E1	E2	E3	E4	E5	E6	A, B	E	E	E	E	E	E
K	E1	E2	E3	E4	E5	E6														
A, B	E	E	E	E	E	E														
URL	https://eclass.uoa.gr/courses/DI481/																			
EXPECTED PRIOR KNOWLEDGE/ PREREQUISITES AND PREPARATION:																				
TEACHING AND EXAMINATIONS LANGUAGE:	GREEK																			
THE COURSE IS OFFERED TO ERASMUS STUDENTS	NO																			

COURSE CONTENT
<p>Dimensions of user differentiation. User needs analysis for persons with sensory (vision, hearing, touch), motor (locomotion, dexterity, reaching/stretching) and cognitive (mental functions, interpersonal communication) disability. Modelling and metrics of disability based on the standards of the World Health Organisation. The principles of Universal Design. The 80/20 rule (Pareto principle). Techniques, devices and software for accessible interaction - Computer based Assistive Technologies. The rules of Fitts and Hick. Application of Universal Design on accessible multimedia content. Component-based life cycle of accessible software applications. Universal Design for Learning. International standards for accessibility and usability. The Web Accessibility Initiative of the World Wide Web Consortium (W3C). Web Content Accessibility Guidelines. Legal obligations for the web content accessibility. Development of accessible websites. Tools for the assessment and evaluation of websites' accessibility.</p>

STUDENT LEARNING OBJECTIVES
<p>The course objectives include:</p> <ul style="list-style-type: none"> Understanding the role of computer-based Assistive Technologies for persons with impairments and/or students with special learning needs,

- understanding of the various aspects of e-accessibility in computer systems and the web content for persons with impairments as well as understanding of the corresponding principles, tools and standards
- preparation of the university students to work with professionally, developmental and research issues of computer-based Assistive Technologies and Universal Design for Persons with Impairments

After the successful completion of the course the student could show knowledge and skills in:

- disability models and metrics,
- analysis of user requirements for Persons with Impairments,
- definitions, classification and functional specifications of computer-based Assistive Technologies for persons with impairments,
- Principles and methods of Universal Design,
- International standards for e-accessibility,
- Developments of accessible websites and accessible web content
- Website accessibility assessment tools.

TEACHING AND LEARNING METHODS - ASSESSMENT													
TEACHING METHOD	In Class and in Laboratory (Face to Face)												
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	<p>Learning process supported by the eClass platform (basic and supplementary educational material delivery, announcements, task assignments and submissions, project assignment and submission, course information, calendar, messages).</p> <p>Email communication.</p> <p>Utilization of specialized software: Free Assistive Technology Inventory for Personal Computers (https://access.uoa.gr/ATHENA/) and mobile devices - smartphones and tablets (https://access.uoa.gr/mathena)</p>												
<p>TEACHING ORGANIZATION</p> <p><i>Describe in detail the way and methods of teaching:</i> 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.</p> <p><i>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</i></p>	<p>Theory is presented through lectures and slides. The programming environment is presented in the laboratory. Students have access to online educational material in the form of slides, manuals, laboratory exercises, videos.</p> <table border="1"> <thead> <tr> <th>Activity</th> <th>Student Workload (hours)</th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td>26</td> </tr> <tr> <td>Laboratory</td> <td>26</td> </tr> <tr> <td>Small individual exercises</td> <td>60</td> </tr> <tr> <td>Independent Study</td> <td>38</td> </tr> <tr> <td>Total Course (25 hours of workload per unit of credit)</td> <td>150</td> </tr> </tbody> </table>	Activity	Student Workload (hours)	Lectures	26	Laboratory	26	Small individual exercises	60	Independent Study	38	Total Course (25 hours of workload per unit of credit)	150
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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.

Assessment of students is based on: a) grading 5 laboratory exercises that students submit to eClass on predefined deadlines and b) a written examination based on multiple choice questions.

The grade of the exercises is taken into account in the final evaluation in the case the student achieves a grade of 5 (in the scale of 10) in the written examination.

Students can access the errors on their written examinations and ask for a regrading.

Assessment methods	Number	Percentage
Written examination	1	54%
Exercises	5	46%

LITERATURE AND STUDY MATERIALS / READING LIST

- C. Stephanidis (Ed.) "The Universal Access Handbook" CRC Press, 2009
- W. Chisholm, M. May "Universal Design for Web Applications", O'Reilly Media Inc., 2009
- B. Carpenter, L. Johnston, L. Breard "Assistive Technology: Access for All students" 3rd edition, Pearson, 2015
- J. Green: "Assistive Technology in Special Education: resources for education, intervention and rehabilitation", 2nd edition, Prufrock Press, 2014
- A. Dell, D. Newton, J. Petroff: "Assistive Technology in the classroom" 3rd edition, Pearson, 2016
- G. Kouroupetroglou and E. Florias "Scientific Symbols in braille at the Greek domain - Application in Computer Systems for the Blind", Editor: Education and Rehabilitation Center of Blind, Athens 2003 (*in Greek*)
- G. Kouroupetroglou, K. Xipteridis and E. Mitsopoulos: "Computer Access Techniques", University of Athens, Athens, 2001 (*in Greek*)
- G. Kouroupetroglou and S. Lialiou: "Symbol based Alternative Interpersonal Communication Systems", University of Athens, Athens, 2000 (*in Greek*)
- G. Kouroupetroglou and S. Lialiou: "Alternative and Augmentative Interpersonal Communication for Persons with Impairments", University of Athens, Athens, 2001 (*in Greek*)