

<b>INSTITUTION</b>	NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS																			
<b>SCHOOL</b>	SCHOOL OF SCIENCE																			
<b>DEPARTMENT</b>	INFORMATICS AND TELECOMMUNICATIONS																			
<b>COURSE LEVEL</b>	UNDERGRADUATE																			
<b>COURSE TITLE</b>	Computer systems and e-accessibility for students with disabilities																			
<b>COURSE CODE</b>	ΥΣ22	Semester	7	ECTS	6															
<b>TEACHING HOURS per week</b>	<b>THEORY</b>	2	<b>SEMINAR.</b>	0	<b>LABORATORY</b>	2														
<b>COURSE TYPE</b>	<p><b>Select one of the following and delete the rest</b> 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														
<b>URL</b>	<a href="https://eclass.uoa.gr/courses/DI481/">https://eclass.uoa.gr/courses/DI481/</a>																			
<b>EXPECTED PRIOR KNOWLEDGE/ PREREQUISITES AND PREPARATION:</b>																				
<b>TEACHING AND EXAMINATIONS LANGUAGE:</b>	GREEK																			
<b>THE COURSE IS OFFERED TO ERASMUS STUDENTS</b>	NO																			

<b>COURSE CONTENT</b>
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. Modeling 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.

### STUDENT LEARNING OBJECTIVES

The course objectives include:

- Understanding the role of computer-based Assistive Technologies for students with impairments and/or special learning needs,
- understanding of the various aspects of e-accessibility in computer systems and the web content for students 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 students 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)				
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</b>	<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 (<a href="https://access.uoa.gr/ATHENA/">https://access.uoa.gr/ATHENA/</a>) and mobile devices - smartphones and tablets (<a href="https://access.uoa.gr/mathena">https://access.uoa.gr/mathena</a>)</p>				
<b>TEACHING ORGANIZATION</b> <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,	<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> </tbody> </table>	Activity	Student Workload (hours)	Lectures	26
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Lectures	26				

<p><i>Developing a project, Individual / group work Telework (reference to tools) etc.</i></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>	Laboratory	26	
	Small individual exercises	60	
	Independent Study	38	
	<b>Total Course (25 hours of workload per unit of credit)</b>	<b>150</b>	
<p><b>ASSESSMENT OF STUDENTS</b> <i>Description of the assessment process</i></p> <p><i>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</i></p> <p><i>Fully defined evaluation criteria are mentioned and if and where they are accessible to students.</i></p>	<p>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.</p> <p>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.</p>		
	<b>Assessment methods</b>	<b>Number</b>	<b>Percentage</b>
	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" 3<sup>rd</sup> 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*)