

<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>	GRADUATE				
<b>COURSE TITLE</b>	<b>Techno-economic Analysis of Telecommunication Systems</b>				
<b>COURSE CODE</b>	<b>C26</b>	<b>SEMESTER</b>	spring	<b>ECTS</b>	<b>6</b>
<b>TEACHING HOURS per week</b>	<b>THEORY</b>	<b>3</b>	<b>SEMINAR</b>	<b>LABORATORY</b>	
<b>URL</b>	<a href="https://eclass.uoa.gr/courses/DI470/">https://eclass.uoa.gr/courses/DI470/</a>				

<b>COURSE CONTENT</b>
<p>The course focuses on general issues of techno-economic design and implementation of telecommunication networks as well as current issues relating to regulation in the telecommunications' market.</p> <p>An introduction to the techno-economic valuation of networks and services is given and the basic concepts and ways of valuing investments are analyzed.</p> <p>The way of calculating the first installation cost and the dimensioning of selected architectures and technologies are analyzed. For telecommunication solutions, methods are given to calculate the operating costs of maintenance and the management costs of a modern network.</p> <p>Mathematical methods for calculating service demand are presented, through technology diffusion models. An introduction to service and network pricing and life cycle cost modelling.</p> <p>The basic structure of investment valuation, the financial indicators as well as modern business models of access network providers and virtual providers (MVNO) are presented.</p> <p>Finally, there is an introduction to uncertainty problems and sensitivity analysis as well as applications of real options theory in matters of telecommunication networks through case studies.</p> <p>During the course, case studies are implemented by each examinee. These case studies concern foreign countries.</p>

<b>STUDENT LEARNING OBJECTIVES</b>
<p>Upon successful completion of the course the student will be able to:</p> <ul style="list-style-type: none"> <li>• Define the basic parts of a techno-economic model</li> <li>• Dimension a wired or wireless telecommunication network</li> <li>• Create a demand model</li> <li>• Calculate the financial indicators</li> <li>• Build a complete techno-economic model of telecommunication infrastructure</li> <li>• Perform different scenarios and deliver a profit sensitivity model</li> <li>• Develop and evaluate a risk analysis model</li> </ul>

<b>TEACHING AND LEARNING METHODS – ASSESSMENT</b>	
<b>TEACHING METHOD</b>	In class (Face to Face)
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</b>	Learning process supported by the e-class platform. E-mail communication Live transmission of lectures

	<p>Ability to follow recorded lectures Utilization of educational environments (webex, zoom)</p>																		
<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 &amp; 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>The course's lectures and seminars are given through slide show presentations. Three individual assignments (one for each part of the course) are given in order to embed the theory through the application of TE tools.</p> <table border="1" data-bbox="753 411 1386 695"> <thead> <tr> <th>Activity</th> <th>Student Workload (hours)</th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td>39</td> </tr> <tr> <td>Three (3) Case study Assignments</td> <td>60</td> </tr> <tr> <td>Small practice tests</td> <td>11</td> </tr> <tr> <td>Independent Study</td> <td>40</td> </tr> <tr> <td><b>Total Course (25 hours of workload per unit of credit)</b></td> <td><b>150</b></td> </tr> </tbody> </table>	Activity	Student Workload (hours)	Lectures	39	Three (3) Case study Assignments	60	Small practice tests	11	Independent Study	40	<b>Total Course (25 hours of workload per unit of credit)</b>	<b>150</b>						
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<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>Students are assessed with three (3) compulsory individual assignments. Assignment results are presented in class. The assignments are evaluated with classified criteria and communicated to the students. Complaints and retrains are allowed.</p> <table border="1" data-bbox="753 863 1386 1125"> <thead> <tr> <th>Assessment methods</th> <th>Number</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Assignment 1 / Presentation</td> <td>1</td> <td>20%</td> </tr> <tr> <td>Assignment 2 / Presentation</td> <td>2</td> <td>35%</td> </tr> <tr> <td>Assignment 3 / Presentation</td> <td>3</td> <td>45%</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Assessment methods	Number	Percentage	Assignment 1 / Presentation	1	20%	Assignment 2 / Presentation	2	35%	Assignment 3 / Presentation	3	45%						
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<p><b>LITERATURE AND STUDY MATERIALS / READING LIST</b></p>
<p>Broadband Access Networks, Introduction Strategies and Techno-economic Evaluation DOI <a href="https://doi.org/10.1007/978-1-4615-5795-1">https://doi.org/10.1007/978-1-4615-5795-1</a> Papers in eclass and technoeconomic models from NRA websites</p>