

<b>Course unit title:</b>	Complex Networked Systems
<b>Course unit code:</b>	CSW461
<b>Type of course unit:</b> (Compulsory/optional)	Optional
<b>Level of course unit:</b> (First, second or third cycle)	Bachelor (1st cycle)
<b>Year of study:</b>	4
<b>Semester when the unit is delivered:</b>	7 or 8
<b>Number of ECTS credits allocated:</b>	6
<b>Name of lecturer(s):</b>	TBA
<b>Learning outcomes of the course unit:</b>	
<p>Upon successful completion of this course students should be able to:</p> <ul style="list-style-type: none"> <li>• Define and explain the structure of networked systems.</li> <li>• Identify key concepts in network system structure</li> <li>• Recognize properties and behaviors of network systems and identify criteria to measure them</li> <li>• Create models of network systems in order to explain their evolution and possibly predict interacting behaviors.</li> <li>• Use social network analysis and relevant research to analyze and assess organizational networks</li> </ul>	
<b>Mode of delivery:</b>	Face-to-face
<b>Prerequisites and co-requisites:</b>	CSW341
<b>Recommended optional program components:</b>	None
<b>Course contents:</b>	
<p><b>Objective:</b> The course focuses on the field of complex networked systems. Starting at its infancy, it then presents the structure of networks and their dynamics as a key concept across disciplines. Examples of networked systems include the Internet, the World Wide Web, social networks of acquaintance or other connections between individuals, inter-organisational networks, neural networks, metabolic networks, food webs, and many others. Such diverse networks share common topological and dynamical features, indicating the existence of robust self-organising principles and evolutionary laws that govern many natural and social systems. The course also aims to analyse common</p>	

properties shared by a wide range of networked systems in order to examine sociologically relevant phenomena that exhibit complex network structures and dynamics. Such examples are epidemics of disease, cultural fads, financial crises, organisational innovation and inter-firm coordination. To address these and many other problems, the course will develop a highly interdisciplinary approach to social science by combining current research literature on complex systems and social networks with contributions of relevant organisational and sociological research.

**Description:**

This course will introduce the concept of network and discuss empirical studies of the structure of networks of different types. These are organisational networks, information networks, technological networks and biological networks. This will develop an understanding of the main properties that characterise the structure and behaviour of networked systems, and to suggest appropriate ways to measure these properties. Also, students are required to create models that can help them understand the meaning of the main properties of networked systems— how they came to be as they are, and how they interact with one another. Also, it will introduce the main issues surrounding the prediction of the behaviour of networked systems on the basis of measured structural properties and the local rules governing individual nodes. Also, students will develop a conceptual framework for the analysis, design and assessment of organisational networks by extending and integrating social network analysis with new institutional economics contributions and other strands of relevant organisational and sociological research

Material to be covered: Graph Model for Pattern Recognition in Text.-Information Retrieval in Wikis using an Ontology.- Ego-centric Network Sampling in Viral Marketing Applications.- Integrating SNA and DM Technology into HR Practice and Research: Layoff Prediction Model.- Actor Identification in Implicit Relational Data Sources.- Perception of Online Social Networks.- Ranking Learning Entities on the Web by Integrating Network-based Features.- Discovering Proximal Social Intelligence for Quality Decision Support.- Discovering User Interests by Document Classification

<p><b>Recommended or required reading:</b></p>	<p>Ting, I-Hsien; Wu, Hui-Ju; Ho, Tien-Hwa , Mining and Analyzing Social Networks, Springer, 2010,  Jan Van Dijk, The Network Society, SAGE Publications LTD, 2012, (1446248968)</p>				
<p><b>Planned learning activities and teaching methods:</b></p>	<table border="0"> <tr> <td data-bbox="565 1619 1024 1711">Class Instruction:</td> <td data-bbox="1024 1619 1461 1711" style="border: 1px solid black; text-align: center;">42 Hours</td> </tr> <tr> <td data-bbox="565 1711 1024 1873">Consultation:</td> <td data-bbox="1024 1711 1461 1873" style="border: 1px solid black; text-align: center;">15 Hours</td> </tr> </table>	Class Instruction:	42 Hours	Consultation:	15 Hours
Class Instruction:	42 Hours				
Consultation:	15 Hours				

<b>Assessment methods and criteria:</b>	Examinations Class Participation Project	<table border="1"> <tr> <td data-bbox="1029 226 1260 268">55%</td> </tr> <tr> <td data-bbox="1029 268 1260 310">5%</td> </tr> <tr> <td data-bbox="1029 310 1260 352">40%</td> </tr> <tr> <td data-bbox="1029 352 1260 394">100%</td> </tr> </table>	55%	5%	40%	100%
55%						
5%						
40%						
100%						
<b>Language of instruction:</b>	English					
<b>Work placement(s):</b>	No					
<b>Place of Teaching:</b>	Regular Classroom European University Cyprus, Nicosia					