

Course unit title:	Computer Networks and IT Facilities
Course unit code:	INS608
Type of course unit: (Compulsory/optional)	Optional
Level of course unit: (First, second or third cycle)	Master (2 nd Cycle)
Year of study:	1 or 2
Semester when the unit is delivered:	2 or 3
Number of ECTS credits allocated:	8
Name of lecturer(s):	TBA
Learning outcomes of the course unit:	
<p>Upon successful completion of this course students should be able to:</p> <ul style="list-style-type: none"> • Recognize the current communications technology and practices in the field. • Relate services, interfaces and standards to the layered OSI reference model. • Analyze and determine the networking requirements for the provision of networked services and selection of the appropriate technologies. • Identify and discuss the current and emerging issues in the area of communications technology. • Apply the appropriate communications strategy for an enterprise customer. • Design and develop networked products and services, supporting business objectives and adding measurable value to businesses and organizations. • Rate the social economic political and legal issues associated with the use of broadband and mobile networking technology. 	
Mode of delivery:	Face- to- face
Prerequisites and co-requisites:	None
Recommended optional program components:	None
Course Contents:	
<p>Objective: To evaluate the technical challenges and business potential faced by organizations, utilizing IS and increasingly relying on the use of networking and IT technology. Provide students with the ability and skills to design networking systems for their organizations by assessing the organizations' needs and the constraints and limitations of current technology.</p>	

Description:

Telecommunications fundamentals: media, network equipment, software and services.

Data communications fundamentals: codes, data encoding, and synchronization, channel capacity, error correction, data compression and multiplexing

Computer networks and the Internet:

The Network Edge; the network core; network access and physical media; ISPs and Internet backbone; delay and loss in packet switched networks; protocol layers and their service models.

Layered protocols: The TCP/IP protocol suite and architecture

Principles of application layer protocols:

The Web and HTTP; applications FTP; electronic mail DNS; socket programming with TCP and UDP.

Transport layer:

Multiplexing and demultiplexing; connectionless transport and UDP; principles of reliable data transfer; connection oriented transport: TCP; principles of congestion control; TCP congestion control.

Network routing:

Routing principles; hierarchical routing; the Internet protocol; routing in the Internet; Ipv6; multicast routing; mobility and the network layer.

VoIP; and real-time transmission on IP networks.

LANs:

Error detection correction techniques; multiple access protocols; LAN addresses and ARP; ethernet; hubs bridges and switches; wireless links; point-to-point protocols; asynchronous transfer mode; frame relay.

Network management:

The Infrastructure for network management; FCAPS framework.

Mobile networking:

Technologies to support personalized delivery targeted information; user modeling and feedback; wireless transmission technologies; WiFi; 3G – 4G telecoms networks; nomadic networking.

Mobile databases:

Infrastructure-based mobile platform; infrastructure-less mobile platform; characteristics of mobile environments; data management issues in mobile environment.

Corporate networks:

Intranets; extranets; network management; access; security; firewalls. The role of VANs - services and service providers.

Broadband networks and cable:

Charging systems; set-top boxes; databases supporting BLOBS (binary large objects); encryption and security; case studies.

Security in computer networks:

Principles of Cryptography; authentication; integrity; key distribution and certification;

<p>access control; attacks and countermeasures.</p> <p>Concepts of interoperability and standardization.</p> <p>Computer platforms and information architectures</p> <p>Web services. The role of XML and SOAP.</p> <p>Enterprise systems and enterprise system architectures.</p> <p>Evaluate identify and choose the appropriate components for a given set or requirements. Economic and political implications of trans-border data flow; case studies.</p>							
<p>Recommended or required reading:</p>	<p>Kurose, J., F., & Ross, K., W. (2009). Computer Networking: A Top-Down Approach Featuring the Internet, 5th Edition. Boston, MA: Addison-Wesley.</p> <p>Stallings, W. (2008). Business Data Communications, 5th Edition. Prentice Hall.</p> <p>Stallings, W. (2009). Wireless Communications and Networks, 2nd Edition. Boston, MA: Prentice Hall.</p> <p>Halsall, F. (1996). Data Communications, Computer Networks and OSI, 4th Edition. Boston, MA: Addison-Wesley.</p> <p>Journals: IEEE/ACM Transactions on Networking IEEE Transactions on Multimedia IEEE Transactions on Communications CISCO CCNA cisco.netacad.net/</p>						
<p>Planned learning activities and teaching methods:</p>	<table border="1"> <tr> <td>Class Instruction</td> <td>42 Hours</td> </tr> <tr> <td>Consultation</td> <td>30 Hours</td> </tr> </table>	Class Instruction	42 Hours	Consultation	30 Hours		
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<p>Assessment methods and criteria:</p>	<table border="1"> <tr> <td>Examinations</td> <td>60%</td> </tr> <tr> <td>Project/ Participation</td> <td>40%</td> </tr> <tr> <td></td> <td>100%</td> </tr> </table>	Examinations	60%	Project/ Participation	40%		100%
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Language of instruction:	English
Work placement(s):	No
Place of Teaching:	Regular Classroom European University Cyprus, Nicosia Computer Laboratory European University Cyprus, Nicosia