

Course #:	CSCI-B 438
Course Title:	Computer Networks
Course Type:	Upper level elective
Prerequisites:	C243 Data Structures, C335 Computer Structures
Credits:	3
Text Book:	Behrouz A. Forouzan, <u>TCP/IP Protocol Suite</u> , Third Edition, McGraw-Hill, New York, NY, 2006. ISBN: 0-07-296772-2
References:	<p>James F. Kurose, Keith W. Ross, <i>Computer Networking: A Top-Down Approach Featuring the Internet</i>, third edition, Pearson Addison-Wesley, 2005</p> <p>Andrew J. Tanenbaum, <u>Computer Networks</u>, Fourth Edition, Prentice Hall, Upper Saddle River, NJ, 2003.</p> <p>Douglas E. Comer, <u>Internetworking with TCP/IP- Volume I</u>, Fifth Edition, Prentice Hall, Upper Saddle River, NJ, 2005.</p> <p>W. Stallings, <u>Data and Computer Communications</u>, Seventh Edition, Prentice Hall, Upper Saddle River, NJ, 2003.</p> <p>W. Richard Stevens, <u>Unix Network Programming</u>, Prentice Hall, Upper Saddle River, NJ, 1998.</p>
Current Catalog Description:	This course covers theory and practice of data communication between computing devices. Topics include network architecture and topology, wide-area networks, local-area networks, and ISO network layers.
Course Goals	<p>The student who completes this course:</p> <ol style="list-style-type: none"> 1. Will understand the basic concept of data communications and computer networks (e.g., different network types, applications, protocols, OSI layered architecture model, packet switching, etc.) 2. Will understand different network layer protocols: application layer, transport layer, network layer, data link layer, and physical layer. 3. Will understand Internet and principles of the TCP/IP protocol suite. 4. Will understand LANs, Wireless LANs and WANs. 5. Will be able to program simple network applications using socket API.
Major Topics Covered in the Course	<ol style="list-style-type: none"> 1. Basics of networking and protocols 2. OSI network layered models 3. Application layer protocols

	<ol style="list-style-type: none"> 4. Transport layer protocols 5. Network layer protocols and network routing 6. Data link layer protocols (Ethernet and Wireless LANs). 7. Transmission media and communication basics. 8. Internet and TCP/IP protocols. 9. Socket programming basics. 10. Multimedia communications and QoS basics. 11. Introduction to network security. 12. Error detecting and correcting. 13. LAN technologies, network topologies and MAC addresses. 14. Internetworking. 15. IP V6. 																		
Laboratory projects (specify number of weeks on each)																			
Estimate Curriculum Category Content (Semester hours)	<table border="1"> <thead> <tr> <th>Area</th> <th>Core</th> <th>Advanced</th> </tr> </thead> <tbody> <tr> <td>Algorithms</td> <td></td> <td></td> </tr> <tr> <td>Software Design</td> <td>6</td> <td>6</td> </tr> <tr> <td>Comp. Arch.</td> <td>4</td> <td></td> </tr> <tr> <td>Data Structures</td> <td>4</td> <td></td> </tr> <tr> <td>Prog. Languages</td> <td></td> <td></td> </tr> </tbody> </table> <p>Additional hours may be dedicated to curriculum categories not listed above. For example explanation of concepts and theories. Discussion of social and ethical issues, discussion of inter personal relationships and working within groups.</p>	Area	Core	Advanced	Algorithms			Software Design	6	6	Comp. Arch.	4		Data Structures	4		Prog. Languages		
Area	Core	Advanced																	
Algorithms																			
Software Design	6	6																	
Comp. Arch.	4																		
Data Structures	4																		
Prog. Languages																			
Oral and Written Communications	Not a course objective.																		
Social and Ethical Issues	Not a course objective.																		
Theoretical Content																			
Problem Analysis	Homework assignments involve analysis of network software, theoretical analysis of protocols and networking technology. Projects involve using simulators to analyze network protocol performance and to use sockets to write a client-server application.																		
Solution Design	Homework assignments require theoretical analysis of problems and the comparison of possible solutions. Projects are solved by either studying the problems or using network programming techniques or by doing extensive simulation to																		

	collect and analyze data.
Prepared By	Surma