

1.	Course Title	Operating Systems and Internetworking		
2.	Course Code	CCPS4533		
3.	Status	Major		
4.	Credit Hour	3 (2+1) 2 lecture (2 hours lecture x 14 weeks) 1 tutorials (1.5 hours per x 14 weeks)		
5.	Semester/Year	1/4		
6.	Prerequisites	CCPS3533 Operating System & CNET2513 Data Communication & Telecommunication System		
7.	Teaching method:	Distance Learning (Electronic)		
8.	Evaluation	Assessment and Marking Percentage: Participation 5% Quizzes 15% Project 15% Mid Sem Exam 15% Final Examination 50%		
9.	Lecturer			
10.	Objective of the Subject	The course will expose the students to the overall understanding and knowledge in operating system in relation to inter-networking. The major areas of studies include Unix Socket Programming, Operating System concepts with relation to TCP/IP and distributed system		
11.	Learning Outcomes	By the end of the subject, students should be able to • Install and configure a UNIX based Operating System and its associated internetworking services. • Explain how information is encoded for transmission over digital channels and the concepts of channel capacity and latency • Explain the basics of operation of important Internet protocols including IP, TCP, Mail and web protocols • Design, code and test simple client / server programs that communicate via network		
12.	Synopsis	The course will expose the students to further understand how the theory in operating system can be applied in relation to internetworking.		
13.	Topics	Details	Lecture (Hrs)	Tutorial (Hrs)
	Topic 1	Review on fundamental of Operating System OS services and components, multitasking, multiprogramming, timesharing, buffering, spooling, process and thread management, concurrency, deadlocks, memory management, I/O and file systems	3	2
	Topic 2	Distributed System Basics of parallel, networked and distributed systems. Process communications in Distributed System.	4	2
	Topic 3	Unix Operating system Basic design principles, concepts of kernel and shell, fundamentals of file system, process models and IPC mechanisms	5	1.5
	Topic 4	Device Management Characteristics of serial and parallel devices Abstracting device differences Buffering strategies Direct memory access Recovery from failures	1	1.5
	Topic 5	Review on Fundamentals of Networking Multiple Access protocols, IEEE 802 standard for LAN's	1	1.5

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		bridges, fast Ethernet, FDDI		
	Topic 6	Operating System in relation to Internet : Application Layer Inetd Daemon, process id, Socket-stream, Shell Scripting, Advanced Unix command for networking. Electronic Mail, Telnet, SSH, POP3, NNTP. Setting up application servers and configuration on Unix platform. Web server configuration.	2	2
	Topic 7	Internet and TCP/IP: Session, Presentation XDR, ASN.1, BER, MIME	1	1.5
	Topic 8	Internet and TCP/IP: Transport Layer issues Transport Protocol: Addressing, Connection establishment, release and management. TCP: Protocol, Header, connection, connection management. UDP, RTP.	2	2
	Topic 9	Internet and TCP/IP: Network Layer issues IP Multicast, IPV6. Mobile IP. QoS: Requirement, Techniques, Integrated Services, Differentiated Services, Label Switching.	2	1
	Topic 10	WAN technologies WAN Infrastructure, WAN Services: X.25, SONET, ISDN, Frame Relay, & SMDS.	2	2
	Topic 11	Network Management SNMPv1, RMON, CMIP, SNMPv2, SNMPv3	2	2
	Topic 12	Security Issues in Operating System and Networking Cryptography, Symmetric-Key Algorithm, Public Key Algorithm, Digital Signature, IPSec, FireWalls, Network Security:	3	2
		Total contact hours	28	21
		Equivalent lecture hours	28	14
		Total lecture hours	42	
		Credit hours	3	
14.	Main reference: Textbook:	Larry L. Peterson and Bruce S. Davie, Computer Networks - A Systems Approach , 4th Edition, Morgan Kaufmann, 2007.		
15.	Additional References:	1. R. Stevens. Addison Wesley, TCP/IP Illustration,. 2. W. Richard Stevens, Unix Network Programming , Addison Wesley. 3. Stallings, William. Data & Computer Communications. 7th edition. Prentice Hall. 4. Shay, William A. Understanding Data Communications and Networks. 3rd edition. Thomson Publishing. 5. Tanenbaum, Andrew S. Computer Networks. 5th edition. Prentice Hall		
	Other Materials:	All materials will be available to the students online.		