



National Computing Education Accreditation Council NCEAC



NCEAC.DOC.001-E

COURSE DESCRIPTION

NAME OF INSTITUTION	Lahore Garrison University
PROGRAM (S) TO BE EVALUATED	Computer Science , Spring 2022

Course Description : In the course, advanced Internet procedures and technologies are described which support an efficient, effective and secure interconnection of both distributed applications and related structured data. Routing, flow and congestion control algorithms and procedures are worked out as well as those concerned with insuring quality of service for various distributed application. Internet security mechanisms are also elaborated along with procedures for preventive and intervention response to network security threats. Finally, advanced techniques for application interworking are worked out, which are based upon standard and intelligent network computation models

Course Code	CSC																								
Course Title	Advance Computer Networks																								
Credit Hours	3																								
Prerequisites by Course(s) and Topics	N/A																								
Assessment Instruments with Weights (homework, quizzes, midterms, final, programming assignments, lab work, etc.)	SESSIONAL (Quizzes, Assignments, Presentations) =25 % Midterm Exam =25 % Final Exam = 50%																								
Course Coordinator	Dr. Ishtiaque Mahmood																								
URL (if any)																									
Current Catalog Description																									
Textbook (or Laboratory Manual for Laboratory Courses)	• Computer Networking A Top-Down Approach James F. Kurose by Keith W. Ross, 7th Edition																								
Reference Material	• Computer Networks: A systems Approach Larry Peterson and Bruce Davie 5th Edition.																								
Course Goals	to study the problematic of service integration in TCP/IP networks focusing on protocol design, implementation and performance issues, to debate the current trends and leading research in the computer networking area.																								
Course Learning Outcomes (CLOs):	<table><tr><th>At the end of the course the students will be able to:</th><th>Domain</th><th>BT Level*</th></tr><tr><td>To identify and discuss the concepts underlying IPV4/IPv6 protocol, and their main characteristics and functionality;</td><td></td><td></td></tr><tr><td>To understand the principles and functionality of mobile IP, explaining its concretization in IPV4/IPv6;</td><td></td><td></td></tr><tr><td>To understand the needs of optimization of the mobility mechanisms and description of some extensions that aim to reduce handover latency and requirements from terminals;</td><td></td><td></td></tr><tr><td>To explain and exemplify current QoS architectures and mechanisms, and the QoS support challenges in future networks;</td><td></td><td></td></tr><tr><td>To understand and explain the design issues in transport services in face of applications and services requirements;</td><td></td><td></td></tr><tr><td>To understand theoretical and practical concepts behind the design of multiconstrained applications and services;</td><td></td><td></td></tr><tr><td colspan="3">* BT= Bloom's Taxonomy, C=Cognitive domain, P=Psychomotor domain, A= Affective domain</td></tr></table>	At the end of the course the students will be able to:	Domain	BT Level*	To identify and discuss the concepts underlying IPV4/IPv6 protocol, and their main characteristics and functionality;			To understand the principles and functionality of mobile IP, explaining its concretization in IPV4/IPv6;			To understand the needs of optimization of the mobility mechanisms and description of some extensions that aim to reduce handover latency and requirements from terminals;			To explain and exemplify current QoS architectures and mechanisms, and the QoS support challenges in future networks;			To understand and explain the design issues in transport services in face of applications and services requirements;			To understand theoretical and practical concepts behind the design of multiconstrained applications and services;			* BT= Bloom's Taxonomy, C=Cognitive domain, P=Psychomotor domain, A= Affective domain		
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Topics Covered in the Course, with Number of Lectures on Each Topic (assume 15-week instruction and one-hour lectures)	Week	Lecture	Topics Covered
	Week 1	1	Internet, Network Edge, Network Core
		2	Packet Switching, Circuit Switching
	Week 2	3	Principles of network applications
		4	HTTP, Web, Email, DNS, Peer to Peer applications
	Week 3	5	Transport Layer, Multiplexing, De-Multiplexing
		6	Reliable data transfer, congestion control
	Week 4	7	Network layer, data plane
		8	Switching, Queuing , packet scheduling, IPV4/IPV6
	Week 5	9	Network layer, control plane
		10	Routing algorithm, OSPF, BDP
	Week 6	11	SDN, ICMP
		12	Link layer and LANs
	Week 7	13	CRC, multiple access protocols
		14	Switched LAN
	Week 8	1 hours	Mid Term
	Week 9	15	VLAN, MPLS
		16	Data center networking
	Week 10	17	Wireless and mobile networks
		18	Mac protocol, frame
	Week 11	19	Cellular internet access
		20	Extending the internet to cellular subscribers
	Week 12	21	Mobility management
		22	Mobile IP, Wireless and Mobility
	Week 13	23	Security in computer networks
		24	Cryptography, Hash functions, Digital signatures
	Week 14	25	End-to-End encryption
		26	Securing E-mails
	Week 15	27	SSL, Network layer security
		28	WEP, Firewalls, IDS
	Week 16	29	Multimedia networking applications
		30	Streaming stored video
	Week 17	2 hours	Final Term
Laboratory Projects/Experiments Done in the Course			
Programming Assignments Done in the Course			

Instructor Name	Dr. Ishtiaque Mahmood
Instructor Signature	
Date	