The Detailed Syllabus of the

Professional Masters in Information and Cyber Security (PMICS) Program

Total Credit: 36

Courses

Course Code	Course Title	Credits
CSE 801	Communication Protocols and Internet Architecture	3
CSE 802	Information Security and Cryptography	3
CSE 803	Software Security	3
CSE 804	Network and Internet Security	3
CSE 805	Digital Forensic	3
CSE 806	Privacy and Ethics	3
CSE 807	Information Security Management	3
CSE 808	Cybersecurity Law and Policies	3
CSE 809	Cloud Security	3
CSE 810	Project on Cybersecurity	9

Detailed Course Syllabus

CSE 801 Communication Protocols and Internet Architecture

Design, analysis, and implementation of networks and protocols: Internet Architecture & Performance Parameters, TCP/IP, TCP Tahoe, TCP Reno, TCP New Reno, TCP CUBIC, Network Address Translation (NAT), Dynamic Host Configuration Protocol (DHCP), Internet Protocol Security (IPsec), Internet Control Message Protocol (ICMP), IPv4 and IPv6, Concepts of routing (Bellman-Ford and Dijkstra algorithms), Open Shortest Path First (OSPF), Interior Gateway Routing Protocol (IGRP), Enhance Gateway Routing Protocol (EIGRP), and Border Gateway Protocol (BGP), Software Defined Networking, Virtual Network Function, OpenFlow Protocol and Network Function Virtualization. **Application layer protocols**: Domain Name System (DNS), Simple Mail Transfer Protocol (SMTP), HTTP 1.0 to HTTP 3.0, Cookies, Webcaching, Proxy, Content Distribution Network, Bit Torrent, DASH Protocol, multimedia protocols for voice and video. **Design and Analysis of Networks:** LAN architecture and design, internetworking using switches and routers, the design and analysis of both private networks Internet, Zero trust network architecture. Network quality of service, voice and video on the Internet, policy-based networks, and Introduction to wireless networks – IEEE 802.11 wireless LAN, Adhoc and infrustructure mode networks protocols.

Textbook and Reference:

Textbook:
– *J. F. Kurose and K.W. Ross*, **Computer Networking: A Top Down Approach**, 8th Edition, Pearson Publications, 2020.

References:
– *Andrew Tanenbaum & David Wetherall*, **Computer Networks**, Fifth Edition, Pearson, 2010.

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