Track II: Computer Networks

Course Number	Course Title	Credits Hours	Weekly Hours		Prerequisite
			Lecture	Lab	
CSI 431	Advanced Computer Networks	3	2	2	CSI 322
CSI 432	Network Security	3	2	2	CSI 431
CSI 531	Wireless & Mobile Computing	3	2	2	CSI 322
CSI 532	Network Programming	3	2	2	CSI 431
CSI 533	Cloud Computing	3	2	2	CSI 322 , CSI 321

- **CSI 431 Advanced Computer Networks**

This course is an advanced topic in design and analysis of computer networks. It comes as a second level module of the curricula which includes: Modeling, performance evaluation and queuing theory applied to computer networks.- Traffic flow management and error control - - Routing algorithms and protocols. - Switch and router architectures - Selected issues in high speed network design - Optical networks.

- **CSI 432 Network Security**

This course provides an introduction to the field of network security. Specific topics to be examined include Security attacks, mechanisms, and services. Network security and access security models. Network security practice. Email security. IP security and web security. Intrusion detection and prevention systems. Firewalls and virtual private networks. Cellular and wireless network security.

- **CSI 531 Wireless and Mobile Computing**

This course is offered for those who are interested in understanding and building systems support mechanisms for mobile computing and wireless systems including client-server web/database/file systems, and mobile ad hoc and sensor networks for achieving the goal of anytime, anywhere computing in wireless mobile environments. The technologies involved to realize such a system will be covered and the fundamental concepts of mobile computing are introduced. These include mobility and service management, data management, routing in mobile ad hoc and sensor networks, and security issues for mobile systems. While mobile computing covers many topics, in this course the main focus will be on mobility, data and service management, and security issues in mobile computing environments. Students are expected to be familiar with basic concepts in Operating Systems and Networks in this class.

- **CSI 532 Network Programming**

Introduction to networking and Internet protocols via programming and hands-on labs. TCP/IP protocol architecture; user datagram protocol (UDP); multicasting; transmission control protocol (TCP); standard Internet services, and protocol usage by common Internet applications. Sockets

programming; client/server; peer-to-peer; Internet addressing; TCP sockets; UDP sockets; raw sockets. Multithreading and exception handling. Finger, DNS, HTTP, and ping clients and servers. Routers and architectures, routing protocols. Router and switch configurations, Internet operating systems. Internetwork setup, network topology, wireless internetworking. Network protocol analyzers; traffic generation.

- **CSI 533 Cloud Computing**

Cloud Computing uses Internet as the platform for the development and delivery of computing technologies. Topics discussed in this course include: cloud computing concepts, cloud computing architecture, Infrastructure as a Service (IaaS), Platform-as-a-Service (PaaS), Software as a Service (SaaS), cloud computing access and implementation, and cloud computing with MapReduce.