

Course number and name: **CS 06410: Data Communications and Networking**
Credits and contact hours: 3 credits / 3 contact hours
Faculty Coordinator: Andrea F. Lobo
Text book, title, author, and year: Kurose and Ross, Computer Networking: A Top-Down Approach, 7th Edition, Addison Wesley, 2017.

Specific course information

Catalog description: Students will explore topics in mobile application development. This course covers the various mobile operating systems, mobile development tools, and all that is needed to create mobile applications, using programming languages appropriate for the mobile platform being studied. Students will gain an advanced understanding of mobile application development and have an exciting opportunity to write and publish feature-rich mobile applications.

Prerequisites: CS 07340 Design and Analysis of Algorithms and STAT 02290 Probability and Statistical Inferences for Computing Systems

Type of Course: Required Elective Selected Elective

Specific goals for the course

1. The student will understand layered architectures.
2. The student will model the performance of network components or systems.
3. The student will understand the operation of important application, transport and network layer protocols.
4. The student will describe some basic security issues.

Required List of Topics to be covered

1. Networking models (OSI and IP)
2. Network media (wired, optical, and wireless)
3. Network Architectures and topologies (PAN, LAN/WAN, DMZ, Enclaves, VLAN, NAT, subnetting, supernetting)
4. Common Network Devices and their role in the network. (Routers, Switches, Hosts, VPNs, Firewalls)
5. Network Protocols introduction (IP, TCP, UDP, ICMP)
6. Network Services and protocols introduction (DNS, NTP, VLAN, etc.)
7. Network Applications and protocols introduction (SMTP, HTTP, VoIP, SSH, etc.)

8. Overview of Network Security Issues
9. Network switching (Ethernet)
 - a. ARP and RARP
10. IPv4 suite
 - a. IPv4 Addressing
11. IPv6 Suite
 - a. IPv6 Addressing
12. Routing in IPv4 and v6
 - a. Routing tables and metrics
13. Network Naming
 - a. DNS
14. Layered services design
15. Complexity measures
 - a. Communications