Course number and name- ECE429 Computer Communications Laboratory

Credits— 2 credits

Contact hours— 4 hour

Name(s) of instructor(s) or course coordinator(s)— Roberto Rojas-Cessa

Instructional Materials— Manual prepared by Roberto Rojas-Cessa and specialized laboratory infrastructure.

Specific course information (Brief description of the content of the course (catalog description):

Experiments with different industry-standard protocols used in the Internet and general data networks, covering the complete protocol stack, such as Data-Link layer protocols, including IEEE 802.3 variants/WiFi, Internet Protocol (IP), Transport Control Protocol (TCP), User Datagram Protocol (UDP), and practice of network design, software for network simulation, and router configuration. The exercises also cover application testing, network measurement, virtualization, and data collection for analysis.

Prerequisites— ECE 422 Computer Communication Networks

Educational objectives for the course:

Students will be able to identify the function and operations of modern computer communications and networking and the layers of the TCP/IP stack and the 7-layer networking Open System Interconnect Model that a communication function belongs. Students will also be familiarized with designing and building a computer network.

ABET objectives: Students will learn and develop:

(b) an **ability to design and conduct experiments**, as well as to analyze and interpret data

(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Brief list of topics to be covered—

Chapter 1. Introductions to the computing equipment for computer communications

Chapter 2. Tools for examination of computer communication

Chapter 3. Configuring a LAN and WLAN and managing mechanisms of Data Link Layer

Chapter 4. Configuring a multi-hop network: Network Layer Protocols

Chapter 5. Network Simulation and preparation: Industry Standard Simulation

Chapter 5. Configuring routers: Industry Standard Equipment