1. **Course Number & Name:** EE 465L, Intro to Networking and Network Management Lab

2. **Course Credit and Contact hours:** 1 Unit, 3 hours Lab

3. **Course Coordinator:** Dr. Farid Farahmand


5. **Supplemental Materials:** Lab instructions and Slides and Ubuntu OS are provided in the lab

6. **Specific Course Information:**
   a. **Description:** This laboratory emphasizes on network concepts and protocols through configuring a network using networking elements and PCs, observing the actual behavior of the overall network, and analyzing and evaluating the results.
   
   b. **Prerequisites:** (EE 314 or CS 315), and EE 442 or consent of Instructor
   
   c. **Co-Requisite:** EE 465, with consent of instructor
   
   d. **Status:** ☑ Required for EE program, ☐ Elective, ☐ Selected Elective

7. **Specific Goals for the Course:**
   a. **Specific outcomes of instruction:** Upon successful completion of this course the students will gain:
      i. Ability to explain and apply the Linux commands.
      
      ii. Ability to explain the hands-on networking terminologies of data and computer networking.
      
      iii. Ability to configure computer IP address for computer connectivity.
      
      iv. Ability to capture application data and analyze the data.
      
      v. Ability to explain the common protocols such as ARP, STP, VLAN, FTP, Web server and their applications.
   
   b. **This course supports the following ABET Student Outcomes:**
      i. *SO-6: an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.*

8. **Brief List of Topics to be Covered:**
   a. Configuration of the ITL (Internet Teaching Lab)
b. Ethernet cable & categories

c. Ubuntu Operating System.

d. Intro to Linux and Linux commands using Ubuntu.

e. Ethernet port identification and their proper set up

f. Ping command.

g. Hubs, switches, & routers, and connecting computers over the hub or switch & the differences.

h. Basic protocol analysis and applications by Wireshark.

i. TCP & UDP protocol analysis and differences between TCP & UDP.

j. HTTP protocol analysis.

k. Address Resolution Protocol and ARP Protocol Analysis.

l. Webserver design with security for public access.

m. LAN partitioning into secured VLANs (IEEE 802.1Q) via the switch console.

n. FTP Server design to transfer file between a client and a server.

o. Spanning Tree Protocol (IEEE 802.1D & Q) to avoid loop creation when redundant paths are in the network.