

## EE 465L

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
4. **Textbook:** *Computer Networks & Internet*, Douglas Comer, 6<sup>th</sup> Ed, Pearson, 2014, ISBN 978-0-13-358793-7p
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.