

**Hellen and John C. Hartmann Department of Electrical and Computer Engineering
New Jersey Institute of Technology**

ECE429- Computer Communications Laboratory

Credits: 2

Instructor: Roberto Rojas-Cessa Office: FMH 220

Email: rojas@njit.edu

Textbook: No textbook. Laboratory notes (available in the laboratory).

Prerequisites: ECE 422

Course Catalog Description:

Experiments with different protocols and standards used in the TCP/IP computer communications, including Ethernet/802.3 standard, Address Resolution Protocol (ARP), Internet Protocol (IP), Transport Control Protocol (TCP), User Datagram Protocol (UDP), and others. Exercises with network measurements and virtualization tools, and configurations of some commercial routers are included.

Course Learning Outcomes:

Students will be able to

1. Understand and develop hand-on skills on networking design,
2. Use TCP/IP protocols
3. Perform troubleshooting experiences in Linux OS and network design
4. Administer a network.

Relevant ABET Student Outcomes:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics (CLO 1-4);
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives (CLO 1-4)
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions (CLO 1-4).

Students will form **teams** and **laboratory experiment** will be assigned in class.

Reports

A report of the experiment must be submitted in the session following the completion of the experiment. The format of the report is:

Experiment number and title

Names of team member

Course number and date when experiment was performed

Technical description

Office Hours:

T: 3:00pm-4:00pm

F: 11:00am-12:00pm

Grading Policy: Lab reports: 70% Attendance: 30%

**Only successfully completed experiments will be considered (students must demo their experiments to Instructor). Reports will be reviewed and graded. The average grade of the reports will be used to set the final grade. Class attendance is required.

Experiment Outline

1. Introductions to the computing equipment and Linux (week 1)
2. Tools for examination of computer communication (weeks 2)
3. Data-Link Layer protocols (weeks 2-3)
4. Network Layer protocols (weeks 4 to 7)
5. Dynamic routing with Cisco routers (week 8-9)
6. Transport Layer Protocols (weeks 10-11)
7. Socket programming (weeks 12-13) Extra. Make up week (week 14)

The Honor Code

Students should be familiar with NJIT Honor Code. This code will be rigorously upheld, any violations will be brought to the immediate attention of the administration.