ECE429 - Computer Communications Laboratory

Credits: 2

Time and room: Tuesdays, Start time: 1:00 pm

Classroom: FMH 101- C

Instructor: Rituja Bhattacharya

Office: FMH 401C

Office hours: Tuesday 10:00am - 11:00am (Zoom), Wednesday: 3:00pm - 4:00pm (Zoom). Also available other times by appointment. You can contact the instructor anytime by email: rb793@njit.edu.

Zoom link: https://njit-edu.zoom.us/my/**rituja**

Email: rb793@njit.edu (use direct email to communicate faster with me, do not email through Canvas)

Textbook: No textbook. Laboratory notes are provided.

Corequisite: ECE422

Goals:

CLO: Students will develop hands-on skills in networking design, TCP/IP protocols, and troubleshooting experience in Linux OS, network design, network simulation, and network administration. Students will also get familiar with how to setup applications and install applications on an operating system for data communications.

ABET objectives: In addition, 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.

Team and Individual Laboratory Experiments

Chapter 1 & 2: Individual work

Chapters 3 and over: Single-team work

Chapter 4b: Double-team work

Each team will comprise up to two (2) members. Report for experiments in Chapters 1 and 2 are individual, and reports for the following chapters are 1/team. Experiments are described in the laboratory manual. The description of the experiments is given in advance, except for the first set, which is given in the first day of class. Prelabs (for Chapters 2 and after) must be completed and submitted to the instructor before starting the experiments, individually. The prelab,

including the questions, will be posted in days ahead of the due date. The topics included in the prelab can be found in the manual.

Prelabs & Reports

Prelabs: Prelabs have to objective to get the student familiar with the background information needed for performing the experiments. Prelabs are to be performed **individually** and are research tasks that are reported in a quiz style on canvas. Prelabs may take the form of quizzes on Canvas.

Demos: Students must demo their labs from Chapter 3 and over to get report grades. Attendance to present demos on the date scheduled for the experiment is required.

Reports: Reports will be submitted as pdfs in Canvas. See Report Format below. No handing of documents is required. First report will not be counted towards grade and used as practice/familiarization with this reporting method. Reports for **Chapters 1 & 2** are **individual**. Reports for **Chapters 3 and over, are one per team**.

Report Format:
The 1st page includes the student's name, ID, submission date, course name, and chapter name, etc.
From 2nd page onwards -
1. Methodology section - The main body of the report, containing solutions to the exercises and other relevant details.
2. Discussions section which includes your observations and challenges faced during any step.
3. Conclusion section
4. References section

Presentations. Teams are required to make presentations in class. A schedule of presentations will be provided.

Grading Policy:

Demo and reports: 45%

Attendance: 10%, mandatory to a) have a report graded, b) show demo, c) for min 90% for passing course.

Prelabs: 20%,

Presentations 15%

Participation: 10%

Attendance requirement: Each lab must be attended on time, tolerance time: 10 mins is considered late (-10% of Demo and Report), and over 15 mins is considered absence (no demo will be considered that session and report is not eligible for submission). Attendance for each experiment is required for grading.

Experiment Outline

Chapter 1. Introductions to the computing equipment and Linux (week 1)

Chapter 2. Tools for examination of computer communication (weeks 2)

Chapter 3. L2: Configuring a LAN and managing mechanism of L2 (weeks 2-3)

Chapter 4. (parts a and b). L3: Configuring a multi-hop network (weeks 4 to 6)

Chapter 4c. L3: Network Simulation and preparation for Cisco Routers (week 7) (Tentative)

Chapter 5. L3: Configuring Cisco routers (week 8-10)

Chapter 6. L4: UDP and TCP traffic, iPerf, secure file transfer (week 11-12)

Chapter 7. L5: Security and other practical topics (weeks 13-14) -Tentative and subject to change.

Academic Integrity Policy: The NJIT University Code on Academic Integrity will be followed in all courses. The code states “Each student shall demonstrate honesty and integrity in the completion of all assignments and in the participation of the learning process.”