**CSCI/CMPE 4345**

**COMPUTER NETWORKS**

**Syllabus for Fall 2017**

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**ALL STUDENTS: PLEASE USE BLACKBOARD TO SUBMIT ASSIGNMENTS**

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| **CSCI/CMPE 4345** | MW: 10:50 am - 12:05 pm  **Eng 1.250** | Ppt [1](../ppt/21-IP%20addressing.ppt) [2](../ppt/Introduction.ppt) 3 |  |
| **CSCI 6175.01** | T: 8:45 pm - 9:35 pm  **Eng 1.274** |  | **Mr. Robert Jackson, system specialist** [robert.jackson@utrgv.edu](mailto:robert.jackson@utrgv.edu) |
| **E Commerce Sys Implementa - 15130 - CSCI 6314 - 01** | M: 5:55 - 8:25 pm  **Eng 1.236** |  |  |
| **Office Hours** | **MW 9:30-10:30 am**  **MW 12:00-1:30 pm** |  |  |

Cell phones must be entirely out of sight inside a closed backpack or purse. **IF YOU USE THE PHONE DURING CLASS, I WILL ASK YOU TO BRING THE PHONE TO THE FRONT AND KEEP IT ON THE TABLE UNTIL THE CLASS IS OVER, NO EXCEPTIONS.**

TA:

**Required Textbook**: Comer, Douglas E., Computer Networks and Internets, 6th Edition, Prentice Hall, 2015.

ISBN-10: 0133587932 **(**ISBN-13: 978-0133587937**)**

**Please take good notes as I cover a great deal more than in the textbook.**

**Reference:**

* Behrouz A. Forouzan, TCP/IP Protocol Suite, 4th Ed., McGraw Hill, 2010. ISBN 978-0-07-337604-2
* Tanenbaum, A. S., 2002, Computer Networks, 4th Ed., Prentice Hall, Upper Saddle River, New Jersey.
* UNIX Network Programming by W. Richard Stevens, Prentice Hall, 1990

**Catalog description**:

An introduction to data communication topics, including data transmission, encoding data link control, switching, network topologies, protocols, internetworking and data security. Examples of existing networks and network architectures are studied. Prerequisites: Operating systems or Computer Architecture or consent of instructor.

In addition to this, students will gain practical experience in setting up communication between computers, networking, and network management. Students will also install different peer-to-peer and client-server network software. They will also gain some experience on inter-networking.

Students are required to setup servers and conduct experiments. Students are expected to dedicate outside hours to complete lab assignments. Most lab assignments can be completed using **virtual machines set up on personal computers**. Advanced lab in the second floor is available if you want to make arrangements.

Grading:

Midterm and Final Exams 50%

Group Project 20%

Practical portion 20%

Attendance and online quiz 10%

**Course Topics:**

Fundamentals of computer networks; theory, design, implementation and performance analysis of computer networks; network protocols; examples of computer network applications.

**COURSE OBJECTIVES**: Upon conclusion of this course a student will be able to plan and install a TCP/IP protocol stack based local area network, set up switches and routers, and write socket programs for communication.

**Learning outcomes:**

* 1. Compare and contrast the OSI and TCP/IP models.
  2. Given a network problem, create appropriate topology and draw wiring diagrams.
  3. Make cat 5 cables and connect them with switches and make crossover cables where appropriate.
  4. Configure servers, switches and routers.
  5. Create subnets and supernets.
  6. Create routing tables.
  7. Setup static IP address as well as DHCP based addresses.
  8. Setup a DNS.
  9. Setup a mail server
  10. Setup a wireless network
  11. Install appropriate network security
  12. Write socket programs in C or Java.

**General instructions about the group project**: Groups are formed only for presentation; each one should complete the whole project. As the number of students grew there is no time for each one to present. Group assignments are given to encourage cooperation among students. Start working on the research right away. I have created a set up [group projects](file:///C:\Users\jabraham\Group%20projects) to which you will be assigned. If you would like do something else that interests you please talk with me. Each student please submit a one page summary of your presentation and one multiple choice question with the correct answer.

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| **Project 1: Internetworking with Linux and Windows. Wed Sept 20**  Install Linux and Windows Server in two different computers. Authentication should be through the use of Windows Active Directory. Share files between the two. Samba provides integration between Windows and Linux. |
| **Project 2: Router setup using CISCO IOS and creating Virtual Local Area Networks. Wednesday October 18**  Set up a CISCO router using IOS. There are home-Cisco router that do not come with IOS; please do not use those. Make sure you can browse the internet and share files. Please install two routers, name these with two countries’ names, interconnect them. Have computers at both ends and verify that they can ping and then share files. |
| **Project 3: Cyber Security and Forensics. Wed Sept 27**  Using Backtrack or Kali show how (A) forensic analysis is conducted (live and dead analysis). (B)Using readily available programs in the internet show how a malware can be planted and show how an attacker then can take control of the system. (C) show how one can attack a cellphone to capture videos. |
| **Project 4: Microsoft System monitoring and management. Mon Oct 30**  Demonstrate Task Manager and show what you can do with each of the tabs (Applications, Processes, Services, Performance, Networking and Users)   1. Demonstrate the use of Regedit and show how you can search and delete items that cause problems. 2. Demonstrate the use of MSconfig and show you can modify each of those. 3. Demonstrate the use of computer management and explain the use of System tools (task scheduler, event viewer – please spend considerable time here, local users and groups and device manager), disk management and services and application management. There may be some overlap with item #1 here. |
| **Project 5: WINDOWS SERVER GROUP POLICY. Wed Nov 1**  Demonstrate how to administer group policies. Group policy administrative tools include Group Policy Editor for Active Directory and Sysvol, server side snap-ins, Group Policy Management Console, Resultant Set of Policy. Explain these and show examples of using each. Write some group policies for internet search sites, new program installation, etc. and demo them. |
| **Project 6: VIRTUAL PRIVATE NETWORKING and COMMUNICATION SERVERS or SOFTWARE DEFINED NETWORKING (SDN). Wednesday October 25th. VPN is to interconnect two LANs in two different cities.** |

I encourage you to do the following programs on your own; no need to submit for credit.

1. Write a Java program to discover the IP address of your machine.

2. Write a program to send a file across Transport Service Access Points (TSAPs) also known as TCP ports or Sockets. Your program can select any non-privileged port (that is, the port number should be greater than 1024).

3. Write a server program to make use of threads. Write appropriate client program to test it. OR Write a Java program to open a file on a remote computer and look up records.

Practical (Lab) work:

* + Virtual Machine
  + Peer to Peer
  + RDP
  + Domain
  + Netadmin
  + Join the domain
  + Create Security groups
  + Grant local Admin rights
  + Packet analyzer
  + WSUS
  + Backup
  + Catchup

**Some dates to remember:**

Last day to add or register for Fall classes

Aug 29 – Sept 2 Last day to withdraw (drop all classes) for a 80% refund

Sept 5 Labor Day Holiday, no classes

Sept 6 - Sept 12 Last day to withdraw (drop all classes) for a 70% refund

Sept 14 Census day (last day to drop without it appearing on the transcript)

Sept 13 - Sept 19 Last day to withdraw (drop all classes) for a 50% refund

Sept 20 - Sept 26 Last day to withdraw (drop all classes) for a 25% refund

Nov 17 Last day to drop (DR grade) a class or withdraw (grade of W)

Nov 24 - Nov 25 Thanksgiving Holiday, no classes

Dec 8 Study Day, no classes

**Attendance:**

Attendance and class participation is required to pass the course. If you must miss an exam, make prior arrangements. No make-up exams will be given unless you contact me in advance! Homework assignments may be submitted to me by hardcopy in my mailbox prior to class time (May submit by email to mark date and time, but must be submitted by hardcopy for grading purposes). Late homework will be levied heavy penalties. Penalty: One day late 10%, 1 week late 20%, 2 weeks late 50%. Not accepted afterwards.

STUDENTS WITH DISABILITIES: If you have a documented disability (physical, psychological, learning, or other disability which affects your academic performance) and would like to receive academic accommodations, please inform your instructor and contact Student Accessibility Services to schedule an appointment to initiate services. It is recommended that you schedule an appointment with Student Accessibility Services before classes start. However, accommodations can be provided at any time. **Brownsville Campus**: Student Accessibility Services is located in Cortez Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at [accessibility@utrgv.edu](mailto:accessibility@utrgv.edu). **Edinburg Campus:** Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at [accessibility@utrgv.edu](mailto:accessibility@utrgv.edu).

MANDATORY COURSE EVALUATION PERIOD: Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account (<http://my.utrgv.edu>); you will be contacted through email with further instructions. Online evaluations will be available Nov. 18 – Dec. 9, 2015. Students who complete their evaluations will have priority access to their grades.

SCHOLASTIC INTEGRITY: As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, plagiarism, and collusion; submission for credit of any work or materials that are attributable in whole or in part to another person; taking an examination for another person; any act designed to give unfair advantage to a student; or the attempt to commit such acts. Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty incidents will be reported to the Dean of Students.

SEXUAL HARASSMENT, DISCRIMINATION, and VIOLENCE: In accordance with UT System regulations, your instructor is a “responsible employee” for reporting purposes under Title IX regulations and so must report any instance, occurring during a student’s time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can be found at [www.utrgv.edu/equity](http://www.utrgv.edu/equity), including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a learning, working, and living environment that promotes personal integrity, civility, and mutual respect in an environment free from sexual misconduct and discrimination.

COURSE DROPS: According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date. Following that date, students must be assigned a letter grade and can no longer drop the class. Students considering dropping the class should be aware of the “3-peat rule” and the “6-drop” rule so they can recognize how dropped classes may affect their academic success. The 6-drop rule refers to Texas law that dictates that undergraduate students may not drop more than six courses during their undergraduate career. Courses dropped at other Texas public higher education institutions will count toward the six-course drop limit. The 3-peat rule refers to additional fees charged to students who take the same class for the third time.