Computer Networks

Course Description
Computer-based communication systems. Topics include: advanced computer network architectures, protocols, and programming.

Pre-requisite
COSC 3346 (Operating Systems) and Math 2413 (Calculus I). In particular, students should understand basic computer organization and be able to write programs in C/C++.

Learning Objectives
Upon successful completion of this course, the student will:
1. Become knowledgeable of the data transmission fundamentals and general principles and concepts of computer networks.
2. Become familiar with the knowledge of local area networking technologies, such as Ethernet and Wireless Networks.
3. Become familiar with the knowledge of wide area networking technologies (Packet-Switching and Routing).
4. Become familiar with the knowledge of Internet protocols (IP, TCP, and UDP) and security.
5. Become familiar with the network programming and system programming skills.
6. Have the ability to design and develop basic network services with socket programming.
7. Be able to synthesize ideas presented in the course into new network services, protocols, architectures, or tools.

Major Course Requirements
This is an intermediate course. However, this is a difficult course that demands all students attend all classes! Regular completion of all reading, homework, and other outside assignments, are absolutely essential for success in this course. We will follow the text generally, but non-text material may also be included in the lectures. Except the final exam, all the assignments and the exams will be given during the class hours. You are responsible for all material presented or handed out during a class period.
Your course grade will be decided on your performance in the homework assignments, two mid-term exams, one project, and a final exam. The distribution of points is as follows:

1. Assignments: 25%
2. Project: 15%
3. Three exams: 60% (exam 1: 20%, exam 2: 20%, and exam 3: 20%)

**Assignments:** Approximately five-six assignments will be given. Partial credit will be given for incomplete assignments. Assignments will significantly build on the material from the lectures. They will be posted on the course web page or hard copies will be handed out in the class.

**Project:** The project can be a programming project (with a final report on the project), a research paper or a survey paper. An in-class presentation is also required for any of the above. All projects must be approved by the instructor. Additional details on the project will be available later. The final project or research paper or survey report will be due on December 5, 2014.

**Exams:** Exams will cover all lecture and reading material discussed in the class. Exams must be taken on the hour they are scheduled. In the event, if you cannot attend the class to take the exam due to some emergency or some unavoidable situation (such as serious illness, death in the family, participation in university sports, religious observations, and so on) you must notify me as soon as possible before the exam and also you must validate your absence by providing me a document (e.g., with a letter from your doctor).

**Required or Recommended Readings**


*Website:* will be announced later.

*List of Supplies:* None

**Course Policies**

*Attendance/Tardiness*

You must attend all classes. You are responsible for any materials covered or handed out or announcements made for the tests, quizzes, and homework assignments in your absence. Records of your attendance will be maintained and reported to the university. Students found missing classes without the instructor's permission will be
automatically withdrawn from the course. Students are responsible for all materials covered in class and assigned. Should a student be absent from class, it is his/her responsibility to get the notes, etc. for that missed class. More important, should there be assignments, it is the student’s responsibility to obtain such assignments. No excuse will be accepted for assignments not turned in because the student was absent when it was due.

**Late Work and Make-up Exams**

All the assignments are due at the beginning of the class on the due date. If the student is absent on the assignment due date, it is the student's responsibility to make sure that the assignment is submitted on the designated date. An assignment that is turned in after the class on the due date is considered one day late. There is a penalty for late submissions. Late assignments will be counted 20% off for each day after the due time. No credit will be given if an assignment is submitted after 5 days. If you have not completed your assignment by the due date, you should submit the work you have done for partial credit. No work will be accepted once the graded work has been returned or the solution has been disclosed to the class, except for unusual circumstances.

Exams must be taken on the hour they are scheduled. In the event, if you cannot attend the class to take the exam due to some emergency or some unavoidable situation (such as serious illness, death in the family, participation in university sports, religious observances, and so on) you must notify me as soon as possible before the exam and also you must validate your absence by providing me a document (e.g., with a letter from your doctor).

**Extra Credit**

None

**Cell Phone/Electronic Device Usage**

Set your cell phone/electronic device in silent mode when you are in class.

**Academic Integrity/Plagiarism**

University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a score of 0 (zero) for the work or dismissal from the course and the Dean of Students office will be notified. No copying from another student's work, of any class, is allowed. It is the student's duty to allow no one to copy
his or her work. Anyone found cheating in the exams will receive an automatic F for the course.

**Dropping a Class**

I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with me before you decide to drop to be sure it is the best thing to do. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. November 7, 2014 is the last day to drop a class with an automatic grade of “W” this term.

**Preferred methods of scholarly citations**

All referenced material used in a paper or project report must be properly acknowledged and cited. Use APA style for all scholarly citations.

**Grade Appeals**

A student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is on the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details on the process, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, consult Texas A&M University-Corpus Christi University Procedure 13.02.99.C2.01 Student Grade Appeal Procedures (http://www.tamucc.edu/provost/university_rules/index.html), and the College of Science and Engineering Grade Appeals webpage (http://sci.tamucc.edu/students/GradeAppeal.html). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school or the College of Science and Engineering Dean’s Office.

**Disabilities Accommodations**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Driftwood 101.
If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

**Tentative Course Schedule (Subject to change)**

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<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>Class Intro, Chapter 1: Foundation</td>
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<tr>
<td>Week 2</td>
<td>Chapter 1: Foundation Applications, network architecture, implementing network software Network performance</td>
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<td>Week 3</td>
<td>Chapter 2: Getting started Connecting, encoding, framing, error detection, reliable transmission</td>
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<tr>
<td>Week 4</td>
<td>Chapter 2: Getting started (continued) Ethernet, wireless Exam 1</td>
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<td>Week 5</td>
<td>Chapter 3: Internetworking Switching and bridging Basic internetworking, IP, ARP, DHCP, ICMP, DNS</td>
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<td>Week 6</td>
<td>Network programming Chapter 5: End to end protocols UDP, TCP</td>
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<td>Week 7</td>
<td>Chapter 9: Applications HTTP, SMTP, POP3 protocols Network programming</td>
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<tr>
<td>Week 8</td>
<td>Network programming Chapter 6: Congestion Control</td>
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<td>Week 9</td>
<td><strong>Exam 2</strong> Chapter 8: Network security Cryptographic building blocks</td>
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<td>Week 10</td>
<td>Chapter 8: Network security (cont’d) PGP, SSH, IPSec, Firewall, VPNs</td>
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<td>Week 11</td>
<td>Chapter 3 Internetworking Routing, RIP, OSPF</td>
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<td>Week 12</td>
<td>Chapter 4 Advanced Internetworking Routing on the Internet, routing to mobile hosts <strong>Exam 3</strong></td>
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<td>Week 13</td>
<td>Presentations</td>
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<td>Week 14</td>
<td>Presentations</td>
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<tr>
<td>Week 15</td>
<td>Presentations</td>
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**Final Project or Paper** due on December 5, 2014.

**Note:** This syllabus represents a general plan for the course. Deviations from this syllabus may be necessary during the semester and changes will be announced in class.