Computer Networks COSC 4342
Department of Computer Sciences
Fall 2020

A. COURSE INFORMATION

Course number/section: COSC 4342
Class meeting time: Monday-Wednesday 03:30-04:45PM
Class location: RFEB-108
Course Website: http://shorturl.at/fgzIV

B. INSTRUCTOR INFORMATION

Instructor: **Carlos Rubio-Medrano, Ph.D.**
Office location: CI-339
Office hours: Monday-Wednesday 2:00 PM – 3:00 PM
Telephone: N/A
e-mail: carlos.rubiomedrano@tamucc.edu
Appointments: Please send an email to instructor to arrange for an appointment.

C. COURSE DESCRIPTION

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

Extended Course Description
When appropriate, we will cover topics related to the cybersecurity of computer networks, including, but not limited to: protocol verification, firewall authorization rules, intrusion detection, and protection of software-defined networks.

Nowadays, complex computer networks such as the Internet have become the core of the cyber-infrastructure era. Therefore, understanding basic and advanced topics in networking, along with any related cybersecurity implications, becomes crucial for future computing experts.

D. PREREQUISITES AND COREQUISITES

Prerequisites.
COSC 2437 – Data Structures. MATH 2413 – Calculus I.

Corequisites
None.

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Required Textbook(s)
Computer Networking: A Top Down Approach.
7th edition
Jim Kurose, Keith Ross
Pearson/ Addison Wesley
April 2016.
None.

Optional Textbook(s) or Other References
 None.

Supplies

None.

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course's student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to:

1. Understand and leverage the topology, configuration, and equipment used in modern computer networks, e.g., the Internet.

2. Understand, implement, and augment existing protocols and service models for computer network communications.

3. Differentiate and leverage different types of measuring network performance: loss, delay, and throughput.

4. Leverage basic and advanced cyber-security techniques for computer networks.

5. Comprehend the history, as well as the present technologies for computer networks.

6. Explore, leverage, and augment innovative and emerging techniques for computer networks.

G. INSTRUCTIONAL METHODS AND ACTIVITIES

We will resort to two major instructional methods: 1) in-class, recorded lectures provided by the Instructor; and, 2) graded homework assignments provided by the Instructor as well.

Students are required to attend and/or watch all recorded lectures. Homework assignments will have a moderate-to-advanced level of challenge, and may require students to invest a considerable time on them. Also, assignments include students developing/acquiring additional skills useful in the Computer Science field, e.g., learning a new programming language or development platform. Students are expected to investigate on their own when needed, and may request assistance from the Instructor or TA on additional learning materials when appropriate.

H. MAJOR COURSE REQUIREMENTS AND GRADING

We will have both a midterm as well as a final exam. Students will be required to answer open questions regarding the lectures provided by the Instructor as well as coding problems based on the homework assignments. **The complexity of the exams will be commensurate with the level of complexity observed during lectures and assignments.**

All homework assignments will include coding and **will be graded based on correctness of the solution, level of effort, and on-time submission**. You will be given precise instructions on what programming languages will be allowed, and how to run and submit your programs so the Instructor and/or the TA can compile them, test them, and properly assess a grade. Failing to comply with such instructions will result in a deduction to your assignment grade up to 15/100 points. Not-compiling or runtime-failing code will receive partial credit only, never to exceed 40/100 points.

ACTIVITY	% of FINAL GRADE
Exams	60
Homework Assignments	40

The preliminary thresholds for assigning a letter grade are the following:

Letter Grade	Threshold
A+	97
A	93
A-	90
B+	86
B	83
B-	80
C+	74
C	70

I reserve the right to curve the grades (by lowering the thresholds), depending on the circumstances.

I. COURSE CONTENT/SCHEDULE

DATE	TOPIC	CHAPTER(S)	ASSIGNMENTS
Aug 19, 24	Course Review-Introduction	1	
Aug 26, 31	Application Layer	2	
Sep 7	*Labor Day (No Class)*	-	
Sep 2, 9, 14	Application Layer	2	
Sep 16	Transport Layer	3	
Sep 21	Transport Layer	3	Assignment 1
Sep 23, 28	Transport Layer	3	
Sep 30, Oct 5	Data Plane	4	
Oct 7	Data Plane	4	
Oct 12	Data Plane	4	
Oct 14	**Midterm Exam**	**1, 2, 3, 4**	
Oct 19, 21, 26	Control Plane	5	Assignment 2
Oct 28, Nov 2, 4	Link Layer	6	
Nov 5	**Last Day to Drop Class**	-	
Nov 9	Network Security	8	
Nov 11	*Veterans Day (No Class)*	-	
Nov 16, 18, 23	Network Security	8	Assignment 3
Nov 25	*Reading Day (No Class)*	-	
Nov 30	*Reading Day (No Class)*	-	
Dec 4	-	-	Assignment 4
Dec 7	**Final Exam (1:45 – 4:15 PM)**	**1, 2, 3, 4, 5, 6, 8**	
Dec 14	Course Grades Due at Noon	-	

Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

J. COURSE POLICIES

COVID-19

Face Coverings (cloth face covering, surgical mask, etc.) must be properly worn in all non-private spaces including classrooms, teaching laboratories, common spaces such as lobbies and hallways, public study spaces, libraries, academic resource and support offices, and outdoor spaces where 6 feet of physical distancing is difficult to reliably maintain. Extra masks will be made available if needed.

Attendance/Tardiness
Due to the pandemic situation, no attendance will be recorded or graded. However, students are expected to watch all of the recorded lectures that will be available online when personal physical attendance to the classroom is not possible.

Late Work and Make-up Exams
Late submissions will be penalized with a 10% grade penalty per day, for a maximum of 3 days. After 3 days no submissions will be allowed. This policy will be enforced in Blackboard. Students may request for an assignment deadline extension, which will be granted to all students in the class **only once per assignment**, for a maximum time of one week. **No exceptions**. See below for my exam make up policy.

Extra Credit
No Extra Credit will be offered in this course.

Cell Phone Use
Use of cell phones during class is prohibited unless stated by instructor.

Laptop Use
Use of laptops and other computing devices for the purposes of this course are allowed. Personal use of laptops and other computing devices is prohibited.

Food in Class
Consumption of food in class is prohibited. No exceptions. Properly sealed bottles of water for personal consumption are allowed.

Missed Exam
Exams make ups will be allowed only for extraordinary circumstances as decided by the Instructor. Otherwise, missed exams may not be retaken, so students are encouraged to plan in advance. Students who may miss a scheduled exam because of personal, extraordinary, and well-justified reasons must contact the Instructor at least one week in advance to make any necessary arrangements.

Participation
Students are expected to participate actively in class and interact with the Instructor and other students when appropriate.

Course Communication

All announcements and communications for the class will take place through the class Blackboard site.

In addition, students may use the class Blackboard's discussion forums to ask questions or clarifications, and the TA, Instructor, or other students can answer. Note that the advice in "How to Ask Questions the Smart Way" (http://www.catb.org/~esr/faqs/smart-questions.html) will increase the chances of getting your question answered. While I highly encourage students to help each other on the class forums, please do not go overboard and send your fellow student code (this will be considered cheating). It is better to point out their mistake or direct them to a resource that can help solve their problem, rather than giving them the answer. Note that sharing solutions or answers is expressly prohibited and will result in academic sanctions. In some cases, I will allow students to share test cases through Blackboard for checking their assignments before submission. Such test cases may not contain "production" code for solving the assignment. In case a test case violates this policy, it will be removed by the Instructor.

Also, please if at all possible use the class forums for communication to me or the TAs (unless the communication is private). This way, the entire class will benefit from your question. Note that if we deem it necessary and helpful, we will post to the class forums when replying to an inquiry that may be relevant to everybody (protecting the privacy of the original requester of course).

Midterm Exam

There will be one midterm exam. The exam will cover the material discussed from the lectures and the assignments. No notes or outside material/devices will be allowed.

Final Exam

There will be a final exam that will cover all material presented throughout the course, with an emphasis on material from the second half of the class. No notes or outside material/devices will be allowed.

K. COLLEGE AND UNIVERSITY POLICIES

- **Academic Integrity (University)**
  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 failing grade.

- **Classroom/Professional Behavior**

Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor's ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- **Statement of Civility**
  Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- **Deadline for Dropping a Course with a Grade of W (University)**
  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 your academic advisor, the Financial Aid Office, and me, before you decide to drop this course.*** Should dropping the course be the best course of action, <u>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</u>. Please consult the Academic Calendar (http://www.tamucc.edu/academics/calendar/) for the last day to drop a course.

- **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C0.03, Student Grade Appeal Procedures, 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 upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is required to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C0.03, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://academicaffairs.tamucc.edu/rules_procedures/assets/13.02.99.c0.03_student_grade_appeals.pdf). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**
  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 (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

  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.

  http://disabilityservices.tamucc.edu/

- **Civil Rights Complaints**
  Texas A&M University-Corpus Christi is committed to fostering a culture of caring and respect that is free from discrimination, relationship violence and sexual misconduct, and ensuring that all affected students have access to services. For information on reporting Civil Rights complaints, options and support resources (including pregnancy support accommodations) or university policies and procedures, please contact the University Title IX Coordinator, Sam Ramirez (Samuel.ramirez@tamucc.edu) or Deputy Title IX Coordinator, Rosie Ruiz (Rosie.Ruiz@tamucc.edu) x5826, or visit website at Title IX/Sexual Assault/Pregnancy.

  Limits to Confidentiality. Essays, journals, and other materials submitted for this class are generally considered confidential pursuant to the University's student record policies. However, students should be aware that University employees, including instructors, are not able to maintain confidentiality when it conflicts with their responsibility to report alleged or suspected civil rights discrimination that is observed by or made known to an employee in the course and scope of their employment. As the instructor, I must report allegations of civil rights discrimination, including sexual assault, relationship violence, stalking, or sexual harassment to the Title IX Coordinator if you share it with me.

  These reports will trigger contact with you from the Civil Rights/Title IX Compliance office who will inform you of your options and resources regarding the incident that you have shared. If you would like to talk about these incidents in a **confidential** setting, you are encouraged to make an appointment with counselors in the University Counseling Center.

- **Statement of Academic Continuity**
  In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi;

this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

L. **OTHER INFORMATION**

- **Academic Advising**
  The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College's Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

GENERAL DISCLAIMER

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.