Data Communications and Networking COSC 6355
Department of Computer Sciences
Fall 2020

A. COURSE INFORMATION
Course number/section: COSC 6355
Class meeting time: TuTh 7:00 PM - 8:15 PM
Class location: Bay Hall 206
Course Website: TBA

B. INSTRUCTOR INFORMATION
Instructor: Dr. Chen Pan
Office location: CI-332
Office hours: W 2:00 PM – 5:00 PM
Telephone: TBA
e-mail: chen.pan@tamucc.edu
Appointments: By e-mail

C. COURSE DESCRIPTION
Catalog Course Description
This is a survey of current trends in computer programming. The focus of this course is on the development of computer programs utilizing the latest technologies and paradigms. Topics include state-of-the-art in problem solving and software development, programming techniques and approaches, programming languages, development tools and environments, and software deployment methods.

Extended Course Description
None

D. PREREQUISITES AND COREQUISITES
Prerequisites
None

Corequisites
None

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES
Required Textbook(s)

Optional Textbook(s) or Other References
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. Explain packet transmission mechanisms and determine their performances.
2. Understand advanced packet routing and datagram forwarding mechanisms and analyze their differences.
3. Understand how all internetworking protocols work together to support an internet and corresponding network services.
4. Describe advanced internetworking techniques and protocols.
5. Design and implement advanced application layer protocols.
6. Explain how various overlay networks work.

G. INSTRUCTIONAL METHODS AND ACTIVITIES

Instructions will be delivered through in-class lectures and presentations using slides. Students will be required to present their papers or projects in the class.

H. MAJOR COURSE REQUIREMENTS AND GRADING

This is a high-level elective course. 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.

Assignments and Quizzes. Approximately five to six assignments and quizzes will be given. Partial credit will be given for incomplete assignments. Assignments will significantly be based on the material from the lectures and other material considered essential for the successful completion of this course. Hard copies of assignments will be handed out in the class during the lecture sessions. The submission details will be provided to you along with each assignment. Dates for quizzes will be announced in the class.

Paper/project. All students are required to write a research or survey paper or work on a project. The topic or problem for the paper or project must be approved by the instructor. An in-class presentation is also required. Additional details on the paper or project will be available later.
Exams. There will be two exams. The first exam will be given on October 13, 2020, and the second exam will be given on December 3, 2020 during the scheduled class time.

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two Exams</td>
<td>25+25</td>
</tr>
<tr>
<td>Take-home Quizzes</td>
<td>10</td>
</tr>
<tr>
<td>Homework</td>
<td>10</td>
</tr>
<tr>
<td>Presentations</td>
<td>10</td>
</tr>
<tr>
<td>Papers/project</td>
<td>20</td>
</tr>
</tbody>
</table>

I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>DATE (BY DAY OR WEEK)</th>
<th>TOPIC</th>
<th>CHAPTER(S)</th>
<th>ASSIGNMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Network architecture, Internet architecture, performance.</td>
<td>Chapter 1</td>
<td>TBD</td>
</tr>
<tr>
<td>2</td>
<td>Cyclic redundancy code, reliable transmission, sliding window protocol</td>
<td>Chapter 2</td>
<td>TBD</td>
</tr>
<tr>
<td>3</td>
<td>Internetworking: Switching and bridging, virtual circuit switching, source routing</td>
<td>Chapter 3</td>
<td>TBD</td>
</tr>
<tr>
<td>4</td>
<td>IP, datagram forwarding, ARP, DHCP, ICMP, virtual networks</td>
<td>Chapter 3</td>
<td>TBD</td>
</tr>
<tr>
<td>5</td>
<td>Routing, distance vector, RIP, Link state routing protocol, OSPF, performance</td>
<td>Chapter 3</td>
<td>TBD</td>
</tr>
<tr>
<td>6</td>
<td>Implementation and performance</td>
<td>Chapter 3</td>
<td>TBD</td>
</tr>
<tr>
<td>7</td>
<td>Exam 1, October 13, 2018</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Global Internet, Interdomain routing, IPv6</td>
<td>Chapter 4</td>
<td>TBD</td>
</tr>
<tr>
<td>9</td>
<td>Multicast MPLS, VPNs, routing among mobile devices</td>
<td>Chapter 4</td>
<td>TBD</td>
</tr>
<tr>
<td>10</td>
<td>End to end protocols, UDP, TCP, RTP, RPC</td>
<td>Chapter 5</td>
<td>TBD</td>
</tr>
<tr>
<td>11</td>
<td>Congestion control and resource allocation, TCP congestion control, congestion avoidance mechanisms</td>
<td>Chapter 6</td>
<td>TBD</td>
</tr>
<tr>
<td>12</td>
<td>Common services, HTTP, SMTP, Web services, DNS, SNMP, overlay networks</td>
<td>Chapter 9</td>
<td>TBD</td>
</tr>
</tbody>
</table>
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—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
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.

Extra Credit
None

Cell Phone Use
Set your cell phone/electronic device in silent mode when you are in class.
Laptop Use
You can only use your laptop to view course documents or slides.

Food in Class
Not allowed.

Missed Exam
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). Once your cause is validated a make-up exam will be given.

Participation
You are encouraged to ask questions related to course topics that can help you and others attending the class.

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, 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. Please consult the Academic Calendar ([http://www.tamucc.edu/academics/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](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/](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.