CSCI 5363 COMPUTER NETWORKS AND DISTRIBUTED SYSTEMS
Fall 2021

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PREREQUISITE: CSCI 3342 and 6 advanced hours of CSCI (CSCI 4335 or 5360 recommended).

CLASS INFO: Meeting time: 2:00 p.m. – 3:15 p.m. T,Th
Location: Cole STEM 417

OFFICE HOURS: All office hours will be held by ZOOM. I will be in my office during the normal office hours times (not my post 5 pm ones) and if you need to meet in person CONTACT ME THROUGH EMAIL first.
M, W 10:00 am – 12:00 pm, 1:00 – 2:00 pm
F 1:00 – 3:00 pm
I will gladly make appointments for other times.

COURSE DESCRIPTION: Communication models and protocols. Distributed algorithms and analysis. Distributed systems architectures and communications. Latest developments in communication technology including hardware, software, and applications.

COURSE INTENT: To provide the student with a knowledge of state-of-the-art communications technology, functionality, and distributed systems applications.

REQUIRED TEXTS: Reading material will be provided by the instructor for the class.

EXAMINATIONS: The grades in the course will be points totaling to 1000. The exams add up to 400 points. – short answer, problems, programs – all exams are comprehensive

Test 1 200 points
Final Examination – Comprehensive 200 points

NOTE: There are no exemptions from the final examination and no changes in taking the final examination. Check the final exam time. If the final exam time is a problem, you need to drop this course.

ASSIGNMENTS: 600 points out of the 1000 points.

Students will have to present relevant and current research in the field. Students will also be given assignments to practice distributed systems.

ATTENDANCE: Attendance and constructive class participation - expected
**Tentative course outline:**

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<th>Week</th>
<th>Topic(s)</th>
<th>Due</th>
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<tr>
<td>1</td>
<td>Overview of Distributed Systems</td>
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<td>3</td>
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<td>Client-Server Model</td>
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Consult SFA exam schedule for dates and times of final exam.

**ASYNCHRONOUS MINUTES:**

There will be outside milestones for the project that must be met outside of class.

**EDUCATIONAL OBJECTIVES:**

Upon successful completion of the course, students should be able to:

1. Demonstrate knowledge of communication terms and concepts.
2. Demonstrate skills in problem analysis and solution design for network problems including, centralized control networks, routing, and distributed control networks.
3. Develop classification measures and categorize distributed systems.
4. Identify distributed algorithm design problems in mutual exclusion, election, deadlock, termination, consensus and their respective solutions.
5. Apply distributed algorithm techniques to the analysis of distributed systems.
6. Develop and implement simple distributed applications that illustrate conceptual issues.
7. Utilize advanced language and library support features.
The following topics with estimated hours spent on each is listed below:

- **Network Design** .................................................................18
- **Review analysis techniques** - queuing systems, graph algorithms, optimization
- **Network designs, standards, and interfaces**
- **Protocol design and performance analysis**

- **Distributed Algorithms** ..............................................................12
- **Processes, communication, classification**
- **Issues** - mutual exclusion, election, deadlock, termination, data transfer, consistency, consensus

- **Distributed Systems**..............................................................12
- **Architectural models, design goals, services**
- **Protocols and technologies**
- **Characteristics, interface, software**
- **File and directory structures, sharing, recovery, concurrency**
- **Security** (access, authentication, encryption)
- **Representative systems**

**Exams (plus final)** .....................................................................................3
**TOTAL 45**

**PROGRAM LEARNING OUTCOMES:**
Program learning outcomes define the knowledge, skills, and abilities students are expected to demonstrate upon completion of an academic program. These learning outcomes are regularly assessed to determine student learning and to evaluate overall program effectiveness.

- Students majoring in the Department of Computer Science may access program learning outcomes at [http://cs.sfasu.edu/cs/plo/](http://cs.sfasu.edu/cs/plo/)
- Students majoring in the College of Business may access program learning outcomes at [http://www.sfasu.edu/cob/ug-plo.asp](http://www.sfasu.edu/cob/ug-plo.asp).

**CLASS INFORMATION AND POLICIES**
Department of Computer Science, Cole STEM 312, 468-2508

**Attendance:** Seating Assignments will be made and roll will be taken regularly. Attendance may be taken into consideration for your final grade. If you are absent from class please make sure to get notes from a classmate. Please remember there is no smoking, no chewing of tobacco, no eating or drinking, no bare feet, and no cell phone use during class. Cell phones and other electronic communication devices must be turned off during class. Possession of a cell phone or other electronic communication device during an exam will result in an examination grade of zero. Please keep your feet off of the seat backs and seats. Inappropriate student behavior and offensive language in class, computer science facility or other related activity will not be tolerated. Do not sleep in class, I will wake you up. Only students officially registered for the course and approved assistants may attend class.

**Mental Health and Wellness:** SFASU values students’ mental health and the role it plays in academic and overall student success. SFA provides a variety of resources to support students’ mental health and wellness. Many of these resources are free, and all of them are confidential.

**On-campus Resources:**
SFASU Counseling Services
[www.sfasu.edu/counselingservices](http://www.sfasu.edu/counselingservices)
3rd Floor Rusk Building
936-468-2401

SFASU Human Services Counseling Clinic
[www.sfasu.edu/humanservices/139.asp](http://www.sfasu.edu/humanservices/139.asp)
Human Services Room 202
936-468-1041

**Crisis Resources:**
Burke 24-hour crisis line 1(800) 392-8343
Suicide Prevention Lifeline 1(800) 273-TALK (8255)
Crisis Text Line: Text HELLO to 741-741

**Examination Policy:** All class examinations are considered to be a major part of the course work upon which a large part of the course grade depends. There are NO make-up exams! Class examinations will be announced at least two classes prior to the examination. If you have a conflict with another university event, you must contact me well in advance of the examination. In case of an extreme emergency, contact me before the scheduled examination. Failure to do so will result in an examination grade of zero. There are no exemptions for the final examination and no changes in taking the final examination. All students must take the final exam. A zero on the final exam will result in an F in the course. Check the final examination time. If the final examination time is a problem, you need to drop this course. Once the first person has left the room on the day
of an examination, no one else will be permitted to begin the exam. Please note that being in possession of a cell phone or other electronic communication device during an exam will result in an examination grade of zero.

**Assignment Policy:** All assignments are due at the announced time on the specified due date. Assignments will be accepted up to 12 hours late. (50% off) If you have a conflict, please contact me in advance. Please Note: You will be given assignments and quizzes during the last five class days of the semester. You should turn in your homework assignments done neatly, clearly, and to the best of your ability. Follow all the instructions given. You will lose points for failure to follow instructions. Any work turned in to my box should be dated and timed by the CSC department staff. Please ask nicely. Do not slide any work under my door or under the door to the Computer Science Offices.

**Software Policy:** Disciplinary action will be taken against individuals who perform unauthorized duplication of computer software or who are involved in the unauthorized use of duplicated software. This action may make it impossible for you to complete this course.

**Academic Integrity:** Please review the University policy on Academic Integrity. Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit. Please read the complete policy at http://www.sfasu.edu/policies/student-academic-dishonesty-4.1.pdf

**Computing Laboratory Usage:** Students who utilize equipment in university computing laboratories are expected to read and abide by all posted policies for the laboratories. Please note that no children are permitted in university computing laboratories.

**Program Learning Outcomes:** Program learning outcomes define the knowledge, skills, and abilities students are expected to demonstrate upon completion of an academic program. These learning outcomes are regularly assessed to determine student learning and to evaluate overall program effectiveness. You may access the program learning outcomes for your major and particular courses at http://www.sfasu.edu/academics/colleges/sciences-math/computer-science/about/accreditations

**Withheld Grades Semester Grades Policy (A-54):** Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

**Students with Disabilities:** To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/.

**Acceptable Student Behavior:** Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic, or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/ inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the iCare Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.