CSCI 5363 – 001
COMPUTER NETWORKS AND DISTRIBUTED SYSTEMS
Fall 2023

Instructor:  Dr. Pushkar Ogale
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Phone: (936) 468-2508
Office: 312D STEM

Office Hours: Monday, Wednesday 1:00 PM – 2:00 PM
Tuesday, Thursday 11:00 PM – 12:30 PM (Other times by appointment only)

If Office hours need Zoom Meeting then the following link can be used:
https://sfasu.zoom.us/j/99317676538?pwd=R0dJRmVteEU4ZHRuVFe1b2E5allyUT09

Department: Department of Computer Science

Class meeting:
Time: 2:00 PM – 3:15 PM TR
Place: STEM 417 – Note:Classes may be Live Streamed Online on Zoom at:
https://sfasu.zoom.us/j/93176046422?pwd=NWNRRkV6TUNyeForY2VkU3Badm85dz09

Credit hours 3
Pre-requisites: CSCI 3342 and 6 advanced hours of CSCI (CSC 4335 or 5360 recommended)
Grade Reminder: Must have a grade of C or better in each prerequisite course.

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.

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

More: https://www.sfasu.edu/docs/computer-science/graduate-course-CSCI5363.pdf

Course Contact Hours and Study Hours
This course meets for a minimum of 37.5 lecture contact hours during the semester, including the final exam. Students have significant assignments based on readings from the primary literature, participate in classroom discussions regarding current research topics, complete periodic homework and laboratory/programming assignments, and periodic exams in addition to the final exam. Students are expected to prepare for any class assignments or quizzes over the material covered in class or in the reading material. Successful completion of these activities requires at a minimum six additional hours of outside of classroom work each week. In addition the course will require 150 asynchronous minutes to be completed. This component will be addressed through attending a seminar/researching a relevant topic followed by a discussion board summary or a Quiz. The course calendar on the last page of the syllabus details the topics to be covered during the semester and the reading assignments the students are expected to follow.

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://www.sfasu.edu/academics/colleges/sciences-math/computer-science/about/accreditations

Student Learning Outcomes:
In general, SLOs in a course are specific and include the exact knowledge, skill or behavior taught in the course in support of the more global PLOs. For additional information on meaningful and measurable learning outcomes, see the assessment resource page http://www.sfasu.edu/assessment/index.asp.


Reference Books: Please refer to the syllabus link in the Purpose of Course section above.

Course Requirements: Students are expected to attend classes, are encouraged to ask questions and ensure that they understand the material being taught. There will be regular quizzes, homework assignments and examination to test the student understanding of the material. A review and presentation on current research issues in the field of study will be required. The weightage to these components is specified in the Grading Policy below.
Course Calendar: See last page of Syllabus

Grading Policy: Overall grade will be based on the performance on the following components
1) Attendance - 5 % (Bonus for full attendance only)
2) Quizzes - 10 %
3) HW Assignments/Projects - 30 %
4) Examination 1 - 15 %
5) Examination 2 - 15 %
6) Final Examination - 30 %

Grade bands are usually 90+ A/80+ B/70+ C/60+ D/ 59 and lower F

Exam Note: Examinations are weighted at 60% of the overall course grade. Valid student ID cards must be presented on each examination day. (No ID... No exam...Grade of zero)
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.

Attendance policy: Attendance and constructive class participation is expected. There is no specific grade for attendance. But students who have full attendance except for one unexcused absence will qualify for 5% bonus grade provided they also complete the end of the semester course evaluation. Students traveling for University business/events and those out sick will be excused after they turn in a medical note of absence or University related activity letter from the appropriate authorities.

Educational Objectives The goal of this course is to have students develop the concepts and skills necessary for the design and implementation of distributed systems. Evaluation of student progress will be measured through the successful completion of laboratory assignments, performance on homework problems, and analysis of exam responses.

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.

Course Content                      Hours

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 (excluding the final) …………………………………………………………………………………………………………………3

TOTAL 45
Artificial Intelligence Fair-Use Policy: The emergence of generative AI tools (such as ChatGPT) has sparked interest among many students in our discipline. The use of these tools for brainstorming ideas, exploring possible responses to questions or problems, and creative engagement with the materials may be useful for you as you craft responses to class assignments. While there is no substitute for working directly with people or myself, the potential for generative AI tools to provide automatic feedback, aid in internet search, provide suggestive study materials, and other assistive technology is developing. While all submitted work should be that of your own creation, we shall discuss how we may use AI tools to help prompt additional discovery. Please feel free to reach out to me well in advance of the due date of assignments for which you may be using generative AI tools and I will be happy to discuss what is acceptable.

Faculty Notification Requests (formerly Absence Notifications)
The Dean of Students Office will help to notify faculty of a student’s absence for certain parameters. You can go HERE to learn more about this new process and also submit the form. It is still at the faculty member’s discretion on any missed assignments, tests, etc.

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 may 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.

Assignment Policy: All assignments are due at the announced time on the specified due date. Assignments will not be accepted late. If you have a conflict, please contact me in advance. 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 office door or under the door to the Computer Science offices. PLEASE NOTE: You may be given assignments during the last five class days of the semester.

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

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

Drop Policy (Univ.): The official university add/drop policy is located at http://www.sfasu.edu/policies/course-add-drop_6.10.pdf. If you have questions concerning registration, add/drop, or the withdrawal process, please refer to the Registrar’s website.

Computer Account Policy: All assignments that require the use of the University Computer must be done under the computer account that is assigned to you in this class. You should NOT do other class assignments in this account, and you should NOT do assignments from this class in other accounts. Failure to abide by the above statements will mean that you will receive a grade of F in this course.

Academic Integrity (4.1)
The Code of Student Conduct and Academic Integrity outlines the prohibited conduct by any student enrolled in a course at SFA. It is the responsibility of all members of all faculty, staff, and students to adhere to and uphold this policy.

Articles IV, VI, and VII of the new Code of Student Conduct and Academic Integrity outline the violations and procedures concerning academic conduct, including cheating, plagiarism, collusion, and misrepresentation. Cheating includes, but is not limited to: (1) Copying from the test paper (or other assignment) of another student, (2) Possession and/or use during a test of materials that are not authorized by the person giving the test, (3) Using, obtaining, or attempting to obtain by any means the whole or any part of a non-administered test, test key, homework solution, or computer program, or using a test that has been administered in prior classes or semesters without permission of the Faculty member, (4) Substituting for another person, or permitting another person to substitute for one’s self, to take a test, (5) Falsifying research data, laboratory reports, and/or other records or academic work offered for credit, (6) Using any sort of unauthorized resources or technology in completion of educational activities.

Plagiarism is the appropriation of material that is attributable in whole or in part to another source or the use of one’s own previous work in another context without citing that it was used previously, without any indication of the original source, including words, ideas, illustrations, structure, computer code, and other expression or media, and presenting that material as one’s own academic work being offered for credit or in conjunction with a program course or degree requirements.
Collusion is the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any provision of the rules on academic dishonesty, including disclosing and/or distributing the contents of an exam.

Misrepresentation is providing false grades or résumés; providing false or misleading information in an effort to receive a postponement or an extension on a test, quiz, or other assignment for the purpose of obtaining an academic or financial benefit for oneself or another individual or to injure another student academically or financially.

**Withheld Grades Semester Grades Policy (5.5)**
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 coursework 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 to compute the grade point average. For additional information, go to [https://www.sfasu.edu/policies/course-grades-5.5.pdf](https://www.sfasu.edu/policies/course-grades-5.5.pdf).

**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 promptly may delay your accommodations. For additional information, go to [http://www.sfasu.edu/disabilityservices/](http://www.sfasu.edu/disabilityservices/)

**Student Wellness and Well-Being**
SFA values students’ overall well-being, mental health and the role it plays in academic and overall student success. Students may experience stressors that can impact both their academic experience and their personal well-being. These may include academic pressure and challenges associated with relationships, emotional well-being, alcohol and other drugs, identities, finances, etc.

If you are experiencing concerns, seeking help, 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:**
The Dean of Students Office (Rusk Building, 3rd floor lobby)
www.sfasu.edu/deanofstudents
936.468.7249
dos@sfasu.edu

SFA Human Services Counseling Clinic Human Services, Room 202
www.sfasu.edu/humanservices/139.asp
936.468.1041

The Health and Wellness Hub “The Hub”
Location: corner of E. College and Raguet St.

To support the health and well-being of every Lumberjack, the Health and Wellness Hub offers comprehensive services that treat the whole person – mind, body and spirit. Services include:
- Health Services
- Counseling Services
- Student Outreach and Support
- Food Pantry
- Wellness Coaching
- Alcohol and Other Drug Education

[www.sfasu.edu/thehub](http://www.sfasu.edu/thehub)
936.468.4008
thehub@sfasu.edu

**Crisis Resources:**
- Burke 24-hour crisis line: 1.800.392.8343
- National Suicide Crisis Prevention: 9-8-8
- Suicide Prevention Lifeline: 1.800.273.TALK (8255)
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 Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.

Course Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Topic</th>
<th>Assignments</th>
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<tbody>
<tr>
<td>1</td>
<td>Tuesday, August 29, 2023</td>
<td>Introduction, Syllabus, policies, schedule, D2L, e-mail</td>
<td>Read Chapter 1/Slides</td>
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<tr>
<td></td>
<td>Thursday, August 31, 2023</td>
<td>Chapter 1: Distributed Systems Introduction</td>
<td>Read 1</td>
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<td>2</td>
<td>Tuesday, September 5, 2023</td>
<td>Chapter 1: Distributed Systems Introduction</td>
<td>Read Chpt 1</td>
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<td></td>
<td>Thursday, September 7, 2023</td>
<td>Chapter 2 – System Models</td>
<td>Read Chapter 2/Slides, Quiz 1: Chpt 1</td>
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<td>3</td>
<td>Tuesday, September 12, 2023</td>
<td>Chapter 2 – System Models</td>
<td>Read Chpt 2, HW 1/2: Chpt 1, 2</td>
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<tr>
<td></td>
<td>Thursday, September 14, 2023</td>
<td>Chapter 3 – Networking &amp; Internetworking</td>
<td>Read 3 , Paper Assignments</td>
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<tr>
<td>4</td>
<td>Tuesday, September 19, 2023</td>
<td>Chapter 3 – Networking &amp; Internetworking</td>
<td>Read 3 , Paper Assignments</td>
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<td></td>
<td>Thursday, September 21, 2023</td>
<td>Chapter 4 – Interprocess Communication</td>
<td>Read Chapter 4/Slides, Quiz 2: Chpt 2</td>
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<td>5</td>
<td>Tuesday, September 26, 2023</td>
<td>Chapter 4 – Interprocess Communication</td>
<td>HW 3/4: Chpt 3, 4, Read 4</td>
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<td></td>
<td>Thursday, September 28, 2023</td>
<td>Chapter 5 – Remote Invocation</td>
<td>Read 5, Quiz 3 Chpt 4</td>
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<td>6</td>
<td>Tuesday, October 3, 2023</td>
<td>Exam 1 – Chapters 1, 2, 3, 4</td>
<td>Read Chapter 4/Slides</td>
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<tr>
<td></td>
<td>Thursday, October 5, 2023</td>
<td>Chapter 5 – Remote Invocation</td>
<td>Read 6, Quiz 4, Chpt 5</td>
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<td>7</td>
<td>Tuesday, October 10, 2023</td>
<td>Chapter 6 – Indirect Communication</td>
<td>Read 6</td>
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<td></td>
<td>Thursday, October 12, 2023</td>
<td>Chapter 6 – Indirect Communication</td>
<td>HW 5/6: Chapter 5/6, Read 6 Quiz 5- Chpt 6</td>
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<td>8</td>
<td>Tuesday, October 17, 2023</td>
<td>Chapter 7 – Operating System Support</td>
<td>Read 7</td>
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<td></td>
<td>Thursday, October 19, 2023</td>
<td>Chapter 7 – Operating System Support</td>
<td>Read Chapter 7/Slides</td>
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<td>9</td>
<td>Tuesday, October 24, 2023</td>
<td>Chapter 8 – Distributed Objects and Components</td>
<td>Read Chapter 8/Slides, Quiz 6-Chpt 7</td>
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<tr>
<td></td>
<td>Thursday, October 26, 2023</td>
<td>Chapter 8 – Distributed Objects and Components</td>
<td>HW 7/8: Chapter 7/8, Read 8</td>
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<td>10</td>
<td>Tuesday, October 31, 2023</td>
<td>Chapter 9 – Web Services</td>
<td>Read 9 Quiz 7-Chpt 8</td>
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<td>Thursday, November 2, 2023</td>
<td>Chapter 12 - Distributed File Systems - Students - 1, 2</td>
<td>Read Chapter 12</td>
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<td>11</td>
<td>Tuesday, November 7, 2023</td>
<td>Chapter 13 - Name Services - Students - 3, 4</td>
<td>Quiz 8: Chpt 8, Read 13/Slides</td>
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<td></td>
<td>Thursday, November 9, 2023</td>
<td>Exam 2 – Chapters 5, 6, 7, 8</td>
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<td>12</td>
<td>Tuesday, November 14, 2023</td>
<td>Chapter 11 - Security</td>
<td>Read Chpt 11, HW 9/10 Chpt 12/13</td>
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<td>Thursday, November 16, 2023</td>
<td>Chapter 14 - Time &amp; Global states</td>
<td>Read 14, Quiz 9-Chpt 11</td>
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<td>13</td>
<td>Tuesday, November 21, 2023</td>
<td>Thanksgiving Holiday</td>
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<td></td>
<td>Thursday, November 23, 2023</td>
<td>Thanksgiving Holiday</td>
<td></td>
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<td>14</td>
<td>Tuesday, November 28, 2023</td>
<td>Chapter 15 - Coordination &amp; Agreement</td>
<td>Read 15, Q10 - Chpt 14</td>
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<td></td>
<td>Thursday, November 30, 2023</td>
<td>Paper Presentations</td>
<td>HW 11/12 Chpt 14/15</td>
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<td>15</td>
<td>Tuesday, December 5, 2023</td>
<td>Paper Presentations</td>
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<td></td>
<td>Thursday, December 7, 2023</td>
<td>Paper Presentations</td>
<td></td>
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<tr>
<td>16</td>
<td>Tuesday, December 12, 2023</td>
<td>Final Exam Comprehensive 1:0 PM - 3:00 PM</td>
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