

# CS 3410: Distributed Systems

## Spring 2022 Syllabus

Can be used to fulfill a requirement for students pursuing a degree or emphasis in Computer Science, and open to other students. Covers design and implementation of network applications, including message passing, concurrency, synchronization, scalability, and partial failure.

### Prerequisites

CS 2420 and CS 2810, each with a C or better

### Fees

**Computer lab access fee:** \$20, used to assist in maintaining computing infrastructure.

### Sections

One section:

1. MWF 9:00-9:50 AM in Smith 109

CRN: 20794

Final exam: Wednesday, May 4 at 9:00 AM

### Instructor

**Instructor:** [Dr Russ Ross](#)

**Email:** [russ@dixie.edu](mailto:russ@dixie.edu)

**Phone:** 435-773-5952 (note: email preferred)

**Office:** North Burns 226

**Office Hours:** MWF 11:00 AM-noon, TR 1:00-2:00 PM

### Course learning outcomes

At the successful conclusion of this course, students will be able to:

1. Design and implement software solutions that span multiple computers across a network.
2. Analyze the tradeoffs between competing goals in system software projects, including safety, performance, convenience, and ease of future maintenance.
3. Build and modify complex software projects in teams.
4. Debate and differentiate the approaches and solutions to distributed systems problems taken by modern internet organizations.

### Resources

#### Text

There is no text required for this course. Various online resources will be assigned throughout the semester.

#### Computers

Students are expected to have access to a personal computer running Linux (this includes the Windows Subsystem for Linux) or Mac OS. The instructor will provide basic help setting up the tools and environment for homework, but students are generally responsible for installing and configuring software as well as performing basic troubleshooting and maintenance tasks as needed.

#### Course web site

This course has an accompanying website. You are responsible for announcements, the schedule, and other

resources posted on the website. Grades will be managed using Canvas.

## Assignments and exams

### Reading

The student is responsible for reading the assigned material. A reading schedule is provided with the class schedule on the course website. Readings consist of a series of research papers, online articles, and recordings of technical talks.

Research papers can be difficult reading, so students should plan on several hours over multiple sessions to read each paper.

### Assignments

Assignments will be graded for accuracy of function and style of design. Programs that do not compile will receive no credit. It is important that you start early and get each of your assignments done before its due date. Many problems will take much longer to solve in a single sitting than in many shorter sessions. Give yourself time to think; sleep on difficult problems. Finish early so you can go back and refine your initial approach.

Assignment due dates and submissions are managed in Canvas. Some assignments will be automatically graded using CodeGrinder (which will be explained in class) and others will require the student to record a screencast demonstrating the completed project. This means that you must reserve time to prepare and record a demonstration before the due date.

### Final presentation

There will be no exams, but there will be a final presentation. Each student will be assigned a research paper to read and present to the entire class. Details and the schedule will be discussed in class.

### Grading

Assignments, in-class activities, and presentations each contribute to your point total. In total, the assignments comprise 60% of your grade, reading responses 30%, and the presentation counts for 10%.

Letter grades are assigned based on the percentage of possible points attained, according to the following chart:

Minimum Percentage	Letter Grade
93	A
90	A-
87	B+
83	B
80	B-
77	C+
73	C
70	C-
67	D+
63	D
60	D-
0	F

## Course policies

### Attendance

Students are responsible for material covered and announcements made in class. School-related absences may be made up only if prior arrangements are made. The class schedule presented is approximate. The instructor reserves the right to modify the schedule according to class needs. Changes will be announced in class. Exams and quizzes cannot be made up unless arrangements are made *prior* to the scheduled time.

Occasional absences are acceptable as long as the student keeps up with assignment work. Students who miss more than two consecutive weeks of class or who miss more than 20% of scheduled classes during the

semester without making prior arrangements will receive a failing grade. Students who miss any scheduled exam (including midterm exams and the final exam/presentation) or fail to complete a final project without making prior arrangements will receive a failing grade.

This course can only be completed by attending classes and completing all assigned work to a satisfactory level. There is no procedure for testing out of the class.

## Laptops

Electronics—including laptops—in class have been demonstrated to have a negative impact on student learning (see [Shriram Krishnamurthi's writeup for background](#)). This class has a NO DISTRACTIONS policy, with a few exceptions:

1. When I ask you to use your laptop (or phone) for a specific activity in class. In this case you are permitted to use it for the duration of the activity, but not during the rest of the class.
2. If you need a laptop to accommodate a disability. If this is the case, please talk to me in advance and please visit the Disability Resource Center to document your need. To help other students in the class, please sit near one of the edges so your laptop does not distract other students more than necessary.

This policy extends to phones, tablets, and other electronic devices. I encourage you to pay full attention to class and take notes on paper.

## Time Commitment

Courses should require about 45 hours of work per credit hour of class. This class will require about 135 hours of work on the part of the student to achieve a passing grade, which is approximately 9 hours per week. If you do not have the time to spend on this course, you should probably rethink your schedule.

## Late Policy

Response papers are due before class starts on the day we are scheduled to discuss the paper. No late work is accepted for response papers.

It is critical that students learn Go early in the course. No late work is accepted for the sequence of assignments that introduce the Go programming language.

The lateness policy of this course is designed to encourage students to stay up-to-date on the current topics and assignments. Each assignment has a soft due date (when students are expected to complete it) and a cutoff date (after which submissions are no longer accepted).

Assignments may be made up after the cutoff date, subject to the following constraints:

1. No old assignments are accepted until the current, active assignment is complete. Students should focus on the current projects, instructional materials, and in-class activities, and only go back to work on older assignments when they are fully caught up or even ahead on current assignments.
2. Old assignments (anything accepted after the initial cutoff date) will be subject to a 25% penalty, which may be waived one time.
3. No late work will be accepted more than a month after its original due date.

## Collaboration

Limited collaboration with other students in the course is permitted. Students may seek help learning concepts and developing programming skills from whatever sources they have available, and are encouraged to do so. Collaboration on assignments, however, must be confined to course instructors, lab assistants, and other students in the course. Students are free to discuss strategies for solving programming assignments with each other, but this must not extend to the level of programming code. Each student must code his/her own solution to each assignment. See the section on cheating.

## Cheating

Cheating will not be tolerated, and will result in a failing grade for the students involved as well as possible disciplinary action from the college. Cheating includes, but is not limited to, turning in homework assignments that are not the student's own work. It is okay to seek help from others and from reference materials, but only if you learn the material. As a general rule, if you cannot delete your assignment, start over, and re-create it successfully without further help, then your homework is not considered your own work.

You are encouraged to work in groups while studying for tests, discussing class lectures, discussing algorithms for homework solutions, and helping each other identify errors in your homework solutions. If you are unsure if collaboration is appropriate, contact the instructor. Also, note exactly what you did. If your actions are determined to be inappropriate, the response will be much more favorable if you are honest and complete in your disclosure.

Where collaboration is permitted, each student must still create and type in his/her own solution. Any kind of copying and pasting is *not* okay. If you need help understanding concepts, get it from the instructor or fellow classmates, but never copy another's code or written work, either electronically or visually. The line between collaborating and cheating is generally one of language: talking about solutions in English or other natural languages is usually okay, while discussions that take place in programming languages are usually not okay. It is a good idea to wait at least 30 minutes after any discussion to start your independent write-up. This will help you commit what you have learned to long-term memory as well as help to avoid crossing the line to cheating.

## **Special COVID-19 policies**

Students are strongly encouraged to get vaccinated and to wear a face covering that covers both mouth and nose in class and when working in the Smith Computing Center or visiting faculty offices. Students who are ill for any reason should avoid coming to class or otherwise coming into contact with other people, and should work with other students to get notes from missed classes.

## **College policies**

Click on this link: <https://catalog.utahtech.edu/academiccalendar/> for the official academic calendar, which has several important dates you should be aware of.

Click on this link: <https://employees.utahtech.edu/faculty-resources/required-elements-in-dsu-syllabi/> for links to resources and policies that apply across the entire university.