Principles of Systems Programming
CSCE 3600.001 – Summer 2022
10 Week Session June 6-August 12

Instructor: Curtis Chambers

Office: TBD

E-mail Address: Curtis.Chambers@unt.edu

Class Times:
  Lecture (.001): MoWe 9:00 AM – 11:50 AM
  NTDP K120
  06/06/2022 - 08/12/2022

Office Hours: TBD


Grader: Pranavanath Reddy Jaggari
  pranavanathreddy.jaggari@unt.edu
  Office Hours: TBD

TA: Abiola Salau
  AbiolaSalau@my.unt.edu
  Office Hours: TBD

Recitation Schedule: You should have registered for one of the following groups.
  Recitation Group 1 (.301): TuTh 10:00 AM – 12:00 PM
  Recitation Group 2 (.302): MoWe 3:30 PM – 5:30 PM

Canvas: This course will be using Canvas to distribute course materials, post grades, and submit assignments. Check regularly course work and announcements.

Course Description

3600. Principles of Systems Programming. 3 hours (3;0;1).

Introduction to the design and operation of systems software. Analysis is made of current system software technology, including operating systems, language translation systems and file systems. Prerequisite(s): CSCE 2100 with a grade of C or better.

This course will focus on systems programming fundamentals: learning how computer system software works and improving skills in K&R C and bash (Bourne-again shell).

The course will include one or more major programming group projects and several smaller individual programming assignments. Recitation assignments will assist in reinforcing and applying material
covered in lecture throughout the course. One or more midterm exams will assess your knowledge on the material with a final comprehensive exam at the end.

Course Outcomes

Course outcomes are measurable achievements to be accomplished by the completion of a course. These outcomes are evaluated as part of our ABET accreditation process.

1. Write robust, efficient, readable, and correct system software using the C programming language.
2. Demonstrate an understanding of processes and threads by developing applications using multiple processes and multi-threaded activities in a Linux environment.
3. Demonstrate an understanding of deadlocks and synchronization through the development of the application(s) that utilize a variety of mutual exclusion mechanisms.
4. Develop shell scripts and utilities that demonstrate an understanding of memory, file, and process management and interaction, including concepts such as virtual memory and disk scheduling.
5. Create a Linux-based application that utilizes inter-process communication mechanisms such as pipes and sockets to communicate information between independently running processes on one or multiple platforms.
6. Demonstrate an understanding of the use and interaction among compilers, macro processors, assemblers, linkers, and loaders through their use in creating the applications described in previous outcomes.

Course Requirements

Attendance: Required; not enforced.
Exams: 2 Midterm Exams and 1 Final Comprehensive Exam.
Grade: The final grade for this class will be based on a sequence of recitation assignments, 4 minor (individual) programming assignments, 2 major (group) programming assignments, and 3 exams.

Attendance Policy

Attendance will not be part of your grade. However, it is required.

Lecture Session: Required; but not graded.

Should you miss class, you are responsible for the covered course material and assignments you may have missed. The instructor will not be responsible for re-teaching material missed by a student who did not attend class.

As always, if there are extenuating circumstances, please notify your instructor and course assistance staff (such as Graders and TAs) via UNT Email ASAP so that you can work together to ensure your success in learning the material.
Note that the Graders and TAs should only be notified. Do not expect a response from them outright.

**Recitation Sections: Required;** but not enforced.

Recitation is (generally) considered optional. I, however, **require** that you attend recitation. Recitation will cover recitation (graded) assignments, minor, and major assignments. We’ll also cover exam preparation in recitation. While in recitation you can use your time as you see fit, but respect and follow the TA’s instructions.

Recitation Assignments will be distributed during Recitation Hours of your grade but should be accessible on Canvas.

**Academic Misconduct**

- This course follows UNT’s policy for Student Academic Integrity that can be found at https://policy.unt.edu/policy/06-003 as well as the Cheating Policy for the Department of Computer Science and Engineering.
- The department, college, and university have very strict guidelines regarding academic misconduct. Students are expected to submit their own work on all individual assignments.
- You are allowed to discuss solutions, but **do NOT work with other students on shared program/assignment solutions.** Do NOT use even partial program solutions from the Internet without properly citing them. Do NOT recycle a complete assignment, this will result in a failing grade. The complexity of these assignments should not merit the use of external resources. Failure to remain in compliance with the guidelines is considered cheating and will be reported.
- **You will be graded on your contribution to the code.** Be honest—attribute your work. Submitting code or work that you did not solely author (without acknowledging it to the instructor) is cheating and will be dealt with in accordance with the department cheating policy.
- If it is determined that you have cheated, the first instance of cheating in the class will result in a grade of **ZERO (0)** on the assignment in question and referral to the department chairman and dean of engineering. The second instance of cheating in the class will result in a grade of **F** in the class, and a dismissal hearing may be initiated by the dean of engineering.
- **You need to do your own work.** Here, there should be no ambiguity at all.
- In case the above description, and in-class discussion of my views on appropriate and inappropriate collaboration does not answer all your questions, please look at the university Student Rights and Responsibilities web page.
- You are responsible for the information covered in class, **whether you attend class or not.** Individualized lectures will not be given. Please check with other class members for any notes that might have been missed during an absence. Attendance won’t always be taken in lecture and your attendance is strongly recommended to improve your opportunity to meet course objectives.
- This course will contain both **group** and **individual** assignments.
- On major programming assignments, you are to **work in a group** as directed by your instructor.
- Minor programming assignments must be the sole work of the **individual** student.
- You should not work with other students on shared program solutions or use program solutions found on the Internet.
• Specifically, you should never copy someone else’s solution or code, and never let a classmate examine your code.
• A sophisticated program will be used to compare your work to the work of all other students (including students in past classes).
• If you are having trouble with an assignment, please consult with your instructor or course assistance staff (TAs, IAs, Graders, etc.). Failure to adhere to these strict standards may be cause for disciplinary action even leading to expulsion from the University.
• Each student should adhere to the university's student code of conduct. The Code of Student Conduct can be found at http://deanofstudents.unt.edu.

Student Responsibilities

Students are responsible for submitting the correct assignments for each applicable assignment submission. Submissions should include the correct files and submitted prior to the deadline. In certain cases, when an assignment is verified to be completed on time, but either was submitted to an incorrect assignment location (e.g., submitting Minor 5 to Minor 4 location on Canvas) or a wrong assignment was submitted instead, the assignment may be accepted, but assessed a 30% reduction penalty if the due date has passed. Verification of completion time stamp for assignments will be done using the CSE machines, so please make sure to save your work on these departmental servers to ensure that your work can be accepted. If you have any questions or concerns about your submission, please work with your instructor or TA/IA to ensure the correct file(s) is/are submitted.

Excused Absences

Students are expected to schedule routine appointments and activities so as not to conflict with attending class. However, some absences cannot be prevented. In the event of a medical emergency or family death, etc., students must request an excused absence as quickly as feasible following the event. While it is preferred that I am notified prior to the event, that cannot always be the case. Send to me (ASAP) a brief email from your UNT provided email address. You need not go into detail as to the emergency, but you should schedule with me a meeting outside of lecture at your earliest convenience. Students must be able to provide documentation that verifies the reasoning for the excused absence. Above all else, this course is compliant with UNT Policy 06.039 “Student Attendance and Authorized Absences.” Please refer to this policy for more details/information.

Emergencies

By definition, emergencies cannot be planned for. Your instructor attempts to make accommodations in these instances that allow for making up missed work and completion of the course in a timely manner. Students must provide documentation that verifies the emergency.

Disability Accommodation

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your
specific needs in a course. You may request reasonable accommodations at any time; however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information, refer to the Office of Disability Accommodation website at http://www.unt.edu/oda. You may also contact ODA by phone at (940) 565-4323.

Academic Integrity

Below I have taken out two paragraphs from UNT Policy 06.003 Student Academic Integrity.

“UNT promotes the integrity of learning processed and embraces the core values of trust and honesty. Academic integrity is based on educational principles and procedures that protect the rights of all participants in the educational process and validate the legitimacy of degrees awarded by the university. In the investigation and resolution of allegations of student academic dishonesty, the university’s actions are intended to be corrective, educationally sound, fundamentally fair, and based on reliable evidence.”

“Students are expected to conduct themselves in a manner consistent with the university's status as an institution of higher education. In the class setting, students shall follow their instructors’ directions and observe all academic requirements published in course syllabi and other course materials. A student is responsible for responding to an academic dishonesty report issued by an instructor or other university official. If a student fails to respond after proper attempt at notification, the university may take appropriate academic actions in the absence of the student.”

Academic Freedom and Academic Responsibility

Refer to UNT Policy 06.035

Academic freedom and academic responsibility give vitality to the UNT and its mission. As such, the academic freedom to be able to freely consider or investigate important, and, perhaps, controversial questions are essential to the education of students and advancement of knowledge. Faculty have the academic responsibility to subject their knowledge and postulates to rigorous review by peers who are experts in the relevant subject material, to have a firm foundation of their postulates in the most relevant and suitable available evidence, and to work with one another to provide the best education possible for our students.

Syllabus Revisions

This syllabus may be modified as the course progresses should the instructor deem it necessary. Notice of changes to the syllabus shall be made through Canvas and/or class announcements.

Tentative Lecture Schedule (subject to change)
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Subject and Assignments Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6/6 — 6/8</td>
<td>Introduction, Syllabus, Systems Programming Overview</td>
</tr>
<tr>
<td>2</td>
<td>6/13 — 6/15</td>
<td>Linux Overview / Gitlab, Regular Expressions sed/gawk, Bash</td>
</tr>
<tr>
<td>3</td>
<td>6/20 — 6/22</td>
<td>Bash</td>
</tr>
<tr>
<td>4</td>
<td>6/27 — 6/29</td>
<td>Review, Processes</td>
</tr>
<tr>
<td>5</td>
<td>7/4 — 7/6</td>
<td>(No Class Monday) Processes</td>
</tr>
<tr>
<td>6</td>
<td>7/11 — 7/13</td>
<td>Threads</td>
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<tr>
<td>7</td>
<td>7/18 — 7/20</td>
<td>IPC</td>
</tr>
<tr>
<td>8</td>
<td>7/25 — 7/27</td>
<td>IPC</td>
</tr>
<tr>
<td>9</td>
<td>8/1 — 8/3</td>
<td>Compilers &amp; Compilation</td>
</tr>
<tr>
<td>10</td>
<td>8/8 — 8/10</td>
<td>Python, Review</td>
</tr>
<tr>
<td>*</td>
<td>8/12</td>
<td>(Comprehensive) Final Exam @ 9:00 AM</td>
</tr>
</tbody>
</table>

**Other Key Dates**

- Last Day to Add a Class Section: June 10
- Drop with a Grade of W Begins: June 22
- Last day to change to pass/no pass grade option (undergrads): July 1
- Last day for a student to drop a course or all courses with a grade of W: July 27
- Reading Day (no classes): NA
- Final Exam: August 12, 9:00 AM
Final Exams will meet at the same time and location assigned to the class unless other arrangements have been made.

Grading Policy

You must complete all tasks required on time. Late assignments will not be accepted. You have 1 week to dispute a grade on it’s posted date. Afterwards, no credit will be awarded.

After receiving you grade for an assignment, you must email me asap within 7 days should you wish to discuss/dispute it. You’re allowed to notify the TA, but do not expect them to reply as it is my ultimate decision for grades to be changed after they are posted. I recommend that you email me and CC the TA and Grader.

The above is to avoid “end of the semester” rush to alter grade penalties. Each student should keep track of their grades throughout the semester.

Note that as we near the end of the semester, the time to adjust assignments gets shorter.

Each assignment will have varying requirements. Pay very close attention to what I am asking you to deliver in every assignment, program, and exam. Uploads may be on SVN, Canvas, GitLab, in Person, or (in many cases) more than one!

Your final grade will be a weighted average according to the following:

<table>
<thead>
<tr>
<th>Assignment Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recitation Assignments</td>
<td>15%</td>
</tr>
<tr>
<td>Minor Programming Assignments</td>
<td>25%</td>
</tr>
<tr>
<td>Major Programming Assignments</td>
<td>20%</td>
</tr>
<tr>
<td>Midterm Exams 1 – 2</td>
<td>25% (or 12.5% each)</td>
</tr>
<tr>
<td>Final Exam</td>
<td>15%</td>
</tr>
</tbody>
</table>

Letter grading system: A (90+), B (80+), C (70+), D (60+), F(0+)

Grades will be posted on Canvas throughout the semester to provide an ongoing assessment of student progress, though final assessment will be measured using the weighted average above. Once a grade is assigned on Canvas, students have one (1) week to dispute the grade. The proper channel for grade disputes is to first go to the original grader (i.e., TA/IA) in an attempt to resolve the issue. If, however, a resolution cannot be reached between the student and the grader, the student shall then go to the instructor who will have the final say on the grade.

Most programming assignments will be due at 11:59 PM on the specified due date to Canvas. All assignments must be completed and submitted according to their specific directives. Minor and major programming assignments (not recitation assignments) will be accepted up to 24 hours late and assessed a 30% grade reduction penalty. Any minor or major programming assignment submitted more than 24 hours late will not be accepted and receive a grade of 0.

Recitation Assignments: Recitation assignments are meant to serve as preparatory assignments for upcoming minor and major assignments that can be completed in a relatively short amount of time. Students may complete these assignments on their own or by attending their scheduled recitation
where they may receive guidance from a TA/IA on completing. No late recitation assignments will be accepted.

Minor Programming Assignments: Minor programming assignments will be assigned based on the material from the lectures and textbook. These are meant to be individual programming assignments, so you should work on these alone unless explicitly directed otherwise by your instructor.

Major Programming Assignments: Major programming assignments will be worked on in a group and are meant to be more comprehensive problem-solving exercises based on the material from the lectures and textbook.

Midterm Exams: There will be two midterm examinations given in this course. The dates of these exams will be posted on Canvas and announced in class at least one week prior to the date of the exams. A make-up exam will be given at the discretion of the instructor when a student misses an exam with an excused absence. Unexcused absences on the date of an exam may result in a grade of 0 for the missed exam, so every effort should be made to attend class on the day of a scheduled exam. The exam is close-book and close-note.

Final Exam: There will be a comprehensive final exam at the end of the semester. Exams will meet at the same time and location assigned to the class unless other arrangements have been made. (August 12, 9:00 AM). All students are expected to take the final exam during the scheduled time.

Contacting Requirements

When contacting the instructor or course assistance staff (TA, Grader, etc.), the following is required:

- Sent from a UNT Provided Email (or Canvas) Account
- Must have the Course Number AND Section (i.e., 3600.302) in the Subject Line or appropriate field.
- Subject should be short and to the point.
- Detailed, legible, and respectful.
- Please give at least 24 hours for a response, prior to any follow up email.
- Marked URGENT when only applicable.

Emails, messages, and the like that fail to remain in compliance with the above standards may impact efficiency of communication or (in the worst case) result in no reply.