COMP 211-002: Systems Fundamentals

Bulletin Description

"This is the first course in the introductory systems sequence. Students enter the course having taken an introductory programming course in a high-level programming language (COMP 110) and a course in discrete structures. The overarching goal is to bridge the gap between a students' knowledge of a high-level programming language (COMP 110) and computer organization (COMP 311)."

General Course Info

Term:	Spring 2023
Department:	COMP
Course Number:	211
Section Number:	002
Time:	TTh, 2:00 – 3:15
Location:	Chapman 201
Website:	http://www.cs.unc.edu/~jbakita/teach/comp211-s23/

Instructor Info

Name:	Prof. Joshua Bakita
Office:	SN311
Email:	jbakita@cs.unc.edu
Office Phone:	919-590-6103
Web:	http://www.cs.unc.edu/~jbakita
Office Hours:	Mon/Wed, 8:30 – 11:30 AM (unless otherwise posted)

Teaching Assistants

Name	Office	Email	Office Hours
Alex "Amin" Zamani	SN314	azamani@unc.edu	See course website
Andrew Byerle	SN314	andran@live.unc.edu	
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Tom Xu	SN314		
Yufan Liu	SN314	yufan@live.unc.edu	

Textbooks and Resources

The C Programming Language, by Brian Kernighan and Dennis Ritchie, 2nd Edition

Many textbooks you'll read only once before they languish in a closet or a used-books store, but K&R's C is a classic that you'll continue to refer to after this class if you intend to continue in computer science. Note that this will be allowed in exams as reference material.

Piazza

Consider asking a question here first before going to office hours. Please remember that the honor code applies here, including the expectation to, "Treat all members of the University community with respect and fairness."

Gradescope

This will be used for assignments and exam feedback.

Sakai

This will be used for grades.

Additional resources to be posted on the course website.

Course Description

This course is a first step into the wild and wonderful world of systems programming, primarily in C. Your main takeaways from this class should be fundamental principles about how programs and the systems they run on work (particularly how they manage memory), no matter what language you use.

Target Audience

This course is most appropriate for majors intending to go on to COMP 311, however minors may also find many of the topics useful. This course is not recommended for those pursuing a career outside of Computer Science.

Prerequisites

COMP 210 and COMP 283 or MATH 381. Any incoming student should be familiar with programming and simple data structures (such as stacks and queues). Advanced students may request a prerequisite waiver.

Key Learning Objectives

1. Write basic command-line C programs
2. Annotate a C program with information about the storage locations of each variable (static, stack, heap)
3. Understand how to pass data using pointers safely and efficiently and how to do pointer math
4. Perform basic debugging using Valgrind and/or another debugger
5. Use Git for version control, archival, and debugging (git bisect)
6. Safely allocate and use heap memory without leaking it and without a garbage collector

7. Demonstrate basic proficiency in the use of GNU/Linux tools such as ls, cd, cat, grep, and man

Course Requirements

The bulk of the work in this class will be in individual programming and debugging assignments every four lectures (every other week, excluding breaks). These assignments may require you to write basic C programs, debug broken ones, complete provided program templates, or complete software development tasks.

Key Dates (Tentative)

Feb 9th	Midterm 1
March 28th	Midterm 2
May 2nd, noon - 3 PM	Final Exam

Grading Criteria

10% Participation
40% Programming/Debugging Assignments
30% Two Midterms
20% Final Exam

Note that completing extra credit opportunities on assignments or exams may allow that category's score to exceed 100.

Final grades will be rounded up to whole numbers, then converted to letter grades according to the following scale:
A: 94-100;
A-: 90-93;
B+: 87-89;
B: 84-86;
B-: 80-83;
C+: 77-79; and so on.

At least a 40% on the final exam is required to receive a grade higher than F.

Grades may be curved up based on overall class performance.

Attendance and Participation

Attendance is a university requirement [0]. This, and your constructive engagement in class and online, will factor into your course participation grade (10%). Instructors reserve the right to deprioritize questions in office hours that were already covered in class.

If you find the material in class boring, beyond you, or don't see why you should attend, instructors are open to suggestions for improvement.

Late & Makeup Work

Unless otherwise stated on an assignment, only two assignments may be turned in late without penalty. These assignments must be turned in by 168 hours (one week) after the time that the next assignment is due, or before the start of the final exam, whichever is sooner.

Makeup exams will not be offered except in cases of University Approved Absences (UAAs) and final exam exceptions. Please request such absences as far in advance as possible (such as for a known-in-advance competition or religious observance). See the UAA Office for more details: https://uaao.unc.edu/.

Any requests for other exceptions must be made in-person at the instructor's office (SN311), or over the phone (919-590-6103).

Honor Code & Collaboration Policy

You are encouraged to discuss and study general course material with anyone, but these discussions should not include any assignment-specific content. If you need to give an example of a problem in an assignment you don't understand, use an example from class or use your creativity.

For assignments, with proper citation of collaboration (using the process detailed in each assignment), you are allowed to:

- Discuss high-level concepts, approaches, and pseudocode ideas on whiteboards, on paper and pen, etc.
- Help a peer by viewing their screen under the following conditions:
    a. Your own laptop must be fully closed and you must not share any code
    b. You may not touch their keyboard
    c. They should do 80% of the talking and your 20% should be asking questions

For exams, your work must be yours alone. You will be allowed the course textbook, and both sides of a page of letter paper (a "cheat sheet") for reference. All reference materials are subject to review by an instructor upon request. Refusal of such review shall be grounds for a zero on the exam.

All submitted work shall be checked for unauthorized collaboration, and university policy requires the instructors to refer any violations found to the honor court.

If you need help or have extenuating circumstances getting in the way, come see me, and we'll do our best to help you with what you're struggling with.

The instructors reserve the right to remove points on assignment submissions that are unoriginal (very similar to other submissions or implementations on the web, etc), independent of honor court referral.

Required University Disclosures

Final Exam

The course final is given in compliance with UNC final exam regulations and according to the UNC Final Exam calendar.

You are encouraged to at least skim UNC's policy [0].

Change Disclaimer

The instructors reserve the right to make changes to the syllabus, including due dates and test dates. These changes will be announced as early as possible.

Accessibility

"The University of North Carolina at Chapel Hill facilitates the implementation of reasonable accommodations, including resources and services, for students with a disability and/or a chronic health diagnosis resulting in barriers to fully accessing University courses, programs and activities." [1]

Counseling and Psychological Services

"UNC-Chapel Hill is strongly committed to addressing the mental health needs of a diverse student body. The Heels Care Network website is a place to access the many mental health resources at Carolina. CAPS is the primary mental health provider for students, offering timely access to consultation and connection to clinically appropriate services. Go to their website https://caps.unc.edu/ or visit their facilities on the third floor of the Campus Health building for an initial evaluation to learn more. Students can also call CAPS 24/7 at 919-966-3658 for immediate assistance." [1]

Title IX Resources

"Any student who is impacted by discrimination, harassment, interpersonal (relationship) violence, sexual violence, sexual exploitation, or stalking is encouraged to seek resources on campus or in the community. Reports can be

made online to the EOC at https://eoc.unc.edu/report-an-incident/. Please contact the University's Title IX Coordinator (Elizabeth Hall, titleixcoordinator@unc.edu), Report and Response Coordinators in the Equal Opportunity and Compliance Office (reportandresponse@unc.edu), Counseling and Psychological Services (confidential), or the Gender Violence Services Coordinators (gvsc@unc.edu; confidential) to discuss your specific needs. Additional resources are available at safe.unc.edu." [1]

Bibliography

[0] https://catalog.unc.edu/policies-procedures/attendance-grading-examination/
[1] https://curricula.unc.edu/syllabus-guidelines/

Changelog

Jan. 10th, 2023	Syllabus publicly released.