

Instructor: Dr. Guy Zimmerman gzimmer3@depaul.edu Office: M106 CDM Phone: 312-362-7662
Office Hours: MW 10:30-11:30 am, 3:10-4:10 pm, W 4:10-5:10 pm, & by appt. Virtual Office hours: TBA
Section 801: W 5:45-9:00 pm, CS&TC 222

Course Description

A course on computer systems topics, focusing on machine-level programming and architecture and their relevance for application programming. Information representations, assembly language, C programming, and debuggers, processor architecture, program optimization, memory hierarchy and caching.

PREREQUISITE: (CSC 393 or CSC 300) and MAT 140.

Course Objectives

- to develop basic C programming skills
- to develop basic working familiarity with UNIX
- to understand how integers, strings, arrays and other structures are represented and manipulated at the machine level
- to understand how programs are represented at the machine-level
- to be able to read, understand, and debug 64-bit Intel Assembly code in GAS (Gnu ASemblr) format
- to know how to take advantage of the parallelism in modern CPUs to optimize program performance

Textbooks

Computer Systems: A Programmer's Perspective, 3rd Edition, Bryant & O'Hallaron, Prentice Hall/Pearson, 2016, ISBN: 978-0134092669.

Programming in C, 4th edition, Stephen G. Kochan, Addison-Wesley Professional, 2014, ISBN: 978-0321776419.

See Resources tab in course D2L site for additional details about textbooks.

Discussion Platform

The course discussion is an extension of our time in class. This is particularly great for students that miss the live lecture. If you are watching the class online, you should write down any questions that arise, including the time from the recording for reference. Whether you have questions from the recording or otherwise, post your questions on the discussion platform. Everybody is encouraged to discuss and reply to the questions, however, do not send messages that demonstrate non-academic or unprofessional attitude. Respect each other's opinions and do not send messages that are not related to the course. The instructor will be following up with a reply to each discussion or question as soon as possible, within 24 hours in general.

Assessment: Your grade in this course will be determined from the percentage of total points you earn from exams, programming assignments and homework weighted as follows.

Item	Weight
Exams	55%
Homework Assignments	20%
Labs	20%
Participation Classwork	5%

Range	Grade
90% - 100%	A
80% - 89.9%	B
70% - 79.9%	C
60% - 69.9%	D
Below 60%	F
+/- grades will be given at the high/low ends of each range	

Exams: The midterm is worth 25% of your course grade. The final exam (30%) will be comprehensive and you must pass the final exam to pass the course.

Homework Assignments: There will typically be a homework assignment every week. You will submit your solution within D2L or on the class UNIX server. Late submissions, up to 24 hours, will be accepted but will incur a 20% penalty. Submissions more than 24 hours late will not be accepted. Coding submissions with compilation

errors will typically incur a penalty of 50%; it will usually be better to submit something partially correct that runs, as opposed to something that does not compile. Grading rubrics will typically be attached to all programming assignments; you are encouraged to review these rubrics to help you understand how your work will be graded.

The purpose of the homework assignments is to develop understanding of course concepts. It is okay to seek help from others - the goal being to help you better understand how to solve the problem. It is not acceptable to submit work, a significant part of which is a copy/variation of someone else's work. Likewise, working together with someone on the entire assignment is not acceptable. The skills & concepts practiced in homework assignments will be tested on the in-class exams and you are responsible for understanding any work that you submit for credit.

Labs

There will be two lab assignments during the quarter. These will require significantly more effort than weekly homework assignments. You will complete these on the course UNIX platform. You are strongly encouraged to begin working on these as early as possible.

Participation, Classwork

Participation includes both in-class interaction as well as on the course discussion platform. There will typically be an assigned reading to be completed *before* each class meeting. In-class exercises may not be made up; however, the lowest classwork score will be dropped.

Online students are required to complete 'equivalent' in-class exercises. These may not be the same exercises as given in lecture. You will always have at least 48 hours to complete and submit any such exercise. Submission details will be posted in D2L. Online participation may include any of: responding to instructor questions (via email), summarizing in-class Q&A (from video), submitting questions to the instructor.

Tentative Schedule

Week	Date	Topic () Algorithms textbook reference
1	Jan 7-13	Intro to Computer Systems, UNIX, C (BO 1, 2.1-2.1.2)
2	Jan 14-20	Machine representation of data (BO 2.1 - 2.2)
3	Jan 21- Jan 27	Integer Arithmetic (BO 2.3)
4	Jan 28-Feb 3	Floating point (BO 2.4)
5	Feb 4-10	Intro to machine representation of programs (BO 3.1-3.3) Midterm Exam
6	Feb 11-17	Machine representation of programs (BO 3.4-3.5)
7	Feb 18-24	Control (BO 3.6)
8	Feb 25-Mar 3	Procedures (BO 3.7)
9	Mar 4-10	Arrays, data structures (3.8,3.9)
10	Mar 11-17	Optimization, memory hierarchy, final exam review (5.6,5.8,5.9)
11	Mar 20 5:45-7:45 pm	Final Exam

Course Policies

- Students must attend class. Attendance will be taken every day.
- Students must follow/participate in the D2L course discussions in a timely fashion.
- Classroom use of a laptop or tablet must normally be restricted to class-related tasks such as note taking, checking references, testing code examples, etc.

Communication/Email:

- Please include *CSC406* in the subject line of emails and your full name in the body of the message. It is not necessary to send "thank you" emails.
- If you are asking for help with code, please attach the entire source code file and be as specific as you can about what the issue is (line number(s), syntax, runtime) and what you have already tried.

- To minimize email traffic, the instructor will utilize the News feature of D2L for general announcements and use email only for more urgent notices. You can use the notifications settings in D2L to notify you of changes to the course D2L site (e.g. a new News item, changes to course grades).

Absence Notifications

Should a student need to be absent from class for a medical or personal reason, the Dean of Students Office can notify faculty of absences not exceeding five days. For additional information, please see:

<http://offices.depaul.edu/student-affairs/support-services/academic/Pages/absence-notification.aspx>

The absence notification does not mean the student is excused from course material, assignments or exams. It is ultimately up to each professor to decide what, if any, accommodation can be provided in light of this absence. It is the student's responsibility to follow up with the faculty member to inquire about such accommodations.

Academic Integrity and Plagiarism

This course will be subject to the university's academic integrity policy. More information can be found at <http://academicintegrity.depaul.edu/>. If you have any questions be sure to consult with your professor.

Changes to Syllabus

This syllabus is subject to change as necessary during the quarter. If a change occurs, it will be thoroughly addressed during class, posted under Announcements in D2L and sent via email.

Academic Policies

All students are required to manage their class schedules each term in accordance with the deadlines for enrolling and withdrawing as indicated in the University Academic Calendar. Information on enrollment, withdrawal, grading and incompletes can be found at:

<http://www.cdm.depaul.edu/Current%20Students/Pages/PoliciesandProcedures.aspx>

Exams

To maintain the academic integrity of its online courses, DePaul CDM requires that students registered in online sections complete proctored exams. Students registered in an on-campus section are not allowed to register for a proctored exam, and must take the exam with the on-campus section. For additional information, please see:

<http://www.cdm.depaul.edu/onlinelearning/pages/onlinepolicies.aspx>

Incomplete Grades

An incomplete grade is a special, temporary grade that may be assigned by an instructor when unforeseeable circumstances prevent a student from completing course requirements by the end of the term and when otherwise the student had a record of satisfactory progress in the course. For additional information, please see:

<http://www.cdm.depaul.edu/Current%20Students/Pages/Grading-Policies.aspx>.

Online Course Evaluations

Evaluations are a way for students to provide valuable feedback regarding their instructor and the course. Detailed feedback will enable the instructor to continuously tailor teaching methods and course content to meet the learning goals of the course and the academic needs of the students. They are a requirement of the course and are key to continue to provide you with the highest quality of teaching. The evaluations are anonymous; the instructor and administration do not track who entered what responses. A program is used to check if the student completed the evaluations, but the evaluation is completely separate from the student's identity. Since 100% participation is our goal, students are sent periodic reminders over three weeks. Students do not receive reminders once they complete the evaluation. Students complete the evaluation online in CampusConnect.

Students with Disabilities

Students who feel they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss their specific needs. All discussions will remain confidential. To ensure that you receive the most appropriate accommodation based on your needs, contact the instructor as early as possible in the quarter (preferably within the first week of class), and make sure that you have contacted the Center for Students with Disabilities (CSD) at: <mailto:csd@depaul.edu>

Loop Campus - Lewis Center #1420, 25 E Jackson Blvd. 312-362-8002

Lincoln Park Campus - Student Center #370, 2250 N Sheffield Ave. 773-325-1677

Fax: 312 362 6544 TTY: 773 325 7296

Withdrawal

Students who must withdraw from this course may do so by using the University's web registration system. For additional information, please see:

<https://offices.depaul.edu/depaul-central/registration/Pages/withdrawal-or-leave-of-absence.aspx>

Retroactive Withdrawal

This policy assists students for whom extenuating circumstances prevented them from meeting the withdrawal deadline. For additional information, please see:

<http://www.cdm.depaul.edu/Current%20Students/Pages/Enrollment-Policies.aspx>

You are strongly encouraged to use class time to your best advantage. This includes asking questions and coming to class prepared.