

CS 302: Data Structures

Fall 2016

Sections 1002

Instructor:

Phone:

Office:

Email:

Office hours: Mo/We: 10:30 - 12:30 and 2:30 - 4:30 Tu/Th: 10:30 - 2:00

Catalog Description

Introduction to sequential and linked structures. File access including sequential, indexed sequential and other file organizations. Internal structures including stacks, queues, trees, and graphs. Algorithms for implementing and manipulating structured objects. Big-O-notation. Prerequisites: CS 202 and MATH 181. 3 credits.

Required Text:

- Data Structures and Algorithm Analysis, Edition 3.2 (C++ Version)
Clifford Shaffer

Student Outcomes Covered by This Course

- Outcome C: Apply computer science theory and mathematical models to comprehend the trade-offs involved in various design choices
 - **Course Objectives and Expected Learning Outcomes**
Upon completion of Computer Science I, students will be able to:
 - Sorting and searching models and algorithms including the associated trade-offs and asymptotic complexity
 - Computer science theory of basic data structures (stacks, queues, trees, heaps, hash tables, and graphs)
 - In addition for all courses involving programming, students should be able to:
 - Develop algorithmic solutions to problems and translate their algorithms into programs that meet a provided set of specifications
 - Demonstrate and use good programming style and adequately document programs

Prerequisites

To qualify for this course you must have earned a C or better in CS 202 (Computer Science II) and CMAT 181 (Calculus I).

Grading

Grades will be based on following:

Homework/Quiz's	45%
Tests	45%
Final Exam	10%

Grades will be posted throughout the semester.

Grading is as follows:

A	A-	B+	B	B-	C+	C	C-	D	F
>94	93- 90	89- 87	86- 84	83- 80	79- 77	76- 74	73- 70	69- 60	<59

There will be numerous quizzes given throughout the semester. There is NO MAKEUP for missed quiz's. Quiz scores will be counted with the homework scores.

Two (2) tests will be given during the semester. Each test will be somewhat comprehensive, but will strongly emphasize material covered since the last test. Tests will be announced two or three class days in advance. There will be NO MAKEUP for missed tests.

Academic Misconduct

Academic integrity is a legitimate concern for every member of the campus community; all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy and are encouraged when faced with choices to always take the ethical path. Students enrolling in UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's function as an educational institution.

An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another, from the Internet or any source, without proper citation of the sources. See the Student Academic Misconduct Policy (approved December 9, 2005) located at: <https://www.unlv.edu/studentconduct/student-conduct>

Department of Computer Science Academic Integrity Policy

Each student enrolled in a course offered by the Department of Computer Science is expected to do his/her own work when preparing written or programming assignments, as well as, examinations. He/She must adhere to the academic integrity policy provided by his/her instructor and the university. It is also each student's responsibility to notify the instructor if he/she becomes aware of any activities that would violate the academic integrity policy of the class.

CS 302 Academic Integrity Policy

Each student is required to do his/her own work on examinations, written and programming assignments and exercises without outside assistance except as noted below. It is also each student's responsibility to notify the instructor if he/she becomes aware of any activities that would violate the academic integrity policy of the class.

Assistance that is allowed in the preparation of coursework:

- information/code provided in the textbook
- information/code provided in the class notes (on the website)
- assistance provided by course instructor
- assistance provided by the College of Engineering Tutoring Center (as long as the tutor is not writing the code)
- use of the Internet to look up a formula that is needed to perform a calculation or to verify the accuracy of a calculation
- use of the Internet as a reference for additional C++ language details

Examples of **prohibited practices include, but are not limited to:**

- copying answers/code from a fellow student, friend, relative
- providing answers/code to a fellow student
- collaborating (sharing) answers/code
- using the Internet to develop a strategy for solving a problem (finding an algorithm)
- using the Internet to solicit a solution to an assignment
- asking and/or paying someone to complete your assignments

Consequences of violating the academic policy:

- an Alleged Academic Misconduct Report will be completed and a copy sent to the [Office of Student Conduct](#)
- 1st violation - student(s) will receive a grade of zero on the assignment/examination
- 2nd violation - a grade of F will be issued for the course; no further assignments/labs/exams can be completed for credit

Class Rules

1. All students are expected to do their own work on exercises, assignments and examinations. (See above policy statement.)
2. All programs must be able to **compile and run** on the Moodle server (osservers.cs.unlv.edu) using the Ubuntu operating system.
3. Check your [Rebelmail](#) on a regular basis. Communications regarding the class will be sent to that address.

Drop Policy

The last day to drop the course is Friday, October 28, 2016.

Copyright

The University requires all members of the University Community to familiarize themselves with and to follow copyright and fair use requirements. **You are individually and solely responsible for violations of copyright and fair use laws. The university will neither protect nor defend you nor assume any responsibility for employee or student violations of fair use laws.**

Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional information can be found at: www.unlv.edu/provost/copyright

Disability Resource Center (DRC)

The UNLV Disability Resource Center (SSC-A 143, <http://drc.unlv.edu/>, 702-895-0866) provides resources for students with disabilities. If you feel that you have a disability, please make an appointment with a Disabilities Specialist at the DRC to discuss what options may be available to you. If you are registered with the UNLV Disability Resource Center, bring your Academic Accommodation Plan from the DRC to the instructor during office hours so that you may work together to develop strategies for implementing the accommodations to meet both your needs and the requirements of the course. Any information you provide is private and will be treated as such. To maintain the confidentiality of your request, please do not approach the instructor before or after class to discuss your accommodation needs.

Religious Holidays

Any student missing class quizzes, examinations, or any other class or lab work because of observance of religious holidays shall be given an opportunity during that semester to make up missed work. The make-up will apply to the religious holiday absence only. It shall be the responsibility of the student to notify the instructor no later than the end of the first two weeks of classes, January 29, 2016, of his or her intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit: <http://catalog.unlv.edu/content.php?catoid=6&navoid=531>.

Incomplete Grades

The grade of I - Incomplete - can be granted when a student has satisfactorily completed three-fourths of course work for that semester/session but for reason(s) beyond the student's control, and acceptable to the instructor and the Department, cannot complete the last part of the course, and the instructor believes that the student can finish the course without repeating it. The incomplete work must be made up before the end of the following regular semester. If course requirements are not completed within the time indicated, a grade of F will be recorded and the GPA will be adjusted accordingly. Students who are fulfilling an Incomplete do not register for the course but make individual arrangements with the instructor who assigned the I grade.

Tutoring

The Academic Success Center (ASC) provides tutoring and academic assistance for all UNLV students taking UNLV courses. Students are encouraged to stop by the ASC to learn more about subjects offered, tutoring times and other academic resources. The ASC is located across from the Student Services Complex (SSC). Students may learn more about tutoring services by calling 702-895-3177 or visiting the tutoring web site at: <http://academicsuccess.unlv.edu/tutoring/>.

UNLV Writing Center

One-on-one or small group assistance with writing is available free of charge to UNLV students at the Writing Center, located in CDC-3-301. Although walk-in consultations are sometimes available, students with appointments will receive priority assistance. Appointments may be made in person or by calling 702-895-3908. The student's Rebel ID Card, a copy of the assignment (if possible), and two copies of any writing to be reviewed are requested for the consultation. More information can be found at: <http://writingcenter.unlv.edu/>

UNLV Library Resources

Students may consult <https://www.library.unlv.edu/consultation> with a librarian on research needs. For this class, the subject librarian is Sue Wainscott. See: https://www.library.unlv.edu/contact/librarians_by_subject for more information. UNLV Libraries provides resources to support students' access to information. Discovery, access, and use of information are vital skills for academic work and for successful post-college life. Access library resources and ask questions at <https://www.library.unlv.edu>.

Rebelmail

By policy, faculty and staff should e-mail students' Rebelmail accounts only. Rebelmail is UNLV's official e-mail system for students. It is one of the primary ways students receive official university communication such as information about deadlines, major campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the university. Students' e-mail prefixes are listed on class rosters. The suffix is always @unlv.nevada.edu. Emailing within WebCampus is acceptable.

Final Examinations

The University requires that final exams given at the end of a course occur at the time and on the day specified in the final exam schedule. See the schedule at: <http://www.unlv.edu/registrar/calendars>.

Tentative Schedule:

The tentative schedule is shown below.

CS 302 Syllabus	
Week	
1	Introduction / Course Overview Review Topics C++ Review: OO, ADT's, Dynamic Allocation, Pointers, Basic Recursion, Templates, Linked lists, Logarithms, Recursion / Recurrence Relations
2	Algorithm Analysis (Big O) Maximum Subsequence Sum Problem
3	Sorting and Searching Bubble sort, Insertion Sort, Selection Sort, Bucket Sort Merge Sort, Quick Sort, Polyphase Merge Sort
4	Lists, Stacks, and Queues Static vs Dynamic Allocation Array vs Linked List Implementations
5-6	Binary Trees Binary Search Trees Pre-order, Postorder, and In-order Traversal Balanced Search Trees
6	Test #1
7	Hashing Hashing, Hash Tables, and Hash Functions
8	Priority Queues Heaps (min and max)
9	Disjoint Sets Disjoint Sets Applications
10	Graph Algorithms Graph Representation Shortest Path Algorithms Minimum Spanning Tree Directed Graphics
11	Test #2
12 - 15	Algorithm Design techniques Greedy Algorithms, Divide and Conquer, Dynamic Programming, Randomized Algorithms, Backtracking Algorithms
16	Final Exam → Fully Comprehensive