Sul Ross State University
Course Syllabus
CSA 2315: Data Structures
Fall 2024

Instructor: Neal Xiong
Office Number: BAB Floor 3, 306
Office Telephone Number: 432-837-8106
Email Address: neal.xiong@sulross.edu
Office Hours: MW 12-1:00 pm, 2:40-4:40 pm; T: 12:15-4:45pm; TR 10-11:00 am, + by appointment
Time and Place of Class Meetings: MW 11:00-11:50 am, W 1-2:40 pm, at BAB-00302

Course Description: This course is a further application of programming techniques. Topics include Abstract Data Types (ADTs), linear data structures (arrays, stacks, queues, and lists), and non-linear data structures, including graphs, trees, heaps, has tables, dictionaries, and maps. Students will also be introduced to recursive algorithms and graph traversal techniques.

Prerequisite: CS 1320

Required Materials: (1) Starting Out with Programming Logic & Design, Third Edition, by Tony Gaddis, Publisher: Pearson; Print ISBN: 9780133985078, 0133985075. (2) MindTap for Azevedo/Cutajar's Java Data Structures, 1 term Instant Access, 1st Edition, Joao Azevedo; James Cutajar, ISBN-10: 0-357-11484-1, ISBN-13: 978-0-357-11484-1 NOTE: You are not required to purchase a printed textbook. However, students can obtain this book thou their Cengage Unlimited account for an additional fee. (3) C++ How To Program, Deitel and Deitel, Publisher: Pearson, ISBN-13: 9780133378719. Or any good used C++ textbook for reference.

Student Learning Objectives:

1. Design and develop programs that implement basic data structures, including stacks, queues, linked lists, hash tables, trees, and graphs.

2. Apply recursive techniques and algorithms to solve problems.

3. Implement searching and sorting algorithms.

4. Understand algorithm efficiency, Big-O notation, and why it should be considered in programming.

5. Analyze and select appropriate data structures to implement a solution to a problem.

6. Design and implement data structures using classes and incorporating object-oriented concepts.

7. Demonstrate best practices of software development including testing, validation, and

documentation.

Assignment Information:

Codding Lab Assignments: Expect to complete at least 4-5 coding tasks. The code tasks will be completed in our lab. Make sure you are aware of when assignments are due to avoid a late penalty.

Quizzes: You will have at least several quizzes. You are allowed to use your textbook and/or notes, but these will have a time limit, so please prepare accordingly before attempting a quiz. The questions on the quizzes are multiple-choice and true-false. You will be taking the quizzes in Blackboard. Each quiz can be taken up to 3 times, the highest grade will be the grade that is recorded.

Projects: You will complete several projects. These will need to be submitted through Blackboard for grading.

Exams: There are three exams associated with this course. You may take each exam only once. The lowest exam grade will be dropped. If you do not miss any exams and are satisfied with your exam grade at the end of the semester, you do not have to take the final exam.

General Policies: Students are expected to check on Blackboard for announcements and updated assignments. You are expected to check your Sul Ross e-mail account. I will only discuss grades and attendance issues in our face to face courses. When meeting through Zoom, make sure your first name and at least last initial are visible. Preference will be that your video is available, but please make sure you are properly dressed.

Americans With Disabilities Act: Sul Ross State University (SRSU) is committed to equal access in compliance with Americans with Disabilities Act of 1973. It is SRSU policy to provide reasonable accommodations to students with documented disabilities. It is the student's responsibility to initiate a request each semester for each class. Students seeking accessibility/accommodations services must contact Rebecca Greathouse Wren, LPC-S, SRSU's Accessibility Services Coordinator at 432-837-8203 (please leave a message and we'll get back to you as soon as we can during working hours), or email rebecca.wren@sulross.edu. Our office is located on the first floor of Ferguson Hall (Suite 112), and our mailing address is P.O. Box C-122, Sul Ross State University, Alpine, Texas, 79832.

Library Services: The Sul Ross Library offers FREE resources and services to the entire SRSU community. Access and borrow books, articles, and more by visiting the library's website, library.sulross.edu. Off-campus access requires your LoboID and password. Check out materials using your photo ID. Librarians are a tremendous resource for your coursework and can be reached in person, by email (srsulibrary@sulross.edu), or phone (432-837-8123).

Distance Education Statement: Students enrolled in distance education courses have equal access to the university's academic support services, such as Smarthinking, library resources, online databases, and instructional technology support. For more information about accessing these resources, visit the SRSU website. Students should correspond using Sul Ross email accounts and submit online assignments through Blackboard, which requires secure login information to verify students' identities and to protect students' information. The procedures for filing a student complaint are included in the student handbook. Students enrolled in distance education courses at Sul Ross are expected to adhere to all policies pertaining to academic honesty and appropriate student conduct, as described in the student handbook. Students in web- based courses must maintain appropriate equipment and software, according to the needs and requirements of the course, as outlined on the SRSU website.