CS 310 Data Structures – Spring 2020

Days: T & TH 8:00 AM to 9:15 AM in COM 105
Instructor: Manju Muralidharan
Office Hours: GMCS 566 T & Th 9:30 AM – 11:00 AM (additional Office Hours by Appointment)
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Be sure to put CS 310 and topic in the subject field of your email and sign your message at end with your First and Last name, as registered at SDSU.

Website: Class will use Blackboard extensively

Prerequisites:
Computer Science 108

Text:
Data Structures & Algorithms in Java Sixth edition, by Michael T. Goodrich and Roberto Tamassia. **Required**.

Supplementary Material, CS 310 Lecture Notes & Supplementary Material, by Alan Riggins, Montezuma Publishing, Online Version or available at SDSU Bookstore. **Required**.

Data Structures and Algorithms in Java, Mark Allen Weiss, publisher: Pearson 3rd edition. Optional.

Core Java 2, 7th Edition, by Cay Horstmann and Gary Cornell, Sun Microsystems Press. Optional.

Course Catalog Description:
Representations and operations on basic data structures. Arrays, linked lists, stacks, queues, and recursion; binary search trees and balanced trees; hash tables, dynamic storage management; introduction to graphs. An object-oriented programming language will be used.

Goals for this course:
Upon completion of this course students will be able to:
1. Analyze and measure complexities of algorithms
2. Write Generic and Reusable code in Java
3. Understand Inheritance, Interfaces, Polymorphism and Abstract Data Types in Java
4. An ability to apply design and development principles in the construction of software systems of varying complexity.

Programming Language Used:
Java

Students must author original java code for all projects throughout this course, student collaboration is encouraged to discuss programming strategies, but all work must be completed and submitted individually. Do not give access to your code to anyone.

If you have not programmed before, you will fail this class.

Class Schedule Description:

Topics
Syllabus Discussion, Why study DS? OOP concepts (Inheritance, Interface, Polymorphism)
Complexity Analysis of Algorithms
Arrays, Stacks & Queues
Linked Lists, List ADT, Unordered and Ordered Lists, Skip Lists
Generic Programming in Java (Iterators, Comparators & parameterized types)
Binary Heaps & Priority Queues
Sorting Algorithms
Binary Search Tree
The dictionary ADT, aka Maps. Hashtables and hash algorithms
Balanced trees, AVL, red/black, 2-3 Trees
Graphs. Representations, weighted and unweighted, simple graph algorithms (DFS, BFS). Minimum spanning tree.
Course Review & Finals

Grading:
Grades are not curved but based on percentages. There will be Weekly Assignments, 2 programming assignments, 2 midterms and one final exam.

• Assignments 10%
• Programming Assignments 20%
• Mid Terms 40%
• Cumulative Final 30%

93% and above A
90%-92% A –
87%-89% B+
83%-86% B
80%-82% B –
77%-79% C+
73%-76% C
70%-72% C –
67%-69% D+
63%-66% D
60%-62% D –
below 60% F

Turning in Work:
Instructions on what, when, where, and how to turn in assignments will be posted on the course black board site. It is the student's responsibility to understand when and how to turn in the assignments.

Late Coursework:
All assignments are due on the date as stated on the blackboard site. Late assignments submitted one day after due date will be marked at 50% of the grade received, any later than that the grade will be automatic 0.

Exams:
Exams will be closed book/closed notes. Computers/laptops and cell phones cannot be used during exams. Once an exam starts, students cannot leave and then return to the test room. Once a student leaves the test room, he/she may not work further on the exam. Do not seek assistance from other students during an exam, for doing so constitutes cheating. Instead, speak with the instructor.

The date, time, and location of the midterms and final exam will be posted on the blackboard site Unexcused absences on the day of an exam will result in the student receiving a 0 on the exam.

No make-up exams will be given for unexcused absences from the exam. If the student has a prior known conflict on the date of the exam, please submit a request to reschedule to the instructor **at least 5 days prior** to exam date. Rescheduling will be at the discretion of the instructor, if approved the student may take the exam on an earlier date.

If the student misses the exam due to an unforeseen circumstance, email the instructor to discuss options. Absence must be documented for rescheduling to be considered.

Classroom Etiquette:
Cell phones should be turned off or set to vibrate mode during class.
Please show courtesy to the class by restricting conversation to in-class topics, and raise your hand to gain attention when asking a question or raising a point of discussion.

Academic Honesty:
The college experience is founded on the concepts of honesty and integrity. Dishonesty, cheating, plagiarism, or knowingly furnishing false information to the college are regarded as particularly serious offenses. Cases of dishonesty will be handled by levying certain penalties. However, in flagrant cases, the penalty may be dismissal from the college after proper due process proceedings.

Special Accommodations:
If you are a student with a disability and believe you will need accommodations for this class, it is your responsibility to contact Student Disability Services at (619) 594-6473. To avoid any delay in the receipt of your accommodations, you should contact Student Disability Services as soon as possible. Please note that accommodations are not retroactive, and that accommodations based upon disability cannot be provided until you have presented your instructor with an accommodation letter from Student Disability
Services. Your cooperation is appreciated.