Syllabus

Semester: Fall 2022
Course Number: COP 3530
Course Title: Data Structures
Credits: 3

Contact Information

Instructor:	Dr. Antonio Hernandez
Office:	CASE 319
Email:	antherna@fiu.edu
Office Hours:	Tu & Th 11 am - 12 pm, by appointment

Class Schedule

Class Schedule			
U01	TuTh 12:30PM - 1:45PM	PG5 Market Station 134	Lecture
U02	MoWe 5:00PM - 6:15PM	Parking Garage 6 112	Lecture

Course Description

Basic concepts of data organization, running time of a program, abstract types, data structures including linked lists, n-ary trees, sets and graphs, internal sorting.

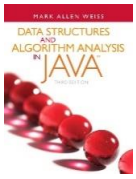
Prerequisites Courses: COP 3337, MAD 2104 or COT3100

Co-requisites Courses: None

Course Outcomes

1. Be familiar with basic techniques of algorithm analysis
2. Be familiar with writing recursive methods
3. Master the implementation of linked data structures such as linked lists and binary trees
4. Be familiar with advanced data structures such as balanced search trees, hash tables, priority queues and the disjoint set union/find data structure
5. Be familiar with several sub-quadratic sorting algorithms including quicksort, mergesort and heapsort
6. Be familiar with some graph algorithms such as shortest path and minimum spanning tree
7. Master the standard data structure library of a major programming language (e.g. java.util)

Textbook



Book Title: Data Structures and Algorithm Analysis in Java
ISBN: 978-0-13-257627-7 (Print) 978-0-13-300135-8 (eBook)
Author: Weiss, Mark A.
Publisher: Pearson Learning Solutions
Edition: 3rd

Learning Management System

This course will use Canvas; all assignments are turned in via Canvas.

Language and Platform

The programming language will be Java and the Integrated Development Environment (IDE) will be NetBeans. NetBeans is installed in the computer labs in the CASE building and you are expected to install it on your laptop also. To install NetBeans, please visit the site at https://netbeans.apache.org/.

Instructional Method

The class is based on the concept of *active learning*. Active learning is an instructional method where students engage in the learning process, participating in discussions, problem solving, experimenting and other active activities, rather than passively listening to long lectures. Students are expected to use their laptops with the NetBeans IDE installed every class and engage in the activities assigned.

Course Grading Criteria

The grade for the course will be based on the following components:

Grading Components	
Assignments (Projects and Quizzes)	60%
Midterm Exam	15%
Final Exam	25%

Letter Grade	%
A	[95 - 100]
A-	[90 - 95)
B+	[87 - 90)
B	[83 - 87)
B-	[80 - 83)
C+	[77 - 80)
C	[70 - 77)
D	[60 - 70)
F	less than 60

*Note: **[a, b]** means **grade ≥ a and ≤ b**, and **[a, b)** means **grade ≥ a and < b**.*

Assignments: assignments consist of a number of projects and in-class quizzes that tackle the topics covered in the lectures. Projects will contain programming exercises.

Midterm Exam: students will have approximately one hour to complete it. It will be taken in the classroom, on Thursday of the week it is due.

Final Exam: the Final Exam will be comprehensive (i.e. cumulative) and students will have approximately two hours to complete it. It will be taken in the classroom, on the designated day.

Weekly Schedule

Week	Course Outcomes	Topic	Readings	Graded Activities and Assignments
1	1	Algorithm Analysis	Ch. 2	
2	3	List ADT and Array Lists	Ch. 3	Assignment (Proj.)
3	3	Linked Lists	Ch. 3	
4	3	The Stack ADT and the Queue ADT	Ch. 3	Assignment (Proj.)
5	2, 5	Recursion and Sorting Algorithms	Ch. 7	
6	2, 5	Sorting Algorithms	Ch. 7	Assignment (Quiz, Th.)
7	2, 5	Searching Algorithms	Ch. 7	
8	2, 4	Trees	Ch. 4	Midterm Exam (Th.)
9	2, 4	Trees	Ch. 4	Assignment (Proj.)
10	4	Hashing	Ch. 5	
11	4	Priority Queues	Ch. 6	Assignment (Proj.)
12	4	Sets	Ch. 8	Assignment (Quiz, Th.)
13	6	Graphs	Ch. 9	
14	6	Graphs	Ch. 9	
15	7	Utilities in the JCL	Chs. 2 - 9	
16	All	Finals Week	–	Final Exam

Course Policies

- *Academic Integrity*: All students are expected to abide by FIU's Code of Academic Integrity, as found in the code of academic integrity and academic misconduct documents.
- *Expected Classroom Behavior*: Class participation, student interaction, and student engagement are important components of the active learning experience. Students are expected and encouraged to actively participate in the class tasks.
- *Attendance*: There is a positive correlation between attendance and academic success. Our class is face-to-face and meets twice a week; attendance to every class is expected. If you must miss a class due to an emergency, please do the best you can to keep up to date by using the materials posted in Canvas: class slides, assignments, and other classwork.
- *Late Projects*: Projects submitted after the due date will receive a 10% grade deduction per day up to 3 days (i.e. 10%, 20%, and 30%, respectively). After the third day project assignments will not be accepted. At the instructor discretion, point deduction might be waived under extenuating circumstances. In case of an emergency, contact the instructor before the due date (or as soon as the emergency allows it) to obtain approval and discuss a plan if late submittal or make-up work is approved.

- *Incorrect Submissions*: Projects incorrectly submitted (for example, blank projects, another course content, etc.) will be considered as not submitted. After submission, make sure you check to verify correct deliverables were uploaded in Canvas.
- *Missed In-class Tests*: All tests are completed during class time, in the classroom. Students who have missed an in-class test may apply for a make-up test provided there is documented proof of a valid reason for the absence. Acceptable reasons include hospitalization, doctor's certification that the student was unfit to take the exam, or subpoenas for court appearances. All make-up requests must be submitted in writing/email, with the appropriate documentation submitted to the instructor within reasonable time.

Staying Safe and Healthy

Students are encouraged to take a proactive role in their safety, personal health, and well-being. Remember: keeping our community healthy and well is a shared responsibility. For the latest information on COVID-19 and other important guidelines, please visit community updates.

Note for Changes

The instructor reserves the right to change this syllabus at any time during the semester in order to better meet the needs of this particular class group.