Lebanese American University	**COE**	312
School of Engineering	Data Structures (required)	3 credits
Department of Electrical and Computer Engineering	TTh 9:30 AM – 10:45 AM (1st Section) TTh 2:00 PM – 3:15 PM (2nd Section)	Zakhem 406
Course syllabus	Dr. Wissam F. Fawaz	Fall 2023

1.   Course Description and Course Prerequisite

Representing information is fundamental to computer engineering. To be practical in terms of storage requirements and running time, computer programs must organize their information in a way that supports efficient processing. For this reason, the study of data structures and the algorithms that manipulate them is at the heart of computer engineering.

This course provides an introduction to data structures and algorithms. More specifically, it touches on the basic principles underlying algorithm performance analysis and data structure design by covering algorithm analysis, stacks, queues, sequences, lists, priority queues, and trees.

Course prerequisite: COE 211 Computer Programming.

2.   Course Objectives

At the conclusion of the course, students will be able to:
- Select the data structure that best meet their requirements.
- Effectively implement the various data structures covered by this course.
- Evaluate the relative efficiency of algorithms.
- Determine the basic operations that must be supported to solve a given problem and quantify the resource constraints for each operation.

3.   Contribution of course to meeting the professional component

Professional Component	Credits
Mathematics and Basic Sciences	1
Engineering Topic	2
General Education	0

4.   Relationship of course to student outcomes

SO (1): *An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*

5.   Course Outline

- Polymorphism
- Exception Handling
- Recursion
- Running Time Analysis
- Event-driven programming
- Stacks, queues, and linked lists
- Trees

6.   Required tools / software / skills

Students must know how to program in JAVA.

7.   Textbook[s]

Data Structures and Algorithms in Java, 6th Edition, by Goodrich, Tamassia, and Goldwasser Wiley, 2014.

8.   Additional References

Robert Sedgewick, *Algorithms in Java,* Third edition, Addison Wesley, 2003.
Anany Levitin, *The Design and Analysis of Algorithms*, Addison Wesly, 2002.

9.	**Schedule of Exams & Grading Percentage**

Quizzes/Projects:	20%
Exam 1:	25%
Exam 2:	25%
Final:	30%

10.	**Course Policies**

Cheating is considered to be a very serious breach of the cheating policy of the faculty and will not be tolerated.

11.	**General Comments**

Instructor:	Dr. Wissam FAWAZ	Email: wissam.fawaz@lau.edu.lb
Office:	103, Bassil Bldg, ext: 2414
Office Hours:	TTh from 11:00 am – 1:30 pm and W from 9:30 am – 12:00 pm
Course webpage:	https://wissamfawaz.com/COE312

12.	**General Rules & Regulations**

- A student can miss no more than the equivalent of 2 weeks of instruction. Students who exceed the allowed number of absences must withdraw from the course; otherwise, the course grade will be recorded as "F".
- Plagiarism: students caught cheating on an exam receive a grade of Zero on the exam in the first cheating attempt and a warning. Students caught cheating for the second time in the same course receive an F grade in the course and a second warning. A grade of zero on an exam resulting from cheating must be counted in the student's course grade. The zero cannot be dropped in computing the final grade in case the instructor has a policy of allowing students to drop their worst exam grade.
- Any student who receives 3 warnings will be suspended.
- In order to improve the effectiveness of the educational process, all students are expected to submit their course evaluations by the last day of classes. Students who fail to complete the evaluation of ALL registered courses by the set deadline:
    - will not be able to access their course grades from Banner or Portal until two weeks after the end of the final exams period; and
    - will not be able to request transcripts. The anonymity of the process and the students will be maintained at all times.

13.	**Person(s) who prepared this description and date of preparation**

Dr. Wissam Fawaz prepared this syllabus in August 2023.