

**Department of Computer and Electrical Engineering  
and Computer Science  
Florida Atlantic University  
Course Syllabus**

<b>1. Course title/number, number of credit hours</b>	
Data Struct/Algorithm Analysis/COP3530	# of credit hours: 3
<b>2. Course prerequisites, corequisites, and where the course fits in the program of study</b>	
MAD2104, COP3014	
<b>3. Course logistics</b>	
<i>Term:</i> Summer 2018 This is a classroom lecture course <i>Class Location:</i> Online	
<b>4. Instructor contact information</b>	
<i>Instructor's name</i> <i>Office address</i> <i>Office Hours</i> <i>Contact telephone number</i> <i>Email address</i>	Lofton Bullard EE 429 W,R: 8:30AM-11:30PM 561-297-3985 lbullard@fau.edu
<b>5. TA contact information</b>	
<i>TA's name</i> <i>Office address</i> <i>Office Hours</i> <i>Contact telephone number</i> <i>Email address</i>	None
<b>6. Course description</b>	
The design, implementation and run-time analysis of important data structures and algorithms. The data structures considered include sorted arrays, linked lists, trees and hash tables. An approach based on abstract data types will be emphasized. Programming assignments will be implemented in the C++ language.	
<b>7. Course objectives/student learning outcomes/program outcomes</b>	
<i>Course objectives</i>	The course will provide a good understanding of Abstract Data Types, commonly used data structures such as stack, list, queue, tree, and hash tables, and their implementation in C++. The student will also learn good programming principles and proper use of the C++ language. The material learned in this course is fundamental for the computer science and computer engineering programs. The programming assignments will provide valuable experience with programming in C++, designing classes, implementation, testing and debugging.

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<i>Student learning outcomes &amp; relationship to ABET Objectives</i>	An ability to apply design and development principles in conducting experiments, analyzing results, and construction of hardware or software systems of varying complexity.	
<b>8. Course evaluation method</b>		
Computer Projects -	25 %	<i>Note:</i> The minimum grade required to pass the course is C.
Examination 1 -	25 %	
Examination 2 -	25 %	
Final Examination -	25 %	
<b>9. Course grading scale</b>		
Grading Scale: 90 and above: "A", 87-89: "A-", 83-86: "B+", 80-82: "B", 77-79: "B-", 73-76: "C+", 70-72: "C", 67-69: "C-", 63-66: "D+", 60-62: "D", 51-59: "D-", 50 and below: "F."		
<b>10. Policy on makeup tests, late work, and incompletes</b>		
No makeup tests will be given, except with documentation from a Doctor. Late assignments will only be accepted and graded, if excused by me. Blackboard will allow you to submit an assignment after the due date and time. However, Blackboard will mark a late assignment late. Incomplete grades will only be given if the student is passing the class and has proper documentation for the reason of the incomplete.		
<b>11. Special course requirements</b>		
None		
<b>12. Classroom etiquette policy</b>		
University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones and laptops, are to be disabled in class sessions.		
<b>13. Attendance policy statement</b>		
Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.		
<b>14. Disability policy statement</b>		

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In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at [www.fau.edu/sas/](http://www.fau.edu/sas/)

**15. Counseling and Psychological Services (CAPS) Center**

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>

**16. Code of Academic Integrity Policy Statement**

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see [University Regulation 4.001](#).

**17. Required texts/reading**

Larry Nyhoff, ADT, Data Structures and Problem Solving with C++, 2nd Edition, Pearson Prentice Hall, 2005

**18. Supplementary/recommended readings**

None

**19. Course topical outline:**

**Brief list of topics that may be covered:**

- a. Principles of Programming
- b. Review of C++ concepts
- c. Recursion (fundamentals)
- d. Data abstraction: Abstract Data Types, C and C++ classes
- e. Linked lists: singly-linked, circular, dummy header, doubly-linked
- f. Pointers and dynamic allocation
- g. Stacks: Stack ADT, various implementations, applications
- h. Queues: Queue ADT, various implementations, applications
- i. C++ Classes
- j. Inheritance and Object-oriented Design
- k. Virtual functions
- l. Template classes
- m. Operator overloading
- n. Algorithm efficiency: growth rates and big-O notation

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- o. Sorting: comparison of various algorithms
- p. Trees: Binary Tree ADT, binary search tree ADT, implementation and applications
- q. Graph ADT, implementation, DFS, BFS.
- r. Hash Table ADT
- s. Priority Queue ADT, heaps, heap-sort