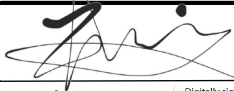
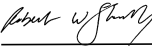


 FLORIDA ATLANTIC UNIVERSITY		COURSE CHANGE REQUEST Graduate Programs		UGPC Approval _____ UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner _____ Catalog _____	
		Department Electrical Engineering and Computer Science College Engineering and Computer Science			
Current Course Prefix and Number COT 6405		Current Course Title Analysis of Algorithms			
Syllabus must be attached for ANY changes to current course details. See Template . Please consult and list departments that may be affected by the changes; attach documentation.					
Change title to: Change prefix From: _____ To: _____ Change course number From: _____ To: _____ Change credits* From: _____ To: _____ Change grading From: _____ To: _____ Academic Service Learning (ASL) ** Add ☐ Remove ☐			Change description to: Design and analysis of algorithms from several areas of computer science. Topics include divide and conquer, maximum flow, dynamic programming, greedy algorithms, NP-completeness and approximation algorithms. Change prerequisites/minimum grades to: COP 3530 or COP 3410 or permission of instructor Change corequisites to: Change registration controls to: Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade.		
Effective Term/Year for Changes: Fall 2023			Terminate course? Effective Term/Year for Termination:		
Faculty Contact/Email/Phone Hanqi Zhuang / zhunag@fau.edu / 561-297-3413					
Approved by Department Chair _____ College Curriculum Chair _____ College Dean _____ UGPC Chair _____ UGC Chair _____ Graduate College Dean _____ UFS President _____ Provost _____			 Digitally signed by Francisco Presuel-Moreno DN: cn=Francisco Presuel-Moreno, o, ou, email=fpresuel@fau.edu, c=US Date: 2022.11.28 13:51:44 -0500  Mihaela Cardei (Dec 19, 2022 10:21 EST) 		
			Date 11/28/2022 11/28/2022 11/28/2022 Dec 19, 2022 Dec 19, 2022 Dec 19, 2022 _____ _____		

COT 6405
ANALYSIS OF ALGORITHMS
3 credits

Fall 2023
Professor: Dr. Mihaela Cardei
Office: EE96, Room 308N
Office Hours: TBA
Telephone: 561-297-3459
Email: mcardei@fau.edu

Course Description

Design and analysis of algorithms from several areas of computer science. Topics include divide and conquer, maximum flow, dynamic programming, greedy algorithms, NP-completeness and approximation algorithms.

Instructional Method

A brief statement about the Instructional Method and the expectations for student attendance in the class will be included here. For a list of the Instructional Methods and their definitions, see https://www.fau.edu/registrar/courses/Instru_Method.php

Prerequisites

COP 3530 or COP 3410 or permission of instructor

Course Objectives/Student Learning Outcomes

Course objectives (CO)

Upon successful completion of this course, students will be able to:

1. Design algorithms using pseudocode. (CO: 1)
2. Analyze expressions, pseudocode, and algorithms using asymptotic notations. (CO: 2)
3. Solve recurrences using Master's Theorem, backward substitution, and forward substitution. (CO: 3)
4. Apply representative algorithmic techniques: brute force, divide-and-conquer, backtracking, branch-and-bound, linear programming, greedy algorithms, dynamic programming, and maximum flow. (CO: 4)
5. Analyze data structures and the running time of their operations using asymptotic notations. (CO: 5)
6. Classify problems into classes P, NP, and NP-complete. (CO:6)
7. Apply reducibility method to NP-complete problems. (CO:7)
8. Solve hard problems using approximation algorithms. (CO:8)

Course Evaluation Method

5 Homework (15% each) – 75%

Class Participation – 5%

Programming Project – 20%

Course Grading Scale

[90, 100] A, [85, 90) A –, [80, 85) B +, [75, 80) B, [70, 75) B –, [67, 70) C +, [63, 67) C, [60, 63) C –, [57, 60) D +, [53, 57) D, [50, 53) D –, [0 – 50) F.

Policy on Makeup Tests, Late Work, and Incompletes (if applicable)

- Late work is not acceptable.
- *Grades of Incomplete (“I”)* are reserved for students who are passing a course but have not completed all the required work because of exceptional circumstances. If you have solid evidence of medical or otherwise serious emergency, please contact the instructor as soon as possible to discuss the possibility of an Incomplete grade.
- No extra work or bonus problems/assignments will be assigned to improve the course grade. All assignments will be counted in the final grade.

Special Course Requirements (if applicable)

NA

Classroom Etiquette Policy (if applicable)

NA

Policy on the Recording of Lectures

Students enrolled in this course may record video or audio of class lectures for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach students about a particular subject. Recording class activities other than class lectures, including but not limited to student presentations (whether individually or as part of a group), class discussion (except when incidental to and incorporated within a class lecture), labs, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, and private conversations between students in the class or between a student and the lecturer, is prohibited. Recordings may not be used as a substitute for class participation or class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University’s Student Code of Conduct and/or the Code of Academic Integrity.

Attendance Policy

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.

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/>

Disability Policy

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/.

Code of Academic Integrity

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](#).

Required Texts/Readings

No required textbooks.

Supplementary/Recommended Readings (if applicable)

- *Introduction to Algorithms*, 3rd edition, by T. H. Cormen, C. E. Leiserson, R. L. Rivest, and C. Stein, The MIT Press, 2009, ISBN: 0262033844
- *Algorithm Design*, J. Kleinberg and E. Tardos, Addison Wesley, 2006.
- *The Design & Analysis of Algorithms*, 2nd edition, A. Levitin, Addison Wesley, 2007.
- *Algorithms*, R. Johnsonbaugh and M. Schaefer, Pearson Education 2004.

- *Fundamentals of Algorithms*, G. Brassard and P. Bratley, Prentice Hall 1996.

Course Topical Outline

1. Foundations of Algorithm Design and Analysis
2. Advanced Data Structure: B-Trees
3. Brute Force & Exhaustive Search
4. Backtracking & Branch and Bound
5. Divide and Conquer
6. Maximum Flow and Extensions
7. Linear Programming
8. Greedy Algorithms
9. Dynamic Programming
10. NP-Completeness
11. Approximation Algorithms