

COT6405

Analysis of Algorithms

Computer & Electrical Engineering and Computer Science Dept.
Florida Atlantic University

Spring 2017

General Information

Course Information

- 3 credits
- Wednesday & Friday 2:00 – 3:20 PM
- FL 401

Instructor Information

Dr. Mihaela Cardei, Professor CEECS-FAU

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Office Hours:

- **Wednesday & Friday 11:30 AM – 1:00 PM**
- Other times by appointment

Course Information

Catalog Description

- The design and analysis of algorithms from several areas of Computer Science.
- Topics include advanced data structures, dynamic programming, greedy algorithms, approximation algorithms, and NP-completeness.

Prerequisites

- COT 4400 Design and Analysis of Algorithms, or another algorithms course

Course Information, cont.

Books that we will use:

- ✓ *Introduction to Algorithms*, 3rd edition, by T. H. Cormen, C. E. Leiserson, R. L. Rivest, and C. Stein, The MIT Press, 2009, ISBN: 0262033844.
 - <http://ce.bonabu.ac.ir/uploads/30/CMS/user/file/115/EBook/Introduction.to.Algorithms.3rd.Edition.Sep.2010.pdf>
- ✓ *Algorithm Design*, J. Kleinberg and E. Tardos, Addison-Wesley Publishing Company, 2006.
 - <http://smie2.sysu.edu.cn/~zzz/algorithm/files/Algorithm%20Design.pdf>
- ✓ *The Design & Analysis of Algorithms*, 3rd edition, A. Levitin, Pearson, 2012.
 - <http://www.vgloop.com/files/1394454921-126688.pdf>
- *Algorithms*, R. Johnsonbaugh and M. Schaefer, Pearson Education 2004.
- ✓ *Fundamentals of Algorithms*, G. Brassard and P. Bratley, Prentice Hall 1996.
 - https://cerocks.files.wordpress.com/2011/03/fundamentals-of-algorithmics-brassard_ingles.pdf

Course Evaluation

- | | |
|------------------------|-----|
| • 3 quizzes (10% each) | 30% |
| • 2 exams | 50% |
| • programming project | 20% |

Note:

- no late submissions are accepted
- please start working on your quizzes/project early and submit them on time
- if you want to discuss your grade (for any quiz, project, exam) please do so within 1 week since you received your score

Course Evaluation, cont.

- Exams must be taken **online** on Canvas, on the specified day, between 9:00 AM and 9:00 PM. Each exam has only one attempt. There is no class in the days of the exams.
- Midterm exam takes 105 minutes (90 mins the exam + 15 mins to scan and upload solution files). The final exam takes 135 minutes (2hrs the exam + 15 mins to scan & upload solution files).
- Quizzes must be taken **online** on Canvas. They have a duration of 2 hours and unlimited attempts. Only the last attempt submitted on Canvas before the deadline will be graded. Submission deadline is at 11:59PM on the specified day. That means students have to press SUBMIT button no later than 11:59 PM.
- The Programming Project must be submitted **online** on Canvas. It is due on the specified day at 11:59M.

Dates for Quizzes, Project, and Exams

Quiz 1: due on February 8

Quiz 2: due on February 24

Midterm Exam: Friday March 3

Quiz 3: due on April 14

Programming Project: due on April 21

Final Exam: Friday April 28

Note:

- All submissions are done on CANVAS
- No paper submissions are accepted!

Canvas

- canvas.fau.edu
- make sure you can access the course on Canvas
- check *Announcements* section often
- all class materials will be posted here: lecture notes, PPT presentations, quizzes, exams, project.
- you can check grades and submit your quizzes/exams/project

Grading Scale (tentative)

[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

- *Makeup tests* are given only if there is solid evidence of a medical or otherwise serious emergency that prevented the student of participating in the exam. Makeup exams are administered and proctored by department personnel unless there are other pre-approved arrangements
- *Late work* is not acceptable.
- *Incomplete grades* are assigned only in the case of solid evidence of medical or otherwise serious emergency situation.

Classroom Etiquette Policy

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.

Disability Policy Statement

In compliance with the Americans with Disabilities Act (ADA), students who require special accommodations needed to properly execute coursework must register with the FAU Students Accessibility Services (SAS) located in Boca Raton, in Davie and in Jupiter campuses and follow all SAS procedures. <http://www.fau.edu/sas/>

Honor Code Policy

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 unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and place high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. See University Regulation 4.001 at:

www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf

Course Topics

1. *Introduction*
2. *Foundations: Growth of Functions and Recurrences*
3. *Advanced Data Structures*
4. *Brute Force*
5. *Backtracking*
6. *Branch and Bound*
7. *Divide and Conquer*
8. *Network Flow*
9. *Linear Programming*
10. *Greedy Algorithms*
11. *Dynamic Programming*
12. *NP-Completeness*
13. *Approximation Algorithms*
14. *Other topics if time allows*