

COP 3410

Data Structures and Algorithms in Python

WF 9:30 – 10:50 am
3 credits

Spring 2022

Prof. Sareh Taebi

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Course Description

This course is an advanced programming class with an introduction to the field of data structures and the analysis of algorithms using the Python programming language. The course will cover the use of various data structures and abstract data types in the design and implementation of computer programs.

Instructional Method

This class is designated as "in person with remote live options". Class would be recorded.

Prerequisites/Corequisites

COP 2034: Introduction to Programming in Python

Course Objectives/Student Learning Outcomes

The primary objective of this course is to provide an advanced understanding of object-oriented Python programming. Including the development of data structures including Linked Lists, Stacks, Queues, Trees, Graphs, and Hash Tables.

Course Evaluation Method

Subject to changes:

Exams: 65%

Assignments: 35%

Participation Bonus: up to 5%

COVID-19 Statement

Due to the surge in COVID-19 cases and the omicron variant, all students regardless of vaccination status are expected to wear masks while indoors in any FAU facilities, including classrooms and laboratories. Students experiencing flu-like symptoms (fever, cough, shortness of breath) or students who have come in contact with confirmed positive cases of COVID-19 should immediately contact FAU Student Health Services (561-297-3512). Symptomatic students will be asked to leave the classroom to support the safety and protection of the university community. For additional information visit www.fau.edu/coronavirus. In classes with face-to-face components, quarantined students should notify me immediately as you will not be able to attend class. I will not be able to offer an online version of the class but will make reasonable efforts to assist students in making up the work.

Note: The minimum grade required to pass the course for CS/ CE majors is a C.

Course 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-

Below 50: F

Policy on Makeup Tests, Late Work, and Incompletes

Late Assignments Policy: All assignments are due at 11:59 pm on the due date. Late assignments will be accepted with a penalty of 10% for every 24 hours up to 72 hours (i.e., 30% deduction). It is recommended that students submit their assignments earlier in case the student encounters technical difficulties in submission. No submission would be accepted outside of Canvas.

Make-up Policy for Tests: 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. Final exam will not have a makeup test under any circumstances.

Incomplete (“I”) Grade Policy: Incomplete grades are against the policy of the department. Unless there is solid evidence of medical or otherwise serious emergency and the student is currently passing the class, incomplete grades will not be given.

Note: students are not penalized for absences due to participation in university-approved activities, including athletic or scholastics teams, musical and theatrical performances, and debate activities. Reasonable accommodation will be made for students participating in a religious observance.

Special Course Requirements

Technology Requirements: The students are required to have their own personal computers which must be equipped with speakers, microphones, and webcams. The students must have access to reliable broadband internet connection throughout the semester. Python IDLE compiler must be installed. Refer to:

<https://www.python.org/downloads/>

Discussion boards: a great way to communicate with the entire class, and answer course-related questions. All questions must be posted publicly through Canvas discussion boards, so other students also benefit from the answers. Only personal or confidential matters should be sent via email to the professor, all others will be ignored.

Course Assessments/Assignments and Grading Policy: All assignments, projects, programs, quizzes, and exams in this course must be INDIVIDUAL effort. All programming assignments are individual work, the best way to learn how to program is to write your own code. **Sharing work is considered cheating.** Sharing code includes posting completed work before the assignment official deadline onto sites, emailing code to other students, allowing any access to your work before the official deadline has passed. Other code sharing offenses include submitting another person's work as your own, this includes taking code off sites on the internet. Modifying code and submitting it as your own is a fraudulent practice—specifically, plagiarism. **Make sure that you work independently and submit only your own work.** We do have access to software that can easily detect plagiarism, and students would be given zero automatically.

Once the grades are published for any assignment, lab, exam or quiz, the students are given **one week** time to report to the instructor any concerns or questions regarding that grade.

Classroom Etiquette Policy

CLASSROOM ETIQUETTE/DISRUPTIVE BEHAVIOR POLICY STATEMENT

Disruptive behavior is defined in the FAU Student Code of Conduct as "... activities which interfere with the educational mission within classroom." Students who disrupt the educational experiences of other students and/or the instructor's course objectives in a face-to-face or online course are subject to disciplinary action. Such behavior impedes students' ability to learn or an instructor's ability to teach. Disruptive behavior may include but is not limited to non-approved use of electronic devices (including cellular telephones); cursing or shouting at others in such a way as to be disruptive; or, other violations of an instructor's expectations for classroom conduct.

For more information, please see the FAU Office of Student Conduct.

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](#).

PLAGIARISM

Plagiarism is unacceptable in the University community. Academic work must be an original work of your own thought, research, or self-expression. When students borrow ideas, wording, or organization from another source, they must acknowledge that fact in an appropriate manner. Plagiarism is the deliberate use and appropriation of another's work without identifying the source and trying to pass off such work as one's own. Any student who fails to give full credit for ideas or materials taken from another has plagiarized. This includes all discussion board posts, journal entries, wikis, and other written and oral presentation assignments. If in doubt, cite your source.

Required Texts/Readings

Michael T. Goodrich, Data Structures and Algorithms in Python, Wiley, ISBN: 9781118290279, 1118290275

Supplementary/Recommended Readings

lecture slides

Course Topical Outline

Subject to changes

1. Introduction
2. Review of Python concepts
3. Algorithm Analysis
4. Recursion
5. Array-Based Sequences
6. Stacks, Queues
7. Linked Lists and Trees
8. Priority Queues
9. Maps, Hash Tables, and Skip Lists
10. Search Trees
11. Sorting and Selection
12. Graphs

This course uses Canvas: <http://canvas.fau.edu> for notes, assignments, announcements and all course information (restricted to enrolled students)
Students need to check FAU email regularly