CS 608 Algorithms and Computing Theory

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Office Hours: Tuesdays 11 – 4 (PLV - Goldstein 323)

1. Course Description:

Applications of abstraction and divide-and-conquer in computer science (hardware, software, theory); essentials algorithms including searching, sorting, hashing and graphs; popular algorithms such as string machine, Map Reduce and RSA and their applications; complexity; computability; NP-hard problems, NP-complete problems, and undecided problems; finite state automata vs. regular expressions.

Actual topics covered may change – depending on the background of the class and time available.

2. Textbook:

Data Structures and Algorithm Analysis in Java (3rd Edition) by Mark A. Weiss
Publisher: Pearson
ISBN-10: 0132576279
ISBN-13: 978-0132576277

3. Course Overview:

This is an online course. We will be using the University Online System Black Board: http://blackboard.pace.edu. All the materials - reading materials, online quizzes and assignments will be posted on the Black Board system. Every student registered in the course will be given a user id and a password. For "Everything you need to know about Pace online courses," please see, http://www.pace.edu/online-learning/. If you have difficulty with blackboard, please contact ITS (our tech department), http://www.pace.edu/information-technology-services/services/its-help-desk. They are very prompt in helping you.
We will be covering several standard data structures and algorithms in this course.

4. Learning Outcomes:

At the completion of the course, students will be able to

- Appreciate the importance selecting appropriate data structures and algorithms to solve a given problem.
- Analyze the complexity of algorithms.
- Solve computing problems by selecting appropriate data structures and algorithms.
- Write and debug Java programs to implement algorithms using appropriate data structures.

5. Weekly plan

Your responsibility every week includes:

- Reading weekly materials assigned from the textbook
- Reading My Notes provided each week on Black Board
- Taking a quiz: You will have an online quiz every week. Each quiz will be based on the material for that week: the material from the textbook (assigned for reading that week) and My Notes and the lab assignment. Quizzes are online and are timed (generally 30 minutes).
- Completing a Lab Assignment: You will have a lab assignment every week (to be completed using Java).

Note: Always take the quiz after completing the Lab Assignment. There will be questions from the Lab Assignment on the quiz.

This is a 14 week course. The following is a tentative weekly plan:
(Topics subject to change)

Week	Topic	Textbook
Week 1	Mathematical Background	Chapter 1
Week 2	Algorithm Analysis	Chapter 2
Week 3	Stacks	Chapter 3
Week 4	Queues	Chapter 3
Week 5	Trees	Chapter 4
Week 6	Trees continued	Chapter 4

Week 7	Hashing	Chapter 5
Week 8	Priority Queues	Chapter 6
Week 9	Sorting	Chapter 7
Week 10	Sorting continued	Chapter 7
Week 11	Searching	---
Week 12	Graph Algorithms	Chapter 9
Week 13	Other selected topics	---
Week 14	Other selected topics	---

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6. Evaluation

- Each weekly online quiz is worth 10 points
- Each Weekly Lab is worth 15 points
- No other exams.
- Quizzes taken late penalty: 5 points/week
- Assignment submitted late penalty: 5 points/week

Important notes on quizzes and Labs:

- After you take the quiz, if you have a question on grading, you must contact me within one day.
- You should do quizzes and labs on your own. You should NOT do them in groups. You should NOT receive any kind of help on quizzes and labs (except via Discussion Board on Black Board). Breaking this policy will lead to severe consequences (for both "help taker" and "help giver").

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7. Policies:

Policy on Late Work:

Quizzes taken late 5 points/week

Assignment submitted late 5 points/week

Grading policy:

The final grade depends on the total score, Quizzes + Lab Assignments.

Total score (%)	Final grade
96 - 100	A
90 - 95	A-
85 - 89	B+
82 - 84	B
80 - 81	B-
75 - 79	C+
72 - 74	C
70 - 71	C-
Less than 70	F

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8. Academic Integrity:

Faculty members are encouraged to include the following text related to academic integrity and plagiarism. They should include either the Undergraduate or the Graduate text as appropriate. The two Catalog statements are very similar, but not exactly the same.

All members of the Pace community are expected to behave with honesty and integrity. The Undergraduate/Graduate *[choose one]* Catalog includes the following advisory for students on Academic Integrity:

[Undergraduate]
Students must accept the responsibility to be honest and to respect ethical standards in meeting their academic assignments and requirements. Integrity in the academic life requires that students demonstrate intellectual and academic achievement independent of all assistance except that authorized by the instructor. The use of an outside source, including electronics sources, in any paper, report or submission for academic credit without the appropriate acknowledgement is plagiarism. It is unethical to present as one's own work the ideas, words or representations of another without the proper indication of the source. Therefore, it is the student's responsibility to give credit for any quotation, idea or data borrowed from an outside source. Students who fail to meet the responsibility for academic integrity subject themselves to sanctions ranging from a reduction in grade or failure in the assignment or course in which the offense occurred to suspension or dismissal from the University. (21)

[Graduate]

Students must accept the responsibility to be honest and to respect ethical standards in meeting their academic assignments and requirements. Integrity in academic life requires that students demonstrate intellectual and academic achievement independent of all assistance except that authorized by the instructor. The use of an outside source in any academic paper, report or submission for academic credit without the appropriate acknowledgement is plagiarism. It is also academically dishonest to submit anything in electronic form as one's own that is the work, either fully or in part, of someone else. It is unethical to present as one's own work, the ideas, words or representations of another without the proper indication of the source. Therefore, it is the student's responsibility to give credit to any quotation, idea or data borrowed from an outside source. Students who fail to meet the responsibility for academic integrity subject themselves to sanctions ranging from a reduction in grade or failure in the assignment or course in which the offense occurred to suspension, dismissal or expulsion from the University. (L-54)

Accommodations for Students with Disabilities:
The University's commitment to equal educational opportunities for students with disabilities includes providing reasonable accommodations for the needs of students with disabilities. To request an accommodation for a qualifying disability, a student must self-identify and register with the Coordinator of Disability Services for his or her campus. No one, including faculty, is authorized to evaluate the need and arrange for an accommodation except the Coordinator of Disability Services. Moreover, no one, including faculty, is authorized to contact the Coordinator of Disability Services on behalf of a student. For further information, please see *Information for Students with Disabilities* on the University's web site. To receive accommodation for any disability, students must contact the campus Counseling Center (Pace Plaza, 212-346-1526; Westchester, 914-773-3710).

Technological Assistance:
For a list of all Pace Information Technology Services see http://www.pace.edu/its.
For live assistance with a technological concern, contact the Pace Helpdesk at 914-773-3648 or create a work request at https://help.pace.edu/helpdesk/WebObjects/Helpdesk.
The Calendar - You can always see the university academic calendar at http://webevents.pace.edu/?filter=academiccalendar.