SYLLABUS AND COURSE GUIDE

Data Structures and Algorithm Analysis

COSC 310.001

Section
MWF 9:00-9:50am in CCIT 270
Final – 12*/14/2017 [Th] @ 11:15pm-1:45pm in CCIT 270*

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Office Hours:
MW – 3:00 – 4:00pm
TuTh – 12:30 – 2:00pm
And by appointment

Fall Semester, 2017
Department of Computer Science & Information Technology
Frostburg State University

Frostburg, Maryland 21532

COSC 310 Data Structures and Algorithm Analysis
(3 credits)

Current Catalog Description

Design and implementation of intermediate and advanced data structures and a rigorous introduction to the asymptotic analysis of algorithms. Topics include Huffman coding trees, binary search trees, splay trees, height-balanced binary search trees, general trees, graphs, hash tables, skip lists, multilists, omega, theta, and omicron notation, and limits to computation. Research paper and presentation required.

Prerequisites

MATH236 and a grade of C or better in COSC241.

Textbooks

1. REQUIRED: ZyBook: Data Structures & Algorithms
    a. Sign in or create an account at learn.zybooks.com
    b. Enter zyBook code
        i. **FROSTBURGCOSC310KennedyFall2017**
    c. Subscribe. A subscription is **$67** and will last until Jan 10, 2018.
2. RECOMMENDED: Data Structures & Algorithms in Java, *Sixth Edition*, Goodrich, Tamassia, Goldwasser. Wiley ISBN: 978-1-118-77133-4

Additional Resources

- https://learn.zybooks.com
- https://www.cs.usfca.edu/~galles/visualization/Algorithms.html
- https://docs.oracle.com/javase/8/docs/api/

Program Outcomes Assessed

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(f) An ability to communicate effectively with a range of audiences.

Additional Program Outcomes Covered

(i) An ability to use current techniques, skills, and tools necessary for computing practices

(j) An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.

Course Objectives

- Upon completion of this course, students should be able to understand and apply intermediate and advanced data structures to their work environment.
- The instructor reserves the right to alter course contents based upon class experience and progress.

Attendance

Attendance is not required. However, experience has shown that poor attendance results in poor class performance. If you miss class for any reason, *you are responsible for all information, announcements, handouts, etc. presented in class*.

Late and Incomplete Course Work –

Late work will not be accepted except under extreme circumstances. You are responsible for any missed materials due to an absence. All assignments must be turned in to Blackboard. **Contact me immediately if you feel that you might miss a deadline.**

Grading Procedures

Exam 0000	10%
Exam 0001	10%
Exam 0010 - *Cumulative Final*	20%
Assignments / Quizzes / Labs	15%
Programs	25%
Group Project	15%
Participation	5%

All assignments will be due by 11:59pm on a given date via Blackboard, on the due date unless otherwise noted. *Late assignments will not be accepted*!

Grades will be determined according to the following scale:

90%-100% - A | 80%-89.9% - B | 70%-79.9% - C | 60%-69.9% - D | < 60.0% - F

Academic Dishonesty

Academic dishonesty is defined to include *any form of cheating and/or plagiarism*. Cheating includes, but is not limited to, such acts as stealing or altering testing instruments; falsifying the identity of persons for any academic purpose; offering, giving or receiving unauthorized assistance on an examination, quiz or other written or oral material in a course; or falsifying information on any type of academic record. Plagiarism is the presentation of written or oral material in a manner which conceals the true source of documentary material; or the presentation of materials which uses hypotheses, conclusions, evidence, data, or the like, in a way that the student appears to have done work which he/she did not, in fact, do. In cases involving academic dishonesty, a failing grade or a grade of zero (0) for either an assignment and/or a course may be administered. Students who are expelled or suspended for reasons of academic dishonesty

are not admissible to other institutions within the University System of Maryland. Suspension or expulsion for academic dishonesty is noted on a student's academic transcript. (Academic Dishonesty, Pathfinder)

Disruptive Behavior

It is assumed that all students are attending college to learn, and thus the instructor of this class will judge if a student's actions are interfering with other students' learning and shall take reasonable measures to remove or have removed any student who interferes with the learning process.

"The University will not tolerate disorderly or disruptive conduct which substantially threatens, harms, or interferes with university personnel or orderly university processes and functions. A faculty member may require a student to leave the classroom when his/her behavior disrupts the learning environment of the class. A student found responsible for disruptive behavior in the classroom may be administratively withdrawn from the course," (Student Code of Conduct, Pathfinder).

Learning Environment

Frostburg State University and its faculty are committed to maintaining a safe learning environment and supporting survivors of violence. To meet this commitment and comply with federal and state law, FSU requires all faculty and staff (other than the confidential employees in CAPS and Brady Health) to report any instances of gender-based harassment, sexual misconduct, relationship violence, or stalking against students. This means if you share your or another FSU student's experience with gender-based harassment, sexual misconduct, relationship violence, or, stalking, I have a duty to report the information to the University's Title IX Coordinator. The only exception to my reporting obligation is when such incidents are communicated during class discussion, as part of an assignment for a class, or as part of a University-approved research project.

Faculty and staff are also obligated to report allegations of child abuse and neglect to University Police and to Child Protective Services. This obligation extends to disclosures of past abuse even if the victim is now an adult and the abuser is deceased. My duty to report suspected child abuse and neglect extends to disclosures that are made as part of classroom discussions and in writing assignments.

If you or someone you know has experienced an incident of harassment or violence, please go to www.frostburg.edu/titleix to find information on reporting options and the resources and services available for support.

Schedule (tentative) – Week Begin Date and Chapters

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Aug 28	Java Review (Wiley 1)
Sept 4	Object Oriented Design (W 2)
Sept 11	Fundamentals (W 3, Z 1, 2.1- 2.12)
Sept 18	Algorithm Analysis (W 4), Recursion (5)
Sept 25	Catch-up, **EX0000**

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Oct 2	Stacks, Lists (W 6, 7)(Z 2.13, 2.14)
Oct 9	Priority Queues (9)
Oct 16	Trees, Search Trees (W 8, 11)(Z 3)
Oct 23	Hash Tables, Skip Lists (W 10)(Z 4)
Oct 30	Catch-up, **EX0001**

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Nov 6	Sorting Revisited, Text (W 12, 13)
Nov 13	Graphs (W 14)(Z 5)
Nov 20	*Thanksgiving Recess begins 11/22*
Nov 27	Memory (15), Limits to Computation (*)
Dec 4	**Presentations**
Dec 11	Wrap-Up, *Last Day of Classes (Dec 11)*

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