**GLENDALE COMMUNITY COLLEGE BUSINESS DIVISION**

**COURSE OVERVIEW (SYLLABUS) FOR CS/IS 212,**

**Advanced Data Structures**

**Instructor:** Tony Biehl

Ticket #'s          Classroom     Class Day          Class Hours               Final Exam

1264 .............. SG137......... TTh............. 8:40  – 10:05 pm........... Tuesday, June 10th, 7:30 pm – 10:00 pm

Semester: Spring 2014

Telephone: 818 240-1000 X5478

E-mail: [tbiehl@glendale.edu](mailto:tbiehl@glendale.edu) but please use Blackboard email instead to contact instructor

Office Location: SR334

Office Hours: MW, 1:35-2:50 pm, TTh, 5:30 – 6:45 pm

Supplemental Instruction: TBD

**Course Description**

CS/IS 212 is designed to provide a thorough coverage of data structures with data abstraction applied to a broad spectrum of practical applications. Students who take this course will master the principles of programming as a tool for problem solving. The students will solve practical problems in a computer-equipped laboratory using an object oriented programming language, such as JAVA. Some specific topics that will be covered include hash tables, trees, persistent structures, indexed files, and databases.

**Recommended Prerequisites**

CS/IS 211, or the equivalent.

**Disabled Students**

All students with disabilities requiring accommodations are responsible for making arrangements in a timely manner through the Center for Students with Disabilities.

**Course Objectives**

Students should be able to:

�       create computer programs using more complex OOP problems;

�       explain more complex abstract data types such as trees, graphs, hash tables, and heaps;

�       explain queues, deques, and priority queues;

�       write programs utilizing trees, binary trees, full binary trees, and complete binary trees.

Course topics (not inclusive):

            Recursion

            Array searching and file searching

            Linked lists

            Stacks

            Queues

            Class Relationships.

            Trees.

            Advanced Implementation of Tables

            Graphs

            External Methods

**Student Learning Outcomes**

Upon successful completion of the required coursework, the student will be able to:

            1.  create computer programs solving more complex OOP problems;

            2.  explain more complex abstract data types such as trees, graphs, hash tables, and heaps;

            3.  explain queues, deques, and priority queues;

            4.  write programs utilizing trees, binary trees, full binary trees, and complete binary trees.

**Textbook and Supplies**

Required Text:    Data Abstraction & Problem Solving with C++, Walls & Mirrors, 6th edition, Carrano, Addison Wesley

Have a flash drive to store your assignments

**Attendance**

Students are required to attend all class sessions and to stay for extra lab time whenever needed to complete work on time (see weekly schedule below).  Any student missing more than one consecutive class meeting must contact the instructor to explain the absences either by phone or email. Missing more than 2 class meetings could seriously jeopardize a student�s grade and could, without prior arrangements made with the instructor, make him/her subject to being dropped from the course.

**Exam Makeup Policy**

An exam may be made up if there is a valid excuse (serious illness corroborated by a physician). A make-up exam must be scheduled within 12 hours of the actual exam in person, by phone or email.

**Grading Method**

|  |  |  |
| --- | --- | --- |
| Required Work: | % | Grading Scale |
| Attendance/participation | 5 |  |
| Homework/In Class Exercises | 15 | A = 90% |
| Labs/Projects | 25 | B = 80% |
| Quizzes | 10 | C = 70% |
| Midterm | 20 | D = 60% |
| Final | 25 | F = less than 60% |

**First Day Drop Policy**

This instructor reserves the right to drop no-shows after the first hour of the first class meeting if no prior arrangements were made for the absence.

**Late Policy**

Assignments have a one-day grace period. Then they are marked off 20% up to a week late from the due date. After that, they are marked off 50% until the final. Quizzes have no grace period but a makeup quiz may replace a missed quiz. Only the first makeup quiz has no penalty: subsequent makeup quizzes count only 50%.

**Communication**

Blackboard email - Students are encouraged to e-mail the instructor with questions or problems as necessary. Please use WebCT email to contact the instructor about course related issues.

**Academic Honesty Policy**

This instructor follows the Glendale Community College Honesty Policy as listed in the *Glendale Community College Catalog*and the *Student Handbook*(free at Information Desk near Admissions).  Students are, at all times, required to do their own work.  No copying of other students' work, whether on a test or on routine class work, is allowed at any time. Activities that are considered to be CHEATING include, but are not limited to, the following: communication with another person during an exam, accessing materials electronic or otherwise without the instructors express permission. Violation of any of these rules (i.e. cheating) could result in a lowering of the exam grade or the course grade (e.g. a "Fail"), and the violator's name and student I.D. number will be sent, with a description of the violation, to the Division Chair and to the Vice President of Instruction to be kept on record for future reference. The Dean of Student Activities may also be contacted for disciplinary action, if necessary.

**Academic Integrity**

The work you do and submit is expected to be the result of your effort ONLY. You may discuss the high level (general) solution of an assignment. However, cooperation should not result in one or more students having possession of any part of an assignment written by another student. Incidents of academic dishonesty or lack of integrity will be referred to the Vice-President of Instruction's office.

**Class Rules**

Turn off cell phones before entering class. Use of recorders (audio and/or video) is allowed with instructor permission.

No eating or drinking in class, and please return chairs, throw away your trash, etc.  Everyone is to behave in a professional manner while online and while interacting with the instructor or other students (no rude or insulting behavior, please). Those acting in an unprofessional manner may be banned for a few days from the online site.

**Issues or Complaints**

Please address any issues you may have that are relative to this course *with me, your instructor*, either in person during my office hours (see above), by e-mail ([tbiehl@glendale.edu](mailto:tbiehl@glendale.edu) or Moodle), or by telephone (818 240-1000 X5478) as early in the semester as possible. If you and I cannot resolve the issue, I will refer you to the division chair, Rory Schlueter, rory@glendale.edu, 818 240-1000, Ext. 5886 or see the Division Office, SR 311, Ext. 5484, for an appointment.

**Schedule of Class work, Homework, Exams, and Other Activities**

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| --- | --- | --- | --- |
| **CS/IS 212 – Tentative Class Work Schedule - Spring 2014** | | | |
| Week | Date | Concept Lectures & Projects | Exams |
| 1 | T, 2/18  Th, 2/20 | Introduction, Chapter 2, Recursion: The Mirrors |  |
| 2 | T, 2/25  Th, 2/27 | Chapter 5, Recursion as a Problem-solving Technique | Q1 |
| 3 | T, 3/4  Th, 3/6 | Chapter 6, Stacks | Q2 |
| 4 | T, 3/11  Th, 3/13 | Chapter 7, Stack implementations | Q3 |
| 5 | T, 3/18  Th, 3/20 | Chapter 10, Algorithm Efficiency | Q4 |
| 6 | T, 3/25  Th, 3/27 | Chapter 11, Sorting Algorithms and Their Efficiency | Q5 |
| 7 | T, 4/1  Th, 4/3 | Chapter 12, Sorted Lists and Their Efficiency |  |
| 8 | T, 4/8  Th, 4/10 | Chapter 13, Queues and Priority Queues | Midterm Exam |
|  | 4/14 to 4/19 | Spring Break |  |
| 9 | T, 4/22  Th, 4/24 | Chapter 15, Trees  Chapter 16, Tree implementations | Q6 |
| 10 | T, 4/29  Th, 5/1 | Chapter 17, Heaps | Q7 |
| 11 | T, 5/6  Th, 5/8 | Chapter 18, Dictionaries and Their Implementations | Q8 |
| 12 | T, 5/13  Th, 5/15 | Chapter 19, Balanced Search Trees | Q9 |
| 13 | T, 5/20  Th, 5/22 | Chapter 20, Graphs | Q10 |
| 14 | T, 5/27  Th, 5/29 | Chapter 21, Processing Data in External Storage |  |
| 15 | Th, 6/3 | Review |  |
|  | T, 6/10 |  | Final Exam |
| \* means extra credit | | | |