

**Instructor:** Dr. Guy. Zimmerman      gzimmer3@depaul.edu

Office: M106 CDM      Office Phone: 312-362-7662

Office Hours: MW 12-1:15 pm, 3:15 -4:15 pm; R 3-5:15 & by appt. Virtual Office hours: TBA

Section 901: R 5:45 – 9:00 pm, CDM 226; Section 910 Online

### Course Description

This is the first course in a two-course sequence on data structures using Java. The course introduces basic Java programming, reviews recursion, introduces asymptotic notations, and focuses mainly on linear data structures including arrays, linked lists and their variants, stacks and queues, and data structures supporting disjoint-set operations. The implementation of the basic operations on each data structure are discussed and analyzed in terms of their efficiency. The applications covered highlight and exploit the unique characteristics of the data structures, and emphasize problem solving and recursive thinking. Prerequisite: CSC 242 or 243

### Course Objectives

To develop a permanent understanding of:

- Basic OO programming techniques
- Debugging and testing programs
- Analyzing program correctness and performance
- Iterative and recursive solutions to problems
- Linked lists and resizable arrays
- Stacks, Queues, Heaps
- Union-find
- Sorting

### Textbooks

Core Java for the Impatient, Cay Hortsman, Addison-Wesley 2015.

Algorithms 4e , Robert Sedgewick and Kevin Wayne, Addison-Wesely 2011

See Resources tab in course D2L site for additional details about textbooks.

### Discussion Platform

The course discussion is an extension of our time in class. This is particularly great for students that miss the live lecture. If you are watching the class online, you should write down any questions that arise, including the time from the recording for reference. Whether you have questions from the recording or otherwise, post your questions on the discussion platform. Everybody is encouraged to discuss and reply to the questions, however, do not send messages that demonstrate non-academic or unprofessional attitude. Respect each other's opinions and do not send messages that are not related to the course. The instructor will be following up with a reply to each discussion or question as soon as possible, within 24 hours in general.

**Assessment:** Your grade in this course will be determined from the percentage of total points you earn from exams, programming assignments and homework weighted as follows.

| Item                                  | Weight |
|---------------------------------------|--------|
| Exams                                 | 55%    |
| Homework<br>Assignments               | 25%    |
| Participation<br>Classwork<br>Quizzes | 20%    |

| Range   | Grade |
|---|-------|
| 90% - 100%  | A     |
| 80% - 89.9%   | B     |
| 70% - 79.9%   | C     |
| 60% - 69.9%   | D     |
| Below 60%   | F     |
| +/- grades will be given at the high/low ends of each range |       |

**Exams:** The midterm is worth 25% of your course grade. The final exam (30%) will be comprehensive and you must pass the final exam to pass the course.

**Homework Assignments:** There will typically be a homework assignment every week. You will submit your solution within D2L. Late submissions, up to 24 hours, will be accepted but will incur a 10% penalty. Submissions more than 24 hours late will not be accepted. Submission with compilation errors will typically incur a penalty of 50%; it will usually be better to submit something partially correct that runs, as opposed to something that does not compile. Grading rubrics will typically be attached to all programming assignments; you are encouraged to review these rubrics to help you understand how your work will be graded.

The purpose of the homework assignments is to practice programming skills and to gain understanding of the underlying data structures and associated algorithms. It is okay to seek help from others - the goal being to help you better understand how to solve the problem. You should include a credit comment "I got help on part X & Y" in the header comment section of your source code. It is not acceptable to submit work that is largely a copy/variation of someone else's work. Likewise, working together with someone on the entire assignment is not acceptable. The skills & concepts practiced in homework assignments will be tested on the in-class exams and you are responsible for understanding any work that you submit for credit.

### **Participation, Classwork, Quizzes:**

Participation includes both in-class interaction as well as on the course discussion platform. There will typically be in-class exercises every class meeting. There will typically be an assigned reading and a corresponding online quiz to be completed *before* each class meeting. In-class exercises & quizzes may not be made up; however the lowest classwork score and the lowest quiz score will be dropped.

Online students are required to complete 'equivalent' in-class exercises. These may not be the same exercises as given in lecture. You will always have at least 24 hours to complete and submit any such exercise. Submission details will be posted in D2L. Online participation may include any of: responding to instructor questions (via email), summarizing in-class Q&A (from video), submitting questions to the instructor.

### **Tentative Schedule**

| Week |  | Topic ( ) Algorithms textbook reference                  |
|------|--|--|
| 1    | Mar 26-Apr 1                               | Java and Eclipse; Arrays, Iteration and Recursion (1.1)  |
| 2    | Apr 2 – Apr 8                              | Induction, Iteration and Recursion                       |
| 3    | Apr 9 – Apr 15                             | Linked Structures, Queues, Stacks (1.2, 1.3)             |
| 4    | Apr 16 – Apr 22                            | Mutating Linked Structures (1.3)                         |
| 5    | Apr 23 – Apr 29                            | Intro to Analysis of Algorithms (1.4)                    |
| 6    | May 3<br>May 3                             | Midterm Exam 5:45 -7:15<br>Union Find (1.5) 7:30 – 9:00  |
| 7    | May 7 – May 13                             | Union Find (1.5)   |
| 8    | May 14 – May 20                            | Elementary Sorts (2.1)                                   |
| 9    | May 21 – May 27                            | Priority Queues and Heaps (2.4)                          |
| 10   | May 28 University closed<br>May 30 – Jun 4 | Mergesort, QuickSort and Comparators (2.2, 2.3)          |
| 11   | Jun 7 6:00 – 8:45 pm                       | Final Exam - Section 901<br>Final Exam – Section 910 TBA |

### **Course Policies**

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- Students must attend class. Attendance will be taken every day.
- Students must follow/participate in the D2L course discussions in a timely fashion.
- Classroom use of a laptop or tablet must normally be restricted to class-related tasks such as note taking, checking references, testing code examples, etc.

### **Communication/Email:**

- Please include *CSC300* in the subject line of emails and your full name in the body. It is not necessary to send "thank you" emails.

- If you are asking for help with code, please attach the entire source code file and be as specific as you can about what the issue is (line number(s), syntax, runtime) and what you have already tried.
- To minimize email traffic, the instructor will utilize the News feature of D2L for general announcements and use email only for more urgent notices. You can use the notifications settings in D2L to notify you of changes to the course D2L site (e.g. a new News item, changes to course grades).

### **Absence Notifications**

Should a student need to be absent from class for a medical or personal reason, the Dean of Students Office can notify faculty of absences not exceeding five days. For additional information, please see:

<http://offices.depaul.edu/student-affairs/support-services/academic/Pages/absence-notification.aspx>

The absence notification does not mean the student is excused from course material, assignments or exams. It is ultimately up to each professor to decide what, if any, accommodation can be provided in light of this absence. It is the student's responsibility to follow up with the faculty member to inquire about such accommodations.

### **Academic Integrity and Plagiarism**

This course will be subject to the university's academic integrity policy. More information can be found at <http://academicintegrity.depaul.edu/>. If you have any questions be sure to consult with your professor.

### **Changes to Syllabus**

This syllabus is subject to change as necessary during the quarter. If a change occurs, it will be thoroughly addressed during class, posted under Announcements in D2L and sent via email.

### **Academic Policies**

All students are required to manage their class schedules each term in accordance with the deadlines for enrolling and withdrawing as indicated in the University Academic Calendar. Information on enrollment, withdrawal, grading, and incompletes can be found at:

<http://www.cdm.depaul.edu/Current%20Students/Pages/PoliciesandProcedures.aspx>

### **Exams**

To maintain the academic integrity of its online courses, DePaul CDM requires that students registered in online sections complete proctored exams. Students registered in an on-campus section are not allowed to register for a proctored exam, and must take the exam with the on-campus section. For additional information, please see:

<http://www.cdm.depaul.edu/onlinelearning/pages/onlinepolicies.aspx>

### **Incomplete Grades**

An incomplete grade is a special, temporary grade that may be assigned by an instructor when unforeseeable circumstances prevent a student from completing course requirements by the end of the term and when otherwise the student had a record of satisfactory progress in the course. For additional information, please see:

<http://www.cdm.depaul.edu/Current%20Students/Pages/Grading-Policies.aspx>.

### **Online Course Evaluations**

Evaluations are a way for students to provide valuable feedback regarding their instructor and the course. Detailed feedback will enable the instructor to continuously tailor teaching methods and course content to meet the learning goals of the course and the academic needs of the students. They are a requirement of the course and are key to continue to provide you with the highest quality of teaching. The evaluations are anonymous; the instructor and administration do not track who entered what responses. A program is used to check if the student completed the evaluations, but the evaluation is completely separate from the student's identity. Since 100% participation is our goal, students are sent periodic reminders over three weeks. Students do not receive reminders once they complete the evaluation. Students complete the evaluation online in CampusConnect.

### **Students with Disabilities**

Students who feel they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss their specific needs. All discussions will remain confidential. To ensure that you

receive the most appropriate accommodation based on your needs, contact the instructor as early as possible in the quarter (preferably within the first week of class), and make sure that you have contacted the Center for Students with Disabilities (CSD) at: <mailto:csd@depaul.edu>

Loop Campus — Lewis Center #1420, 25 E Jackson Blvd. 312-362-8002

Lincoln Park Campus — Student Center #370, 2250 N Sheffield Ave. 773-325-1677

Fax: 312 362 6544 TTY: 773 325 7296

### **Withdrawal**

Students who must withdraw from this course may do so by using the University's web registration system. See: <https://offices.depaul.edu/depaul-central/registration/Pages/withdrawal-or-leave-of-absence.aspx>

### **Retroactive Withdrawal**

This policy assists students for whom extenuating circumstances prevented them from meeting the withdrawal deadline. Please see: <http://www.cdm.depaul.edu/Current%20Students/Pages/Enrollment-Policies.aspx>

*You are strongly encouraged to use class time to your best advantage.  
This includes asking questions and coming to class prepared.*