

### Course Description

This is the second course in a two-course sequence on data structures using Java. The course focuses mainly on the following data structures, their analysis, and their applications: trees (search trees, balanced search trees), heaps, associative arrays, hash tables, and data structures for representing graphs. The implementation of the basic operations on each data structure are discussed and analyzed in terms of their efficiency. The applications discussed highlight and exploit the unique characteristics of the different data structures, and emphasize problem solving and recursive thinking.

PREREQUISITE(S): CSC 300, MAT 140

### 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
- Search trees, balanced search trees
- Hash tables
- Graph data structures
- String Algorithms

### Textbooks

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

Core Java SE 9 For the Impatient (recommended)

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

### Discussion Platform

The course discussion platform is an extension of our virtual class. 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 the course assignments listed in the table below. There are two options for how the assignment scores will be weighted; you will automatically receive the higher of these two weightings. The substantive difference between the two is that option 2 does not require any active learning activities.

Item	Option 1 Weight	Option 2 Weight
Midterm Exam	20%	20%
Final Exam	25%	35%
Homework Assignments	35%	35%
Active Learning	10%	0
Quizzes	10%	10%

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 (cutoff: 3%)	

**Exams:** The midterm is worth 20% of your course grade and the final exam is worth 25(35)% and will be comprehensive. To maintain the academic integrity of its online courses, DePaul CDM requires that students registered in online sections complete proctored exams. See: <https://www.cdm.depaul.edu/onlinelearning/Pages/Exams.aspx> for details.

**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 20% penalty. Submissions more than 24 hours late will not be accepted. Submissions with compilation or run-time 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/run. Grading rubrics will typically be attached to all homework 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 conceptual & 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 a significant part of which is 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 evaluated as part of the midterm & final evaluations and you are responsible for understanding any program that you submit for credit.

### Active Learning Activities, Quizzes:

Active learning activities and quizzes are intended to help engage you (actively) in learning the course material. Active learning activities & quizzes may not be made up. However, to allow for the variety of unexpected life-circumstances that we all commonly experience, the lowest weekly ALE score and the lowest weekly quiz score will be dropped.

### Extra Credit

Some opportunities for extra credit may be available during the quarter; see the course D2L documents folder for details.

### Tentative Schedule

Week	beginning	Topic ( ) Algorithms textbook reference
0*	< Jan 2	Course Intro & Review
1	Jan 2	Symbol Tables (3.1, 3.5)
2	Jan 9	Binary trees (3.2)
3	Jan 16	Binary search trees (3.2)
4	Jan 23	Balanced search trees (3.3)
5	Jan 30	Hash Tables I (3.4) Midterm Exam Feb 3-4-5
6	Feb 6	Hash Tables II
7	Feb 13	Undirected Graphs (4.1)
8	Feb 20	Un/Directed Graphs (4.1/4.2)
9	Feb 27	Directed Graphs (4.2)
10	Mar 6	String Algorithms (5.1, 5.2)
11		Final Exam Mar 17-18-19

### Communication/Email:

- Please include CSC301 in the subject line of emails and your **full name** in the body of the message. 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: <https://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 <https://offices.depaul.edu/academic-affairs/faculty-resources/academic-integrity/Pages/default.aspx>. 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 in the D2L News feed 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: <https://www.cdm.depaul.edu/Student-Resources/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:

<https://www.cdm.depaul.edu/onlinelearning/Pages/Exams.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: <https://www.cdm.depaul.edu/Student-Resources/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. For additional information, please 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. For additional information, please see: <https://www.cdm.depaul.edu/Student-Resources/Pages/Enrollment-Policies.aspx>

*You are strongly encouraged to use class resources to your best advantage. This includes consulting with the professor during zoom office hours and/or appointments.*