

## CSC 300 – Data Structures I

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### Summary of Course

This is the first course in a two-course sequence on data structures using Java. The course introduces basic Java programming, 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.

Upon completion of this course, the student will be able to:

- Ability to code without typing (on paper/whiteboard).
- Understanding correctness of programming.
- Understanding performance characteristics of programs.
- Competence with iterative solutions to problems.
- Basic object-oriented programming.
- Use of debuggers and testing.
- Understanding of 1-D & 2-D arrays, and resizable arrays.
- Understanding of singly and doubly linked lists.
- Understanding of fixed and variable sized stacks, queues, and priority queues.
- Understanding of heaps and disjoint-set (i.e., union-find).
- Understanding Order of Magnitude & Big-O notation.
- Basic understanding of sorting and searching.

### Prerequisites

CSC 242 or CSC 243 is the prerequisite for this class.

### Grading Policy & Scale

- Programming assignment submissions that do not compile will receive zero points.
- Quizzes are taken online. Missed quizzes *cannot* be made up and will result in a zero grade.
- Exams will be given on paper, in person without computers or notes. There are no online exams. You must appear physically in front of a proctor (either the instructor or a designated proctor) when taking exams.
- Students in the live-class section must take the exam on the specified day and time, as announced in class and on D2L.
- Students in online sections must register with a proctor for exams. To register, use the CDM Proctored Exams section of the course homepage on D2L. You must register at least a week before the exam.

#### Course Grading Breakdown:

Attendance	10%
Quizzes	20%
Assignments	20%
Midterm Exam	25%
<u>Final Exam</u>	<u>25%</u>
Total	100%

#### Course Grading Scale:

A	93-100	C+	77-79
A-	90-92	C	73-76
B+	87-89	C-	70-72
B	83-86	D+	67-69
B-	80-82	D	60-66

## Course Drop Dates

Please reference: <https://academics.depaul.edu/calendar/Pages/default.aspx>

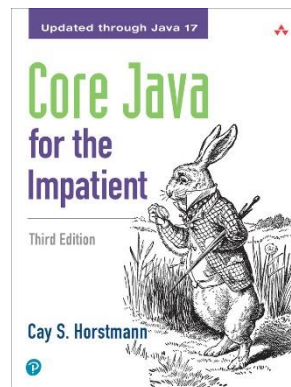
## Course Attendance

Attendance counts for credit in this course (10%). Live-class students are expected to attend every class session; OL students are expected to view the recording of the class as soon as possible, usually within 1-2 Days of the in-class meeting. (Online students will be given a means to verify that they have watched the recorded lectures).

Be advised that a significant amount of topic and assignment content is given in class/on recordings and missing that assistance can severely compromise your ability to perform adequately in this course.

## Textbooks and Resources

- **Core Java SE 9 for the Impatient**, by Cay Horstmann, Addison-Wesley Professional, ISBN: 9780134694849, 2017
- **Algorithms (4th Edition)**, by Robert Sedgewick and Kevin Wayne, Addison-Wesley Professional, ISBN 9780321573513, 2011



**NOTE:** The **Core Java SE 9 for the Impatient** book is technically optional (as many Java resources exist in print and online). I will assign readings from this textbook. How you learn this material (another book, an online source, etc.) is up to you, but you will be responsible for knowing the Java information in the assigned sections.

## Course Performance Requirements

Course grades are *solely* based upon the student's academic performance. This means a student's grade is based *only* upon their performance on the course quizzes, assignments, and exams. No other factors will be considered. **THIS POLICY WILL BE STRICTLY ENFORCED.**

All assignments in this course must be completed and submitted on time. Late assignments will not be accepted and will receive a grade of zero (no exceptions). Missed quizzes will receive a grade of zero (no exceptions).

Assigned reading is essential to understand and appreciate the concepts and practices covered in this course. All assigned readings are expected to be completed in a timely manner. The readings, quizzes, and assignments are designed so the student can master the data structure concepts, as well as ensure that the student leaves the course with a working knowledge of these concepts.

The dates/deadlines assigned to the various assignments, quizzes, and exams in this course are firm. There will be no make-up exams nor special extra credit assignments - please don't ask (requests will not receive a response). If there is a medical emergency and you must miss an exam, you must notify me and provide documented evidence of the emergency.

*The lowest assignment & quiz grade will be dropped at the end of the quarter.*

## Required Software

Java Interactive Development Environment (IDE) – IntelliJ (Be sure to download the “Community Edition”):

- <https://www.jetbrains.com/idea/download>

## Academic Integrity and Plagiarism

Refer to *Appendix A: “Course Academic Integrity and Plagiarism Policy”* for the full Academic Integrity and Plagiarism policy. It is every student’s responsibility to familiarize themselves with this policy and to strictly adhere to its content.

## Schedule of Topics

*NOTE: Topic order and appearance are subject to change based upon actual class performance and instructor discretion.*

Week 1 (Tu/Th):	Java Language	Week 7 (Tu/Th):	Queues, Priority Queues, Analysis of Algorithms
Week 2 (Tu/Th):	Java Language and Arrays/Loops	Week 8 (Tu/Th):	2-D Arrays, Nested “for” loops, Sorting Overview/Algorithms
Week 3 (Tu/Th):	Java Language and Linked Structures	Week 9 (Tu/Th):	Heaps & Union Find
Week 4 (Tu/Th):	Working with Linked Structures	Week 10 (Tu/Th):	Recursion & Review
Week 5 (Tu/Th):	Topic Review / Midterm Exam	Week 11:	<i>Final Exam</i>
Week 6 (Tu/Th):	Doubly Linked Structures, Fixed & Variable Stacks		

## 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>.

## Student Guidelines

- Be on time for class.
- Take an active role in class discussions and activities.
- Be a respectful participant by keeping phones in silent mode.
- Please keep eyes up (and off your electronic devices) when attention should be paid to the instructor. It is unprofessional and disrespectful to the instructor and other students to be surfing the internet, chatting, or checking social media.
- Practice professionalism in your communications (face-to-face, emails, etc.) with the professor and fellow students.
- Always include the CSC 300 course number in email subjects.

A professional and academic attitude is expected throughout this course. Measurable examples of non-academic or unprofessional attitude include but are not limited to talking to others when the instructor is speaking, mocking another's opinion, cell phones ringing, emailing, texting, or using the internet whether on a phone, tablet, or computer. If continuing issues arise, a student may be asked to leave the classroom. The professor will partner with the Dean of Students Office to assist in managing such issues.

DePaul University is a community that thrives on open discourse that challenges students, both intellectually and personally, to be Socially Responsible Leaders. It is the expectation that all dialogue in this course is civil and respectful of the dignity of each student. Any instances of disrespect or hostility can jeopardize a student's ability to be successful in this course. The professor will partner with the Dean of Students Office to assist in managing such issues.

### **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:

Lewis Center 1420, 25 East Jackson Blvd.

Phone number: (312)362-8002

Fax: (312)362-6544

TTY: (773)325.7296

### **Online Teaching Evaluation**

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 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.

## Appendix A: Course Academic Integrity and Plagiarism Policy

### 1. Purpose and Scope

This Academic Integrity Policy is established to govern the ethical conduct of students in this course. The policy covers all aspects of academic work, including code development, quizzes/exams, and the use of artificial intelligence tools. It provides clear guidelines and consequences to maintain the integrity of the academic environment.

### 2. Plagiarism and Code Sharing

- a. **Plagiarism Definition:** Plagiarism is defined as presenting the work, ideas, or intellectual property of another person or entity as one's own. This includes, but is not limited to, the content listed in section "b" ("Prohibition") below.
- b. **Prohibition:** Students are strictly prohibited from engaging in any form of plagiarism, including but not limited to:
  - Using software code provided to you by someone other than your instructor in your assignments.
  - Sharing your own (or anyone else's) code with other students in this or any other course.
  - Using any part of previously submitted assignment work written by yourself or someone else.
  - Using or adapting code from online repositories or forums.
  - Using or adapting code generated by any form of AI tool/utility (see section 3).
  - Submitting code obtained from previous course offerings or external sources.
  - Using, rewriting, or in any way modifying code not originally written by yourself for this course.
  - Fabricating code, data, or results and presenting it as original legitimate work.
  - Using any unauthorized assistance when working on assignments or taking quizzes.
  - Taking quizzes in a group setting, or in any context where you obtain assistance from others.
  - Using any assignment or quiz materials from a previous semester.

### 3. Use of AI Tools and Automation

- a. **AI Tools Definition:** AI tools encompass any software or algorithmic system designed to automate or enhance aspects of coursework development, including but not limited to code generation, testing, and debugging.
- b. **Prohibition:** Students are prohibited from using AI tools to create or modify code that is submitted as their own work. Examples include:
  - Using AI code generators to produce content used in your assignment submission.
  - Using AI code assistants in an IDE to produce content used in your assignment submission.
  - Copying and pasting code generated by any AI tools.
  - Modifying AI-generated code and submitting it as your own work.

### 4. Individual Work and Collaboration

- a. **Authenticity of Work:** All submitted quizzes/exams, assignments, projects, and code must be the individual work of the student submitting them. There are no group projects in this course, and collaboration with another individual or entity on any course assignments or quizzes is prohibited. The submission of work completed by others, whether from current or previous course offerings, is strictly prohibited.
- b. **Collaboration:** Students are encouraged to discuss course concepts and assignment requirements. However, all submitted work must be the sole effort of the individual student. Collaboration in the form of sharing or jointly producing assignment materials (as outlined in this document) is strictly prohibited.

### 5. Academic Integrity Violation Detection

- a. **Plagiarism Analysis Tools:** Every submission through the D2L platform undergoes meticulous scrutiny via automated plagiarism detection tools. This evaluation extensively examines submitted code against the entirety of current and

previous course code submissions, as well as cross-references with online code repositories, actively identifying any utilization of AI-generated code. These robust tools serve to guarantee the genuineness and uniqueness of all submitted academic work.

## 6. Penalties for Violations

- a. **Investigation:** Suspected violations of academic integrity will be thoroughly investigated as detailed in DePaul University's Academic Integrity Policy (<https://offices.depaul.edu/academic-affairs/faculty-resources/academic-integrity/Pages/resources.aspx>).
- b. **Penalties:** Penalties for violations may include, but are not limited to, receiving a grade of zero for the assignment, project, or exam, and potential course failure. Serious or repeated violations may result in academic sanctions, including suspension or expulsion. See DePaul University's Academic Integrity Policy (<https://offices.depaul.edu/academic-affairs/faculty-resources/academic-integrity/Pages/resources.aspx>) for more information.

## 7. Reporting and Confidentiality

- a. **Reporting:** Students, TAs, and graders are encouraged to report suspected violations promptly. Reports will be treated confidentially, and the identity of the reporting party will not be disclosed without consent.

By enrolling in this course, students acknowledge their understanding and acceptance of the terms outlined in this Academic Integrity Policy. Any violation of these terms may result in academic and disciplinary consequences as outlined in this policy and the institution's broader academic integrity framework.

Please note, your attendance in this course beyond the first day will constitute an implicit confirmation that you have thoroughly read and understood this entire document and agree to all content herein.