

CSC 300 – Data Structures I – Syllabus

Instructor Information

Instructor: John Lynch

Email: jlynch34@depaul.edu

Office Hours: Thursdays 3:30PM – 5:00PM via Zoom

Communications: Please include CSC300 and include either your name or student-id in the body of your email. If asking for help with code, please attach your full source code file and be as specific as possible about the issue you are facing. You can include screenshots, compile errors, line number(s), syntax, runtime, and list fixes you have already tried. I will be monitoring my emails daily, so I will try to respond as quickly as possible.

Course Information

Course Number and Title: CSC300 Data Structures I

Class Hours: Tuesday 5:45PM – 9:00PM in **CDM 00226 LOOP** Synchronous (face-to-face)

Class number: 4603

Course Management System: D2L (Desire to Learn)

Drop Dates: <https://academics.depaul.edu/calendar/Pages/default.aspx>

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.

Course Objectives

The course objectives will focus on teaching students the following

- Java programming language and semantics
- Ability to read and write code without typing it
- Understanding correctness of programming
- Understanding performance characteristics of programs

- Becoming competent with iterative and recursive solutions to problems
- Basic Java object-oriented programming
- Use of debuggers
- Use of testing
- Understanding of linked lists and resizable arrays
- Understanding of stacks, queues, dequeues
- Understanding of heaps
- Understanding of union-find

Prerequisites

CSC 242 or CSC 243 or a prior programming class.

Course Textbooks

If you are delayed in getting the texts, you can view them online at [O'Reilly](#).

Required Textbooks

1. [Core Java SE 9 for the Impatient, 2nd Edition](#) [[Amazon](#), [Indiebound](#)]
by Cay Horstmann (Addison-Wesley, 2017)
Available as [Ebook](#)
[\(Online version\)](#)
[Companion site](#).
Older edition is fine.
2. [Algorithms 4e](#) [[Amazon](#), [Indiebound](#)]
by Robert Sedgewick and Kevin Wayne (Addison-Wesley, 2011)
Available as [Ebook](#)
[\(Online version\)](#)
[\(Author videos\)](#) These are also for sale as an [Ebook](#)
[Companion site](#).
Do not get an older edition. They are completely different books.

Recommended Textbooks

1. [Schaum's Outline of Data Structures with Java 2e](#) [[Amazon](#), [Indiebound](#)]
by John Hubbard (Schuams, 2009)
This book is a good source of example problems with solutions.
Available as [Ebook](#)

More Books

1. [How to Think Like a Computer Scientist](#)
by Allen B. Downey.

Free!

A good introduction to Java.

Skip the GridWorld chapters, which are intended to help with the AP exam in CS.

See also these [lecture notes from MIT](#). The first three lectures are particularly useful.

2. [Java for Python Programmers](#)

by Brad Miller.

Free!

See also [here](#).

3. [Introduction to Programming in Java \(Chapter 1\)](#)

by Robert Sedgewick and Kevin Wayne, free!

This is the first chapter of the introductory text written by the authors of our primary textbook.

It presents the same material as section 1.1 of the primary text, but at a slower pace.

4. [Effective Java 3e](#) [[Amazon](#), [Indiebound](#)]

by Joshua Bloch (Addison-Wesley, 2008)

Available as [Ebook](#)

([Online version](#))

The algorithms text describes all the Java that is required for the class. The discussion is terse, making it an excellent reference. If you would like a longer discussion of Java, you might want a supplementary text. In this case, you might consider one of the following.

- Kathy Sierra and Bert Bates's "Head First Java" ([Online version](#))
- Bruce Eckel's "Thinking in Java" (3e available for [free for download online](#) and fine for our purposes)
- David Flanagan's "Java in a Nutshell" ([Online version](#))
- Cay Horstman's "Big Java" ([Online version](#))

Lecture Plan Week-by-Week : subject to updates

Numbers are Chapters / Sections from the required **Algorithms 4E textbook**

Class 1	09/14/2021	Arrays and Loops (1.1)
Class 2	09/21/2021	Recursion (1.1)
Class 3	09/28/2021	Linked Structures (1.2, 1.3),
Class 4	10/5/2021	Mutating Linked Structures (1.3)
Class 5	10/12/2021	Counting and Intro to Analysis (1.3, 1.4)
Class 6	10/19/2021	Midterm
Class 7	10/26/2021	More Analysis, Union Find (1.4, 1.5)
Class 8	11/2/2021	Elementary Comparison-Based Sorting (1.2, 2.1, 2.5)
Class 9	11/9/2021	Priority Queues (2.4) & Heaps (6.1)
Class 10	11/16/2021	Review
Class 11	11/23/2021	Final Exam

Assessment

Grades will be determined as follows.

- 5% Participation / Attendance
- 15% Online Quizzes
- 30% Programming Assignments
- 25% Midterm Exam
- 25% Final Exam

Programming assignments that do not compile will receive **zero** points.

You **must** pass the final exam to pass the course.

[DePaul's academic integrity policy](#)

All students are expected to abide by the University's Academic Integrity Policy which prohibits cheating and other misconduct in student coursework. Publicly sharing or posting online any prior or current materials from this course (including exam questions or answers), is considered to be providing unauthorized assistance prohibited by the policy. Both students who share/post and students who access or use such materials are considered to be cheating under the Policy and will be subject to sanctions for violations of Academic Integrity.

Assignments

There will typically be a homework assignment every week. You do not have to do it alone, but you must be self-motivated. You can ask me and other members of the class any questions about the assignment, and you must start the assignments early.

Exams

Aside from in class quizzes, there will be a midterm and final exam. You must pass the final exam to pass the course.

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 oncampus section. For additional information, please see the CDM Online Learning Policies.

Course Policies

Attendance will be taken. Lots of information is covered in each session, so please try your best to not miss any sessions. There will be discussion forums for general help with the course material or for help with the programming assignments, do not post answers in these forums. Communication and discussion in these forums alongside participation in class will contribute to your participation grade.

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.

Respect for Diversity and Inclusion at DePaul University is aligned with our Vincentian Values

At DePaul, our mission calls us to explore “what must be done” in order to respect the inherent dignity and identity of each human person. We value diversity because it is part of our history, our traditions and our future. We see diversity as an asset and a strength that adds to the richness of classroom learning. In my course, I strive to include diverse authors, perspectives and teaching pedagogies. I also encourage open dialogue and spaces for students to express their unique identities and perspectives. I am open to having difficult conversations and I will strive to create an inclusive classroom that values all perspectives. If at any time, the classroom experience does not live up to this expectation, please feel free to contact me via email or during office hours.

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. Please see <https://resources.depaul.edu/teaching-commons/teaching/Pages/online-teaching-evaluations.aspx> for additional information.

Academic Integrity and Plagiarism

This course will be subject to the university's academic integrity policy. All students are expected to abide by the University's Academic Integrity Policy which prohibits cheating and other misconduct in student coursework. Publicly sharing or posting online any prior or current materials from this course (including exam questions or answers), is considered to be providing unauthorized assistance prohibited by the policy. Both students who share/post and students who access or use such materials are considered to be cheating under the Policy and will be subject to sanctions for violations of Academic Integrity.

More information can be found at <https://resources.depaul.edu/teaching-commons/teaching/academic-integrity/Pages/default.aspx>.

Posting work on online sites, such as Hero

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access or use such materials are considered to be cheating under the Policy and will be subject to sanctions for violations of Academic Integrity.

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>

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. All incomplete requests must be approved by the instructor of the course and a CDM Associate Dean. Only exceptions cases will receive such approval. Information about the Incomplete Grades policy can be found at

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

Preferred Name & Gender Pronouns

Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the quarter so that I may make appropriate changes to my records. Please also note that students may choose to identify within the University community with a preferred first name that differs from their legal name and may also update their gender. The preferred first name will appear in University related systems and documents except where the use of the legal name is necessitated or required by University business or legal need.

For more information and instructions on how to do so, please see the Student Preferred Name and Gender Policy at <http://policies.depaul.edu/policy/policy.aspx?pid=332>

Students with Disabilities

Students seeking disability-related accommodations are required to register with DePaul's Center for Students with Disabilities (CSD) enabling them to access accommodations and support services to assist with their success. There are two office locations:

- Loop Campus (312) 362-8002
- Lincoln Park Campus (773) 325-1677
- Email: csd@depaul.edu

Students who register with the Center for Students with Disabilities are also invited to contact Dr. Gregory Moorhead, Director of the Center, privately to discuss how he may assist in facilitating the accommodations to be used in a course. This is best done early in the term. The conversation will remain confidential to the extent possible.

Please see <https://offices.depaul.edu/student-affairs/about/departments/Pages/csd.aspx> for Services and Contact Information.