

**University of Delaware**  
**CISC 220-080 – Honors:Data Structures**  
**Fall 2022**

## **1 Administrative information**

- Instructor: Chien-Chung Shen
- Contact information:
  - Office: Smith Hall room 450
  - Email: [cshen@udel.edu](mailto:cshen@udel.edu)
  - Office hours: Tuesday 11 am - 1 pm and by appointment (in-person or on Zoom)
- Lecture: MWF 10:10 am - 11 am in Alison Hall (ALS) 318
- Lab: Friday 2:30 pm - 3:20 pm in Pearson Hall (PRS) 101D
- Teaching assistants:
  - Dea Harjianto <[dea@udel.edu](mailto:dea@udel.edu)>; office hours: Thursday 11 am - 1 pm (on Zoom)
  - Colin Stetler <[cstetler@udel.edu](mailto:cstetler@udel.edu)>; office hours: Wednesday 2 pm - 4 pm (in-person in Smith 203 or on Zoom)
- Course website: <https://www.cis.udel.edu/~cshen/220>
- Required textbook: zyBook:CISC220 Data Structures and C++
- Recommended books:
  - Tim Roughgarden: Algorithms Illuminated: 3-part series
  - Mark Weiss: Data Structures and Algorithm Analysis in C++, 4th Edition
  - Bjarne Stroustrup, The C++ Programming Language, 4th Edition, Pearson, 2013
  - Stanley Lippman, Josée Lajoie, and Barbara Moo, C++ Primer, 5th Edition, Pearson, 2012
  - An introduction to the C++ language
  - Detailed info on C++ features and standard library functions and templates

## **2 Course Statement**

**Programs = Algorithms + Data Structures**

This course is an introduction to data structures and algorithm design. It covers the major data structures and program design principles which provide you with the background required for further study in Computer Science. The course also covers algorithm analysis to highlight the crucial choices to be made regarding best use of space, time, and programming effort. All code examples and programming projects will be in C++.

### 3 Student Background

The pre-/co-requisites for this course are:

- Pre-requisites: a minimum grade of C– in CISC 210 (Introduction to Systems Programming)
- Co-requisites: MATH 210 (Discrete Mathematics I) or MATH 241 (Analytic Geometry & Calculus A)
- Ability to design, code, compile, and execute programs in C++ on a computer running UNIX/Linux.

I expect that you are here to learn, and are willing to work hard on it.

### 4 Work Requirement

During the semester, you are responsible for participating in class discussion/presentation, completing the assigned readings and activities, homework/programming assignments, two midterm exams, and the final exam.

#### 1. Readings, Participation Activities, Coding Labs

- It is required that you purchase the zyBook textbook and complete the assigned **readings, participation activities, exercises, and coding labs**

#### 2. Homework/Programming Assignments

- Homework and programming assignments (some individual and some group) will be given. They will be described in more detail in each assignment.
- Late assignments will be penalized by 10% per day.

#### 3. Exams

- Two 50-minute midterm exams – TBA
- Final exam (two hours) – Friday, December 16, 10:30 am – 12:30 pm in EWG210
- Exams will be based on course readings, class discussions, and homework/programming assignments.

#### 4. Problem design contest with the pedagogy of **By The Student (BTS): learn** by the students, **assign** by the students, and **grade** by the students.

- Students in groups of 3 design one data structure problem based on course materials
- Designed problems will be voted/ranked by the students to be rewarded with gifts

Attendance is strongly encouraged as we will have class discussion and presentation. If you do happen to miss a class, you are responsible for finding out what material was covered and if any administrative announcements were made.

“The University requires faculty to complete a No-Show Notification for students who did not attend a single class during the free add/drop period (generally the first two weeks of classes). Under the **Title IV Federal Student Aid** regulations, faculty are required to certify that each student enrolled in the class has either attended some of the classes or has not attended any class. For this reason, it is a good idea to take attendance during some of the classes within the free add/drop period to determine this information.”

## 5 Grading

- Final scores will be determined using the following formula:

17% zyBooks Participation Activities, Exercises, and Labs

40% Homework/Programming Assignments

20% Two Midterm Exams

23% Final Exam

Final grades will be determined according to the following table.

A	A-	B+	B	B-	C+	C	C-	D+	D	F
92%	89%	86%	83%	80%	77%	74%	71%	68%	65%	below

- I will **not** assign incompletes unless it is for a documented medical reason.

## 6 Topics

The exact amount of lecture time devoted to each topic (and therefore homework/programming assignment dates) is subject to change.

- Introduction to Data Structures and Algorithms
- Searching and Algorithm Analysis (Recursion)
- Sorting Algorithms
- Lists, Stacks, and Queues
- Hash Tables
- Trees
- Balanced Trees
- Heaps
- Graphs
- B-trees
- Sets

## 7 Academic Honesty

I don't mind if you help each other with understanding the material; in fact, I encourage it. However, **all** work turned in on homework assignments, programming assignments, and exams must be your (team's) own work. If any portions of homework assignments, programming assignments, or exams are found to be shared between two (or more) students/teams, there will be 0 (zero) credit given to **all** students concerned and all students will be disciplined. We will act harshly at any sign of plagiarism or other academic misconduct. This policy is in the interest of those students who do their own work, which hopefully applies to all of you in this class. I encourage you to familiarize yourself with the University's Policy on Student Code of Conduct on Academic Honesty.

## **8 Laptops, Tablets and Cellphones**

I love my job teaching at UD, and promise to work extremely hard to make this class exciting and challenging. In return, I expect your full attention in class. I believe cell phone texting, using a laptop for doing other class assignments, reading emails, playing video games, visiting Facebook, Twitter, etc., while someone is working to educate you is as rude as it gets, and I will be personally offended. At the beginning of class, turn off your cellphones, shut down your games, and close your Gmail/Facebook/Twitter pages. If you believe this policy is too severe, I ask you to please take Data Structures from another faculty.