

CIS 2168 005-006 Fall 2017 – Data Structures

Instructor

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Or by appointment via this
link: <http://goo.gl/1T0mtn>.

Course Basic Information

Lecture: 11am—12:20pm, Tuesday/Thursday, Tuttleman 402
Lab 005: 3pm—4:50pm, Tuesday, SERC 359
Lab 006: 11am—12:50pm, Wednesday, SERC 206
TA: The TA will teach both labs. His Contact:

- **Andrew Schneider**, tue82238@temple.edu

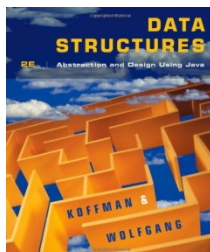
Communication

- Your **TU Email** will be used for me to send important information about the course. **Please get into habit of checking your TU emails frequently.**
 - **Note that some emails sent via TU blackboard may be delivered to your SPAM or Junk email folder. Please also check those folders to see if you miss any information.**
- To speed up the response to your email, I would appreciate it if you could provide me the following information in your **email subject**:
 - The course you are taking: **CIS2168 005 or CIS2168 006**
 - Your **FULLNAME** in the format: **Lastname, Firstname or Firstname Lastname**
 - Email content summary

Pre-requisites

CIS1068 Program Design and Abstraction, Min grade: C-
& CIS1166 Mathematical Concepts in Computing I, Min grade: C-

Textbooks



Title: Data Structures: Abstraction and Design Using Java, 2nd Edition
Authors: Elliot Koffman, Paul Wolfgang
Publisher: John Wiley & Sons, Inc., 2010
ISBN 13: 978-0470128701

Note: required textbook.



Title: Java the Complete Reference, 9th Edition
Author: Herbert Schildt
Publisher: McGraw-Hill Osborne Media, 2014
ISBN 13: 978-0071808552

Note: optional reference book.

Location of course materials

TU Blackboard (<https://learn.temple.edu>) is used for important announcements, assignments, lecture notes, tests, and data files used in the textbook. For your own benefit, please check the Blackboard very often for the latest information.

Course summary (catalog description)

A continuation of CIS 1068. Program style organization and design with continued emphasis on the object-oriented design paradigm. Understanding and use of data abstraction through Java classes and class libraries. Understanding and use of the following Abstract Data Types: strings, stacks, queues, priority queues, lists, linked lists, binary trees, heaps, and hash tables. Introduction to expression evaluation and other applications. Introduction to recursion and comparative analysis of searching and sorting algorithms and data structures. Sorting algorithms include insertion sort, mergesort, heapsort, and quicksort. Searching algorithms include binary search, hashing, and Huffman coding.

Topics covered

- Program style, organization and design with emphasis on object-oriented design paradigm
- Understanding and use of data abstraction through Java classes
- Basic data structures (stacks, queues, priority queues, linked lists, binary trees, binary search trees, heaps, hash tables, graphs) and their applications
- Recursion
- Insertion sort, merge sort, heap sort, quick sort
- Worst-case execution time
- Inheritance
- Huffman codes

Certain topics may not be covered in detail due to limitation in time.

Goals and Objectives

The purpose of this course is to stress three main themes

- Basic Internal Data Structures and their impact on programs
- The use of Data Abstractions and their implementation in Java using classes
- Problem Solving Methodology and Algorithms and their impact on programs

Grading components

Quizzes/Homework:	20%
Midterm and Final:	55%
Lab Assignments:	25%

- There will be a short quiz almost every week. There may be some homework for the lecture section.
- There will be a series of programming assignments given as lab work. You may not complete these assignments during the scheduled lab class time. Please plan ahead and give you enough time to complete each programming assignment on time.
- **Group work:** It is ok to work together to discuss a problem and get ideas for its solution. However, you must write your own program yourself. Turning in other students' work is plagiarism. If you don't complete these programs yourself, you will most likely fail in the quizzes and exams.
- You can work on your program in any computer. But you must turn them into the TU Blackboard. And your programs must work on the department computers.

Grading scale (Final/Mid-Term Grade)

	88 – 89 = B+	78 – 79 = C+	68 – 69 = D+	
92 – 100 = A	82 – 87 = B	72 – 77 = C	62 – 67 = D	0 – 59 = F
90 – 91 = A-	80 – 81 = B-	70 – 71 = C-	60 – 61 = D-	

Important Dates

Event	Date
Last day to add/drop a course	Monday, Sep 11
Undergraduate Mid-Term rating	Monday, Oct. 2 – Monday, Oct. 16
Last day to withdraw from the course	Tuesday, Oct. 24
Fall break (No Class) & Thanksgiving Break	Monday, Nov. 20 – Sunday, Nov. 26
Last day of class	Monday, Dec. 11
Study days	Tuesday, Dec. 12 – Wednesday, Dec. 13
Final Exam	TBA (Common Final Test)
Final Grades due to the Registrar	Friday, Dec. 22

Late submission policy

- There will NOT be any makeup quiz. Your lowest grade in the quizzes will be dropped.
- There will **NOT be make-up exams except for documented emergencies**. It is required that you notify me **at least 24 hours before the regular exam time**.
- Programming assignments are expected to be submitted on time. Late assignments may be accepted depending on the course schedule. If late submission is accepted there will be penalty points deducted. The penalty details will be stated in the assignment description.
- No student will be allowed to have two or more makeup exams.

Work required outside of class

Outside of class, you are required to do the following:

- Check the blackboard on a daily basis. Read important announcements and course content updates.
- Read the textbooks and any handout given.
- Watch tutorial videos if there is any.
- Complete each assignment, quiz, and exam on time.

Course Calendar (Tentative)

The schedule below is a tentative schedule. The detailed and up-to-date schedule can be found in our course on the blackboard.

Week	Dates	Major Topics Covered	Related Book Chapters
1 - 2	8/29, 8/31, 9/5, 9/7	Object-oriented programming and class hierarchy: class, inheritance, polymorphism, abstract classes, abstract methods, interface	Chapter 1
3 - 4	9/12, 9/14, 9/19, 9/21	Linked lists: nodes, single linked list, double linked list, iterators	Chapter 2
5	9/26, 9/28	Stacks & Queues	Chapter 3, Chapter 4
6	10/3, 10/5	Recursion, Midterm Review	Chapter 5
7	10/10, 10/12	Midterm Exam, Recursion	Chapter 5
8 - 9	10/17, 10/19, 10/24, 10/26	Trees: binary tree, binary search trees, Huffman trees	Chapter 6
10	10/31, 11/2	Hash tables (open addressing, linear probe, quadratic probe, chaining)	Chapter 7
11	11/7, 11/9	Sorting: insertion, merge, heap, quick sort	Chapter 8
12	11/14, 11/16	Graph: Graph Representations, Traversal, Minimum Spanning Trees, Shortest path algorithm	Chapter 10
13		Fall & Thanksgiving Break	
14	11/28, 11/30	Graph: Graph Representations, Traversal, Minimum Spanning Trees, Shortest path algorithm	Chapter 10
15	12/5, 12/7	Final Review	
16	12/12, 12/13	Study days	
17	TBA	Final Exam	
	12/22	Final grades due	

Attendance policy

- Attendance of class meetings in both the lectures and the labs are required.
- Attendance will be checked.
- You are required to attend all classes that discuss exams, quizzes, and assignments.
- If you miss more than five lecture classes or more than five lab classes, your grade will be dropped to the next level in the grading scale.

Accommodations for Students with special needs

Any student who has a need for accommodation based on the impact of a documented disability, including special accommodations for access to technology resources and electronic instructional materials required for the course, should contact me privately to discuss the specific situation by the end of the second week of classes or as soon as practical. If you have not done so already, please contact Disability Resources and Services (DRS) at 215-204-1280 in 100 Ritter Annex to learn more about the resources available to you. I will work with DRS to coordinate reasonable accommodations for all students with documented disabilities.

(<http://www.temple.edu/studentaffairs/disability/accommodations/>)

Student and Faculty Academic Rights and Responsibilities

Freedom to teach and freedom to learn are inseparable facets of academic freedom. The University has a policy on Student and Faculty and Academic Rights and Responsibilities (Policy #03.70.02) which can be accessed through the following <http://policies.temple.edu/PDF/99.pdf>

Have a successful semester!