# CSE 2017-03 Data Structure and Lab.

# Fall 2019

This course is an introductory course in data structures. Topics include arrays, stacks, queues, linked lists, recursion and binary trees. The student will build projects using the data structures taught in class. Proper software engineering techniques are introduced, including object oriented design and programming and unit testing.

**Professor**: Eun Man Choi **Email**: [emchoi@dongguk.edu](mailto:emchoi@dongguk.edu)

**Course Web Page**: eclass.dongguk.edu

**Office Hours**: W 11:00-12:00 AM **Office Location**: Room 10119, New Engineering Bld.

**TA**: Junsun Hwang(hwangsun12@naver.com), Hyuk Byon(rexs333@naver.com)

**Class Hours**: M 13:00-15:00PM, W 10:00-12:00 AM **Class Location**: 3182(Lab), 6144(Lecture) NEB.

**Texts**: 1. Nell Dale and David Teague: [C++ Plus Data Structures](Data%20Structure(2018S)/A.Laboratory.Course.In.C.Plus.Plus.Data.Structures.2nd.Editi.pdf), fourth edition, Jones and Bartlett, 2007.

2. James Roberge: [Data Structures in C++: A Laboratory Course](Data%20Structure(2018S)/C++%20Data%20Structures%203rd%20ed%20-%20Nell%20Dale.pdf), second edition, Jones and Bartlett, 2003.

**Prerequisites**: Knowledge of C or C++: CSE 2014 or PRI 4035.

**Grading**:

* + Project(#1~4): 15%
  + Labs(#1~12): 20%
  + Midterm: 30%
  + Final Exam: 30%
  + Attendance and Participation: 5%

**Grading Scale**: A= 85% B=70% C=60% D=50% F<50%

**Exam Failure:** The instructor reserves the right to assign a failing semester grade to any student who fails either (or both) exams.

**Lateness:**  All assignments are due at the beginning of class on the due date. Assignments turned in late will automatically have one full grade deducted. No assignments will be accepted one week or later after the due date.

**Academic Integrity**

Any indication of copying lab or project work or any behavior during exams that could be considered copying or cheating will result in an immediate zero on the assignment/exam for all parties involved. The student’s advisor/department and the Dean will be notified. Cheating on assignments is defined to be copying from someone else or providing someone else copies of your answers. Do not show your assignments to anyone else! You may answer questions on labs or project homework asked by other students.

## Schedule for Lecture and Laboratory

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| --- | --- | --- | --- | --- |
| **Week** | **Class Topic & Contents** | **Chapter on Text** | **Assignment** | **Project** |
| 1 | 9/2 [Lecture 00: Orientation and Introduction to Data Structure](Data%20Structure(2018S)/00_Orientation(2018).pdf)  9/4 [Lecture 01: Review and introduction to C++](Data%20Structure(2018S)/01_C++Introduction.pdf)(1) | Text 1: Chapter 2 |  |  |
| 2 | 9/9 [Lab 00: Practice in C++ programming and debugger](Data%20Structure(2018S)/Tutorial%20VC++.pdf)  9/11 Lecture 01: Review and introduction to C++(2) | Text 2: Chapter 1 |  |  |
| 3 | 9/16 Lab 01: Logbook  9/18 [Lecture 02: Data Abstraction and List(array)](Data%20Structure(2018S)/02_DataAbstraction%20and%20List.pdf) | Text 1: Chapter 3  Text 2: Lab 3 List ADT | Laboratory 2: Logbook |  |
| 4 | 9/23 Lab 02: Array Implementation of the List ADT  9/25 [Lecture 03: Stack(Array) and Pointer](Data%20Structure(2018S)/03_Stack.pdf) | Text 1: Chapter 5  Text 2: Lab 5 Stack ADT | Laboratory 5: In-lab Exercise #2 *(pp.60)* |  |
| 5 | 9/30 Lab 03: Stack(Array)  10/2 [Lecture 04: Stack(Linked)](Data%20Structure(2018S)/04_Linked%20Stack.pdf) | Text 1: Chapter 7  Text 2: Lab 7 Single Linked List | Laboratory 7: In-lab Exercise #1 | Assign [Project #1](Data%20Structure(2018S)/Project_1.htm) |
| 6 | 10/7 Lab 04: Stack(Linked)  10/9 [Lecture 05: Queue(Array, Linked)](Data%20Structure(2018S)/05_Queue.pdf) | Text 1: Chapter 6  Text 2: Lab 6 Queue ADT | Laboratory 6: In-lab Exercise #1 |  |
| 7 | 10/14 Lab 05: Queue(Array, Linked)  10/16 Lecture 06: [List Plus(Double Linked List)](Data%20Structure(2018S)/06_List%20plus.pdf) | Text 1: Chapter 6  Text 2: Lab 9 Double Linked List ADT | Laboratory 6: In-lab Exercise #2, 3 |  |
| 8 | 10/21 Lab 06: Double Linked List  10/23 Midterm exam | Preview Exam | Laboratory 9: In-lab Exercise #2 | Assign [Project #2](Data%20Structure(2018S)/Project_2.htm) |
| 9 | 10/28 No Lab  10/30 [Lecture 07: Recursion](Data%20Structure(2018S)/07_Recursion.pdf) | Text 1: Chapter 7 |  |  |
| 10 | 11/4 Lab 07: Recursion with Linked List  11/6 [Lecture 08: Tree](Data%20Structure(2018S)/08_BinarySearchTree.pdf)(On-line) | Text 1: Chapter 8  Text 2: Lab 10 Recursion | Laboratory 10: In-lab Exercise 1 |  |
| 11 | 11/11 Lab 08: Binary Search Tree  11/13 [Lecture 09: Expression Tree](Data%20Structure(2018S)/09_Expression%20Tree.pdf) | Text 1: Chapter 8  Text 2: Lab 11 BST | Laboratory 11: In-lab Exercise 1 | [Assign Project #3](Data%20Structure(2018S)/Project_3.htm) |
| 12 | 11/18 Lab 09: Expression Tree  11/20 [Lecture 10: Heap](Data%20Structure(2018S)/10_Heap(2017).pdf) | Text 1: Chapter 9  Text 2: Lab 12 Expression Tree | Laboratory 12 In-lab Exercise 1 |  |
| 13 | 11/25 Lab 10: Heap  11/27 [Lecture 11: Graph(1)](Data%20Structure(2018S)/11_Graph.pdf), [Graph(2)](Data%20Structure(2018S)/12_Graph2.pdf) | Text 2: Lab B Heap | Laboratory B: In-lab Exercise 1 | Assign Project #4 |
| 14 | 12/2 Lab 11: Weighted Graph  12/4 [Lecture 12: Sorting](Data%20Structure(2018S)/13_Sorting.pdf) | Text 1: Chapter 9  Text 2: Lab 13 Weighted Graph | Laboratory 13 In-lab Exercise 1 |  |
| 15 | 12/9 Lab 12: Sorting  12/11 Final Exam | Text 1: Chapter 10  Text 2: Slide |  |  |