**Class Meetings**

<table>
<thead>
<tr>
<th>Section 01:</th>
<th>MF 9:00am – 10:15am</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor:</td>
<td>Li Han</td>
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<tr>
<td>Section 02:</td>
<td>MF 10:25am – 11:40am</td>
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<tr>
<td>TAs:</td>
<td>Ava Bartolome, Cat Mai, Jack Rogerson, Catalin Veghes, Jade Zhang</td>
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<tr>
<td>Labs:</td>
<td>W 9:00am – 10:15am</td>
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Please use Piazza for CS121 communication.

**Office hours are given on the course schedule webpage.**

**Course Description**

The Data Structures course is a 2nd semester continuation of CS 120, Introduction to Computing. The course features an emphasis on such topics as abstract data types, collections, and dynamic data structures such as linked lists, stacks, queues and binary trees. The usage and implementation of recursion is also discussed, as is the elementary analysis of algorithms. This course is designed to continue your development of computer programming skills, introduce you to common building blocks of computer programs, and help you develop problem-solving skills in computing by applying those building blocks.

**Prerequisite**

CSci 120 Introduction to Computing

**Textbook**


**Course Content and Learning Objectives**

CS and Java Fundamentals: about 5 weeks
- Primitive Data Types
- Lops and Conditionals
- Arrays
- Input and Output
- Static Methods
- Recursion
- Abstract Data Types (ADTs)
- User-Defined ADTs
Time and Memory Analysis: 1 week
  - Importance of Efficient Solutions
  - Experimental, Doubling Analysis
  - Mathematical Models
  - Tilde Notation and Big Theta Notation

Linear Data Structures: about 3.5 weeks
  - Linked Lists
  - Stacks
  - Queues
  - Implementations and Applications
  - Generics
  - Iterators

Symbol Tables (a.k.a. Dictionaries, Maps): about 3 weeks
  - Hash Tables
  - Binary Search Trees
  - General Binary Trees
  - Applications

Introduction to Graph (if time permits): a couple of lectures

By the end of the course, students should develop a solid understanding of the topics listed above, improve their critical thinking, and computational problem solving skills, be more systematic and discipline in their coding development, and be better prepared for their further study in computer science. These learning objectives fit well with Clark’s LEEP learning outcomes and vision of liberal education.

Grading
The following percentages are tentative and may be changed at the instructor’s discretion:

- Attendance and Participation 10%
- Exercises and Assignments 55%
- Exams and Final 35%

Time Expectations
Clark policy states that each course requires a minimum of 180 combined hours of engaged academic time for the student from time inside and outside the classroom. Here is a general guideline for time expectations in this course:

- It is expected that you commit at least 12.75 hours to this class every week.
  - 2.5 hours: lecture attendance and participation
  - 1.25 hours: lab attendance and participation
  - 4.0 hours: studying the week’s materials
  - 5.0 hours: completing assignments and attending office hours as needed

With a 14-week semester, this amounts to 14 * 12.75 = 178.5 hours. Adding these hours to the exam hours, the total engaged hours will be above 180.
Policies and Miscellaneous

The official administrative business of this class will be conducted on Piazza. Grade questions/disputes, explanation of absence, etc. will be processed on Piazza so that we both have a written record of what was agreed. Feel free to discuss in person but a Piazza follow-up post is required for the official record.

Attendance and discussion/asking questions are expected.
If you must be absent, please contact me in advance to let me know why you won’t be in class, and you must make up for the missed class and keep up with the course work.

Assignments are due on the time (11pm, with additional 59 minute courtesy time) and date stated on the assignment page on the web. No late submission will be accepted, except for extraordinary situations.

Plan your work accordingly, work on each exercise and assignment as soon as possible, ask questions and get help early, be critical with your own solution, and be.

Students are responsible for ensuring that assignments are correctly submitted. If you have a question or problem, seek help from CS121 staff immediately.

No special make-up work will be accepted after the end of the semester.
In the event of a documented major medical problem, a grade of Incomplete will be given pending the submission of complete work. However, make up work “to improve one’s grade” will not be accepted.

Grades are not negotiable.
Please don’t even ask – just do the work and you’ll get the grade you deserve. Of course, please bring any clerical grading errors to our attention and we will gladly fix them.

Pair Programming*:
Some cs121 assignments allow pair programming. When partnering, both students work together (in the same room) and discuss, write, debug, test, analyze, document, and submit all elements of the assignment. In this case, only one partner (with the other partner present) submits their assignment code and report; the other partner submits only an abbreviated readme.txt that contains both partners’ names and logins. Both partners are responsible for understanding all parts of the submitted assignment and receive the same grade.

Collaboration policy*:
Programming is an individual creative process much like composition. You must reach your own understanding of the problem and discover a path to its solution. During this time, discussions with other people are permitted and encouraged. In fact, we recommend student cooperation in understanding programming concepts, algorithms and system features. You are encouraged to discuss lecture materials, textbook examples, labs, assignment problem specifications and expected outputs, and to seek and receive help with the Java Programming Language, IntelliJ, and other tools. However, when the time comes to develop algorithms and write code that solves the problem, such discussions (except with course staff members) are no longer appropriate: the code must be your or your pair’s own work. For each assignment, you must
specifically describe in your readme or report file, whatever help (if any) that you received from others and tell us the names of any individuals with whom you collaborated. This includes help from friends, classmates, lab TAs, and course staff members.

Welcoming Class Atmosphere
I strive to make CS121 welcoming and productive for all students. Please bring to my attention any issues or concerns you have about the class atmosphere.

Students with Disabilities
Clark University is committed to providing students with documented disabilities equal access to all university programs and facilities. If you have, or think you have a disability and require academic accommodations, you must register with Student Accessibility Services (SAS). If you have questions about the process, please contact The Director of Accessibility Services. If you are registered with SAS and qualify for accommodations that you would like to utilize in this course, please request those accommodations through SAS in a timely manner. Clark University is committed to providing students with documented disabilities equal access to all university programs and facilities.

Notice to students -- Faculty Members are Responsible Employees
As an instructor, one of my responsibilities is to help create a safe learning environment on our campus. I also have a mandatory reporting responsibility related to my role as a responsible employee. I am required to share information regarding sexual misconduct or information about a crime that may have occurred at Clark. Students may speak to someone confidentially by contacting the Center for Counseling and Personal Growth at (508) 793-7678 or our faculty confidential sources: Kathleen Palm Reed, James Cordova, or Andrew Stewart. If you would like to pursue a formal complaint through university procedures, contact Lynn Levey, Assistant Dean for Wellness and Title IX Coordinator by email or at (508) 793-7194. If you would like to pursue a criminal complaint you can contact University Police at (508) 793-7575 or work with Lynn Levey to arrange for a meeting with Worcester Police.

Academic Integrity/Cheating & Plagiarism

Academic integrity is a basic value for all higher learning. Simply expressed, it requires that work presented must be wholly one's own and unique to that course. All direct quotations must be identified by source. Academic integrity can be violated in many ways: for example, by submitting someone else's paper as one's own; cheating on an exam; submitting one paper to more than one class; copying a computer program; altering data in an experiment; or quoting published material without proper citation of references or sources. Attempts to alter an official academic record will also be treated as violations of academic integrity.

To ensure academic integrity and safeguard students' rights, all suspected violations of academic integrity are reported to the College Board. Such reports must be carefully documented, and students accused of the infraction are notified of the charge. In the case of proven academic dishonesty, the student will receive a sanction, which may range from an F in the assignment or course to suspension or expulsion from the University.

The complete academic integrity policy is available with Academic Advising at http://www.clarku.edu/offices/aac/integrity.cfm.
Do not, under any circumstances, copy another person’s code or show your assignment code to other students. Incorporating someone else’s code into your program in any form is a violation of academic regulations. In addition to the definition of plagiarism in the handbook, with respect to CS121, plagiarism is specifically defined to include (but is not limited to) the following:

- copying any part of someone else's assignment/program, even if you have permission and/or have modified the code
- sharing or giving your assignment/code or even a subset of your assignment/code to another student
- using another student’s solution (including from past semesters)
- using solutions on the internet

Also you may not publish your solutions to the cs121 programming problems in a way that could compromise their utility as pedagogical tools.

It is our policy to use automatic plagiarism detection software, and suspicious similarities will be uncovered.

If you have any questions about these matters, please consult a course staff member.

Alleged violations will be reported to Clark College Board for review. If found guilty, a violator will receive an assignment/exam grade of zero for the 1st offense, a course grade of F for the 2nd or later offense, plus whatever disciplinary action the College Board imposes.

*Parts of the text are adapted from course webpages for “COS226 -- Data Structures and Algorithms”, R. Sedgewick and K. Wayne (Princeton).

Disclaimer. The instructor reserves the right to make changes to any information contained in this syllabus at any time during the semester. Changes will be announced, and an updated version of the syllabus will be posted online.