

# CS 3350 Fall 2016 – Data Structures and Algorithms

BGSU Computer Science

## Prerequisites

Math 2220/3220 and grade of C or better in CS 2020

## Class Meeting Time

Section 1001: Tuesdays/Thursdays, 1:00-2:15pm, HAYES 117

Section 1002: Tuesdays/Thursdays, 4:00-5:15pm, OLSCAMP 107

Section 8001: Tuesdays/Thursdays, 4:00-5:15pm, CEDAR PT CENTER 1011

## Textbook

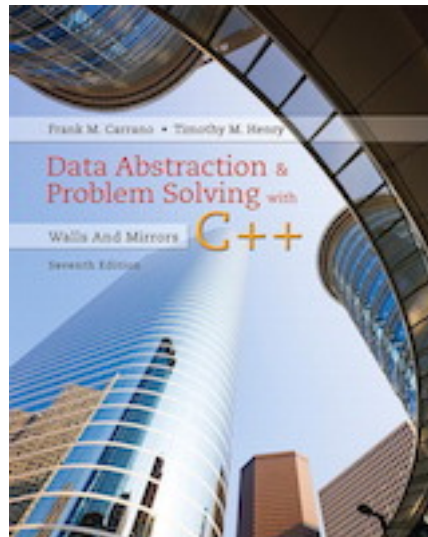


Figure 1: Book

“*Data Abstraction & Problem Solving with C++: Walls and Mirrors*,” 7th Edition (2016), Carrano and Henry, Pearson, ISBN: 978-0-13-446397-1. On 2-hour reserve in the library.

## Contact Information

---

Instructor	Dr. Robert Dyer
Office Hours	MTWR 2:30–4:00pm OR by appointment
E-mail	rdyer@bgsu.edu
Office	HAYES 244
Phone	(419) 372–3469

---

## Outcomes for the course

After successfully completing CS 3350, students will be able to say:

- I can solve computation problems using recursion.
- I can implement and apply stacks, queues, trees and other custom data structures.
- I can create generic functions and classes.
- I can understand algorithmic complexity (e.g., Big-Oh notation)
- I can understand the relationship between data structures and algorithms.
- I can understand the design tradeoffs (e.g., code complexity and performance) in data structures and algorithms.

## Grading

The final grade will be composed of the following weights. (The instructor reserves the right to make changes at any time.)

### Assessments

Item	Points Each	Total
Exams (3)	50	150
Final Exam	100	100
Assignments (8)	15-25	150
In-class activities	5-10	100
<b>Total</b>		<b>500</b>

### Grading Scale

Point Range	Percentage	Grade
460 - 500	92 - 100%	A
410 - 459	82 - 91%	B
360 - 409	72 - 81%	C
310 - 359	62 - 71%	D
0 - 309	below 62%	F

## Assessments

### Exams

There are a total of 3 exams throughout the semester and a final exam during finals week. Exams will consist of a variety of question types, including multiple choice, true/false, short answer, short programming questions, and interpreting code.

### Assignments

There will be several programming assignments completed outside of class and individually. To receive credit for your assignments, they must be submitted on BGUNix in the CS3350 class account (see below) by the due time. **There are no late submissions allowed.** Partial credit will be given for any completed portion of the assignment, so be sure to submit on time even if you are not finished with the assignment!

## **Technology**

### **BGUnix**

We will use BGUnix, a mainframe computer on campus, to type in, debug and run our C++ programming assignments. It can be accessed from any lab computer on campus or from a personal/home computer using PuTTY with Windows (PC) or Terminal on a Mac.

Other documentation about BGUnix (getting a BGUnix account, using editors on BGUnix, etc.) are available at <https://www.bgsu.edu/its/services/class/bg-unix.html>

### **Canvas**

The syllabus, all assignments, and due dates are posted on Canvas. Your grades will also be available on Canvas throughout the semester.

## Course Policies

### Withdrawal Deadline

Friday, November 11, 2016. University policy states that after this date, anybody withdrawing from the course will have the grade automatically turn into an F.

### Office Hours and Help

Please check your Canvas course site, Canvas messages, and your BGSU email regularly. [You may have your Canvas messages forwarded to your BGSU/other email, and have your BGSU email forwarded to another favorite email address, if necessary, but do check it (multiple times) daily.] I do forward my own Canvas messages to my BGSU email and check my BGSU email multiple times everyday (with rare exceptions). I check BGSU email more often than I access Canvas, so if you need to contact me urgently, use both Canvas and BGSU email, if necessary multiple times. I will do my best to accommodate you ASAP, even if outside my posted office hours and without appointment. In general, if you need to see me in my office outside of my regular office hours, please make an appointment.

### Attendance

Students are expected to attend each class and be on time. I take attendance at the start of each lecture. I typically use good attendance as a factor when considering final grades. I reserve the right to penalize students up to 1% of their final grade, per absence, for more than 3 un-excused absences.

### Make-up policy

If you cannot take an exam as scheduled, you (or an authorized person, only in case you are unable to do so) must contact me ahead of time with the reason. Make-ups are considered typically for health emergencies only.

### Academic honesty

All coursework for this class is expected to be YOUR OWN work. The MINIMUM penalty for copying someone's work (including current classmates, students from a previous offering of the course, or postings found on the web) or knowingly allowing someone to copy your work is a zero for the homework/project/exam/paper/presentation. The offense is also reported to the dean of your college. Turnitin and Moss, plagiarism detection tools, will be used in this course. I will follow the Department's policies and the University's code of academic conduct as defined in the BGSU Student Handbook. For details refer to:

1. [Department of Computer Science Academic Honesty Policy](#)
2. [BGSU Code of Academic Conduct](#)
3. [The Academic Charter, section B-I.G](#)

### Disability Policy

In accordance with the University policy, students with disabilities must verify their eligibility through the Office of Disability Services, 38 College Park Office Building, 419-372-8495 (<http://www.bgsu.edu/disability-services.html>). Contact me as soon as possible this semester to arrange any accommodations needed to assist with your success in this course.

## **Religious Holidays**

It is the policy of the University to make every reasonable effort allowing students to observe their religious holidays without academic penalty. In such cases, it is the obligation of the student to provide the instructor with reasonable notice of the dates of religious holidays on which he or she will be absent. Absence from classes or examinations for religious reasons does not relieve the student of responsibility for completing required work missed. Following the necessary notification, the student should consult with the instructor to determine what appropriate alternative opportunity will be provided, allowing the student to fully complete his or her academic responsibilities ([The Academic Charter, section B-I.F-4.b](#)).

## Tentative Course Schedule

Week	Day	Date	Topics
1	T	Aug 23	Introduction; Ch. 1 Data Abstraction
	R	Aug 25	Interlude 1 C++ classes; Interlude 3 Exceptions
2	T	Aug 30	Ch. 3 Array-based Implementation
	R	Sep 1	Ch. 3 Array-based Implementation
3	T	Sep 6	Ch. 2 Recursion
	R	Sep 8	Ch. 4 Link-based Implementations
4	T	Sep 13	Exam Review
	R	Sep 15	<b>Exam 1</b>
5	T	Sep 20	Interlude 2 Pointers
	R	Sep 22	Ch. 6 Stacks
6	T	Sep 27	Ch. 7 Implementing Stacks
	R	Sep 29	Ch. 8 Lists; Ch. 9 List Implementations
7	T	Oct 4	Ch. 12 Sorted Lists
	R	Oct 6	Exam review
8	<del>T</del>	<del>Oct 11</del>	<del>No class</del>
	R	Oct 13	<b>Exam 2</b>
9	T	Oct 18	Ch. 10 Algorithm Efficiency
	R	Oct 20	Ch. 11 Sorting Algorithms
10	T	Oct 25	Ch. 13 Queues/Priority Queues
	R	Oct 27	Ch. 14 Implementing Queues
11	T	Nov 1	Ch. 15 Trees
	R	Nov 3	Ch. 16 Tree Implementations
12	T	Nov 8	Ch. 17 Heaps
	R	Nov 10	Interlude 7/8 Iterators/STL
13	<del>T</del>	<del>Nov 15</del>	<del>No class</del>
	R	Nov 17	Exam review
14	T	Nov 22	<b>Exam 3</b>
	<del>R</del>	<del>Nov 24</del>	<del>No class</del>
15	T	Nov 29	Ch. 18 Dictionaries
	R	Dec 1	Ch. 19 Balanced Search Trees
16	T	Dec 6	Ch. 20 Graphs
	R	Dec 8	Exam Review
17	M	Dec 12	3:30-5:30pm Final exam (sections 1002/8001)
	T	Dec 13	1:15-3:15pm Final exam (section 1001)

*NOTE: If there is a discrepancy between the due dates here and on actual assignments, the one on the assignment applies.*