CSIT 254-51V Data Structures CRN 17206

Fall 2020 - Syllabus v0.2

Section Info:

Section 51V - CRN 17206
Tuesday 5:30 pm - 10:15 pm "Remote Synch"

Course Modality: "Remote Synch"

The class will be conducted as a "Remote Synch" course. The 'Remote' means that we will work from home instead of on-campus and the 'Synch' is short for synchronous which means the class has a scheduled meeting time, for us that is Tuesdays starting at 5:30 pm.
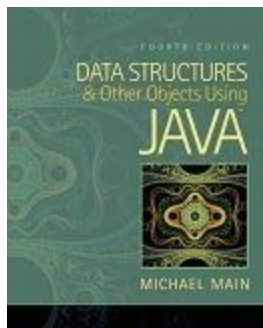
Link(s) to Zoom meeting(s) will be in the Learning Management System (LMS) called Canvas

Versions

- Version 0.2 - 9/4/2020 - second draft **(published not polished)**
- Version 0.1 - 8/31/2020 - first draft
- Version 0.0 - 8/20/2020 - Pre-draft

Book Information

Data Structures & Other Objects Using Java, Michael Main, 4th Edition

Picture of book:

Instructor Ino

Name: Stephen T. Brower   **Office:** West Building W324 *
Work # (908) 526-1200 x8259 *   **preferred email:** stephen.brower@raritanval.edu

* For Fall 2020, I will not be on campus - the best way to reach me will be via email. I will have "drop-in" office hours via Zoom - link(s) in Canvas

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Canvas:

> Canvas is the official source for the latest: Syllabus, Class Schedule, Slides, Demos, Homework Assignments, Lab Assignments, Project Assignments, Exam Information

Fall 2020 "Virtual" Office Hours via Zoom (9/2-12/14):

- Monday 3:00 - 5:00   ← links to office hours are in Canvas
- Tuesday 3:00 - 4:00
- Wednesday 4:00 - 6:00
- Thursday 3:00 - 4:00
- and by appointment

Which Email to use and Email Response Time

If you have a question or have an issue submitting an assignment in Canvas, the preferred (fastest) way to contact the instructor is via his preferred email**:** stephen.brower@raritanval.edu

Over the last several semesters, I found the email system embedded in Canvas frustrating. So please email me at: stephen.brower@raritanval.edu

The goal is to respond in less than 24 hours. Please don't expect a response after 10 pm.

Occasionally there are known exceptions such around Thanksgiving where a response may take a little longer. If the instructor knows ahead of time there will be a period of unavailability longer than 24 hours, that will be communicated to the class.

Course Overview

> *Prerequisite: CSIT(CISY) 105 Foundations of Computer Science or GDEV(CISY) 242 Object Oriented Programming:*
> This course introduces students to the fundamental data structures used in Computer Science. The data structures covered include linked lists, doubly linked lists, stacks, queues, trees, and graphs. Algorithms that manipulate these data structures are discussed and used in laboratory work. Students are introduced to the run-time analysis of algorithms and basic algorithms for searching and sorting.

General Education Goals:

After completion of this course, students will be able to:
1. design and develop data structures that efficiently address program requirements (G.E. 1)

2. analyze the data structures used in computer applications and the issues surrounding their implementation (G.E. 2, 4)
3. apply quantitative reasoning to analyze the performance of data structure algorithms in order to efficiently solve problems (G.E. 7)

Course learning outcomes:

At the conclusion of the course, students will be able to:
1. compare and contrast the basic data structures used in Computer Science: lists, stacks, queues, trees and graphs
2. identify and implement the basic operations for manipulating each type of data structure
3. create data structures using Java
4. analyze the run-time analysis of algorithms and express them using O ( ) notation
5. apply recursion to data structure operations
6. identify the appropriate data structure for a given problem
7. analyze algorithms to search or sort the data in various data structures (arrays, queues, stacks, etc.) and interpret their run-time performance
8. create and execute test plans which include the testing of boundary conditions

Course Management, Structure and Pace

This course meets for approximately five hours a week for 14 weeks. Students should plan on putting in at least two hours of study time for every hour spent in class for lecture. Additionally, students should plan study time of another half hour for every hour spent in lab. Students who are successful in this class typically spend approximately seven hours *outside of class* each week working on the subject. This includes reviewing class notes, reading and studying the textbooks, doing homework and reviewing Collection Classes and testers.

Zoom for Lectures / Lab time

As a "Remote Synch" course, Zoom will be used for the time we spend in the class.

Zoom Lectures

If we were in a traditional classroom, I would be able to see the student's faces. I could see multiple "deer in the headlights" looks and realize I was going too fast and needed to back up and slow down and re-explain something. I could see multiple students falling asleep and realize I needed to move on or do an impromptu group exercise.

For the lecture I am asking you to have the webcam on and be muted.

My asking of the students to use their webcam to project their face while I am lecturing can benefit everyone so I can read the audience. I may not adjust if 1 person looks lost or 1 person starts to doze off, but if I realize 4-5 or more look lost or 4-5 or more face-plant on the keyboard (that happens) then I will adjust.

Zoom has a raise hand feature and Zoom has a chat where questions could be posted.

I am afraid that when reviewing code (this course involves programming) I may forget to position the code and the Zoom room side by side so I can read the audience, look for hands and see if hands are raised. I'm sure I will forget multiple times and I apologize in advance.

Zoom Lab Time

There are a number of group exercises for this class where we will use breakout rooms in Zoom. To work in these breakout groups, you need a webcam so your fellow group members can see you, and you need a microphone so your fellow group members can hear you.

For this class, the majority of the programming labs will be individual exercises writing Data Structures in Java.

If we were in a traditional classroom, I could hear someone groan or see someone literally pull out their hair and I would realize that although they didn't ask for help, they need help. In a traditional classroom, I would periodically walk up and down the aisle because some people are hesitant to ask for help from afar but will ask if I am nearby.

If we were in a traditional classroom, I could look over your shoulder at your code or output screen on your computer and offer advice or direct through some clicking.

Since this is my first semester using Zoom for "Lab Time" I am not really sure what the best way is to handle lab time.

There will be times that it would help me if you share your screen so I can see the code, but then so does the whole class.

If someone unmutes and asks a question everyone hears the question and everyone hears the answer (or me saying beats me)

It is possible that for lab time for the programming labs, I might just say leave the room and come back in if you have a question.

For lab time I want to help those that want help and I want to leave alone those that want to be left alone

So, for Lab time in Zoom...beats me!

Zoom down?

Remember August 24th 2020? Zoom had a major outage.

If that happens, I will create a Microsoft Teams meeting and email the link to the class.

If both Zoom and Microsoft Teams are down...Beats me!

Honors Option

An Honors Option is available for this course. A general requirement for Honors courses and Honors Option courses is a minimum grade point average of 3.5

"Definition: Students pursuing the Honors Option will be required to demonstrate a higher level of knowledge and skill in each of their course programming projects. They will be required to take the concepts introduced and generalize them for broader application. Students will also do independent work researching application programming interfaces." (Master Course Outline)

For this Honors Option, the demonstration of a higher level of knowledge and skill will be through enhanced Labs and Projects. The independent work for research will be through additional research components for Homework

The expectation is that all of the 'honors option' exercises be completed. However, since the 10th day is the last day to switch to the honors option section, then the expectation is that 90% of the 'honors option' exercises be completed. If more than 10% of the 'honors option' exercises are not completed then for the assignments completed without the honors option beyond 10% of the assignments a penalty will be assessed

For some of the assignments, there are extra credit options for the students in the 'regular section' that are mandatory for the students in the 'honors section' and the grade is based on the proportion of the total points. For example: suppose there is 15 points extra credit on an assignment, for the students in the 'honors section' their grade is based on the total points / 115.

If a student switches from the 'honors section' back to the 'regular section', the grade will be recalculated.

Enrolling in the Honors Option Section: by the "10th Day of the semester" (aim for 9/10) fill out an Add/Drop form that drops Section 51V and adds Section 51H and get the instructor's signature/approval (by 9/10) and the department chair's signature/approval. After the form is filled out and signed then take/submit to the registrar.

Exiting the Honors Option Section: If you wish to switch back to the regular section, by the withdrawal date (11/13), fill out an Add/Drop form that drops Section 51H and adds Section 51V and get the instructor's signature/approval and the department chair's signature/approval. After the form is filled out and signed then take/submit to the registrar.

Additional Software/Computer Requirements:

Unless you plan on working in the open lab on campus, you will need access to a computer with Java and an IDE.

You can download the Java JDK and Netbeans. There are links in Canvas with some information. See the "Preparing your computer" module in Canvas

Course Routine

Classes will usually consist of 3 possible segments: Lecture, Lab Lecture, and Lab Time - all will be conducted in Zoom

Lecture

A majority of the lectures will be on topics within Data Structures. Some of the lecture will be the theoretical nature of Data Structures, which will include a number of crudely drawn pictures (worse virtually), a discussion of algorithms that act on Data Structures, and in some cases Pseudocode.

Lab Lecture

The Lab Lecture will be an introduction to the week's lab which could be a review of the topic(s) introduced in the Lecture, a review of the UML diagram for the class(es) to be written, or simply "here". Because we meet once a week the Lab Lecture will be for both labs for the evening. See next section.

Lab

There are two kinds of Labs: *Data Structure Labs* and *Programming Labs*. *Data Structure Labs* will group exercises related to the Data Structure topics from the lectures (if we were in the classroom they would be on paper...I got some thinking to do). *Programming Labs* will be for individual work using your computer to implement Data Structures in Java to solve problems.

If you finish the lab early, you should look ahead on the Class Schedule to work on the next programming project (if posted) or do the next homework that is due.

Because we meet once a week, each night the order will be Lecture, Lab Lecture, and then Lab Time (for both labs)

Zoom Recording Policy

There are a number of privacy issues regarding the recording of Zoom lectures, especially the potential recording of students. I will not be recording the lectures and posting them later.

There are a handful of software demonstrations that I will do live that I will also record a video not in Zoom demonstrating the same software. The Software Demonstration videos I record outside of Zoom will be made available via Canvas

Grade Determinants:

Item	Percent
Homework	10%
Data Structure Labs	10%
Programming Labs	20%
Programming Projects	20%
Mid-Term Exam	15%
Final Exam	25%

Grade	% Range
A	89.5-100.0+
B+	86.5-89.4
B	79.5-86.4
C+	76.5-79.4
C	69.5 - 76.4
D	59.5 - 69.4
F	0 - 59.4

Homework

The Homework will be posted in Canvas. Homework must be submitted electronically via Canvas as a document saved as a **.docx** or **.rtf** file.:

See below for the Late Policy(don't be late) and the Cheating Policy (don't cheat)

Data Structure Labs

For classes that introduce new Data Structures, the Data Structure Lab on a topic may be a drawing showing a series of operations on a Data Structure.

The instructor will review the Data Structure Lab before the beginning of Lab time.

Most Data Structure Labs will be done in small groups (break-out rooms in Zoom), and are due at the end of the class 10:15 pm

See below for the Late Policy(don't be late). Since the Data Structure Labs are group-based, the Cheating Policy as stated below isn't fully applicable.

Programming Labs

Programming Labs will be programs written independently in Java to implement a Data Structure to solve some problems.

All of the Programming Labs have some assumptions for clean input so that the focus can be on the writing and use of the data structure. For example assuming a number entered is a number.

Some Programming Labs have been abbreviated to be done in the class-time allotted and those abbreviated labs are due at the end of the class by 10:15 pm.

Some Programming Labs are one week and are due the following week.

The instructor will review the Programming Lab before the beginning of lab time.

The .java* files are to be submitted as attachments to the assignment in Canvas - *alternatively, a .zip file of the folder that contains the .java files or a .zip of the NetBeans project.

See below for the Late Policy(don't be late) and the Cheating Policy (don't cheat)

Programming Lab Compiling Policy

As a second course using Java, the expectation is that your Java code will compile. For all of the Programming Labs from Programming Lab 4 and beyond, if the code submitted does not compile, or if the instructor's tester used to test the classes submitted does not compile, the assignment is a 0.

The only edits that will be made to get the program to compile is to remove the -# that Canvas adds to the file name when there are additional submissions and the package statement
Programming Projects
The idea behind Programming Projects is that they are more complex than labs and are used to demonstrate mastery of Data Structures. A number of them also do not have the assumptions for clean input that the Programming Labs have.

A reminder that Java is in the open Lab in the West Building which is open 6 days a week. Java is also available for download from the Oracle WebSite. See the instructor's website for more information.

The .java* files are to be submitted as attachments to the assignment in Canvas. alternatively, a .zip file of the folder that contains the .java files or a .zip of the NetBeans project.

See below for the Late Policy(don't be late) and the Cheating Policy (don't cheat)

Project Compiling Policy

As a second course using Java, the expectation is that your Java code will compile. For all of the Projects, if the code submitted does not compile, or if the instructor's tester used to test the classes submitted does not compile, the assignment is a 0.

The only edits that will be made to get the program to compile is to remove the -# that Canvas adds to the file name when there are additional submissions and the package statement

Exams

Note the Class Schedule for the dates of the exams. If you are late for the exam, you will only have the time until the scheduled end of the exam.

Exams must be taken on days assigned. If you know ahead of time that you cannot make an exam, ask the instructor to arrange for the exam to be left in the testing center or to arrange another time.

About a week before each exam, a 'information' sheet on the exam will be distributed. That information sheet will cover the format and content of the exam.

Failure to notify the instructor that the Midterm exam will be missed will result in a makeup that *might* be harder, *not by design, but by consequence of being different.* Missing the Final Exam will result in a 0 on the Final Exam so that grades can be submitted on time before fleeing the state.

The Midterm Exam will be one hour long; the Final Exam will be two hours long. Both exams will be closed note /closed book / closed computer, and cumulative up to that point.

Cheating Policy

Don't cheat!

Cheating is not allowed on Homework, Programming Labs, Programming Projects, and Exams. All parties involved in cheating will receive a 0 and will be reported to the dean. Excessive cheating within the class can result in an F for the course. Excessive cheating at RVCC can result in expulsion. Consult your student manual.

For the Programming Labs, asking the instructor for hints is not considered cheating. It is ok to email a Java file to the instructor to ask for assistance. But, don't expect a response after 10:15 pm on any night.

NOTE: you have permission to use the instructor's demo .java files, in whole or in part, for your programming labs and programming projects (just cite that in a comment in the code) and you have permission to use the code the instructor writes on the whiteboard (just cite that in a comment in the code) and you have permission to use the code in the book, in while or in part (just cite that in a comment in the code).

Late Policy

Don't submit work late!

According to the RVCC Catalog, students are not to be penalized for 1 week of absences. To accommodate this, at the end of the semester the lowest homework, the lowest programming lab and the lowest Data Structures lab will be dropped.

"Life Happens"

According to the RVCC Catalog, students are not to be penalized for 1 week of absences. To accommodate this, at the end of the semester the lowest homework, the lowest programming lab and the lowest Data Structures lab will be dropped. That handles life happens.

Extra Credit

Some exams/homework/labs/projects contain extra credit questions/opportunities. Other than that, no extra credit opportunities will be provided.

For example, if you choose not to submit ANY homework and then in November you ask for "Extra Credit" to make up for the missed homework, the answer is NO.

Class Attendance:

Zoom Note: Each night attendance will be taken. As of this writing I am not sure exactly how that will be done. (Zoom can generate a report if I require registration or I can capture the participants - I'm not sure which is better) - beats me!

For the record, the 'School Policy': Students are expected to attend all classes for every course in which they are enrolled. To accommodate students' reasonable, personal situations that might prevent them from attending classes, each student is entitled to excused absences amounting to the equivalent of one week's class time in a semester. Absences in excess of this standard are handled individually by each faculty member. A student with absences amounting to one-fifth or more of the term's lecture or laboratory classes is subject to administrative withdrawal by the Dean of Instruction upon the recommendation of the faculty member.

Visiting Campus?

As of 8/28, there are only 3 access points to the main part of the campus. Please see the reopening page for information on visiting campus. (see: https://www.raritanval.edu/reopening)

Open Labs

For the schedule of the open computer labs for Fall 2020 Semester (see: https://www.raritanval.edu/reopen-technology)

Withdrawal Procedure

See school's webpage for Fall 2020 Withdrawal and Refund Schedule and Refund Info (see: https://commons.raritanval.edu/admin/finance/Documents/Fall%202020%20WithdrawalRefund%20Schedule%20and%20Enrollment_Payment%20Calendar.pdf   )

(see: https://commons.raritanval.edu/admin/finance/Pages/refund_info.aspx   )

Syllabus Part 2-College Policies

Please see the "Syllabus Part 2-College Policies v3" document

Class Schedule

Please see the Class Schedule for the listing of lecture topics and timing of homework / labs / projects / exams

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