**CS 143: Computer Science II –   
Data Structures with Java**

Table of Contents

[Course Details 1](#_Toc524358665)

[**Course Outcomes** 1](#_Toc524358666)

[**Prerequisites** 2](#_Toc524358667)

[**Topic Coverage** 2](#_Toc524358668)

[Required Materials 3](#_Toc524358669)

[**Software** 3](#_Toc524358670)

[**Text** 3](#_Toc524358671)

[**Computer & Technical Requirements** 3](#_Toc524358672)

[Academic Integrity 3](#_Toc524358673)

[Grading and Assessment 4](#_Toc524358674)

[**Purpose of Activities / Course Alignment** 4](#_Toc524358675)

[**Late Policy** 5](#_Toc524358676)

[Classroom Contract 5](#_Toc524358677)

[Discussion Expectations 6](#_Toc524358678)

[Getting Unstuck 6](#_Toc524358679)

[Letter of Recommendation Requests 7](#_Toc524358680)

[Student Services 9](#_Toc524358681)

[**Campus Closures / Cancelled Class** 9](#_Toc524358682)

[**Students with Disabilities** 9](#_Toc524358683)

[**Tutoring Services** 9](#_Toc524358684)

[**Counseling Center** 10](#_Toc524358685)

[**Success Coaching** 10](#_Toc524358686)

[**Additional Campus Resources** 10](#_Toc524358687)

[Privacy Policies 11](#_Toc524358688)

[Accessibility Policies 11](#_Toc524358689)

**Fall Quarter 2019**

# **Course Details**

|  |  |
| --- | --- |
| **Instructor** | Crystal Hess - [chess@shoreline.edu](mailto:chess@shoreline.edu)  I prefer messages sent through Canvas. Messages are checked daily and typical response time is within 24 hours, this excludes weekends and holidays. |
| **Office Hours** | M/T/W 10-11am, M/Th 3-4pm, or by appt.  Science Building, Office 2813 |
| **Class Hours** | 100% Online |

**CS143 – Computer Science II (5 credits)**

This course is a continuation of Computer Science fundamentals. Students explore an in-depth look at object-oriented programming. Data abstraction and implementation topics include abstract data types, stacks, queues, linked lists, binary trees, predefined collection classes, recursion, complexity, searching, and sorting.

## **Course Outcomes**

## Design and implement solutions to ambiguous problems.

## Read and write code using Object Oriented Programming principles, including: classes, Objects, encapsulation, inheritance and interfaces

## Implement, utilize, and compare List implementations (Array and Node)

## Implement, utilize, and compare Collection interfaces and classes, including: abstractions (List, Set, Map, Stack, Queue) and implementations (Hash Table and Tree)

## Read and write recursive methods, including recursive tracing and helper functions

## Process data, including: searching and sorting

## Analyze code in regard to complexity, performance analysis, and dynamic memory management

## **Prerequisite**

Completion of CS& 141 with a grade of 2.0 or better.

## **Topic Coverage**

Approximate Chapter Coverage:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Week 1 | CS141 Review | ArrayIntList |  |  |
| Week 2 | CS141 Review | LetterInventory  TicTacToe | GradeList | HW1: Sudoku #1 |
| **Exam #1** | | | | |
| Week 3 | Collections Sets & Maps  Big-O |  |  | HW2: Sudoku #2 |
| Week 4 | Searching & Sorting Recursion |  |  | HW3: Sudoku #3 |
| Week 5 | Recursive Backtracking |  |  |  |
| **Exam #2** | | | | |
| Week 6 | Implementation & Generics  Stacks & Queues | ArrayList<E>  Stack<E> | Queue<E>  Sudoku Analysis | HW4: Sudoku #4 |
| Week 7 | Linked Lists | Node<E>  LinkedList<E> | LinkedList<E> | HW5: Job Simulation |
| **Exam #3** | | | | |
| Week 8 | Linked List (cont.) |  |  | HW6: LinkedList |
| Week 9 | Trees: Traversals, Non-Cascading Modifications |  |  | HW7: Assassin Manager |
| Week 10 | Trees: BST | 20 Questions |  | HW8: |
| **Exam #4** | | | | |

# 

# **Required Materials**

## **Software**

* [*Java Development Kit (JDK)*](http://www.oracle.com/technetwork/java/javase/downloads/index.html) *(freely available online)*
* [*JGrasp IDE*](http://www.jgrasp.org/) *(freely available online)*

## **Text**

* Building Java Programs: A Back to Basics Approach, 4th Edition by Stuart Reges and Marty Stepp (same book from CS& 141)
  + Available through the Bookstore or on Amazon: [Student Value Edition](http://a.co/hPqGU0I), [Regular Edition](http://a.co/8znVJ4k)

## **Computer & Technical Requirements**

* It is expected that when students enroll for this course they will be able to use a computer, be able to upload and download files, and successfully navigate browsers and websites.
* Students will receive homework throughout the course that must be completed on a computer with Internet access. The school library computers can be used for these purposes.
* **Need help?** Canvas questions can be directed to Shoreline e-Learning at [elearning@shoreline.edu](mailto:elearning@shoreline.edu), (206) 546-6966, visit Building 1200, or [24hour Canvas Support via chat or telephone](http://www.shoreline.edu/virtual-campus/elearning/canvas.aspx). Canvas and basic computing support is also available on campus at the [Shoreline Business Technology & eLearning Center](http://www.shoreline.edu/apply-and-aid/learning-support-centers/business-computer-software.aspx) in Building 1300, Room 1304.
* More [information on general technical requirements](http://www.shoreline.edu/virtual-campus/elearning/tech.aspx) can be found here.

# **Academic Integrity**

Academic honesty and integrity is expected.  Shoreline Community College has a strict policy on cheating and plagiarism.  You are cheating if you copy, steal, borrow, consult, or use any means to obtain answers from classmates or unauthorized sources during a quiz or assignment.  You are committing plagiarism if you copy the words of another person without giving them credit by acknowledging the source of the information.  Any student found guilty of cheating and/or plagiarism will receive a zero for the exam or assignment.  If it happens a second time, you will fail the course.  More Information: [Shoreline Dishonesty in Academics Policy (#5033)](http://intranet.shoreline.edu/faculty-senate/Agendas/POLICY/draft5033%20clean%206.2FINAL.pdf)

# **Grading and Assessment**

In this course, you will be assessed through **Learning Practice** (smaller daily assignments), **Individual Homework**, **Quizzes**, two **Midterm Exams** (approximately week 5 and week 9), and a group **Final Project** (presented during Finals time slot).

I strive to grade daily and weekly assignments within 5 days of the due date. The larger assignments take longer to grade and are generally graded within 7-10 days.

|  |  |
| --- | --- |
| **Activity** | **Percentage** |
| Learning Practice | 20 |
| Learning Reflections | 20 |
| Long Homeworks (~8) | 20 |
| Exams (4, one is dropped) | 40 |

## **Purpose of Activities / Course Alignment**

* **Learning Practice** gives you the opportunity to practice reading and writing small segments of code. These assignments are graded for completion. (Course Objectives 3 and 5)
* **Individual Homework** builds in difficulty throughout the course, providing an opportunity to build software solutions to tackle varying problems. (Course Objective 1, 2, and 4)
* **Exams** provide an assessment of your understanding of programming vocabulary and ability to read and write code quickly. (Course Objectives 2 and 3)

## **Questions or Concerns about Grading**

* **Any**

**Final GPA decimal grading** will be used in accordance with the following table.

****

## **Late Policy**

* Students are expected to turn in all assignments by the due date and time. Assignments not submitted on-time may receive zero points.
* Special arrangements may be approved for flexible due dates in special circumstances when the instructor is contacted **prior** to the due date.

More information available here: [Shoreline's full Grades Policy (#6260)](https://www.shoreline.edu/about-shoreline/policies-procedures/documents/6260GradesPolicy.pdf)

# **Classroom Contract**

You are expected to uphold the classroom contract as follows:

* **Be Prepared**: You are expected to complete all pre-work and homework before class starts so that you are ready to be engaged in conversations and activities.
* **Be Present**: You are expected to be in class, on time, and actively present in the learning process.
* **Participate**: You are expected to be an active contributor in class. This means both asking questions and helping others.
* **Create space for learning:** You are expected to create and cultivate a space where learning is conducive for all learners. This means that you participate in the class without dominating the learning space.

# **Discussion Expectations**

(Adapted from Dr. Susan Shaw, Oregon State University & Angela Velez-Solic, Indiana University Northwest)

* Commit to learning about, understanding, and supporting your peers.
* Assume the best of others in the class and expect the best from them.
* Recognize and value the experiences, abilities, and knowledge each person brings to class.
* Participate actively in the discussions.
* Think through and re-read your comments before you post them.
* Never make derogatory comments toward another person in the class. Do not demean or embarrass others.
* Do not make sexist, racist, homophobic, or victim-blaming comments at all.
* It is ok to disagree with ideas, but do not make personal attacks.
* Be open to being challenged or confronted on your ideas or prejudices.
* Challenge others with the intent of facilitating growth.
* Encourage others to develop and share their ideas.
* Be willing to change.
* Any form of hatred is considered serious and inappropriate.

# **Getting Unstuck**

Getting stuck is part of the programming process. However, one of the most useful skills you may learn from this course is "how to get unstuck."

* **Make systematic changes.** Look carefully at the work you have just done. Try changing one thing and see what effect it has.
* **Talk to a rubber duck.** No really, this is actually [a thing](https://en.wikipedia.org/wiki/Rubber_duck_debugging). Sometimes if you take a moment to tell someone (even someone non-techie) what you're trying to do, you'll end up having an Ah-Ha moment of clarity!
* **Ask a classmate.** Try to share ideas about how to figure out the problem rather than telling your classmate the answer. You'll learn as much by helping others find their mistakes as you will by finding your own.
* **Take a break.** Sometimes you just need to take a break! Looking at code with a fresh set of eyes solves problems quicker than beating your head against the computer :)
* **Ask the Instructor.** I'm here to help you. It's literally my job.

# **Letter of Recommendation Requests**

Letters of recommendation are often needed for applications to transfer universities, jobs, and internships. Instructors take pride in the letters that they write for students and can only craft strong letters for students whom they know well. Part of your job as a college student is to become the kind of student that a professor can speak highly of in a letter of recommendation — hardworking, capable, and intellectually inquisitive.

**Before requesting a letter of recommendation, ask yourself:**

* Have I discussed my academic or career goals with this instructor?
* Have I demonstrated an excellent work ethic or produced quality work in this course?
* Have I demonstrated responsibility for my learning and active participation in class (good attendance, thoughtful communication with the instructor and my peers)?
* Have I shown or communicated a passion for the subject or concepts that were taught?
* Will this instructor be able to incorporate personal and specific details about my academic growth or trajectory?

It is not necessary that the person writing your recommendation be able to speak to every bullet point above, but they should be able to speak to at least one of them.

**Students are required to sign a consent form allowing an instructor to disclose their academic performance according to the Family Educational Rights and Privacy Act (FERPA).** Sometimes you are asked if you would like to waive your rights to read the letter written for you. One advantage to waiving your rights is that the people reading the letter will know that it was written candidly, which could make the letter more influential.  The disadvantage, of course, is that you won’t get to see what your recommender wrote.  Thus, it is important to ask your potential recommender if they can provide a *positive* candid letter.  If your potential recommender can’t say “yes” or suggests you ask another person to write the letter, then ask someone else.

Remember that **requests may be declined for a variety of reasons**, including, but not limited to: insufficient time to write the letter, not knowing the student well enough to provide specific character observations, or too much time has elapsed since working with the student.

**Requests for recommendations should come well in advance of the deadline for submission** (i.e., at least 14 days in advance of the deadline, but the more notice the better).

# **Student Services**

## **Campus Closures / Cancelled Class**

There are two types of suspended operations possible: campus is closed or classes are cancelled.  In the event of campus closure or cancelled class, students will be notified via Canvas of their expectations in relation to school work.

You can read Shoreline’s [Suspended Operations Procedures](https://www.shoreline.edu/about-shoreline/policies-procedures/documents/6030SuspendedOperationsProcedure.pdf).

## **Students with Disabilities**

Shoreline Community College is committed to providing educational programs without regard to disabling conditions as defined by Section 504 of the Rehabilitation Act of 1973. Reasonable accommodations will be made and no otherwise qualified individual with disabling conditions shall, on the basis of disability, be excluded from participation in, be denied the benefits of, or otherwise be subjected to discrimination under any program, activity or service administered by the college.

For more information: <http://www.shoreline.edu/oss/students-with-disabilities/>

## **Tutoring Services**

Tutoring Services provides students with free one-on-one tutoring support for any Shoreline Community College classes. Students can received 2 hours of free tutoring a week per class they are registered for in a quarter.

They also host drop-in learning centers, such as the Biology/Chemistry Learning Center, Business Technology & eLearning Center, Physics Learning Center, Conversation Groups, and more (schedules and availability vary).

For more information and to apply for tutoring assistance or to apply to become a tutor, please visit our office in 4228 (Library), email [pttutors@shoreline.edu](mailto:pttutors@shoreline.edu), call 206-546-4776, or check out the webpage: [www.shoreline.edu/tutoring](http://www.shoreline.edu/tutoring).

The college also provides students with free online tutoring in a variety of courses through [the Western eTutoring Consortium](http://www.shoreline.edu/twls/etutoring.aspx)

## **Counseling Center**

The Counseling Center provides free, confidential and professional counseling services, resources, and referral to support the academic and personal success, health, and well-being of our students and campus community.

Students often visit the Counseling Center to discuss a wide variety of topics: depression, anxiety, relationship concerns, and stress management; indecision about major or career path; and academic concerns such as failing grades, struggling with a subject, or managing a learning disability. The Center also supports students who may be feeling suicidal or in crisis.

* FOSS – 5245, 206-546-4594, [www.shoreline.edu/counseling-center](http://www.shoreline.edu/counseling-center)

Need support when they are not available? For 24/7 emergency counseling, referral, or assistance please contact:

* King County: 24-Hour Crisis Line | 866-427-4747
* Snohomish County: 24-Hour Crisis Line | 800-584-3578
* Live Chat: [crisischat.org](http://crisischat.org/)
* Crisis Text Line: Text 741741
* 911 (for immediate health-related emergency)

## **Success Coaching**

Shoreline Community College provides students with [Success Coaching](https://www.shoreline.edu/advising/success-coaches.aspx) to help students develop and grow their academic skills. Coaching is an ongoing professional relationship where you work on study strategies, goal planning, time management, balancing life’s priorities, focus, motivation, and organization. Coaches also help you identify and connect to other resources. Coaching is not [counseling](http://www.shoreline.edu/counseling-services/), [advising](http://www.shoreline.edu/advising/), or [tutoring](http://www.shoreline.edu/enrollment-services/learning-support-centers/tutoring.aspx).

For more information: [shoreline.edu/advising/success-coaches.aspx](http://www.shoreline.edu/advising/success-coaches.aspx).

To schedule an appointment: [successcoaching@shoreline.edu](mailto:successcoaching@shoreline.edu) or 206-546-4559.

## **Additional Campus Resources**

Check out the [Current Students page](https://www.shoreline.edu/currentstudents/) for more information about Academic Support, Student Services, Campus Life, and much more.

# **Privacy Policies**

To learn about the practices regarding personal information that may be collected from users in this course, check the privacy policies below:

* [Repl.it Privacy Policy](https://repl.it/site/privacy)
* [Coding Bat Privacy Policy](http://codingbat.com/privacy.html)
* [Canvas](https://www.canvaslms.com/policies/privacy)
* [Panopto](https://www.panopto.com/privacy/)
* [Shoreline Privacy Policies](https://www.shoreline.edu/currentstudents/privacyandnondiscrimination.aspx)
* [Student Policies](https://www.shoreline.edu/currentstudents/student-policies.aspx)
* [Microsoft 365](http://www.microsoft.com/online/legal/v2/?docid=22&langid=en-us)
* [Google Privacy Policy](https://www.google.com/intl/en/policies/privacy/)

# **Accessibility Policies**

Below are links to accessibility policies for sites used within this course:

* [Canvas](https://www.canvaslms.com/accessibility)
* [Panopto Accessibility Features](https://support.panopto.com/articles/Documentation/accessibility-features)
* [Shoreline Community College](http://intranet.shoreline.edu/policies/documents/5000/5114.pdf) [(Audio Version)](http://intranet.shoreline.edu/policies/documents/5000/5114.pdf)
* [Microsoft Office 365](https://support.office.com/en-US/article/Accessibility-in-Office-365-ACA7ACCF-58A0-4467-BE5C-24A7E7933A9D?ui=en-US&rs=en-US&ad=US)
* [Google (covers YouTube)](https://www.google.com/accessibility/products-features.html)