CS 115 Fundamentals of Computing II • 4 credits • Spring 2018

CRN: 30618 • MW 8:30-10:10 • Dana 318

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Course Description

A second course, with laboratory, that builds upon the algorithmic problem-solving concepts covered in CS 114. The course emphasizes language-independent, object-oriented programming techniques. It focuses on designing classes for code reuse, cohesion, and coupling, polymorphism, inheritance, static and dynamic binding, and other related concepts. Other topics include exception handling, the software life cycle, recursion, sorting and searching algorithms, and an introduction to data structures.

Course Objectives

At the end of the semester, students should be able to:

- design algorithms and write programs that build and manipulate data stored as a list in a one-dimensional array
- declare and perform fundamental operations on a two-dimensional array
- understand the characteristics of an object-oriented programming language and be able to distinguish between object-oriented programming and structured programming
- apply the object-oriented design methodology to solve a problem and to take an object-oriented design and code it in Java
- understand and use interfaces, polymorphism and inheritance
- implement exception handling, write code that throws an exception, and write an exception handler
- implement file I/O
- understand the concept of data structures

Course Pre-requisites

CS 114 (minimum grade of C)

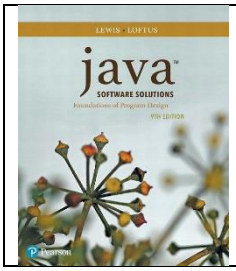
Expectations

Each student is expected to attend classes and take notes. Read the textbook(s) before attending class. Turn in homework, and other assignments on time. Take quizzes and exams as scheduled. The instructor is available for help during scheduled office hours (check "Instructor Information") and also by appointment. Please do not wait until an exam to get help. Seek help as soon as possible. You will need to allocate about **15 hours of your week** towards this course. This time will be used for the following:

- reading the chapters in the text book assigned
- completing activities assigned
- completing homework assignments
- studying for tests and exams

If you need help with the course, please do not wait until it's too late. Your first course of action is to ask to meet your TA and/or instructor. You may also see CS tutors in the CS Lab. If you need help resolving a programming error, please send only the lines of code necessary (not the entire program) and explain what is happening or not happening carefully.

Textbooks



Java Software Solutions, 9th Edition
John Lewis and William Loftus
©2018 | Pearson
Paperback or e-book are both acceptable for this class

Software

The software we will be using in class to write programs is installed on computers in the classroom and in the Computer Science Laboratory (Dana 230). Students may also install copies of this software for free on their personal computers. If you choose to do so, download and install the programs listed below in order.

1. Netbeans, Java SE, JavaFX - Bundled download for all three:
    1) Netbeans is the Integrated Development Environment for Java programs. It provides you an editor, debugger, and a way to hook to the compiler.
    2) Java SE enables you to develop and run Java programs.
    3) JavaFX is the GUI library for Java SE.

- You will need, at the minimum, the Java SE bundle (first column), or All (last column).

2. Scene Builder - This is a visual layout tool for JavaFX which allows you to drop-and-drag user interface (UI) components into your UI design.
3. Dia - A UML diagram drawing tool.
4. Open Broadcast Software (OBS) - For video recording of test runs and code walkthroughs.
5. Video players or browser plug-ins for mp4 files for your OS (Windows or Mac) and web browsers.

CS Computer Account
All CS students have been given a "CS Account". This computer account works in Dana 230 (CS lab) and Dana 318 (CS classroom). The software required for this course are available in these rooms.

Hardware Notes
- Data is erased from lab computers in D318 and D230 every time you log out. You must remember to manage the various files you use/create accordingly.
- Students may choose to use a USB flash drive (jump drive) to store their work. If so, you will need a 1GB or larger drive and you should bring it to every class. Alternatively, you may store your data on the CS department file server (accessible as the G: drive) or you may upload your files to the cloud.
- Remember that computer storage devices do fail. You are advised to make regular backups of your work using multiple devices. Loss of data due to disk failure is not an acceptable excuse for missing a homework deadline.

Grading Policy
All oral and written work submitted must be of the highest quality. You will be graded on your performance and quality of the work required and not on the amount of time spent nor amount of effort. Any piece of work turned in for a grade is subject to an oral examination and the grade for the work hinges on the result of the student's knowledge, not what is submitted.

Final grades are calculated as follows:

Quizzes	10%
Labs	20%
Assignments	25%
Tests	30%
Final Exam	15%

Final letter grades are assigned as follows:

	86.67 to 89.99 = B+	76.67 to 79.99 = C+	66.67 to 69.99 = D+	
≥ 94 = A	83.34 to 86.66 = B	73.33 to 76.66 = C	63.33 to 66.66 = D	≤ 59.99 = F
90.00 to 93.99 = A-	80.00 to 83.33 = B-	70.00 to 73.33 = C-	60.00 to 63.33 = D-	

Pass/No Pass Option Students: Students who are registered with a PASS/NO PASS option must receive a final grade of 65 or better to receive a P.

"My Grades"
Up-to-date grade information is available 24/7 under "My Grades". It also shows your "Weighted Total". This is your up-to-date, cumulative, weighted grade.

Class Participation
Even though class participation is not figured into your final grade, your attendance and participation is crucial to your success in this class. The following should give you a guideline on how to actively and positively participate.

Level of participation	Rubric
A	Actively supports, engages and listens to peers (ongoing) Arrives fully prepared at every class Plays an active role in discussions (ongoing) Comments advance the level and depth of the dialogue (consistently) Group dynamic and level of discussion are consistently better because of student's presence
B	Makes a sincere effort to interact with peers (ongoing) Arrives mostly, if not fully, prepared (ongoing) Participates constructively in discussions Makes relevant comments based on the assigned reading material (ongoing) Group dynamic and level of discussion are occasionally better (never worse) because of the student's presence
C	Limited interaction with peers Preparation, and therefore level of participation, are both inconsistent

	When prepared, participates constructively in discussions and makes relevant comments based on the assigned material Group dynamic and level of discussion are not affected by the student's presence
D	Virtually no interaction with peers Rarely prepared Rarely participates Comments are generally vague or drawn from outside of the assigned material Demonstrates a noticeable lack of interest (on occasion) Group dynamic and level of discussion are harmed by the student's presence
F	No interaction with peers Never prepared Never participates Demonstrates a noticeable lack of interest in the material (ongoing) Group dynamic and level of discussion are significantly harmed by the student's presence

Assignment Policy
Expect one homework assignment every chapter covered - about one a week.
Work independently All homework assignments are to be worked on independently by each student. Discussions as to what the problem is and very general, top-level solutions are allowed between students. Work may not be copied from another source and will constitute cheating if done so. Any work, or part of your work, that is borrowed from another source must be stated so in the assignment and must be pre-approved by the instructor or preceptor. Failure to do so will constitute plagiarism. All assignment submitted is subject to an oral examination. Upon the request of the instructor, the student will explain (in person) the work submitted. The grade of the assignment hinges on how well the student knows and understands what was submitted.
Submission Each assignment must be submitted by following instructions posted on Blackboard. Electronic submissions are due at the end of the day (11:59 pm) on the date due. All assignments must be submitted through Blackboard (View/Complete... link). Do not email your assignment to the instructor; no homework is accepted via email. Similarly, no assignment will be submitted through the Digital Dropbox unless it is pre-approved by the instructor.
Late Penalty Any assignment that is late will receive a deduction of 10% every 24 hours (a day). Work that is more than **3 days late will not be accepted**. Assignments of which answers have been given will also not be accepted. For example, if an assignment is due Friday evening and if you turn it in anytime on Sunday, the grade is deducted 20%; any work turned in after the following Monday will receive a grade of 0.

Tests and Examination Policy
All tests and exams are closed book exams and typically take the entire class period. Make up exams will not be given except in cases of extremely extenuating circumstances and are pre-arranged.

UH Academic Honesty Policy: Strictly Enforced

University of Hartford Academic Honesty Policy

The purpose of the academic honesty policy is to provide a clear statement to students and faculty of the University's expectations regarding academic honesty and to set forth procedures for the enforcement of that policy. The procedures in this academic honesty policy are administrative functions and are not subject to the same rules as in criminal or civil proceedings. Throughout the following policy, the term college refers to any one of the schools or colleges of the University. The term University-wide program refers to programs such as multimedia Web design and development or the Bachelor of University Studies, which do not reside in a college. The term department chair refers to a department chair or, in the case of colleges that do not have departments, the equivalent of a department chair.

- All students are expected to observe generally accepted principles of scholarly writing in all examinations, compositions, papers, essays, tests, quizzes, reports, and dissertations whether written in the class room or outside. Sources of information used by a student in the preparation of work submitted as a basis for credit, or for a grade, or to satisfy graduate or undergraduate thesis requirements shall be clearly indicated in some conventional manner, such as by the use of quotation marks, footnotes, and bibliography.
- Students are forbidden to submit as their own any project, paper, or creative work that is in whole or part the work of another.
- The use of a term-paper writing service is prohibited. Also prohibited is the use of term papers obtained from the Internet, in whole or in part.
- All examinations and quizzes are to be completed without reference to books or notes except when the instructor of a course shall have given explicit authorization for an "open-book examination" or some other specified sort of assistance. Except as authorized by the instructor, no student is to give or receive assistance in the completion of an examination or a quiz.
- Other examples of academic dishonesty include, but are not limited to, the falsification of academic documents, such as transcripts, registration materials, withdrawal forms, or grade reports, as well as the unauthorized reading, removing, or copying of any academic document or record maintained by any member of the faculty or administration.

The Academic Honesty Policy procedure will be enforced.
Your work for this course (assignments, labs, quizzes, tests, exams) must be completed by you - the student - without the help of external sources such as the Internet or a friend. **Searching answers online is NOT ACCEPTABLE and constitutes academic dishonesty. At the first violation of academic dishonesty, the student receives a 0 for the work. On second offense, the student receives an F for the course.**
A&S Academic Misconduct: In the event that it is determined that you violated the Academic Honesty Policy, found in The Source, the dean of your college will be notified and a note will be placed in your permanent file. If previous violations have been filed, any penalty that may be assigned for the offense may be more severe than for a first time offense. If this is the first recorded offense, subsequent violations of the honesty policy may then incur a steeper penalty.

Email and Blackboard

Course materials (announcements, homework assignments, etc.) will be made available through Blackboard at http://blackboard.hartford.edu. Blackboard is to be used as a supplement to class lectures. All important announcements will be made in class. Routine announcements will be made available on Blackboard. However, you are responsible for all announcements and expectations explained in both Blackboard and during class. You are not to rely solely on Blackboard.

Your Blackboard account allows you to personalize your information, including your preferred email account. In your "Blackboard Home Page" on the left frame, there is a "Personal Information" link which allows you to edit your information. It is your responsibility to make sure that the email account set here is the one you check regularly and that the Inbox for that email is not rejecting incoming mail.

Student Illness

The instructor recognizes that students may occasionally become incapacitated by a brief illness or injury and will be unable to attend class or complete a graded assignment or test on time. In the latter case, you are expected to notify your instructor (in advance if at all possible) that you cannot complete the work due to illness or injury. Following the University of Hartford's Policy of Student Illness as listed on The Source, the student must:

1. visit the University Health Center, a doctor, or hospital for treatment on the day that you are sick and get documentation of the visit,
2. email the instructor in advance (or if not possible, within 24 hours of missed class, test, or assignment) to tell her that you cannot attend (and/or complete work) and that you are seeking or have sought treatment, and
3. as soon as you are able to come to class, bring your documentation of your doctor's visit to your instructor and arrange to make up missed work.

Allowing you to make up missed tests and assignments is at the instructor's discretion. For extended illness (a week or more), email the academic services office of YOUR college or school. Documentation of treatment is required. Do not visit the University Health Center after the day you are sick. They will not issue documentation that you were sick on the previous day.

Participation & Attendance

Students are expected to attend ALL classes and are responsible for missed classes and lecture materials. Again, you are expected to attend every single class during the semester. Additional material will be provided and covered in class as the instructor deems appropriate. Any material and information you miss is your responsibility. No excuses will be accepted for poor grades. If you must be absent from a class, you must let me know either by phone or e-mail and you are responsible for any material covered or homework assigned. Informing me of your absence does NOT excuse you from any work due that day nor permit you to makeup an exam.

Computer and Other Electronic Equipment-use Policy

When classes meet in a room equipped with computers, students are expected to use the computers for the purposes of completing assigned work only. At no circumstances will a student be allowed to surf the Internet, check email during a class, or use the computers for any other purpose. In violation, a student will face serious consequences.
Use of any electronic equipment (or otherwise) that is annoying or disrupting is not allowed in class. Such devices include mobile phones, beepers, PDAs, laptops, among others.

Students with Special Needs

Student athletes and students registered with Learning Plus must inform the instructor of their special needs as soon as possible. This also applies to other students with any other concerns. The instructor will accommodate the student based on their special needs.

Assigned Reading and Topics

Subject to Change			
Week #	**Week Day**	**Date**	**Quiz Topics - Read before class**
1	Wed	Jan-24	Review Chapter 8. Arrays 8.1 Array Elements 8.2 Declaring and Using Arrays 8.3 Arrays of Objects
	Mon	Jan-29	
2	Wed	Jan-31	8.4 Command-Line Arguments 8.5 Variable Length Parameter Lists 8.6 Two-Dimensional Arrays
	Mon	Feb-5	
3	Wed	Feb-7	Chapter 9. Inheritance 9.1 Creating Subclasses 9.2 Overriding Methods
	Mon	Feb-12	9.3 Class Hierarchies 9.4 Visibility 9.5 Designing for Inheritance

4	Wed	Feb-14	
	Mon	Feb-19	
5	Wed	Feb-21	Test 1
	Mon	Feb-26	Chapter 10. Polymorphism 10.1 Late Binding 10.2 Polymorphism via Inheritance 10.3 Polymorphism vis Interfaces
6	Wed	Feb-28	10.4 Sorting
	Mon	Mar-5	10.5 Searching
7	Wed	Mar-7	10.6 Designing for Polymorphism 10.7 Properties
	Mon	Mar-12	
8	Wed	Mar-14	Test 2
	Mon	Mar-19	Spring Break
9	Wed	Mar-21	Spring Break
	Mon	Mar-26	Chapter 11. Exceptions 11.1 Exception Handling 11.2 Uncaught Exceptions 11.3 The Try-Catch Statement
10	Wed	Mar-28	11.4 Exception Propagation 11.5 The Exception Class Hierarchy 11.6 I/O Exceptions
	Mon	Apr-2	
11	Wed	Apr-4	
	Mon	Apr-9	Chapter 12. Recursion 12.1 Recursive Thinking 12.2 Recursive Programming
12	Wed	Apr-11	12.3 Using Recursion
	Mon	Apr-16	
13	Wed	Apr-18	
	Mon	Apr-23	Test 3
14	Wed	Apr-25	Chapter 13. Collections 13.1 Collections and Data Structures 13.2 Dynamic Representations
	Mon	Apr-30	13.3 Linear Collections 13.4 Non-Linear Data Structures 13.5 The Java Collections API
15	Wed	May-2	
	Mon	May-7	
	Wed	May-9	Final Exam 11AM-1PM