

CISC 3115 Modern Programming Techniques Spring 2020

Instructor: Ari Mermelstein

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Class meeting hours:

EWQ6: Wednesdays 6:30-10:00PM in room 129 F (WEB Building)

MY9: Mondays and Wednesdays 9:05-10:45AM in room 129 F (WEB Building)

Office hour and room:

Wednesdays 11:00AM - 12:00 PM in 532 NE (New Ingersoll)

Wednesdays 5:00PM - 6:00 PM in 532 NE (New Ingersoll)

Required Textbook

Starting Out with Java, from Control Structures Through Data Structures, Third Edition by Tony Gaddis
ISBN: 9780134038179

Prerequisite

CISC 1115 - Introduction to Programming Using Java.

A grade of C or higher in CISC 1115 is required to be able to take CISC 3110.

Information most needed from CISC 1115:

1. Conditional statements (including if-statements, switch statements, and the ternary operator)
2. Loops (including for-loops and while-loops)

3. Arrays (including how to declare arrays, how to iterate through arrays, and how to pass arrays to methods)
4. Methods (including void returning methods, methods that return a value)
5. Parameter passing schemes (difference between pass-by-reference and pass-by-value)
6. How to work with files (both input and output)
7. How to use Strings and the associated string library methods (e.g. indexOf(), length(), +, +=, ==, equals(), compareTo(), substring(), etc.)

Course Objectives

After successfully completing this course, students will be able to

1. Trace and write programs using object-oriented programming techniques.
2. Use effectively the programming environment offered by a Unix-like system.
3. Implement recursive solutions to problems and demonstrate how recursion is implemented by tracing changes in the runtime stack.
4. To understand multithreading.

5. To understand Inheritances and Polymorphism and how these can be used in graphics software.

Academic Integrity

The faculty and administration of Brooklyn College support an environment free from cheating and plagiarism. Each student is responsible for being aware of what constitutes cheating and plagiarism and for avoiding both. The complete text of the CUNY Academic Integrity Policy and the Brooklyn College procedure for policy implementation can be found at www.brooklyn.cuny.edu/bc/policies. If a faculty member suspects a violation of academic integrity and, upon investigation, confirms that violation, or if the student admits the violation, the faculty member *must* report the violation.

Non-Attendance Because Of Religious Observance

The state law regarding non-attendance because of religious beliefs is on p. 53 in the Bulletin. Please let me know now if you have to miss an exam (as far in advance as possible).

Center for Student Disability Services

In order to receive disability-related academic accommodations students must first be registered with the Center for Student Disability Services. Students who have a documented disability or suspect they may have a disability are invited to set up an appointment with the Director of the Center for Student Disability Services, Ms. Valerie Stewart-Lovell at (718) 951-5538. If you have already registered with the Center for Student Disability Services, please provide your professor with the course accommodation form and discuss your specific accommodation with him/her.

Important Dates For the Spring 2020 Semester

Monday, January 27 - First day of weekday class

Sunday, February 2 - Last day to add a class.

Wednesday, February 12 -- College Closed

Monday, February 17 -- College Closed

Wednesday, April 1 - Last day to drop with a W grade.

Tuesday, April 7 -- Wednesday Schedule -- class meets

Wednesday, April 8 - Thursday, April 16 -- Spring recess.

Friday, May 15 -- reading day.

Grades

First Test - 25%

Second Test - 25 %

Final Exam- 30%

Homework - 15%

Participation- 5%

Note: Participation really does mean participation. This is not a free 5 points. It must be earned.

Exam Dates - Tentative

The first exam will be held on Wednesday March 11 .

The second exam will be held on Wednesday April 29.

Each exam will last only 1 hour and 40 minutes, which is the time for each MY9 class meeting.

The final exam (not tentative) for MY9 will be on Monday, May 18 at **8:00AM (NOT 9:05!)**

The final exam (not tentative) for EWQ6 will be on Wednesday, May 20 at **6:00 PM (NOT 6:30!)**

Note: The final exam will be cumulative, and I am not allowed to give any more time than 2 hours.

Final grade calculation

Your letter grade will be determined as follows:

A+ : 98-100

A : 93-97

A- : 90-92

B+: 87-89

B: 83-86

B-: 80-82

C+: 77-79

C : 73-76

C- : 70 - 72

D+: 67-69

D: 63 - 66

D- : 60 - 62

F : < 60

I do not curve final grades by many points. I may round grades up or give a few points based on merit, but I will not curve grades by tens of points.

Homework

Homework will be assigned every 1-2 weeks, and you will typically have 2 weeks to complete assignments. Assignments will typically include multiple files. **You must use the school's UNIX accounts to do your homework. No other operating system will be allowed.** (On the first week of class, I will show you how to work this operating system, and also how to connect to the school accounts from home. You don't necessarily have to do your homework at school). **Only code that is commented and documented, explaining what the code does will be marked fully correct. If I can't ascertain the correctness of your solution, I can not possibly grade it properly.**

A hard copy of your homework must be handed in in class on the day that it is due. The reason I am requesting this is so that I can write comments on your programs, indicating what is incorrect and/or suggestions for improvement. In the past, when I have accepted submissions by email, this was untenable, to say the least.

The homework assignments will be graded out of 10.

Late homework will not be accepted under any circumstances, unless you have spoken to me ahead of time, explaining why you need an extension. I am more than happy to grant extensions if you are honest with me.

In addition, there will be Codelab assignments periodically assigned. Your grade on all of the Codelab assignments combined will be averaged in as one homework. Information on how to register for Codelab is on the course website. If you took CISC 1115 in Brooklyn College, you need to just add a course, and registering a new account will not be necessary.

Topics List

1. Review of CISC 1115

2. How to use UNIX and UNIX-like operating systems

- How to create and delete directories (folders)
- How to navigate in the file system
- How to use *nano* or *vim* as an editor to write programs
- How to link files and compile Java programs in UNIX
- How to display files.
- How to list the files in a directory
- How to redirect input and output.
- How to use *ssh* and *sftp* to login to UNIX accounts remotely and to transfer files between computers.
- Command line arguments

3. Recursion

- The difference between iteration and recursion.
- The difference between iterative processes and recursive processes
- How to think recursively
- How to solve problems recursively
- How the computer's stack is used during recursive calls.

4. Classes

- What classes are
- How to write a simple class
- What access specifiers are

- What encapsulation is
- static vs. non-static member variables
- static vs. non-static methods
- methods inside of classes
- accessors and mutators
- constructors
- The Object class
- method overriding and equals() and toString()
- How to declare references to objects.
- How to initialize objects of classes.
- How to declare and initialize arrays of objects.

5. Interfaces

- How to create an interface
- How to write a class that implements an interface.

6. Inheritances and Polymorphism

- What inheritance is
- How to write classes that inherit from other classes
- How to write a superclass as the base for other classes.
- How to leverage this behavior in large scale systems.
- What polymorphism is
- How to use polymorphism in code.

7. Graphics

- How to use inheritance, polymorphism, and classes to create our own graphical systems.
- How to create buttons, sliders, etc.
- How to use graphical layouts
- How to draw shapes, and other pretty images using code.

8. Threads

- How to write multithreaded programs
- How to deal with concurrency issues.