CS210, Fundamentals of Computer Science I, Syllabus

Fall 2012 Online Class

Instructor: Ravi Gandham
E-mail: rgandham@BellevueCollege.edu
This class - online section, meets on Canvas online-class for problem solving exercises, discussions, quizzes/exams, email and programming assignments activities.

Introduces computer science and programming for CS majors. Students learn design and implementation of algorithms and programming in a structured, modular language, with emphasis on problem solving, program design, and style. Prerequisite: MATH& 141.

Course Outcomes

This course is taught using JAVA. The course outcomes are:

- Solve problems applying the techniques of decomposition (breaking a problem into smaller more manageable pieces), critical reasoning, induction and deduction.
- Define what an Algorithm is.
- Describe the functionality of memory, CPU and programs, including compilation, linking/loading and executing, and history of computing.
- Identify and explain the Software Development Life Cycle.
- Describe and apply the main steps of specification, analysis, design, implementation, testing and maintenance to solve problems.
- Identify the main goals of software programming, including correctness, maintainability, style, structure and documentation.
- Define the concepts of data types, including the fundamental data types as well as compound data types.
- Use the fundamental and compound data types to model data in problem solving and programs.
- Explain the concept of type conversions, and apply the knowledge of declaration and use of variables, constants, executable statements as well as input, output of values (including boolean values), to write a simple program.
- Explain the process of evaluation of arithmetic expressions in conjunction with the precedence rules for the operators.
- Explain the sequence, selection, iteration and recursion control structures and use these constructs in simple programs.
- Describe the process of procedural abstraction in terms of separation of design and purpose from implementation.
- Explain the black box thinking and top down design in designing the solutions for solving the problems.
- Explain how to define and invoke functions, and apply in simple programs.
- Describe the process of parameter passing, distinguishing between actual and formal parameters and the process of returning values.

- Explain the parameter passing mechanisms of call by value, call by address and call by reference and describe the scope of identifiers.
- Discuss the availability of functions using function libraries and reusability of code, and use library functions and existing code in programs.
- Describe the concept of logical and physical files and operations that can be performed on them, like read, write, open and close, and use these concepts in programs.
- Discuss the importance and role of documentation using comments and descriptive identifiers, and incorporate documentation techniques in programs.
- Explain the various techniques used in testing and debugging programs, like desk checking and test suites.
- Apply testing concepts and techniques to verify and fix errors in their own programs.
- Explain the importance of being able to read, extend and modify the existing code, and apply these principles in program development.
- Use the programming environment tools to create programs using an editor, compile or interpret them, and use the debugger to find and fix errors.

Assessment of Outcomes

There are three quizzes (150 points) and four homework assignments (200 points). The Final at the end of the course (50 points). In addition, there are graded discussions that are posted every week for a total of 50 points.

Discussion problems, Assignments and Quizzes are to be worked-on and completed **individually.** Multiple choice and short answer questions can also appear on these quizzes. Be aware that other students in our class might have a slightly different arrangement of problems, so cheating can have disastrous results in many dimensions.

Assignments are from the text and require composition and execution of Java programs. Your code must be submitted electronically, via attachment, as detailed on each assignment. Readability of code is crucial, and adherence to specifications is paramount, where superfluous inclusions are usually considered detrimental.

Late work indicates issues with planning or problems with comprehension, unless arrangements are made in advance of the due date/time. In general, late work will be discounted 10 points, plus an additional 10 points per additional calendar day late. No work is accepted after end-of-quarter.

Class Participation: Discussions with your colleagues are often very instructive and encouraged in this class. You simply will be lost if you don't ask/answer questions and/or don't interact with other students and instructor. You can use discussion tool and topics to do this.

Grading

Grading standard is as follows:

100-93(A)	**92-90(A-)**	
89-87(B+)	**86-83 (B)**	**82-80(B-)**
79-77(C+)	**76-73 (C)**	**72-70(C-)**
69-67(D+)	**66-60 (D)**	**Below 60(F)**

The link to the College Grading Policy is located in the Course Catalog and also on the web at: **bellevuecollege.edu/policies/3/3000_grading.asp.**

Books and Materials Required

Building Java Programs: Skills, A Back to Basics Approach, 2/E, by Stuart Reges and Marty Stepp, University of Washington, ISBN-10: 0-13-609181-4

You can get this book through the BCC bookstore and also via Amazon.com and BarnesAndNoble.com by searching for the title. Just make sure you are getting the 2nd edition!

I use this text to prepare my lectures, examples, quizzes, and assignments, so I don't know how one could pass this class without. My book and downloads come from the Pearson Education site:
www.pearsonhighered.com/educator/product/Building-Java-Programs-A-Back-to-Basics-Approach/9780136091813.page

There is also a companion site that might be useful:
www.buildingjavaprograms.com

And the authors use this book for the CSE142 classes at University of Washington:
www.cs.washington.edu/education/courses/142

And finally, I see there is an eText available now:
www.coursesmart.com/9780132131353

Next you will need a way to compose, compile, and run Java programs. There are countless ways to do this, so I'm going to limit myself to two approaches this quarter, BlueJ and Eclipse:
www.bluej.org
www.eclipse.org

Since Java is so pervasive in the software industry today, you probably already have some version of Java installed on every computer who use. Most PC's simply have the Java Runtime Environment (JRE) installed, which could probably get you through this class along with Eclipse as the Integrated Development Environment (IDE). But some development will require installation of the Java Development Kit (JDK) which can be obtained for free from Oracle, who purchased Sun Microsystems in 2010: http://www.oracle.com/technetwork/java/javase/downloads/jdk6-jsp-136632.html

Confused? You're not the only one, and I reiterate my request for classroom participation!

Instructor's Expectation

My role as the instructor is to:

- Help students succeed in this course;
- Share my knowledge and experiences to help expand on concepts discussed in the course;
- Provide timely feedback to students;
- Moderate discussions and challenge students to further their knowledge; and
- Evaluate and grade students.

As a student in this course, I expect you to:

- Work hard to achieve the goals of the course;
- Actively contribute to any discussions;
- Share your thoughts, knowledge and experiences;
- Cooperate and collaborate with other students; and
- Provide feedback to me throughout the course.

To be successful, you must participate regularly and spend significant time studying. I can tell you from experience that it takes discipline, patience and thoughtful planning to be successful.

Affirmation of Inclusion

Bellevue College is committed to maintaining an environment in which every member of the campus community feels welcome to participate in the life of the college, free from harassment and discrimination.
We value our different backgrounds at Bellevue College, and students, faculty, staff members, and administrators are to treat one another with dignity and respect. http://bellevuecollege.edu/about/goals/inclusion.asp

Academic Honesty

"Cheating, stealing and plagiarizing (using the ideas or words of another as one's own without crediting the source) and inappropriate/disruptive classroom behavior are violations of the Student Code of Conduct at Bellevue College. Examples of unacceptable behavior include, but are not limited to: inappropriate behavior toward the instructor or classmates. The instructor can refer any violation of the Student Code of Conduct to the Vice President of Student Services for possible probation or suspension from Bellevue College. Specific student rights, responsibilities and appeal procedures are listed in the Student Code of Conduct, available in the office of the Vice President of Student Services." The Student Code, Policy 2050, in its entirety is located at: http://bellevuecollege.edu/policies/2/2050_Student_Code.asp

Bellevue College E-mail and access to MyBC

All students registered for classes at Bellevue College are entitled to a network and e-mail account. Your student network account can be used to access your student e-mail, log in to computers in labs and classrooms, connect to the BC wireless network and log in to *My*BC. To create your account, go to: https://bellevuecollege.edu/sam .

BC offers a wide variety of computer and learning labs to enhance learning and student success. Find current campus locations for all student labs by visiting the Computing Services website.

Disability Resource Center (DRC)

The Disability Resource Center serves students with a wide array of learning challenges and disabilities. If you are a student who has a disability or learning challenge for which you have documentation or have seen someone for treatment and if you feel you may need accommodations in order to be successful in college, please contact us as soon as possible.

If you are a person who requires assistance in case of an emergency situation, such as a fire, earthquake, etc, please meet with your individual instructors to develop a safety plan within the first week of the quarter.

The DRC office is located in B 132 or you can call our reception desk at 425.564.2498. Deaf students can reach us by video phone at 425-440-2025 or by TTY at 425-564-4110. Please visit our website for application information into our program and other helpful links at www.bellevuecollege.edu/drc

Public Safety

The Bellevue College (BC) Public Safety Department's well trained and courteous non-commissioned staff provides personal safety, security, crime prevention, preliminary investigations, and other services to the campus community, 24 hours per day, 7 days per week. Their phone number is 425.564.2400.

The Public Safety website is your one-stop resource for campus emergency preparedness information, campus closure announcements and critical information in the event of an emergency. Public Safety is located in K100 and on the web at: http://bellevuecollege.edu/publicsafety/

Academic Calendar

The Bellevue College Academic Calendar is separated into two calendars. They provide information about holidays, closures and important enrollment dates such as the finals schedule.

- Enrollment Calendar - **http://bellevuecollege.edu/enrollment/calendar/deadlines/**. On this calendar you will find admissions and registration dates and important dates for withdrawing and receiving tuition refunds.
- College Calendar - http://bellevuecollege.edu/enrollment/calendar/holidays/1213.asp. This calendar gives you the year at a glance and includes college holidays, scheduled closures, quarter end and start dates, and final exam dates.

Online Class: General Information

What Is Online Instruction?

Online instruction is an alternative, flexible form of instruction that enables you to work through course activities at your own pace instead of attending class five hours per week listening to lectures. The advantages of this type of instruction includes: ability to work on a concept or feature as long as you need to acquire understanding and competency; "fast-forward" through concepts you already understand; and focus without distractions. Because there is no "live" instructor in this type of instruction, it is up to you, the student, to provide your own motivation to complete assignments and take exams by specified deadlines.

Where do I work?

There is a significant amount of computer work that must be completed during this course. The lab fee you paid gives you access to computers in NWCET Building, N250, during posted lab times, where you can learn the software and do the homework assignments. However, the advantage of an online course is that you will probably want to use a non-BCC computer at home, work, etc. to complete your learning, assignments and quizzes.

Browsers?

The browser is the most important piece of software for an online course. Web-based materials in online courses include tables, frames, forms and animated graphics. You will need version 5.0 or above of either Microsoft Internet Explorer or Netscape Navigator. Older browsers will make a scrambled mess of some of the course

materials.

The Distance Education site (http://bellevuecollege.edu/distance/canvas_classroom.asp) has more detailed information concerning browser requirements & optimization.

What Happens if I Get Stuck?
If you find yourself totally stuck while working on an exercise, and believe you have tried all suggested steps, including using Microsoft Help, Canvas, the program we use for our online courses, contains a Discussions icon which you can click on to communicate with your fellow students. This is a good place to start by posting your question. If you have a question, probably someone else has had the question, figured out the answer and is willing to help you. Also, you may send me an email message through Canvas with your detailed question and I will respond within 24 hours.

Course Calendar

Please note: This syllabus was constructed as a tentative plan for how this course will proceed. Circumstances or conditions may arise requiring alteration of topics, schedules, activities, materials etc. The instructor reserves the option of making any changes as deemed necessary.

Many examples will be used from the text during class time, with appropriate modifications done during class. You'll need to be there to see what modifications are considered appropriate.

Starting Fall 2010, we're using the 2nd Edition of Building Java Programs:

Week	Topics	Reading	Assign Due	Quiz
9/18/12	Java Programming	Chapter 1		
9/24	Objects, Methods, and Functions		1	
10/1	Primitive Data and Definite Loops	Chapter 2		1
10/8	Parameters and Objects	Chapter 3	2	
10/15	Conditionals	Chapter 4		
10/22	Boolean Logic	Chapter 5		2
10/29	Indefinite Loops		3	
11/5	File Processing	Chapter 6		3
11/12	Arrays	Chapter 7		
11/19	Classes and the Java API	Chapter 8		
11/26	Classes and the Java API	Chapter 8	4	
12/3	Finals ***Final Exam on or before: Wednesday, 12/7***	All		Final Exam