BCEE 232   Programming for Building and Civil Engineers I (2 credits)

1. General Information

- BCEE 232: Programming for Building and Civil Engineers I (2 credits)
- Lecture time: 11:30-13:10
- Room: H-535
- Lab sessions will begin in the second week of class.
- Instructor: Benjamin Fung, *Ph.D., P.Eng*., Concordia Institute for Information Systems Engineering, ENCS, Concordia University
- Telephone: 514-8482424 ext. 5919
- E-mail: fung@ciise.concordia.ca
- Office: EV7.628
- Office hour: Monday 10:00-11:00
- Course website: http://www.ciise.concordia.ca/~fung/BCEE232/. The webpage will contain announcements related to the class, pointers to documents, class notes, assignment description, etc. The username and password required to access this page will be provided in class. Check the website and your e-mails for important notices.

2. Course Description

The main objective of this course is to empower students with the capability to program computers for engineering computations. After completing this course, students will be well prepared for tackling interesting basic programming problems. Students will be prepared to use computers for non-trivial engineering computation that is required in courses such as mathematics, numerical methods, engineering analysis and design. The course will cover elements of procedural programming (e.g., variables and scope, primitive and derived data types, operators and expressions, control structures, and functions), elements of object-oriented programming (e.g., classes, objects, member functions, data members, function overloading and function templates), basic data structures and design patterns (e.g., arrays, vectors, recursion, and iteration).

The weekly lecture will cover course contents while the tutorial will provide examples. Students will be expected to spend significant amount of time each week to review course material, to read assigned sections of the textbook, and to do programming assignments.

Prerequisite: BCEE 231. Students without the prerequisite must have permission of the instructor.

Important: There are two lecture sessions, namely Lecture L and Lecture V, offered by different instructors. Students are encouraged to attend their own registered sessions. Laptops can be used to read lecture notes during the lectures, but not for other purposes. Other communications devices, such as cellular phones and text/video messaging devices, have to be turned off during the lectures.

3. Learning Outcomes

By the end of this course, students are expected to:

- Be capable to design, manage, and implement small-scale procedural programs in C++.

- Have a working knowledge of C++ and important tools including editors, debuggers, syntax checkers, program libraries, etc.

- Understand the basic concepts of object-oriented programming.

4. Tentative Schedule (Subject to change)

- Lecture 1: Course Information + Introduction to C++
- Lecture 2: Elementary Programming
- Lecture 3: Elementary Programming
- Lecture 4: Selections + Loops
- Lecture 5: Loops
- Lecture 6: Function Basics
- Lecture 7: Function Basics
- Lecture 8: Midterm
- Lecture 9: Advanced Function Features
- Lecture 10: Single-Dimensional Arrays
- Lecture 11: Multi-Dimensional Arrays + Objects and Classes
- Lecture 12: Objects and Classes
- Lecture 13: Review Session

5. Course Materials

Textbook: Introduction to Programming with C++ (2nd Edition), Y. Daniel Liang, Pearson/Prentice Hall, 2009. ISBN-13: 9780136097204

(We will cover the first 9 chapters, depending on our progress.)

(The book comes with a DVD containing Microsoft Visual C++ 2008 Express Edition, which is useful if you want to practice your programming and do the assignments at home. The computer lab will also have the software installed.)

6. Assignments and Grading

The course has a reasonable amount of load, with several new concepts and a fair bit of programming workload. Therefore, you should be prepared to spend adequate time and effort on this course. The grading of the course is as follows:

Assignments: 20%

There will be 3 programming assignments. The assignments are very important because you will learn most of your practical programming experience through the assignments. Please note that all assignments will be placed on the website no hardcopies of the assignments will be distributed in class. You must attach **Expectations of Originality form** http://www.ciise.concordia.ca/currentstudents/ forms/expectation.pdf to each submitted assignment; otherwise, the assignment will not be marked.

Midterm Exam: 30%

There will be one midterm exam. The date for the exam will be announced at the beginning of the term. The midterm will cover all material presented in the lectures, the textbook, and in the assignments, up to and including the lecture preceding the exam. There is no substitution to a missing midterm, so you must make sure that you write that exam at its scheduled time.

Final Exam: 50%

The final exam will be scheduled by the University Exam's office. The exam will cover material from the entire semester, including lectures, textbook, and assignments. Passing the final exam is necessary for passing the course.

Important: There is no substitution to a missing exam, so you must make sure that you write that exams at their scheduled time. You may ask for a make-up exam or later submission of assignments ONLY under a university-approved condition, such as sickness with a doctor's note. Other events such as a business travel cannot be an excuse. You need to inform the instructor as early as possible, unless it is an emergency. Note that, your request is not accepted, until you receive an explicit confirmation from the instructor. Do keep the confirmation as a proof.

Important: There is no substitution to a missing midterm, so make sure that you write the midterm at the scheduled time. There are no pre-set cutoff points for the final grades; the cutoff points will be decided based on an assessment of difficulty level, class performance, and fairness. That is, there is no definite rule for translation of number grades to letter grades.

In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.

Plagiarism, absenteeism, lack of preparation, and lack of effort will result in a failing grade.

7. Academic Code of Conduct

<u>Academic Integrity</u>

Any form of cheating, plagiarism, personation, falsification of a document as well as any other form of dishonest behaviour related to the obtention of academic gain or the avoidance of evaluative exercises committed by a student is an academic offence under the Academic Code of Conduct and **may lead to severe penalties up to and including suspension and expulsion.**
As examples only, you are not permitted to:
- Copy from anywhere without indicating where it came from
- Let another student copy your work and then submit it as his/her own
- Hand in the same assignment in more than one class
- Have unauthorized material or devices in an exam. Note that you do not have to be caught using them – just having them is an offence
- Copy from someone's else exam
- Communicate with another student during an exam
- Add or remove pages from an examination booklet or take the booklet out of an exam room
- Acquire exam or assignment answers or questions
- Write an exam for someone else or have someone write an exam for you
- Submit false documents such as medical notes or student records
- Falsify data or research results

You are subject to the Academic Code of Conduct. Take the time to learn more at
http://provost.concordia.ca/academicintegrity/

8. Student's Responsibilities

- Students are expected to attend every class. Some material may only be covered in class and not made available on the course website. Students are expected to read the assigned materials and to actively participate in class discussions.
- Students are expected to be respectful of other people's opinions and to express their own views in a calm and reasonable way. Disruptive behaviour will not be tolerated.
- Students are expected to be familiar with the Code of Rights and Responsibilities:
  http://rights.concordia.ca
- If you cannot attend class for any reason, unforeseen or not, you are to come and talk or write to me as soon as possible.

9. Student Services

- **Concordia Counselling and Development** offers career services, psychological services, student learning services, etc.
   http://cdev.concordia.ca

- **The Concordia Library Citation and Cycle Guides:**
  http://library.concordia.ca/help/howto/citations.html
- **Advocacy and Support Services:**
  http://supportservices.concordia.ca
- **Student Transition Centre:**
  http://stc.concordia.ca
- **New Student Program:**
  http://newstudent.concordia.ca
- **Office for Students with Disabilities:**
  http://supportservices.concordia.ca/disabilities/
- **The Academic Integrity Website:**
  http://provost.concordia.ca/academicintegrity/