ECE 244 **Programming Fundamentals** **Fall 2014**

General Information

Welcome to ECE 244! The goal of this course is to provide you with a solid foundation in programming, using a modern object-oriented programming language. The lectures will cover topics such as classes and objects, information hiding, inheritance, templates, exception handling, fundamental data structures (lists, trees, graphs, etc.), big-O complexity analysis, and testing and debugging. The laboratory assignments emphasize the use of object-oriented programming constructs in the design and implementation of reasonably sized programs.

Instructors

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Course Web Site

Information on ECE 244, including important announcements, a copy of this handout, copies of assignment handouts, and course marks may be found on the web site for the course. Please visit the web site on a regular basis for up-to-date information. The web site also provides a bulletin board where you can post questions regarding the course. Instructors and TAs will monitor the discussion board on a regular basis.

To access the course website, go to: http://portal.utoronto.ca and log in using your UTORid and password. If you need information on how to activate your UTORid and set your password for the first time, please go to www.utorid.utoronto.ca.

Once you have logged in to the portal using your UTORid and password, look for the **My Courses** box, where you'll find the link your course websites. If you don't see the course listed here but you are properly registered for the course in ROSI, wait 48 hours. If the course does not appear, go to the library for help.

E-mail

All UofT students are required to have a valid UTORmail email address. You are responsible for ensuring that your UofT email address is properly entered in the ROSI system.

Forwarding your utoronto.ca email to a Hotmail, Gmail, Yahoo or other type of email account is not advisable. In some cases, messages from utoronto.ca addresses sent to Hotmail, Gmail or

Yahoo accounts are filtered as junk mail, which means that emails from your course instructor may end up in your spam or junk mail folder.

Textbook and Other Reference

The following book is required, and it will serve as the main reference for the course.

Walter Savitch, *Problem Solving with C++*, 8th Edition, Addison Wesley.

The book is available at the University of Toronto bookstore and may be available at the University of Toronto Engineering Stores as well. Also, an electronic version of the book is available, at a discounted price, from: www.coursesmart.com. Search for the book using the ISBN number: 9780132162739.

Please note that is **not necessary** to buy the latest edition; any edition past the 5th edition (i.e., 6th and the 7th) is adequate for the purposes of the course.

Reference material and excellent tutorials on the C++ programming language can also be readily found on the Web. We recommend in particular:

- C plus plus: http://www.cplusplus.com

- Sharam Hekmat (pragsoft.com) C++ Programming: http://www.pragsoft.com/books/CppEssentials.pdf

- Herbert Schildt, *C++: The Complete Reference, Fourth Edition*, McGraw-Hill/Osborne,

  This is an e-book available via the "books 24.7" program on the UofT Library Website. However, it is accessible only if your browser is running on a host with a UofT IP address:

    Go to http://main.library.utoronto.ca/
    Search "e-resources" for "books 24x7"
    Click on "Books 24x7" and enter your UofT library card info
    Search for "C++: The Complete Reference, Fourth Edition"

Timetable

The following is the timetable for the course. You are to attend three lectures, one tutorial, and one lab session per week. Please **attend only the lectures, tutorial, and labs session for your officially designated section**, as indicated on your timetable.

	Weekday	Hours	Location
Lecture Section 1 (Stumm)	Monday	4-5pm	BA1180
	Tuesday	5-6pm	BA1180
	Thursday	4-5pm	BA1180
Lecture Section 2 (Abdelrahman)	Monday	2-3pm	WB116
	Wednesday	2-3pm	WB116
	Thursday	2-3pm	WB116
Lecture Section 3 (Abdelrahman)	Monday	9-10am	BA1130
	Wednesday	9-10am	BA1170
	Friday	11-12noon	MB128
Tutorial 1	Tuesday	3-4pm	GB304
Tutorial 2	Tuesday	3-4pm	GB304
Tutorial 3	Monday	1-2pm	GB304
Tutorial 4	Monday	1-2pm	GB304
Tutorial 5	Tuesday	10-11am	GB220
Tutorial 6	Tuesday	10-11am	GB220
Lab 1	Monday	9-11am	SF1012/SF1013
Lab 2	Monday	9-11am	SF1012/SF1013
Lab 3	Tuesday	1-3pm	SF1012/SF1013
Lab 4	Tuesday	1-3pm	SF1012/SF1013
Lab 5	Wednesday	3-5pm	SF1012/SF1013
Lab 6	Wednesday	3-5pm	SF1012/SF1013

Laboratory Assignments

The lab assignments consist of number of programming exercises using the C++ programming language. A handout describing each assignment will be made available on the web site for the course. The lab assignments do take a substantial amount of your time. Hence, **it is important to start as early as possible on your assignments and to avoid procrastination**.

All the labs will be in room SF1013. While lab access and use are possible any time, you are strongly encouraged to regularly attend your scheduled lab period; a Teaching Assistant (TA) will be available to answer any questions and offer help during these periods.

Please consult with the handout titled "Laboratory Information" for more details on the lab assignments, their schedule, and other related information.

Tutorials

The tutorials are intended to review basic programming concepts and revisit material already covered in the lectures in a more interactive setting, where questions can be asked frequently and freely. Attending the tutorials is encouraged, but is not mandatory since no new material will be introduced. Some tutorials will elaborate on laboratory assignments. Also, some

tutorials will demonstrate important programming tools and techniques, such as the use of a debugger. These tutorials will be announced on blackboard ahead of time, and attending them is strongly encouraged.

Topic Outline

The following is a list of the topics, and the corresponding reference. Chapters are from the 8th edition of the "Problem Solving with C++" textbook; earlier editions may have slightly different chapter numbers, but essentially the same content. Please keep in mind that this list of topics is <u>tentative</u> and is intended to serve as only a general guide. Lecture by lecture reference to the textbook will be given in class.

Topic	Reference
Review of C++; compilation	Textbook – Chapters 1- 9, 12
Pointers	Textbook – Chapter 9
Classes and objects	Textbook – Chapter 10, 11
Recursion	Textbook – Chapter 14
Inheritance	Textbook – Chapter 15
Templates	Textbook – Chapter 17.1
Exception handling	Textbook – Chapter 16
Linked Lists, Trees and Graphs	Textbook – Chapter 13; Lecture notes
Complexity of Algorithms	Lecture notes; Textbook – Chapter 18.3

Marking and Evaluation

There will be several programming assignments during the term. There will also be one midterm test on Tuesday October 28th, 2014, 6-8pm. The location and seating assignment for the midterm will be announced in class and posted on the course's web site. A final exam will be given during the final exams' period. The composition of the final mark is as follows:

Assignments	25%
Test	30%
Final Exam	45%