DEPARTMENT OF SCIENCE

COURSE OUTLINE – CS2010 A2 (FALL 2018)

PRACTICAL PROGRAMMING METHODOLOGY 3 (3-0-3) UT

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OFFICE HOURS:TBA

DELIVERY MODE(S): classroom

PREREQUISITE(S) : CS1150

REQUIRED TEXT/RESOURCE MATERIALS:

The text for this course is *Programming Principles and practices using C++ by Bjarne Stroustrup..* All course/resource materials will be available on Moodle.

CALENDAR DESCRIPTION:

This course introduces you to the principles, methods, tools, and practices of a professional programmer working in a rich programming environment. The lectures focus on the fundamental principles of programming methodology based on abstract data types and their implementations. The laboratories offer an intensive apprenticeship opportunity for the aspiring software developer. You will use the programming languages C and C++ and software development tools supported by the Microsoft Windows and UNIX programming environment.

LEARNING OUTCOMES:

- Student should be able to design C/C++ programs using procedural-based design techniques.

- Students should be able to design C++ programs using object-based / object-oriented design techniques

- Students should be able to use development tools such as git, github, make, vi, and gcc/g++.
- Students should also be familiar other tools such as Visual Studio /Netbeans

- Students should be familiar with and be able to use the Standard Template Library.
- Students should have the skills to combine knowledge of program design and data structures with useful algorithms and mathematics and application-specific knowledge to design and implement non-trivial software.

COURSE OBJECTIVES:

- To be able to handle any intermediate programming problem using C and C++ programming languages under Linux and Windows

- To have the skills to combine knowledge of program design and data structures with useful algorithms and mathematics and application-specific knowledge to design and implement non-trivial software.

COURSE SCHEDULE/TENTATIVE TIMELINE:
C / C++ basics
- C++/C variables, types
- Compound type – references, pointers
- const, auto, typedef
- C-style strings, C++ string,vector class

- C arrrays
- introduction to iterators

Expressions

- arithmetic, logical, relational operators
- Assignment, Member access(.),conditional operators, sizeof, comma operators
- type conversions
- operator precedence

Statements

- simple statements
- statements as expressions
- Conditional, interative, jump (break, continue, goto) statements
- exception handling

functions

- separate compilation of functions/programs
- functions declarations
- Argument passing – value, reference , pointers
- return types
- function as first-class objects – lambda expressions
- default arguments, inline, overloading of functions
- local/global variables

Classes / Objected-Oriented programming

- defining base and derived class
- virtual functions / abstract classes
- public/private/ protected access
- public/private/ protected inheritance
- friend functions

Templates and Generic programming

- Defining function and class templates

Standard Template Library
- generic algorithms
- Sequential containers – vector, string
- Associative containers – map, multimap, set, multiset
- adaptors – stack, queue, deque, priority_queue

EVALUATIONS:

Take home assignments and

Lab assignments (min of 10)   : 45%

Midterm   : 25%

Final   : 30%

Assignments that are less than 2 days late will be penalized 20%; assignments submitted after that period will receive a grade of 0. Please note that you must submit ALL assignments (even late ones!) if you want the assignment portion to count towards your final grade.

STUDENT RESPONSIBILITIES:

1. Student are responsible for adhering to all requirements laid out in the assignments.
2. Students must attend all lectures/labs. A student missing more than 20% of classes/labs may be barred from writing the final exam.
3. Students must submit ALL assignments (even late ones) if they want the assignment portion to count towards their final grade.

GRADING CRITERIA:

Alpha Grade	4-point Equivalent	Percentage Guidelines		Alpha Grade	4-point Equivalent	Percentage Guidelines
A+	4.0	90-100		C+	2.3	67-69
A	4.0	85-89		C	2.0	63-66
A-	3.7	80-84		C-	1.7	60-62
B+	3.3	77-79		D+	1.3	55-59
B	3.0	73-76		D	1.0	50-54
B-	2.7	70-72		F	0.0	00-49

STATEMENT ON PLAGIARISM AND CHEATING:

Cheating and plagiarism will not be tolerated and there will be penalties. For a more precise definition of plagiarism and its consequences, refer to the Student Conduct section of the College Calendar at http://www.gprc.ab.ca/programs/calendar/ or the College Policy on Student Misconduct: Plagiarism and Cheating at https://www.gprc.ab.ca/about/administration/policies **Note: all Academic and Administrative policies are available on the same page.

TRANSFERABILITY

University of Alberta
University of Calgary
University of Lethbridge
Athabasca University
Augustana Faculty, University of Alberta

Concordia University College
Grant MacEwan University
King's University College

*Warning: Although we strive to make the transferability information in this document up-to-date and accurate, the student has the final responsibility for ensuring the transferability of this course to Alberta Colleges and Universities. Please consult the Alberta Transfer Guide for more information. You may check to ensure the transferability of this course at Alberta Transfer Guide main page http://www.transferalberta.ca or, if you do not want to navigate through few links, at http://alis.alberta.ca/ps/tsp/ta/tbi/onlinesearch.html?SearchMode=S&step=2

** Grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability.