Carleton University Department of Systems and Computer Engineering

ECOR 1606 – Problem Solving and Computers Sections C, D. E Winter 2018

All documents (course outline, Assignments, Labs, Exams, Practice Problems and their solutions) posted on the course web page ECOR 1606 Winter 2018 may be used only by students registered in the course. Those documents may not be posted online on any web site without the written permission from all instructors.

Instructors :

Section C and E : Prof. Ali Cherid, PhD

Section D : Prof. Jerome Talim, PhD, PEng

Course Objective : The course introduces the general sequence of steps in solving problems using computer programs. Students will learn to analyze problems (ie. Identify the objectives, the inputs and the outputs to produce), to derive a pseudo-code or a flowchart detailing the sequence of operations to solve the problem, to verify the proposed solution before converting it to a computer program. Examples will include simple numerical methods, sorting arrays or extracting data from arrays ...

Learning Outcomes :

- State the objective of a problem (ie. the results to produce)
- Extract the inputs and the assumptions from the problem description
- Formulate the solution as an algorithm or pseudo-code, using assignments, conditional statement and loops
- List scenarios to test their solution
- Write simple C++ programs with functions, arrays, files I/O
- Convert the algorithm to a C++ program

References and books :

- "How to Think Like a Computer Scientist, C++ version", Allen B. Downey, http://greenteapress.com/thinkcpp/index.html
- "Programming Fundamentals A Modular Structured Approach using C++",Kenneth Busbee, https://cnx.org/contents/MDgA8wfz@22.2:YzfkjC2r@17/Preface
- "Beej's Guide to C Programming", Brian "Beej" Hall, http://beej.us/guide/bgc/html/single/bgc.html
- Prelude to programming, 4th Edition, S. Venit, E. Drake, Pearson, ISBN-13 978-0-321-52175-0
- Engineering Problem Solving with C++, 2nd Edition, Pearson, ISBN-13 978-0-13-601175-0

Software :

Dev C++ ($\underline{http://www.bloodshed.net/devcpp.html}$) available for Windows only. This sofware is the one installed on the lab computers

Code Blocks (<u>http://www.codeblocks.org/</u>) available for Windows, MacOs, and Linux

Schedule:

Jan 8 – Jan 12	Solution planning and design (6.2) Variables and variable type (7.1, 7.2) Introduction to Dev C++	
Jan 15 – Jan 19	Assignment and arithmetic operations	Lab 1
Jan 22 – Jan 26	Boolean type and two way selection (15)	Lab 2
Jan 29 – Feb 2	Multiway selection (16)	Lab 3
Feb 5 – Feb 9	Midterm 1 Mon Feb 5, 14:30-16:00 (Section E) Tue Feb 6, 11:30-13:00 (Section D) Wed Feb 7, 11:30-13:00 (Section C) Introduction to loops (18 . 19, 20)	Lab 4
Feb 12 – Feb 16	Test Before and After loop	Lab 5
Feb 19 – Feb 23	Winter Break no class and no lab	
Feb 26 – Mar 2	Counting loops and practice problems Assignment #1 Due Date : Thu Mar 1	Lab 6
Mar 5 – Mar 9	Midterm 2 Mon Mar 5, 14:30-16:00 (Section E) Tue Mar 6, 11:30-13:00 (Section D) Wed Mar 7, 11:30-13:00 (Section C) Introduction to Arrays (22)	Lab 7
Mar 12 – Mar 16	More about arrays and practice problems	Lab 8
Mar 19 – Mar 23	Introduction to functions (10).	Lab 9 (lab test)
Mar 26 – Mar 30 Mar 30 is a holiday	Practice problems	Lab 10
Apr 2 – Apr 6	Practice problems	Lab 11
	Assignment #2 Due Date : Thu Apr 5	
Apr 9 – Apr 11 (Apr 11 follows a friday schedule)		

Grading Scheme:

Lab : Labs 3, 5, 7 are graded labs (each count for 3%) Lab 9 Test : 11% 2 Midterms : 20% (10% and 10%) 2 Assignments: 10% (5% each) Final Exam : 50%

Plagiarism:

Plagiarism (copying and handing in for credit someone else's entire work or partial work) is a serious instructional offense that will not be tolerated.

Academic Integrity:

Students are strongly advised to consult the Academic Integrity web page at : <u>https://carleton.ca/registrar/academic-integrity/</u>

Academic dishonesty, in whatever form, is destructive to the values of the university, and risks harming the university's reputation as place of learning and innovation. Furthermore, it is unfair and discouraging to those students who pursue their studies honestly.

Lab Attendance and Examinations :

Students are expected to attend all labs.

Lab 9, the two midterms, and the final exam will be closed books and should be completed by the students without any assistance from the TAs or the instructors.

Students must attend the lab and write their midterms in the section in which they are registered.

Final exam is for evaluation purpose and will not be returned to the students.

Academic Accommodations for Students with Disabilities: The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation.

If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). Requests made within two weeks will be reviewed on a case-by-case basis. After requesting accommodation from PMC, meet with instructor to ensure accommodation arrangements are made. Please consult the PMC website : www.carleton.ca/pmc for the deadline to request accommodations for the formally-scheduled exam (if applicable).

Health and Safety: Every student should have a copy of our Health and Safety Manual. An electronic version of the manual can be found at <u>http://www.sce.carleton.ca/courses/health-and-safety.pdf</u>