**ENSF 337- Programming Fundamentals**
**Term Project Instructions**

Department of Electrical & Computer Engineering
University of Calgary
*Maan Khedr*

# Objective:

The objective of this term project is to give you an opportunity to apply the principals of C++ programming and some of its fundamental concepts of Object-oriented programming in a simplified application of a real-world problem. As you grow your skills in C++ programming you can build on such project to include: client-server, and web-based features.

# Due Date:

The project is due on Tuesday June 15, 2021 at 11:59PM. The project delivery have two parts:

- Demonstration: on Tuesday June 15 the team will present their work to their TA for evaluation. The TA will ask questions to evaluate your understanding of the concepts implemented in the project.
- Source code submission: you will upload all the source code files (.cpp, .h, and any input files needed for the program) as a compressed file to a D2L Dropbox. The compressed file should follow the following naming format: ***`Group#_ucid1_ucid2_Term_Project`***

# Project Description:

In this project you will implement a simplified "***`University Student Registration System`***" in C++. This is a very complex application that can be implemented in many ways. For simplicity, the implementation you will carry out is a partial system that will implement the following set of classes:

- Date:

  A class that represents a date object. This class is important for use in the other classes to set students birth date, and course start and end dates.

  The class is simple with minimal functionality. The class skeleton is provided in the date.h file to provide insight on the member variables and functions that should be included in the class

- Student:
  This class is the template the student objects are created from. The class has member variables such as first name, last name, date of birth, and records of courses registered and their grades. The skeleton of the class is provided in the student.h file to provide deeper insight on members of the class and its functionality
- Course:
  This class represents the template for courses. Objects of this class represent a course with its information including its starting and ending dates, list of students registered and their grade items and much more. The skeleton for the class is provided in the course.h file to provide deeper insight on members of the class and its expected functionality

To test the implementation of the classes and give it a main framework and functionality, a main file with the main function will be developed. The framework of the program running in main is:

1- When the program is launched from the terminal, it is optional to provide a list of files to load the information for courses and student list.
2- A welcome message is displayed upon launching to the user displaying the software information (software name: version, developed by: <team of developers>, and release date) then prompts the user to press enter to continue.

3- The main then checks the number of files passed through the command line and should only accept 2 files as input:
    a. If files are provided in the command line, the software will do the following checks:
        i. Check the number of passed files:
            1. If number of files passed are not exactly 2, show an error message stating that only two files can be passed and do not load anything
            2. If 2 files were passed, attempt to load the files, then check success of load and display:
                a. Files were successfully loaded
                b. One file failure message stating which file failed to load
                c. Two files failure showing the names of the files failed to load
4- The program will then go into an infinite loop and display the main menu for the user to select the functionality they want. There should be an option for existing
5- Upon the user selecting one of the options, the corresponding functionality will be carried out, and the program will return to main menu.
6- Program_functions is a library that will be developed (.cpp and .h) that has functions corresponding to items on the main menu. This library is not a class but a set of global functions.

**NOTE that this is the draft, a revised version with supplementary materials will be published beginning of the week**