DEPARTMENT OF SCIENCE

COURSE OUTLINE – FALL 2012

CS1000/EG1050 – COMPUTER PROGRAMMING FOR ENGINEERS – 3.8(3-0-2)UT

INSTRUCTOR: Dr. Tanvir Sadiq, P.Eng. **PHONE:** 780.539.2865
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OFFICE HOURS: Tuesdays/Wednesdays, 1530 – 1700 or By Appointment

PREREQUISITE(S)/COREQUISITE: None

RECOMMENDED TEXT/RESOURCE MATERIALS: *Introduction to MATLAB for Engineers* Author: William J. Palm III, 3rd Edition, Publisher: McGraw Hill.

CALENDAR DESCRIPTION: This is computer programming for solving engineering problems. Structured programming in MATLAB is included.

CREDIT/CONTACT HOURS: 3.8(3-0-2) UT

DELIVERY MODE(S): Lectures, Labs

OBJECTIVES (OPTIONAL): This course is designed to teach engineering students basic computer concepts and terminologies as well as to develop proficiency in MATLAB programming to solve engineering problems. Each student is expected to design and develop several well-structured programs as solution to given assignments.

TRANSFERABILITY: UA, UC, UL, AU, Augustana, CUC, KUC

** 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.

GRADING CRITERIA:

GRADING CONVERSION CHART – This is a general guideline only.			
Alpha Grade	**4-point Equivalent**	**Percentage Guidelines (General)**	**Designation**
A^+	4.0	90 – 100	EXCELLENT
A	4.0	85 – 89	
A^-	3.7	80 – 84	FIRST CLASS STANDING
B^+	3.3	77 – 79	
B	3.0	73 – 76	GOOD
B^-	2.7	70 – 72	
C^+	2.3	67 – 69	SATISFACTORY
C	2.0	63 – 66	
C^-	1.7	60 – 62	
D^+	1.3	55 – 59	MINIMAL PASS
D	1.0	50 – 54	
F	0.0	0 – 49	FAIL
WF	0.0	0	FAIL, withdrawal after the deadline

EVALUATIONS:

Labs – assignments, exam/project*	25%	
Midterm	30%	(October 19, 2012, possibly an evening exam)
Final Exam	45%	(Time & Location TBA by Registrar's office)

*There is 10% penalty for each day an assignment/project is late. Late work will not be accepted after the submissions have been graded and returned to the class.

STUDENT RESPONSIBILITIES: Students are expected to attend all classes. If you miss a class, make arrangements to copy the notes from your class fellows. If you are using older edition of the textbook, you are responsible for matching page numbers, topics, figures, and problems with the editions being used in the class. You are encouraged to ask questions, but do not monopolize the class time.

STATEMENT ON PLAGIARISM AND CHEATING:

Refer to the Student Conduct section of the College Admission Guide at http://www.gprc.ab.ca/programs/calendar/ or the College Policy on Student Misconduct: Plagiarism and Cheating at www.gprc.ab.ca/about/administration/policies/**

**Note: all Academic and Administrative policies are available on the same page.

COURSE SCHEDULE:

Following topics from the textbook will be covered in the class:

Subject	**Lab Assignment**
Course outline -introduction to course goals 01_Introduction -computers are everywhere -why MATLAB 02_MATLAB Environment -desktop/windows/buttons -concept of M files	No lab
03_MATLAB Basics Part 1 -basic program structure -arrays and variables -basic plotting -data types -basic input/output	Assignment 1: Basics
04_ MATLAB Basics Part 2 -simple file I/O commands -built-in functions -arithmetic operators -creation of variables -debugging -sub-arrays and multi-dimensional arrays	Assignment 2: Simple Problem + Plotting
05_Selection Control Structure -programming structures -relational and logical operators -selection statements (`if, switch/case, try/catch/menu`) -flowchart and pseudo-code -logic function: `find` 06_Repetition Control Structure: -`for` and `while` loops -`break,continue` -nested loops	
07_Formatting of Input/Outputs: -user input -revisiting `disp, input, load, num2str`, and `save`commands -learning `format, fprintf, sprintf`, and `fopen` commands 08_User Defined Functions -MATLAB functions with single and multiple inputs and outputs -variable passing into functions -global variables -subfunctions	Assignment 3: Selection
08_User Defined Functions –continuation 09_String Functions -character codes (ASCII) -1D and 2D arrays -string functions: concatenate, compare, replace, find, matching -type conversion functions	Assignment 4: Repetition
10_Cell Arrays, Structures and Structures Arrays -creation, visualization and modification of cell arrays, structures and structure arrays -`cell, celldisp` and `cellplot` functions for cell arrays -`struct`, `rmfield` and `fieldnames` for structures and structure arrays	Assignment 5: Functions

11_Advanced Plotting -assign a handle to plots and adjust properties using handle graphics -how MATLAB handles different types of image files 12_ Image Processing Example -alter images in MATLAB (threshold values, mask, using a mask to	
"merge" two images	
13_Above and Beyond Programming - computer revolution -inside a computer - "onion model" of computer systems - different programming languages -software development -software errors	Assignment 6: Strings
13_Above and Beyond – continuation	Assignment 7: Structure Array
Synthesis of all we have learned. Review and preparation for the Final	No lab

NOTE:

MID-TERM EXAMINATIONS MISSED FOR ANY REASON WILL NOT BE RESCHEDULED. Students not writing the midterm exam, with a valid excuse (as defined by College policy) will have the midterm weight added to the final exam. This is not automatic, and if you miss the mid-term, you should follow all College guidelines and contact your instructor as soon as possible.