COMPUTER METHODS FOR ENGINEERS SYLLABUS

MICHAEL BUTROS - FALL 2018

COURSE INFORMATION

Section Number: 66622
Course Number and Title: ELCT 202 - Computer Methods for Engineers
Lecture Days and Times: DAYS OF WEEK, XX:XX - XX:XX PM
Lab Day and Times: DAYS OF WEEK, XX:XX - XX:XX PM

INSTRUCTOR INFORMATION

Name: Michael Butros
Office: Science Building - Room 45
Office Hours: Monday-Tuesday-Wednesday - 9:30 - 11:00 AM
Phone: 760.245.4271 Ext. 2506
E-mail: Michael.Butros@vvc.edu
Instructor's Page: https://www.butros.info

IMPORTANT DATES:

Semester Begins: August 27, 2018
Labor Day Holiday: September 3, 2018
Veteran's Day Holiday: November 9, 2018
Thanksgiving Holiday: November 22-23, 2018
Semester End: December 15, 2018

GENERAL CLASS INFORMATION:

Prerequisites: MATH 227 or MATH 227H with a grade of "C" or better.

Textbook: MATLAB: An Introduction with Applications 6^{th} Edition by Amos Gilat. (Optional)
There is an online component to this class.

Course Description: This course is an introduction to methods and techniques for solving engineering problems using numerical-analysis computer-application programs, technical computing and visualization using MATLAB software. The course is structured to allow students to have a thorough hands-on experience with examples and exercises applied to a wide variety of practical engineering problems.

Student Learning Outcomes:

The student will be able to:

- Student will demonstrate how to : a. Read data from files b. Save and load variables c. Calculate statistics and best-fit line d. Enter commands e. Create variables f. Access and modify values in variables g. Create character variables and use MATLAB to perform mathematical operations on vectors, scalars, and matrices: a. Addition and subtraction b. Multiplication and addition c. Exponentiation d. Compute, using MATLAB, the numerical-value of standard mathematical functions: i. Trigonometric functions ii. Exponential functions iii. Square-roots and absolute values

- Student will apply MATLAB to visualize systems of linear equations and find the numerical solution to simultaneous linear equations and use MATLAB to perform statistical analysis of experimental data to determine the mean, median, standard deviation, and other measures that characterize the nature of the data

- Student will demonstrate how to collect MATLAB commands, create and run scripts: a. Compose MATLAB script files that employ FOR and WHILE loops to solve engineering problems that require repetitive actions and how to increase automation in MATLAB by encapsulating modular tasks as user-defined functions: a. Create functions b. Call functions c. Sub-functions

Course Content:

The following topics will be covered in lecture

- Starting with MATLAB
- Creating Arrays
- Mathematical Operations with Arrays
- Using Script Files and Managing Data
- Two-Dimensional Plots
- Programming in MATLAB
- User-Defined Functions and Function Files
- Polynomials, Curve Fitting and Interpolation
- Applications in Numerical Analysis
- Three-Dimensional Plots
- Symbolic Math

Attendance Policy: Regular attendance to lecture and lab is strongly recommended.

Grading Policy:

The grading for this class will consist of the following components:

Component	Percentage of Final Grade
Online Assignments	15 %
Assignments	15 %
Labs	15 %
Exam One	15 %
Exam Two	15 %
Exam Three	15 %
Project	10 %

The final grade will be earned according to the following scale:

Total Percentage	Final Grade Earned
90 - 100 %	A
80 - 89 %	B
70 - 79 %	C
60 - 69 %	D
0 - 59 %	F

IMPORTANT NOTE: Students with disabilities, whether physical, learning, or psychological, who believe that they may need accommodations in this class, are encouraged to contact Disabled Student Program & Services as soon as possible to ensure that such accommodations are implemented in a timely fashion.
Authorization from DSPS is required before any accommodations can be made.

CLASS CONDUCT POLICIES:

- Anyone caught cheating will receive a grade of "F" for the course, in addition, I will pursue the strongest disciplinary action available at the college.
- Only those registered for the class are allowed in the classroom during lectures and labs
- It is expected that the sound features on all cell phones will be turned off before class or lab begins. If you have to answer a call or a text message, then you should leave the classroom and return when your call or message is done.
- You are encouraged to work in groups on homework and practice problems, but each student should turn in their own work.
- All assignments and exams are to be completed on the assigned due dates. There will be no make up homework assignments, quizzes, or exams. It is your responsibility to inform the instructor if you are going to be absent on a day when an assignment or exam is due.
- You are encouraged to ask questions during the lecture.
- FOOD AND DRINKS ARE NOT ALLOWED DURING LAB SESSIONS.