LaGuardia Community College  
The City University of New York  
Department of Mathematics, Engineering, and Computer Science

Course Name: Engineering Lab II (MATLAB)  
Credits: 2 (3hrs = 2 hrs lecture + 1 hr Lab)  
Prerequisites: MAT201 with a minimum grade of “C”  

Instructor:  
Rooms:  
Office hour:  
Class Meeting:  

Text Book and Reference:  
Elementary Mathematical and computational tools for electrical and computer engineers using MATLAB. 2nd Ed. ISBN: 0-8493-7425-1 (Jamal T. Manassah, 2007), Taylor & Francis  
(Do not buy the first edition, it is outdated)  
Introduction to MATLAB for Engineers. 3rd Ed. ISBN: 978-0073534879 (William Palm III, 2010), McGraw-Hill

Course Description:  
This second laboratory course serves as an introduction to computer aided analysis techniques necessary for the study of electrical engineering and the design of electrical systems. Concepts introduced through short lectures are examined thoroughly in computer workstation-based assignments, using MATLAB. Topics to be studied include: functions of real variables and their graphs, complex numbers and phasors, linear algebra, difference equations with applications to signal processing, and introductory systems analysis

Grading:  
Tentatively 60% Two quizzes *  
20% Lab book  
20% MATLAB practicum exam

The course will be graded according to a following scale. I will round your score to the nearest integer, and will then apply this scale. There will be no curving in grading. No Makeup will be given. A minimum total of 65% is required to pass the course with a “C” grade.

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Attendance policy:  
The maximum number of unexcused absences is limited to 15% of the number of class hours. Attendance of all lab sessions is required.  
Present: √  
Absent: A [More than three absent (including the first day) may be dropped (WU grade)]  
Late: L [15 minutes will constitute late] [2 L = A]

Academic Integrity:  
This class will be conducted in compliance with LaGuardia Community College’s academic integrity policy.
Syllabus

I. Lectures:
- Lecture 1: Simple programming in MATLAB
- Lecture 2: Array operations
- Lecture 3: Introduction to difference equations
- Lecture 4: Basic financial math
- Lecture 5: Numerical 1-d integration and finding the zeros of a 1-d function.
- Lectures 6 & 7: Solutions of linear constant coefficients difference equations.
- Lectures 8 & 9: Convolution-Summation of a first-order system.
- Lectures 11 - 14: Basics of complex numbers.
- Lecture 15: Iterative constructs.
- Lectures 18 & 19: Phasors
- Lectures 22 & 23: z-transforms.
- Lectures 24 & 25: Introduction to inverse z-transforms. (Time permitting)

II. Computer Lab:
- Session 0: Preparatory work
- Session 1: Introduction
- Session 2: Conditional Statements
- Session 3: Arrays
- Session 4: Parametric Equations
- Session 5: 3-D plotting
- Session 6: Data analysis
- Session 7: Elementary functions
- Session 8: Difference equations
- Session 9: Limits, derivatives, series
- Session 10: Numerical Integration
- Session 11: Zeros and extrema of functions
- Session 12: Numerical solutions of ordinary differential equations (Time permitting)

* Quizzes: Two. One will be scheduled in the midterm period and the other will be during the final week. The practicum is scheduled for the computer lab session during the final week. There will be no cumulative final in the exam period.

Recommended Sequencing: Although not a requirement, students are strongly advised to complete MAT 202, MAC125 and SCP231 before registering in MAE103.

Time Allocation: This course requires at least 6-7 hours of study per week on a regular basis throughout the semester. This time commitment is in addition to the in-class attendance of the lectures and the computer lab sessions.