Course number: 0402317
Course name: Software Engineering Laboratory
Prerequisites by course: Numerical Methods
Prerequisites by topic: Students are assumed to have had sufficient background of the following topics: Ordinary Differential Equations, Numerical Methods, and Computer applications.
Credit hours: 1 hour
Contact hours: 3 hours
Textbook: [Lab Manual], [----], [----]
References:
  1. Matlab references
Course website: ---
Schedule and duration: 16 weeks, 16 Labs, 170 minutes each (including exams).
Minimum student material: Lab Manual, class handouts, some instructor keynotes, calculator and access to a personal computer and internet.
Minimum college facilities: Computer laboratory, library, and computational facilities.
Course objectives: The objectives of this course are:

1.	To be familiar with basic Matlab desktop system and contents, defining variables, exploring and examining predefined functions, creating scripts and m-files
2.	Become capable to define variables and matrices and apply different matrices operations using Matlab
3.	Become capable to define, apply mathematical operations and plot for symbolic variables, polynomials and mathematical expressions in many ways (2-D,3-D and polar plot) using Matlab
4.	To understand the basics of program flow control and programming using conditional and iterative statements
5.	Become capable to explore Simulink blocks, build Simulink applications using Simulink models and execute the models with technically adjusted block parameters

Course outcomes and relation to ABET student outcomes: (matrix)
Upon successful completion of the course, a student should be able to:

Course Outcomes	Student Outcomes						
	SO 1	SO 2	SO 3	SO 4	SO 5	SO 6	SO 7
To get understand the basic technical of program flow control. To understand types and roles of branch statements and loop statements i.e. if statement, for statement		*				*	
To get understand the basic idea and concepts of Simulink and Simulink Library Browser. To get learn how to build and run simple model.		*				*	
To be able to manipulate matrices such as replaces, adding, changing, and deleting the elements of matrices. Applying arithmetic and logical operations on matrices		*				*	

To be able to plot 2D and 3D data sets, symbolic expressions, equations and mathematical relations using MATLAB commands in different formats i.e. single and subplot		*				*	
To be able to define and solve polynomial functions and equations, apply some useful arithmetic operations on polynomials and equations such as derivative, and integration, learning ways of solving systems of equations		*				*	
To be able to install Matlab software and understand Matlab layout, write, store and execute script and function files, search for private coefficients and predefined functions using Matlab help.					*		
To get learn how to build practical simulation models using Simulink Library Browser. To learn an important Simulink application for solving differential equations		*				*	

Course topics:

Introduction into MATLAB Software
Operations on Matrices
Arithmetic and Logical Operations
Plotting
Polynomials
Midterm exam
Solving Equations
Programming
Simulink (1)

Computer usage: MatLab Software

Attendance: Class attendance will be taken every class and the university's policies will be enforced in this regard.

Assessments: Exams

Grading policy:

Participation	5%
Weekly Reports	15%
Midterm Exam	30%
Final Exam	50%

Instructors: Dr. Osama Fares email: osama.fares@iu.edu.jo

Class time and location: Sunday 01:00 – 3:50 pm

Student Outcomes (SOs)

1	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3	An ability to communicate effectively with a range of audiences

4	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5	An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies