



MUTAH UNIVERSITY
Faculty of Engineering
Department of Electrical Engineering



Course Syllabus
Study Plan 2021: Communication Track, and Power and Control Track

| Course Code | Course Name | Credits | Contact Hours |
|-------------|---|---------|---------------|
| 0401220 | MATLAB Applications in Electrical Engineering | 1 | 2T |

| INSTRUCTOR/COORDINATOR | |
|------------------------|--|
| Name | Eng. Anwar Tarawneh |
| Email/Office | Anwar1989@mutah.edu.jo anwartarawneh1988@gmail.com |
| Office Hours | 12:00-13:00 (Sun, Tue, Thu) |
| Classroom/Time | 14:00-16.00 Sun, Tue |

| TEXTBOOK | |
|------------------------------|---|
| Title | Laboratory Manual for MATLAB Applications in Electrical Engineering |
| Author/Year/Edition | Eng. Ra'd Fathi Al-Marbheh |
| Other Supplemental Materials | |
| Title | MATLAB for Electrical and Computer Engineering Students and Professionals with Simulink |
| Author/Year/Edition | Roland Priemer, Edison, NJ/2013/ 2013 th Ed |

| SPECIFIC COURSE INFORMATION |
|---|
| A. Brief Description of the Content of the Course (Catalog Description) |
| The course will provide an overview of the most important features of the MATLAB environment and programming language in order to get you started. Starting with MATLAB. Creating arrays. Mathematical operations with arrays (matrix and array arithmetic, indexing, find, sort, row and column operations). Using script files and managing data: Getting data into MATLAB (from excel, text files). Saving MATLAB results/data (saving as MAT files, exporting to excel or elsewhere). More graphics (2-D and 3-D, building up complex figures, Changing the properties of graphics objects, Outputting high quality figures for publication). Two dimensional plots. 3D plots. Programming in MATLAB (conditional statements). User defined functions. Symbolic Math. Applications in Electrical Engineering. Simulink. |

| | | | | | | |
|---|----------|----------|----------|----------|----------|----------|
| B. Pre-requisites (P) or Co-requisites (C) | | | | | | |
| Electric Circuits 2 (0401212) | | | | | | |
| C. Course Type (Required or Elective) | | | | | | |
| Required | | | | | | |
| SPECIFIC GOALS | | | | | | |
| A. Course Learning Objectives (CLOs) | | | | | | |
| 1. Use MATLAB for applications in electrical engineering. [7] | | | | | | |
| 2. Write simple program scripts and functions in MATLAB. [1] | | | | | | |
| 3. Collect data and analyze basic electronic sensors and circuits.[6] | | | | | | |
| B. Student Learning Outcomes (SLOs) Addressed by the Course | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| √ | | | | | √ | √ |

| BRIEF LIST OF TOPICS TO BE COVERED | | |
|---|---------------------|----------------------|
| List of Topics | No. of Weeks | Contact Hours |
| Topic 1: Introduction to MATALB, MATLAB as A Calculator. | 1 | 2 |
| Topic 2: Arrays; Vectors and Matrices, Linear Algebra | 1 | 2 |
| Topic 3: Plotting Multiple Data Sets in One Graph. | 1 | 2 |
| Topic 4: Script Files and Functions. | 1 | 2 |
| Topic 5: Relation and Control in MATLAB. | 1 | 2 |
| Topic 6: Electrical Circuit Problem Solving using MATLAB | 2 | 4 |
| Topic 7: Generation of Signals and Sequences Using MATLAB | 1 | 2 |
| Topic 8: Logic Gate Design Using MATLAB | 1 | 2 |
| Topic 9: MATALB Simulink. | 2 | 4 |
| Total | 11 | 22 |

| EVALUATION | | |
|------------------------|--------------------------------------|-------------------|
| Assessment Tool | Due Date | Weight (%) |
| Mid Exam | According to the university calendar | 20 |
| Lab Reports | One week after being taken | 40 |
| Final Exam | According to the university calendar | 40 |

ABET's Students Learning Outcomes (Criterion # 3)

| | | Relationship to program outcomes |
|-------------|---|--|
| ABET 1-7 | | ... Engineering Student Outcomes |
| 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 |
| 3. | | 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 |
| 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 |