

**EE 282****Electrical Engineering Program**

- 1. Course Number & Name:** EE 282, Engineering Modeling Laboratory
- 2. Course Credit and Contact Hours:** 1 Unit, 3 hours
- 3. Course Coordinator:** Nansong Wu, Ph.D.
- 4. Textbook:** Essentials of MATLAB Programming by Stephen J. Chapman, 3rd edition, 2017, Cengage Learning, ISBN-13: 978-1305970656.
- 5. Supplemental Materials:** Additional references and reading materials will be posted in Canvas if applicable.
- 6. Specific Course Information:**
  - a. Description:** This laboratory course is designed to introduce engineering students to high-level programming and simulation environments in which they can model, measure, analyze, and visualize data.
  - b. Prerequisites:** CS 115
  - c. Co-Requisite:** None
  - d. Status:**  Required for EE program,  Elective,  Selected Elective
- 7. Specific Goals for the Course:**
  - a. Specific outcomes of instruction:** Upon successful completion of this course the students will be able to:
    - i. Understand how to use MATLAB as programming language.
    - ii. Able to build model through analysis of data.
    - iii. Able to do advanced plotting in three dimensions.
    - iv. Perform statistical analysis on the data and use probability and interpolation.
    - v. Proficient in solving differential equations and calculus problems using numerical analysis.
    - vi. Understand model building using SIMULINK.
  - b. This course supports the following ABET Student Outcomes:**
    - i. *SO-6: an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.*
- 8. Brief List of Topics to be Covered:**
  - a. MATLAB basics

- b. Two-dimensional plots
- c. Branching statements
- d. Loops and vectorization
- e. Basic user-defined functions
- f. Advanced features of user-defined functions
- g. Additional data types and plot types
- h. Cell arrays, structures, and handle graphics
- i. Input-output functions
- j. Handle graphics and animation
- k. Guide-based graphical user interfaces
- l. Simulink