ECE 1101: Electrical and Computer Engineering Tools

Credits and contact hours: 1 Credit (Two 75-minute lectures/labs per week for 5 weeks)

Instructor: John A. Chandy

Textbook: None
   a. *Other supplemental materials*: None.

*Specific course information***:**
   a. *Catalog Description*: An introduction to the modern computer tools used for circuit analysis, signal and system analysis, control, and data acquisition.

   b. *Prerequisite*: None

   c. *Required, elective, or selected elective:* Selected elective

*Specific goals for the course***:**
   a. *Specific outcomes of instruction*: Students will be able to apply basic programming tools and techniques to solve numerical analysis, signal analysis, and data acquisition problems in the context of electrical engineering.

   b. *ABET Criterion 3 Student Outcomes addressed by the course*:

   (1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
   Students apply logical and Boolean analysis to solve engineering problems through programming assignments. In addition, they apply their mathematical knowledge of algebra and calculus to solve programming exercises as applied to signal and numerical analysis.

   (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
   n/a

   (3) an ability to communicate effectively with a range of audiences
   n/a

   (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
   n/a

(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**
n/a

(6) **an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions**
Students learn how to design and conduct experiments through the design, testing, and debugging of weekly assignments. They are able to analyze and interpret testing and use the testing to improve their designs.

(7) **an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.**
Students learn techniques, skills, and modern engineering tools necessary for electrical engineering programming – such as the use of compilers, debuggers, and editors.

Topics covered:
- C Programming
- Debugging
- Numerical analysis