EEL4015C - Electrical Design in Buildings I

Three Credits, Two and a half hours, Engineering Topic.

Instructor: Dr. Amaury A. Caballero

Textbook: National Electrical Code (NEC) 2017

Specific Course Information: Basic principles of DC and AC. Circuits analysis sinusoidal steady-state response, power in AC circuits, the ideal transformer, operational amplifier, Transient Response of RC and RL circuits in the time domain.

Specific Goals for the Course:

1.To study the basic principles of electrical wiring, basic lighting theory, and the use of tools and materials.

2.To learn the content of the National Electrical Code for the practical safeguarding of persons and property from hazards arising from the use of electricity.

3.To give practical skills to the students that will permit them in the future to project residential, commercial and industrial electrical systems in buildings.

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

In this course the student will have to show

(a) an ability to apply knowledge of mathematics, science, and engineering (N/A)

(b) an ability to design and conduct experiments (simulations), as well as to analyze, interpret data (N/A)

(c) an ability to design a system, component, or process to meet desired needs (N/A)

(d) an ability to function in multi-disciplinary teams (N/A)

(e) an ability to identify, formulate, and solve engineering problems (homework) (N/A)

(f) an understanding of professional and ethical responsibility (N/A)

(g) an ability to communicate effectively (through project reports) (N/A)

(h) the broad education necessary to understand the impact of engineering solutions in a global and societal context (N/A)

(i) a recognition of the need, and an ability to engage in life-long learning (N/A)

(j) a knowledge of contemporary issues (N/A)

(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice (N/A)

(l) a knowledge of probability and statistics (N/A)

Brief list of the topics to be covered

a. Specific outcomes of instruction

Upon successful completion of this course, the student will:

1.Introduction to the Course

2.The National Electrical Code (NEC). Purpose and Scope

3.Feeders and Branch Circuits

4.Lighting Circuits.

5.Branch-Circuit, Feeder and Service Calculations in Dwellings

6.Over current Protection

7.Grounding and Bonding
8.Conductors for General Wiring
9.Boxes
10.Conduits and Wire ways
11.Examples of Residential Projects
12.Review of three-phase current
13.Electrical Motors and Motor Circuits
14.Commercial and Industrial Wiring
15.Short-Circuit Calculations
16.Emergency Generators
17.Examples of Commercial and Industrial Projects
18.Electric Lighting.
19.Trends of development of electrical project in buildings

GRADING:

Course Requirements	Weight
Quizzes and Homework	20%
Test # 1	25%
Test # 2	25%
Final Project	30%
Overall Grade	100%

Conversion of Numerical Grade to Letter Grade

95<=A<=100	80<=B<84	65<=C<69
90<=A-<94	75<=B-<79	60<=D<64
85<=B+<89	70<=C+<74	F: Below 60