(1) **Department:** Electrical and Computer Engineering  
**Number:** BE 2377  
**Title:** Electrical Circuits & Motors

(2) **Required or Elective Course**  
Required

(3) **Catalog Description:**  
Principles of electrical circuits, generator, and motors. Introduction to electronics and introduction to microprocessors for data acquisition.

(4) **Prerequisites:**  
PHYS 2421 with a grade of “C” or better.

(5) **Textbook:**  

(6) **Course Objectives:** Students completing BE 2377 will:  
Understand and be able to perform analysis of simple AC and DC electrical circuits. *(A)*  
Understand and be able to solve problems for basic power systems. *(A)*  
Understand the basics of simple instrumentation. *(B)*  
Be able to design simple electrical circuits for instrumentation. *(A)*

(7) **Topics covered:**  
Electrical power and energy  
Series and parallel combinations of components  
Kirchoff’s voltage law  
Kirchoff’s current law  
Equivalent circuits  
Maximum power transfer  
Superposition  
Introduction to magnetic circuits - transformers  
Controlled sources – operational amplifiers  
Instrumentation circuits – grounding  
LR and RC step response  
Single phase ac circuits  
Three phase ac circuits  
Elementary energy conversion machine  
Three phase motors  
Residential wiring – electrical safety

(8) **Class/Laboratory Schedule:**  
Three 50-minute or two 80-minutes sessions per week.
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(9) Contribution of course to meeting the professional component:
BE 2377 is a required lower division course that contributes to the engineering topics requirement.

(10) Prepared by:
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