

## **ELEG 3933 – CIRCUITS AND ELECTRONICS**

### **Credits and Contact Hours**

Three credit hours, 45 hours of instructor contact

### **Instructor's Name**

Randle Overbey

### **Textbook**

Fundamentals of Electrical Engineering and Technology, William D. Stanley, John R. Hackworth, and Richard L. Jones, Thompson/Delmar Learning, 2007

### **Specific Course Information**

- a. Catalog description: Basic principles of electric and electronic circuits and devices.
- b. Pre-requisites or co-requisite: pre-requisites: MATH 2584 and PHYS 2074.
- c. Required

### **Specific Goals for the Course**

#### 1. Specific outcomes of instructions

After completing this course, students should be able to:

- Understand AC/DC circuits and analyze these circuits using basic analysis techniques;
- Understand diodes, transistors, power semiconductor devices and their applications and be able to analyze circuits with these devices (including the design and analysis of basic power supplies);
- Understand and be able to analyze simple OP AMP circuits;
- Understand and be able to analyze basic digital circuits applying Boolean algebra;
- Understand frequency domain concepts like bandwidth.

#### 2. Indicate the student outcomes listed in Criterion 3 addressed by the course

- (a) Students are required to apply mathematics in analyzing circuit performance.
- (c) Students are required to design circuits to meet performance specifications.
- (e) Students are required to solve engineering problems related to electric circuits.
- (l) Students are required to apply mathematics through differential equations in analyzing and designing electric circuits.

### **List of Topics Covered in Class (class time 75 minutes)**

1. Introduction to DC Circuit Theory and Analysis (6 classes)
2. AC Circuit Theory and Analysis (5 classes)
3. Transient Circuit Analysis with Inductors and Capacitors (4 classes)
4. Diodes, Transistors, Power Semiconductors and Op Amps (6 classes)
5. Digital Circuits (Design and Analysis) with Digital Applications (6 classes)