University of Arkansas - Fort Smith
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General Syllabus

EET 3953 Power Electronics

Credit Hours: 3 Lecture Hours: 2 Laboratory: 2

Prerequisite: EET 3743 Discrete Electronics

Effective Catalog: 2018-2019

I. Course Information

A. Catalog Description

Analysis of modern electronics and integrated circuits (ICs) in power generation and transmission, motor drives and controls, and safety issues.

B. Additional Information

This course will contain a practical element emphasizing designing, selecting, and implementing power electronics which necessitate proper heat sinking and circuit board considerations. Projects and labs will be used to facilitate this outcome.

II. Student Learning Outcomes

A. Subject Matter

Upon successful completion of this course, the student will be able to:

1. Calculate generator output.
2. Determine transmissions losses.
3. Program motor drives.
4. Analyze circuit power failures.
5. Design and build circuits using power MOSFETs, IGBTs, and FPGA.

B. University Learning Outcomes

This course enhances student abilities in the following areas:

Communication Skills (written and oral)
Students will write detailed reports covering their design, construction, and testing of circuits built during lab sessions.

Global and Cultural Perspectives
Students will research and present to the class effects of power generation and distribution on cultures around the world.

Ethical Decision Making
Students will explore ethical decision making when they write about a case study involving safety standards and engineering design.

III. Major Course Topics

A. Device power dissipation
B. Power Derating
C. High power devices
D. Power generation formulas
E. Transmission loss formulas
F. Motor drive languages.