

Course	ECE 32400 – Introduction to Energy Systems
Type of Course	Elective for the EE program
Catalog Description	Fundamentals of electrical machines, power circuit analysis techniques, concepts including torque, speed, DC machine equivalent circuit, synchronous and asynchronous AC machines, rotating fields, application of electronics on electrical machines, smart grids and their applications in power engineering, use of composite materials in energy applications, and alternative energy methods including solar energy.
Credits	3
Contact Hours	3
Prerequisite Courses	ECE 25500, PHYS 25100
Corequisite Courses	ECE 20800
Prerequisites by Topics	Understanding of the design and analysis of basic electronic circuits, frequency response of circuits, power concept, electromagnetism, magnetic properties of matter.
Textbook	<ul style="list-style-type: none">▪ <i>Principles of Electric Machines and Power Electronic</i> by P. C. Sen, John Wiley & Sons, Incorporated 3rd Edition, 2014.▪ Lecture notes prepared by Dr. Momoh
Course Objectives	To give students fundamental understanding of common electrical machines and concepts, power circuit analysis techniques, application of electronics on electrical machines, smart grids in power engineering, use of composite materials in energy applications, and alternative energy methods.
Course Outcomes	Students who successfully complete this course will have demonstrated: <ol style="list-style-type: none">1. a basic knowledge of DC Machines (1)2. a basic knowledge of AC machines (1)3. an understanding of power circuit analysis techniques (1)

4. a basic knowledge of application of electronics on electrical machines (7)
5. a basic knowledge of smart grids (4)
6. a basic knowledge of alternative energy methods (4)

Computer Usage Medium

Laboratory Experience None

Design Experience Medium

Coordinator

Date 09/28/2018