111-2 Full Curriculum of Da-Yeh University

Information			
Title	Principles of Electrical Engineering	Serial No./ID	0559 /ENI2010
Required/Credit	Optinal /3	Time/Place	(Mon)567 /H203
Language	Chinese	Grade Type	Number
Lecturer /Full- or Part-time	Tsai Huan-Liang /Full-time	Graduate Class	Non-graduating Class
School System /Dept /Class, Grade	Bachelor /College of Engineering /Class 6, Grade 2		
Office Hour / Place	(Mon) 16:20~17:10, (Tue) 16:20~17:10, (Wed) 16:20~17:10, (Thu) 08:10~09:00 / H715		
Lecturer	n.a.		

Introduction

1. Present the problem-oriented introduction to electrical principles to understand the fundamentals and disciplines of the electrical system.
2. Introduce the underlying concepts and methods in electrical application practices.

Outline

1. Introduction
2. Resistive Circuits
3. Inductance and Capacitance
4. Transients
5. Steady-State Sinusoidal Analysis
6. Frequency Response, Bode Plots, and Resonance
7. Logic Circuits
8. Computers, Microcontrollers, and Computer-Based Instrumentation Systems
9. Diodes
10. Amplifiers: Specifications and External Characteristics
11. Field-Effect Transistors
12. Bipolar Junction Transistors
13. Operational Amplifiers
14. Magnetic Circuits and Transformers
15. DC Machines
16. AC Machines

Prerequisite

Calculus

The Relationship Between Courses and Departmental Core Competencies and Basic Skills

- Ability to apply knowledge of mathematics, science, and engineering.
- Knowledge of contemporary issues; an understanding of the impact of engineering solutions in an environmental, societal, and global context; and the ability and habit to engage in life-long learning.
- Ability to design and conduct experiments, as well as to analyze and interpret data.
- Ability to apply techniques, skills, and modern tools necessary for engineering practice.
- Ability to design an engineering system, component, or process.
- Ability to manage project (including budgeting), communicate effectively, work in multi-disciplinary environment, and function on teams.
- Ability to identify, formulate, research literature and analyses complex engineering problems reaching substantial conclusions.
- Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice, and a sense of respect for diversity.

Teaching Plan						
Core Capability	Weight(%)【A】	Ability index(Performance Indicators)	Teaching Methods	Assessment and Weight	Core Competency Learning Outcomes【B】	Final Exam Grades【C=B*A】
Ability to apply knowledge of mathematics, science, and engineering.	15	Ability to apply knowledge of mathematics, science, and engineering.	Student Presentation Practical Operation (Experiment, Machine Operation Lecturing Special Report	Oral Report: 20% Course Participation: 20% Final Exam: 40% Written Report: 20%	Total: 100	15
Ability to design and conduct experiments, as well as to analyze and interpret data.	15	Ability to design and conduct experiments, as well as to analyze and interpret data.	Lecturing Practical Operation (Experiment, Machine Operation Special Report Student Presentation	Final Exam: 40% Course Participation: 20% Written Report: 20% Oral Report: 20%	Total: 100	15
Ability to apply techniques, skills, and modern tools necessary for engineering practice.	15	Ability to apply techniques, skills, and modern tools necessary for engineering practice.	Lecturing Student Presentation Practical Operation (Experiment, Machine Operation Special Report	Final Exam: 40% Oral Report: 20% Course Participation: 20% Written Report: 20%	Total: 100	15
Ability to design an engineering system, component, or process.	15	Ability to design an engineering system, component, or process.	Student Presentation Practical Operation (Experiment, Machine Operation Lecturing Special Report	Oral Report: 20% Course Participation: 20% Final Exam: 40% Written Report: 20%	Total: 100	15

Ability to manage project (including budgeting), communicate effectively, work in multi-disciplinary environment, and function on teams.	10	Ability to manage project (including budgeting), communicate effectively, work in multi-disciplinary environment, and function on teams.	Student Presentation Practical Operation (Experiment, Machine Operation Lecturing Special Report	Oral Report: 20% Course Participation: 20% Final Exam: 40% Written Report: 20%	Total: 100	10
Ability to identify, formulate, research literature and analyses complex engineering problems reaching substantial conclusions.	10	Ability to identify, formulate, research literature and analyses complex engineering problems reaching substantial conclusions.	Student Presentation Practical Operation (Experiment, Machine Operation Lecturing Special Report	Oral Report: 20% Course Participation: 20% Final Exam: 40% Written Report: 20%	Total: 100	10
Knowledge of contemporary issues; an understanding of the impact of engineering solutions in an environmental, societal, and global context; and the ability and habit to engage in life-long learning.	10	Knowledge of contemporary issues; an understanding of the impact of engineering solutions in an environmental, societal, and global context; and the ability and habit to engage in life-long learning.	Lecturing Practical Operation (Experiment, Machine Operation Student Presentation Special Report	Final Exam: 40% Course Participation: 20% Oral Report: 20% Written Report: 20%	Total: 100	10
Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice, and a sense of respect for diversity.	10	Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice, and a sense of respect for diversity.	Lecturing Practical Operation (Experiment, Machine Operation Student Presentation Special Report	Final Exam: 40% Course Participation: 20% Oral Report: 20% Written Report: 20%	Total: 100	10

Grade Auditing

Final Exam: 40%
Written Report: 20%
Course Participation: 20%
Oral Report: 20%

Book Type (Respect intellectual property rights. Please use official textbooks and do not illegally photocopy others' works.)

Book Type	Book name	Author
Textbook	Electrical Engineering: Principles & Applications	Allan R. Hambley

Lesson Plan

Weeks	Content	Teaching Methods
1	Introduction & Intellectual Property Protection (use legitimate textbooks only) & Traffic safety Propaganda	Lecturing、 Practical Operation (Experiment, Machine Operation
2	Resistive Circuits	Lecturing、 Practical Operation (Experiment, Machine Operation
3	Resistive Circuits	Lecturing、 Practical Operation (Experiment, Machine Operation
4	Inductance and Capacitance	Lecturing、 Practical Operation (Experiment, Machine Operation
5	Inductance and Capacitance	Lecturing、 Practical Operation (Experiment, Machine Operation
6	Transients	Lecturing、 Practical Operation (Experiment, Machine Operation
7	Transients	Lecturing、 Practical Operation (Experiment, Machine Operation
8	Diode	Lecturing、 Practical Operation (Experiment, Machine Operation
9	Midterm Exam	close book
10	Diode Application	Lecturing、 Practical Operation (Experiment, Machine Operation
11	Magnetic Circuits and Transformers	Lecturing、 Practical Operation (Experiment, Machine Operation
12	Magnetic Circuits and Transformers	Lecturing、 Practical Operation (Experiment, Machine Operation

13	DC Machines	Lecturing、 Practical Operation (Experiment, Machine Operation
14	DC Machines	Lecturing、 Practical Operation (Experiment, Machine Operation
15	AC Machines	Lecturing、 Practical Operation (Experiment, Machine Operation
16	AC Machines	Lecturing、 Practical Operation (Experiment, Machine Operation
17	AC Machines	Lecturing、 Practical Operation (Experiment, Machine Operation
18	Final Exam	close book