110-1 Full Curriculum of Da-Yeh University

Information			
Title	Power System	Serial No./ID	1683 /ENI3029
Required/Credit	Optinal /3	Time/Place	(Tue)234 /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 3, Grade 3		
Office Hour / Place	(Mon) 16:20~17:10, (Tue) 08:10~09:00, (Wed) 08:10~09:00, (Thu) 11:10~12:00 / H715		
Lecturer	n.a.		

Introduction

1. Instill understanding for the fundamentals and principles of Electrical Power System.
2. Introduce the practices of proper planning, operations, and control in modern electrical power systems.

Outline

1. Introduction
2. Basic Principles
3. Synchronous Machine and Transformers
4. Parameters of Transmission Lines
5. Transmission Line models
6. Power Flow analysis
7. Symmetrical Faults
8. Symmetric Components and Sequence Networks
9. Asymmetrical Faults
10. Power System Stability
11. Power System Control

Prerequisite

Electrical Circuit

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.	Lecturing Practical Operation (Experiment, Machine Operation	Record on Experiment: 10% Experiment Operation: 10% Course Participation: 20% Final Exam: 20% Midterm Exam: 20% Number of Logging Online/ Message Online/ Class Pa: 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	Final Exam: 20% Midterm Exam: 20% Course Participation: 20% Number of Logging Online/ Message Online/ Class Pa: 20% Experiment Operation: 10% Record on Experiment: 10%	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 Practical Operation (Experiment, Machine Operation	Midterm Exam: 20% Final Exam: 20% Experiment Operation: 10% Record on Experiment: 10% Course Participation: 20% Number of Logging Online/ Message Online/ Class Pa: 20%	Total: 100	15

Ability to design an engineering system, component, or process.	15	Ability to design an engineering system, component, or process.	Lecturing Practical Operation (Experiment, Machine Operation	Experiment Operation: 10% Record on Experiment: 10% Course Participation: 20% Final Exam: 20% Midterm Exam: 20% Number of Logging Online/ Message Online/ Class Pa: 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.	Lecturing Practical Operation (Experiment, Machine Operation	Experiment Operation: 10% Record on Experiment: 10% Course Participation: 20% Final Exam: 20% Midterm Exam: 20% Number of Logging Online/ Message Online/ Class Pa: 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.	Lecturing Practical Operation (Experiment, Machine Operation	Experiment Operation: 10% Record on Experiment: 10% Course Participation: 20% Final Exam: 20% Midterm Exam: 20% Number of Logging Online/ Message Online/ Class Pa: 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	Midterm Exam: 20% Final Exam: 20% Course Participation: 20% Record on Experiment: 10% Experiment Operation: 10% Number of Logging Online/ Message Online/ Class Pa: 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	Midterm Exam: 20% Final Exam: 20% Course Participation: 20% Record on Experiment: 10% Experiment Operation: 10% Number of Logging Online/ Message Online/ Class Pa: 20%	Total: 100	10

Grade Auditing

Course Participation: 20%
Final Exam: 20%
Number of Logging Online/ Message Online/ Class Pa: 20%
Midterm Exam: 20%
Record on Experiment: 10%
Experiment Operation: 10%

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

Book Type	Book name	Author
Textbook	Power System Analysis	J.J. Grainger, W.D. Stevenson, G. W. Chang

Lesson Plan		
Weeks	Content	Teaching Methods
1	Introduction & Intellectual Property Protection (use legitimate textbooks only) & Traffic safety Propaganda & Intellectual Property Protection (use legitimate textbooks only) & Traffic safety Propaganda	Lecturing、 Practical Operation (Experiment, Machine Operation
2	Basic Principles	Lecturing、 Practical Operation (Experiment, Machine Operation
3	Basic Principles	Lecturing、 Practical Operation (Experiment, Machine Operation
4	Synchronous Machine	Lecturing、 Practical Operation (Experiment, Machine Operation
5	Synchronous Machine	Lecturing、 Practical Operation (Experiment, Machine Operation
6	Transformers	Lecturing、 Practical Operation (Experiment, Machine Operation
7	Synchronous Machine and Transformers	Lecturing、 Practical Operation (Experiment, Machine Operation
8	Parameters of Transmission Lines	Lecturing、 Practical Operation (Experiment, Machine Operation
9	Midterm Exam	Open book
10	Parameters of Transmission Lines	Lecturing、 Practical Operation (Experiment, Machine Operation
11	Transmission Line models	Lecturing、 Practical Operation (Experiment, Machine Operation
12	Transmission Line models	Lecturing、 Practical Operation (Experiment, Machine Operation
13	Power Flow analysis	Lecturing、 Practical Operation (Experiment, Machine Operation
14	Power Flow analysis	Lecturing、 Practical Operation (Experiment, Machine Operation
15	Power System Stability	Lecturing、 Practical Operation (Experiment, Machine Operation
16	Power System Stability	Lecturing、 Practical Operation (Experiment, Machine Operation

17	Power System Control	Lecturing、 Practical Operation (Experiment, Machine Operation
18	Final Exam	Open book