Power Generation and Transformation Engineering

2 units (selection)

Masatake Kawada · Associate Professor / Electrical Energy Engineering, Department of Electrical and Electronic Engineering

Target〉 To help the students understand the standard topics of energy resources, power plants, environmental impacts of power generation, power system operation, renewable energy,and transformers,

Outline〉 This cource presents the standard topics of energy resources, power plants, environmental impacts of power generation, power system operation, renewable energys, and transformers.

Fundamental Lecture〉 "**Electrical Circuit Theory (I) and Exercise**"(1.0), "**Electrical Circuit Theory (II) and Exercise**"(1.0), "**Electromagnetic Theory (I) and Exercise**"(1.0), "**Electromagnetic Theory (II) and Exercise**"(1.0), "**Fundamentals of Energy Engineering**"(1.0)

Requirement〉 Prerequisties: Electrical Circuit Theory 1 and 2, and Exercise, Electromagnetics 1 and 2, and Exercise, and Fundamentals of Energy Engineering.

Goal〉

1. To understand the energy resources.
2. To understand the power plants and system.
3. To understand the environmental impact of power plants.
4. To understand the renewable energy.
5. To understand the transformers

Schedule〉

1. Introduction of Power Generation and Transformation Engineering.
2. History of Power Systems.
3. Today's and Future Power Systems.
4. Basic Components of Power Systems.
5. Energy Resources.
6. Hydroelectric Power Plants.
7. Fossil Fuel and Nuclear Power Plants.
8. Midterm Examination (Evaluation of Achievement 1 and 2).
9. Explanation for the Answers to Midterm Examinaiton.
10. Reactors and Safety Features in Nuclear Power Plants.
11. Environmental Impact of Power Plants
12. Renewable Energy1 (Solar Energy).
13. Renewable Energy2 (Wind Energy and Other Enrgy).
14. Transformers
15. Final Examination (Evaluation of Achievement 3, 4, and 5)
16. Explanation for the Answers to Final Examinaiton.

Evaluation Criteria〉 Assignments 20%, Midterm Examination 30%, Final Examination 50%. Totally 60 % is required. Attendance and participation in class are essential.

Relation to Goal〉 (D) Fndamentals in Speciality 30%, (E) Speciality (Electric Energy) 70%

Textbook〉 Mohamed A. El-Sharkawi, Electric Energy An Introduction, Second Edition, CRC Press

Contents〉 http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216257

Student〉 Able to be taken by only specified class(es)

Contact〉

⇒ Kawada (E 棟 2 階北 B-10, +81-88-656-7460, kawada@ee.tokushima-u.ac.jp) Mail (Office Hour: (水)(木) 16:00-17:00)

Note〉

◇ Language: English
◇ Self-study:Preparation 2 hours and review 2 hours for every class (2hours) .