

**Course outline**  
**JEE644 Power Plant Engineering, 3 (3-0-6), Semester 2/2023**  
**Tuesday 9.00– 12.00hr, Class Room: to be informed.**  
**Instructor: Dr. Boonrod Sajjakulnukit, Dr. Nakorn, Dr. Athikom Bangwiwat**

Objective of the course is to provide students an overview of various types of power plants and their components. Basic concepts for fuels and combustion processes, Analysis of steam cycles and combined cycle power generation, Steam generation and turbines, Condenser, feed water and circulating water systems, Gas turbine power plants, emission control and flue gas treatment. Economics of power generation to cope with emerging deployment PV, conceptual design of a PV system for home application and its economic implication will also be offered.

Wk	Date	Details	Instructor
1	23/01	Introduction to power plant generation <ul style="list-style-type: none"> <li>• Electricity generation in the world and Thailand</li> <li>• Types of power plant categorized by fuels</li> <li>• Fuel reserve for electricity generation</li> </ul>	Dr. Boonrod
2	30/01	Basic concepts for fuels and combustion processes I <ul style="list-style-type: none"> <li>• Fuel analyses and properties</li> <li>• Concept of combustion</li> <li>• Combustion products</li> </ul>	Dr. Nakorn
3	06/02	Basic concepts for fuels and combustion processes II <ul style="list-style-type: none"> <li>• Combustion stoichiometry</li> </ul>	Dr. Nakorn
4	13/02	Analysis of steam cycles	Dr. Boonrod
5	20/02	Power plant components: Steam power plants <ul style="list-style-type: none"> <li>• Steam generation and turbines</li> <li>• Condenser</li> <li>• Feed water and circulating water systems</li> </ul>	Dr. Boonrod
6	27/02	Power plant components (Continue)	Dr. Boonrod
7	05/03	Power plant components (Continue)	Dr. Boonrod
8	12/03	Power plant components: ( Continue)	Dr. Boonrod
9	19/03	Midterm Exam	Dr. Boonrod/ Dr. Nakorn
10	26/03	Coal-fired power plant technologies	Dr. Boonrod
11	02/04	Gas turbine power plants	Dr. Boonrod
13	09/04	Combined Cycle Power Plant	Dr. Athikom
14	23/04	Environmental impact & Emission control and flue gas treatment systems	Dr. Nakorn
15	30/04	Conceptual design of a PV system for home application	Dr. Athikom
16	02/05	Economics of power generation	Dr. Athikom

**Grading**

Report & Presentation	25	% (Group Work)
Midterm Examination	35	% (open book exam)
Final Examination	40	% (open book exam)