

Course outline
JEE644 Power Plant Engineering, 3 (3-0-6), Semester 1/2025
Wednesday 13.30– 16.30hr, 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	06/08	Introduction to power plant generation - Electricity generation in the world and Thailand - Types of power plant categorized by fuels - Fuel reserve for electricity generation	Dr. Boonrod
2	13/08	Basic concepts for fuels and combustion processes I - Fuel analyses and properties - Concept of combustion - Combustion products	Dr. Nakorn
3	20/08	Basic concepts for fuels and combustion processes II Combustion stoichiometry	Dr. Nakorn
4	27/08	Analysis of steam cycles	Dr. Boonrod
5	03/09	Power plant components: Steam power plants - Steam generation and turbines - Condenser - Feed water and circulating water systems	Dr. Boonrod
6	10/09	Power plant components (Continue)	Dr. Boonrod
7	17/09	Power plant components (Continue)	Dr. Boonrod
8	24/09	Power plant components: (Continue)	Dr. Boonrod
9	01/10	Midterm Exam	Dr. Boonrod/ Dr. Nakorn
10	08/10	Coal-fired power plant technologies	Dr. Boonrod
11	15/10	Gas turbine power plants	Dr. Boonrod
13	22/10	Combined Cycle Power Plant	Dr. Athikom
14	29/10	Environmental impact & Emission control and flue gas treatment systems	Dr. Nakorn
15	05/11	Conceptual design of a PV system for home application	Dr. Athikom
16	12/11	Economics of power generation	Dr. Athikom

Grading

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