

BOE009	Power Plant Engineering	3L:0T:0P	3 credits
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**Objectives:**

To provide an overview of power plants and the associated energy conversion issues

**Contents:**

Coal based thermal power plants, basic Rankine cycle and its modifications, layout of modern coal power plant, super critical boilers, FBC boilers, turbines, condensers, steam and heating rates, subsystems of thermal power plants, fuel and ash handling, draught system, feed water treatment, binary cycles and cogeneration systems

Gas turbine and combined cycle power plants, Brayton cycle analysis and optimization, components of gas turbine power plants, combined cycle power plants, Integrated Gasifier based Combined Cycle (IGCC) systems.

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Invertis University, Bareilly

Effective from session 2020-21

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# **INVERTIS**

## **UNIVERSITY BAREILLY**

Established by Govt. of U.P. vide U.P. LEG. Act. 1256 vide U.P. Act 22 of 2000

Basics of nuclear energy conversion, Layout and subsystems of nuclear power plants, Boiling Water Reactor (BWR), Pressurized Water Reactor (PWR), CANDU Reactor, Pressurized Heavy Water Reactor (PHWR), Fast Breeder Reactors (FBR), gas cooled and liquid metal cooled reactors, safety measures for nuclear power plants.

Hydroelectric power plants, classification, typical layout and components, principles of wind, tidal, solar PV and solar thermal, geothermal, biogas and fuel cell power systems

Energy, economic and environmental issues, power tariffs, load distribution parameters, load curve, capital and operating cost of different power plants, pollution control technologies including waste disposal options for coal and nuclear plants.

### Course Outcomes:

Upon completion of the course, the students can understand the principles of operation for different power plants and their economics.

### Text Books:

1. Nag P.K., Power Plant Engineering, 3<sup>rd</sup> ed., Tata McGraw Hill, 2008.
2. El Wakil M.M., Power Plant Technology, Tata McGraw Hill, 2010.
3. Elliot T.C., Chen K and Swanekamp R.C., Power Plant Engineering, 2<sup>nd</sup> ed., McGraw Hill, 1998.