

<b>SEMESTER</b> <i>Seventh</i>	<b>DEPARTMENT</b> <i>Power Engineering</i>	<b>COURSE TITLE</b> <i>Power Station Components</i>
<b>COURSE CODE</b> <i>EP701</i>	<b>HOURS: 3</b> <b>UNITS: 3</b>	<b>COURSE SPECIFICATIONS</b> <i>Theoretical Content</i>
<b>1. Introduction:</b> <ul style="list-style-type: none"> <li>➤ Generation of electric power using fossil, nuclear and renewable, including solar, geothermal, wind, hydroelectric, biomass and ocean, energy sources. Power plant thermal cycle analysis. Cogeneration and combined cycles. Economics, operations, and design of electric power stations. Thermodynamic cycle analysis, Automatic generation control.</li> </ul>		
<b>2. Thermal Power Stations:</b> <ul style="list-style-type: none"> <li>➤ Principal fuels for energy conversion (oil, gas, coal, nuclear, solar) and generation efficiency.</li> <li>➤ Thermal unit economic dispatch solution methods, Production cost models.</li> <li>➤ Diesel power stations.</li> </ul>		
<b>3. Gas Turbine Power Generation.</b> <ul style="list-style-type: none"> <li>➤ Major component design and construction</li> <li>➤ Operation of gas turbines: start-up, ignition, governor control, shut-down procedure.</li> <li>➤ Control &amp; protection systems</li> </ul>		
<b>4. Combined-Cycle Power Plants:</b> <ul style="list-style-type: none"> <li>➤ Heat recovery, exhaust gas temperature control.</li> <li>➤ Auxiliary burners.</li> <li>➤ Gas Turbine load.</li> <li>➤ Typical combined-cycle configuration, steam turbines for combined cycle.</li> </ul>		
<b>5. Hydro-Power Stations And Direct Energy Conversion.</b> <ul style="list-style-type: none"> <li>➤ Reservoir control.</li> <li>➤ Hydraulic turbines, monitoring and control.</li> <li>➤ Hydro-generator, operation, monitoring and control.</li> </ul>		



**References:**

1. A J. Woods and B. F. Wollenberg, ***Power Generation, Operation, and Control***, 2nd ed., John Wiley & Sons, 1996.
2. Mohammad Rasul, "***Thermal Power Plants***", Publisher: InTech | ISBN: 9789533079523, 9533079523, 1<sup>st</sup> edition 2012
3. Mukund R. Patel, "***Wind and Solar Power Systems***", CRC Press, 1999.
4. ***Renewable and Efficient Electric Power Systems*** – Gilbert M. Masters, IEEE Press – Published by John Wiley and Sons, Inc. Hoboken, New Jersey, USA, 2004.
5. Weisman & Eckart, ***Modern Power Plant Engineering***, 1985.