

Syllabus of B. Tech. in Mechanical Engineering

Semester VIII

ME1801 POWER PLANT ENGINEERING

(3-1-0)

Introduction: Power and energy, sources of energy, review of thermodynamic cycles related to power plants, fuels and combustion, steam generators and steam prime movers, steam condensers, water turbines.

Variable Load problem: industrial production and power generation compared, ideal and realised load curves, terms and factors. Effect of variable load on power plant operation, methods of meeting the variable load problem. Power plant economics and other considerations in plant selection.

Steam power plant: Power plant boilers including critical and super critical boilers, fluidized bed boilers, boilers mountings and accessories. general layout of a steam power plant. different systems such as fluid handling system, combustion system, draft, ash handling system, feed water treatment, regenerative systems, condenser and cooling system, turbine auxiliary systems such as governing, feed heating, turbine mountings, lubrication, flange heating and gland leakage. Operation and maintenance of steam power plant, heat balance and efficiency, trouble shooting and remedies.

Diesel power plant: General layout, performance of diesel engine, fuel system, lubrication system, air intake and admission system, supercharging system, exhaust system, cooling system, diesel plant operation and efficiency, heat balance, trouble shooting and remedies.

Gas turbine power plant: Elements of gas turbine power plants, regeneration and reheating, cogeneration, Auxiliary systems such as fuel, controls and lubrication, operation and maintenance performance and trouble shooting and remedies.

Nuclear power plant: Principles of nuclear energy, basic components of nuclear reactions, nuclear power station, troubleshooting and remedies.

Hydro electric station: principles of working, applications, site selection classification and arrangement of -hydro-electric plants, run off size of plant and choice of units, operation and maintenance, hydro systems, interconnected systems, trouble shooting and remedies

Design of Engineering System with its sub-systems including consideration of alternatives

Specifications of the components of engineering system

Designing various components of the system from manufacturing point of view.

Systems will be selected out of the following:

- Material handling and transportation systems
- A system power plant
 - (i) Boiler (ii) Condenser (iii) Turbine (steam)
- Refrigeration and Air-conditioning
 - (i) Compressor (ii) Condenser (iii) Evaporator
- Pneumatic and Hydraulic Systems
 - (i) Single and double acting cylinders
 - (ii) Control valves
 - (iii) Hydraulic cylinder
- A pressure vessel
 - (i) Vessel (ii) Ends
 - (iii) Supports (iv) Nozzles and manholes

HS1808-P GENERAL PROFICIENCY VIII

(0-0-0)

Debate, Elocution, Extempore, Group Discussion, Panel Discussion, Presentation - Paper & oral, Allegation & clarification, Quiz / Brain Teaser, Survey Report / Project Report / Case Study, Dissertation, Mock Interview, Expository / Argumentative Report & National Service Scheme (NSS).

LIST OF SUGGESTED PROFESSIONAL AND OPEN ELECTIVES

Professional Electives

Sl.No.	Code	Paper
Design Engineering		
01	MH1711	Finite Element Analysis
02	ME1711	Vibration Engineering
03	ME1806	Machine Tool Design
04	ME1807	Hydraulic Control
05	ME1808	Experimental Mechanics
06	ME1809	Pneumatic Control and Low Cost Automation
07	ME1810	Computer Aided Engineering
Thermal Engineering		
08	ME1712	Energy Engineering
09	ME1811	Automotive Chassis and Transmission
10	ME1812	Pumps, Fans, Blowers and Compressors
11	ME1813	Cryogenic Engineering
Manufacturing Engineering		
12	ME1713	Manufacture and Inspection of Gears
13	ME1714	Computer Integrated Manufacture
14	ME1814	Cost Estimation and Optimization
15	ME1815	Terotechnology Mechatronics Engineering
16	ME1816	Special Casting Techniques
17	EC1823	Robotics
Industrial Engineering		
18	HS 1725	Total Quality Management
19	HS 1726	Value Engineering
20	HS 1825	Entrepreneurship Development
21	HS 1826	Advanced Operation Research
22	ME 1820	Project Engineering
23	HS 1827	Enterprise Resource Planning
24	HS 1828	Industrial Design
25	HS 1829	Personnel Management
26	HS 1830	Financial Management and Accounting

Open Elective

Sl.No.	Code	Paper
01	HS 1722	Enterprise Resource Management.
02	CS 1723	E-Commerce, Strategic IT
03	HS 1723	Technology Management.
04	HS 1724	Decision Support and Executive Information system.
05	CS 1724	Software Technology.
06	HS 1822	Knowledge Management.
07	CS 1824	IT in Marketing Management.
08	CS 1825	IT in HR Management
09	CS 1826	IT in Finance Management.
10	CS 1827	Project Management and Software Tools.
11	HS 1823	Human Values
12	HS 1824	Science Technology and Society

Note: The Institutions can Frame Syllabi of Professional Electives & Open electives to be offered by them in the particular Area.