Department of Mechanical Engineering
Syllabus for BE IV-Semester (2018-19)
Fundamentals of Prime Movers and Pumps (Open Elective -II)

Instruction :1 Hour /week	Semester End Exam Marks : 40	Subject Reference Code : OE410ME
Credits : 1	Sessional Marks: : 30	Duration of Semester End Exam : 2 Hours

Course Objectives	Course Outcomes
The objectives of this course are to: 1. **list** the effect of hydrodynamic forces on various types of vanes in pumps and prime movers 2. **describe** the working of pumps and prime movers.	On completion of the course the student will be able to: 1. **understand** the working of IC engines, steam and gas turbines for generation of power. 2. **apply** fundamental knowledge to understand effect of hydrodynamic forces on various types of vanes used in the pumps and hydraulic turbines. 3. **calculate** the performance of the pumps and prime movers.

UNIT-I

Principles of IC Engines: Introduction, Classification and applications of IC engines, Petrol and Diesel, 2 stroke / 4 stroke engines and efficiencies.
Hydraulic Turbines: Introduction, Classification and applications of hydraulic turbines, Impulse momentum principle, Classification – working principle – Pelton Wheel, Francis, Propeller and Kaplan turbine, work done, power output, efficiency, draft tube.
Steam & Gas Turbines: Classification and working principle and applications.

UNIT-II

Pumps: Introduction, Classification and applications of pumps, Working principles and construction details of centrifugal and reciprocating pumps, Effect of friction, acceleration head, work done, power required, air vessels, cavitation. Working of axial pump, deep well pump and submersible pump.

Suggested Reading:

1. R.K. Rajput, "Thermal Engineering", Laxmi Publications, 2005
2. R.Yadav, "Steam & gas turbines and power plant engineering", Central Publishing House, 7th edition, Allahabad, 2011
3. Bansal, R.K., *"A text book of Fluid Mechanics and Hydraulic Machines",* Laxmi Publication (P) Ltd., New Delhi, 2010
4. Modi, P.N., and Seth, S.M., *"Hydraulic and Fluid Machines",* Standard Book House, New Delhi, 2004
5. D.S. Kumar "Fluid mechanics and fluid power engineering", S.K. Kataria & Sons 2014