Gautam Buddha University, Greater Noida

School of Engineering (Mechanical Engineering)

Degree	Course Name	Course Code	Marks:100
Integrated B. Tech. + M. Tech. / M.B.A.	Fluid Machines	ME 307	SM+MT+ET 25+25+50
Semester	**Credits**	**L-T-P**	**Exam.**
V	4	3-1-0	3 Hours

Unit - I

Introduction: Velocity diagrams; Euler's turbomachinery equation; Similarity laws and specific speed; Aerofoil and cascade theory; Impulse and reaction principle; Degree of reaction. **(06 Hours)**

Unit – II

Hydraulic Turbines: Types; Pelton wheel; Francis Turbine; Kaplan and propeller Turbine; Draft Tube; Cavitation and Thoma's cavitation factor; Governing of impulse and reaction turbines. **(06 Hours)**

Unit – III

Rotodynamic Pumps: Classification; Centrifugal; Mixed and axial flow pumps; Head; Power and efficiency calculations; System losses; Impeller slip and slip factor. **(07 Hours)**

Unit – IV

Performance Characteristics of Fluid Machines: Head; Capacity and power Measurement; Performance and operating Characteristics; Muschal or constant efficiency curves; Model testing. **(08 Hours)**

Unit – V

Hydrostatic Machines: Principle and working of positive displacement machines; Indicator diagram; Volumetric efficiency; Slip; Effect of acceleration and friction; Air vessels; Two and three throw pumps; Constant and variable delivery pumps; Rotary pumps. **(09 Hours)**

Unit – VI

Hydraulic Power Transmission Devices: Fluid coupling and torque converter; Hydraulic jack; Press; Hydraulic crane; Pressure accumulator and intensifier; Rigid column theory; Pressure transients; Water hammer; Surge control.

(09 Hours)

Recommended Books:

1. Fluid Flow Machines; N. S. Rao; Tata McGraw Hill.
2. Turbomachinery: Basic Theory and Applications; E. Logan; CRC Press.
3. Fluid Mechanics and Hydraulic Machines; R. K. Bansal; Laxmi Publication.
4. A Treatise on Turbomachinery; Gopalakrishnan and Prithviraj D.; Scitech Publications.