

Department	Mechanical		Program	B. Tech.	
Subject Name	Hydraulic Machinery		Subject Code	MEC-503	
Semester	5 th	Credits	3	Teacher Incharge/Mentor	

UNIT I

1. <http://nptel.ac.in/courses/112105206/6>
http://nptel.ac.in/courses/112104117/ui/Course_home-7.htm
Impulse hydraulic turbine - Pelton wheel, Velocity triangles and inlet and outlet, Determination of total power given to Pelton wheel
2. <http://nptel.ac.in/courses/112105206/7>
Wheel (or blade) efficiency of Pelton wheel, Condition for maximum wheel efficiency, Hydraulic efficiency of Pelton wheel, Overall efficiency of Pelton wheel
3. <http://nptel.ac.in/courses/112105206/8>
Specific speed of Pelton wheel, Non-dimensional specific speed of Pelton wheel, Governing of Pelton wheel, Limitation of Pelton wheel
4. <http://nptel.ac.in/courses/112105206/9>
Tutorial I
5. <http://nptel.ac.in/courses/112105206/10>
Tutorial II

UNIT II

1. <http://nptel.ac.in/courses/112105206/11>
http://nptel.ac.in/courses/112104117/ui/Course_home-7.htm
Reaction turbine - Francis turbine, Components of reaction turbine, Net head across a reaction turbine
2. <http://nptel.ac.in/courses/112105206/12>
Velocity triangles of a Francis turbine, Blade angle and vane angle, Determination of blade efficiency of Francis turbine, Determination of specific speed of the Francis runner
3. <http://nptel.ac.in/courses/112105206/13>
Usefulness of draft tube, Different types of draft tubes, Efficiency of draft tube, Net positive suction head (NPSH), Thoma's cavitation factor
4. <http://nptel.ac.in/courses/112105206/14>
Tutorial III
5. <http://nptel.ac.in/courses/112105206/15>
Tutorial IV
6. <http://nptel.ac.in/courses/112105206/16>
http://nptel.ac.in/courses/112104117/ui/Course_home-7.htm
Propeller or Kaplan turbine, Evolution of Kaplan runner from Francis runner, Different components of Kaplan turbine
7. <http://nptel.ac.in/courses/112105206/17>
Governing of reaction turbine, Performance characteristics of reaction turbine, Specific speed of reaction turbine

UNIT III

1. <http://nptel.ac.in/courses/112105206/18>
Description of a general pumping system, Change of head in a pumping system, Determination of total head developed by pump
2. <http://nptel.ac.in/courses/112105206/19>
Basic components of centrifugal pump, Velocity triangles for centrifugal pump impeller, Determination of net head developed by centrifugal pump, Manometric efficiency of pump, Mechanical efficiency of pump, Overall efficiency of pump, Losses in a centrifugal pump
3. <http://nptel.ac.in/courses/112105206/20>
Tutorial V
4. <http://nptel.ac.in/courses/112105206/21>
Head-discharge characteristics of a centrifugal pump, Effect of blade outlet angle
5. <http://nptel.ac.in/courses/112105206/22>
Actual head-discharge and power-discharge characteristic curves of a centrifugal pump, H-Q characteristics of pump and system, Effect of speed variation on operating point of a centrifugal pump
6. <http://nptel.ac.in/courses/112105206/27>
7. <http://nptel.ac.in/courses/112105206/28>
Positive displacement pumps, reciprocating pump, Indicator diagram, effect of friction and acceleration,
8. <http://nptel.ac.in/courses/112104117/33>
Pumps
9. <http://nptel.ac.in/courses/112104117/34>
Centrifugal Pump Impeller
10. <http://nptel.ac.in/courses/112104117/35>
Characteristics of a Centrifugal Pump

Books to be Consulted:

1. Jagdish, L., "Hydraulic Machines including Fluidics", Mertopolitan Books co. Pvt. Ltd., 1997 2.