**LESSON PLAN**

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| **Discipline:**  Mech. Engg. | **Semester:**  Fifth (5th) | **Name of the Faculty:**  Er. Rajesh Kumar Prusty |
| **Subject:**  Hydraulic Machine and Industrial Fluid Power | **No. of days/week class allotted:**  Five (5) | **Semester from Date:** 01.07.24 **to Date:**  .11.24  **No. of Weeks:** 15 |
| **WEEK** | **CLASS DAY** | **THEORY TOPICS** |
| 1st | 1st | Introduction to the subject |
| 2nd | Definition and classification of hydraulic turbines |
| 3rd | Construction of impulse turbine |
| 4th | Working principle of impulse turbine |
| 5th | Velocity diagram of moving blades impulse  turbine. |
| 2nd | 1st | Work done and derivation of various efficiencies of impulse. |
| 2nd | Numerical on above |
| 3rd | Velocity diagram of moving blades Francis  turbine. |
| 4th | Work done and derivation of various efficiencies of Francis turbine. |
| 5th | Numerical on above |
| 3rd | 1st | Velocity diagram of moving blades Kaplan  turbine |
| 2nd | work done and derivation of various efficiencies of Kaplan turbine |
| 3rd | Numerical on above |
| 4th | **Monthly Test – 01** |
| 5th | Distinguish between impulse turbine and reaction turbine |
| 4th | 1st | Review class |
| 2nd | Construction of centrifugal pumps |
| 3rd | Working principle of centrifugal pumps |
| 4th | work done and derivation of various efficiencies of centrifugal pump |
| 5th | Numerical on above |
| 5th | 1st | Numerical on above |
| 2nd | Review class |
| 3rd | construction of single acting reciprocating pump |
| 4th | working of single acting reciprocating pump |
| 5th | Numerical on above |
| 6th | 1st | construction of double acting reciprocating pump. |
| 2nd | working of double acting reciprocating pump. |
| 3rd | Numerical on above |
| 4th | **Monthly Test – 02** |
| 5th | formula for power required to drive the pump (Single acting & double acting) |
| 7th | 1st | Define slip. State positive &amp; negative slip establish relation between slip & coefficient of discharge |
| 2nd | Numerical on above |
| 3rd | Numerical on above |
| 4th | Review class |
| 5th | Elements –Filter-Regulator-Lubrication Unit |
| 8th | 1st | Pressure control valves  Pressure relief valves |
| 2nd | Pressure regulation valves |
| 3rd | Direction control valves |
| 4th | 3/2DCV,5/2 DCV,5/3DCV |
| 5th | Flow control valves |
| 9th | 1st | Throttle valves |
| 2nd | ISO Symbols of pneumatic components |
| 3rd | continue |
| 4th | Direct control of single acting cylinder |
| 5th | **Monthly Test – 03** |
| 10th | 1st | Operation of double acting cylinder |
| 2nd | Operation of double acting cylinder with metering in and metering out control |
| 3rd | Review class |
| 4th | Hydraulic system, its merit and demerits |
| 5th | Hydraulic accumulators |
| 11th | 1st | Pressure control valves |
| 2nd | Pressure relief valves |
| 3rd | Pressure regulation valves |
| 4th | **Monthly Test – 04** |
| 5th | Direction control valves |
| 12th | 1st | 3/2DCV,5/2 DCV,5/3DCV |
| 2nd | Flow control valves |
| 3rd | Throttle valves |
| 4th | Fluid power pumps |
| 5th | Vane pump |
| 13th | 1st | Radial piston pumps |
| 2nd | ISO Symbols for hydraulic components. |
| 3rd | Actuators |
| 4th | Hydraulic circuits |
| 5th | continue |
| 14th | 1st | Direct control of single acting cylinder |
| 2nd | Operation of double acting cylinder |
| 3rd | Operation of double acting cylinder with metering in control |
| 4th | Operation of double acting cylinder with metering out control |
| 5th | Comparison of hydraulic and pneumatic system |
| 15th | 1st | Review class |
| 2nd | Revision |
| 3rd | Revision |
| 4th | Revision |
| 5th | Revision |