

**FOR ENGINEERING DEGREE LEVEL ELECTIVE SUBJECT**

**For Branches in Electrical/ Mechanical/ Instrumentation/ Electronics Engineering**

1. **Subject Code:** \_\_\_\_\_ **Course Title: Hydropower Development**

2. **Contact Hours: L: T: P:**

3. **Examination Duration (Hrs.): Theory :** \_\_\_\_\_ **Practical :** \_\_\_\_\_

4. **Relative Weightage : CWS PRS MTE ETE**  
**PRE**

5. **Credit:** \_\_\_\_\_ 6. **Semester:**     
**Autumn Spring**

**Both**

7. **Pre-requisite: NIL** 8. **Subject Area:** \_\_\_\_\_

9. **Details of Course:**

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<b>Sl. No.</b>	<b>Particulars</b>	<b>Contact Hours</b>
1.	INTRODUCTION: Type of Hydro-electric development, classification, Techno Economic studies for size & type, Speed rise and Pressure Rise, studies for performance requirements	
2.	Hydraulic Turbines and Governor: Types; selection criteria, Model testing, specifications, protection from silt	
3.	Hydro Generator and Excitation System: Types; selection; Characteristics; Specification; Testing	
4.	Power Transformer: Types; Characteristics; Specification and Testing	
5.	HV Circuit Breaker: Types; Characteristics; Specification and Testing	
6.	Control & Protection: (i) Protective Relaying and Metering of Hydro Generators; Turbines, Transformers, Bus Bars and Outgoing Feeders, control and Monitoring System for Turbines, Generators, Exciters; transformers; Breakers, Power Plant Start/Stop, running control and Annunciation	
7.	Electrical Auxiliaries: Auxiliaries Power; DC System; Power & Control Cables and Cabling; Lighting System; Grounding System	
8.	Mechanical Auxiliaries: EOT Crane; Cooling Water System; Dewatering and Drainage System; HP & LP compressed Air System; Fire Protection; Ventilation and Air conditioning	
9.	Switchyard Equipment: Isolators, Potential Transformers, Current Transformer; Lighting Arrestors; Switchyard and Structures	
10.	Power evacuation arrangements	

11.	Erection, Commissioning and Field Testing Renovation and modernization	
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**Suggested Readings:**