



*Maulana Azad*  
**NATIONAL INSTITUTE OF TECHNOLOGY, Bhopal-462003**  
**DEPARTMENT OF CIVIL ENGINEERING**  
**M. Tech. in Civil Engineering**  
*With Specialization in: Hydro Power Engineering*  
**SCHEME OF STUDY (Revised April 2020)**

**FIRST SEMESTER**

Course No.	Subject	Scheme of Studies Periods per week			Total Credits
		L	T	P	
HY101	Computational Fluid Dynamics	3	1	-	4
HY102	Advanced Fluid Mechanics	3	1	-	4
HY103	Hydro Power Potential Assessment	3	1	-	4
HY104	Theory of Cascades	3	1	-	4
	Elective 1(A)	3	1	-	4
	Elective 2 (B)	3	1	-	4
HY105	Lab - 1	-	-	2	1
HY106	Seminar - 1	-	-	2	1
HY107	Communication Skills/ NPTEL/MOOC/Hum. Dept.	2	-	-	2
<b>Total Hours 30</b>		<b>Total credits</b>			<b>28</b>
<b>Total Credits (Cumulative) 28</b>					

**SECOND SEMESTER**

Course No.	Subject	Scheme of Studies Periods per week			Total Credits
		L	T	P	
HY201	Characteristics of Hydraulic Machines	3	1	-	4
HY202	Design of Hydraulic Turbines	3	1	-	4
HY203	Design of Hydraulic Pumps	3	1	-	4
	Elective 3(A)	3	1	-	4
	Elective 4 (A)	3	1	-	4
	Elective 5 (C)	3	1	-	4
HY204	Lab - 2	-	-	2	1
HY205	Research Methodology, Technical Report and Paper Writing	-	2	-	2
HY206	Seminar - 2	-	-	2	1
<b>Total Hours 30</b>		<b>Total credits</b>			<b>28</b>
<b>Total Credits (Cumulative) 56</b>					

**THIRD SEMESTER**

Course No.	Subject	Scheme of Studies Period per week			Total Credits
		L	T	P	
HY301	Dissertation Phase-1	-	-	24	12
<b>Total Hours</b> 24 <b>Total Credits (Cumulative) 68</b>		<b>Total credits</b>			<b>12</b>

**FOURTH SEMESTER**

Course No.	Subject	Scheme of Studies Period per week			Credits
		L	T	P	
HY401	Dissertation Phase-2	-	-	24	12
<b>Total Hours</b> 24 <b>Total Credits (Cumulative) 80</b>		<b>Total credits</b>			<b>12</b>

## **LIST OF ELECTIVES**

### **Group – A Program Electives**

HY 501 Planning & Layout of Hydro Power Plants  
HY 502 River Basin Planning and Management  
HY 503 Hydro Power Structures  
HY 504 Hydraulic Transients  
HY 505 Instrumentation and Measurements  
HY 506 Manufacturing of Hydro Equipments  
HY 507 Small Hydro and Tidal Power Plants  
HY 508 Design and Analysis of Piping Systems  
HY 509 Industrial Hydraulics

### **Group – B Department Electives (for other programs of same department only)**

HY 601 Computational Fluid Dynamics  
HY 602 Hydro Power Potential Assessment  
HY 603 Instrumentation and Measurements  
HY 604 Small Hydro and Tidal Power Plant  
HY 605 Design & Analysis of Piping System

### **Group – C Institute Electives (for other departments only)**

HY 701 Hydraulic Transients  
HY 702 Design of Hydraulic Turbines  
HY 703 Instrumentation and Measurements  
HY 704 Small Hydro and Tidal Power Plants  
HY 705 Design of Hydraulic Pumps