

### Academic Curriculum for Master of Technology in WATER RESOURCES DEVELOPMENT (WRD)

Teaching Scheme					Contact Hours per Week			Exam. Duration (Hrs.)		Relative Weightage (%)				
S. No	SUBJECT CODE	COURSE TITLE	SUBJECT AREA	CREDITS	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
<b>1<sup>st</sup> YEAR I SEMESTER (AUTUMN)</b>														
1.	WR-501	System Design Techniques	PCC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
2.		Program Core Course 1	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
3.		Program Core Course 2	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
4.		Program Core Course 3	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
5.		Program Elective Course	PEC	4	as per elective course									
<b>Sub Total</b>				<b>20</b>										

<b>II SEMESTER (SPRING)</b>														
1.	WR-505	Preparation of Water Resources Project Report	PCC	2	-	-	4	-	-	-	50	-	-	50
2.		Program Elective Course	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
3.		Program Elective Course	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
4.		Program Elective Course	PEC	4	as per elective course									
5.		Program Elective Course	PEC	4	as per elective course									
6.	WR-700	Seminar	SEM	2	-	-	-	-	-	-	-	100	-	-
<b>Sub Total</b>				<b>20</b>										

Note: P.G. Diploma course in WRD shall be of ONE YEAR duration comprising of semesters I and II only, with a minimum credits of 40

<b>2<sup>nd</sup> YEAR III SEMESTER (AUTUMN)</b>														
1.	WR-701A	Dissertation Stage I	DIS	12	-	-	-	-	-	-	-	-	100	-
<b>Sub Total</b>				<b>12</b>										
* to be continued and grade to be awarded in the next semester														
<b>IV SEMESTER (SPRING)</b>														
1.	WR-701B	Dissertation (continued from 3 <sup>rd</sup> Semester)	DIS	18	-	-	-	-	-	-	-	-	100	-
<b>Sub Total</b>				<b>18</b>										
<b>Total</b>				<b>70</b>										

#### PROGRAMME CORE SUBJECTS

##### For Civil Background

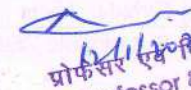
1.	WR-502	Design of Water Resources Structures	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
2.	WR-503	Water Resources Planning and Management	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
3.	WR-504	Applied Hydrology	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-

##### For Electrical Background

1.	WR-531	Hydro Generating Equipment	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
2.	WR-532	Hydropower System Planning	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
3.	WR-533	Power System Protection Application	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-

##### For Mechanical Background

1.	WR-532	Hydropower System Planning	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
2.	WR-551	Design of Hydro Mechanical Equipment	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
3.	WR-552	Project Planning and Management	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-

  
**Professor & Head**  
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**Program Elective Courses (WRD)**

1.	WR-511	Geotechnical Engineering	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
2.	WR-512	Hydropower and Appurtenant Works	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
3.	WR-513	Earth and Rockfill Dams	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
4.	WR-514	Masonry and Concrete Dams	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
5.	WR-515	Irrigation Structures	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
6.	WR-516	Rural and Urban Water Supply	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
7.	WR-517	River Engineering	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
8.	WR-518	Finite Element Methods	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
9.	WR-519	Water Resources System Reliability	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
10.	WR-520	Environmental Impact Assessment of Water Resource Projects	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
11.	WR-521	Groundwater Hydrology	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
12.	WR-522	Climate Change and Water Resources	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
13.	WR-534	Substation and Transmission line Design	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
14.	WR-535	Installation Maintenance and Testing of Hydro Generating Equipment	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
15.	WR-536	Maintenance Management in Power Plants	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
16.	WR-537	Power System Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
17.	WR-538	Electrical Design of Hydro Power Station	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
18.	WR-539	Power System Operation and Control	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
19.	WR-540	Control and Instrumentation of Hydro Power Plant	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
20.	WR-541	Power System Analysis	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
21.	WR-542	Power System Reliability	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
22.	WR-543	Insulating Systems	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
23.	WR-544	Planning and Design of Small Hydro Power Schemes	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
24.	WR-545	Power Electronics Controlled Hydro-Electric Systems	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
25.	WR-546	Modelling and Simulation of Hydro-Electric Energy Systems	PEC	4	1	1	4	2	2	20-35	20	-	40-50	20
26.	WR-547	Synchronous and Asynchronous Generators Laboratory	PEC	4	1	-	6	-	3	-	50	-	-	50
27.	WR-548	Power Electronics Laboratory	PEC	4	1	-	6	-	3	-	50	-	-	50
28.	WR-549	Control and Instrumentation Laboratory	PEC	4	1	-	6	-	3	-	50	-	-	50
29.	WR-553	Design of Construction Job Facilities	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
30.	WR-554	Construction Plant Machinery	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
31.	WR-555	Air Conditioning and Ventilation	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
32.	WR-556	Construction Techniques	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
33.	WR-571	Design of Irrigation Structures and Drainage Works	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
34.	WR-580	Renewable Energy System Technology	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
35.	WR-581	Water Quality Monitoring and Modeling	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
36.	WR-588	Remote Sensing and GIS Applications in Water System	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
37.	WR-586	Groundwater Development and Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
38.	WR-587	Watershed Development and Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
39.	WR-597	Machine Learning Models in Water Resources Planning and Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
40.	WR-595	Circular Water Economy	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
41.	WR-596	Sustainable Water Resources	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-