

**DEPARTMENT OF WATER RESOURCES DEVELOPMENT AND MANAGEMENT
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE**

Program Code	:	XXX	M.Tech. (Irrigation Water Management)/P.G. Diploma in Irrigation Water Management
Department	:	Department of Water Resources Development and Management	
Year	:	I	
Model	:	2	

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
Semester-I (Autumn)									
1.	WRC-503	Water Resources Planning and Management	PCC	4	3	1	0	3	0
2.	WRC-533	Design of Irrigation Structures and Drainage Works	PCC	4	3	0	2	3	0
3.	WRC-536	On Farm Development	PCC	3	2	0	2	3	0
4.	WRC-538	Principles and Practices of Irrigation	PCC	3	2	0	2	3	0
5.		Program Elective-I	PEC	3	-	-	-	-	-
6.		Social Science Course	SSC	2	-	-	-	-	-
		Total		19					
Semester-II (Spring)									
1.		Program Elective-II	PEC	3	-	-	-	-	-
2.		Program Elective-III	PEC	3	-	-	-	-	-
3.		Program Elective-IV	PEC	3	-	-	-	-	-
4.		Program Elective-V	PEC	3	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-
6.	WRC-700	Seminar	SEM	2	1	0	2	-	-
		Total		17					
Note: P.G. Diploma course in IWM shall be of One Year duration comprising of semesters I and II only, with a minimum credit of 36									

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Program Code : **XXX M.Tech. (Irrigation Water Management)/P.G. Diploma in Irrigation Water Management**
 Department : **Department of Water Resources Development and Management**
 Year : **II**
 Model : **2**

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
Semester-I (Autumn)									
1.	WRC-691	Internship Social Activity	ISA	4	-	-	-	-	-
2.	WRC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-
		Total		14					
Semester-II (Spring)									
1.	WRC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-
		Total		14					

Summary				
Semester	1	2	3	4
Semester-wise Total Credits	19	17	14	14
Total Credits	64			

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Program Elective Courses for Semester-I (Autumn)

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
1.	WRL-601	Open Channel Hydraulics	PEC	3	2	0	2	3	0
2.	WRL-602	Data Analytics for Water Resources	PEC	3	2	0	2	2	1
3.	WRL-603	Smart Irrigation Systems	PEC	3	2	0	2	2	1
4.	WRL-604	Environmental Impact Assessment of Water Resources Project	PEC	3	3	0	0	3	0
5.	WRL-605	Circular Water Economy	PEC	3	3	0	0	3	0

Program Elective Courses for Semester-II (Spring)

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
1.	WRL-612	Underground Structures and Tunnels	PEC	3	2	1	0	3	0
2.	WRL-613	System Design Techniques	PEC	3	2	1	0	3	0
3.	WRL-614	Sediment Transport in Rivers	PEC	3	2	1	0	3	0
4.	WRL-617	Earth and Rockfill Dams	PEC	3	2	1	0	3	0
5.	WRL-620	River Engineering	PEC	3	2	0	2	3	0
7.	WRL-624	Climate Change and Water Resources	PEC	3	2	1	0	3	0
8.	WRL-645	Soil and Agronomy	PEC	3	2	1	0	3	0
9.	WRL-646	Renewable Energy System Technology	PEC	3	2	1	0	3	0

Program Elective Courses for Semester-II (Spring)

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
10.	WRL-647	Water Quality Monitoring and Modeling	PEC	3	2	1	0	3	0
11.	WRL-648	Groundwater Development and Management	PEC	3	2	1	0	3	0
12.	WRL-649	Watershed Development and Management	PEC	3	2	1	0	3	0
13.	WRL-650	Remote Sensing and GIS Applications in Water Systems	PEC	3	2	0	2	3	0
14.	WRL-651	Sustainable Water Resources	PEC	3	2	1	0	3	0
15.	WRL-652	Ecohydrological Modeling and Sustainability	PEC	3	2	0	2	3	0
16.	WRL-655	Rural and Urban Water Supply	PEC	3	2	0	2	3	0
17.	WRL-656	Performance Evaluation of Irrigation Systems	PEC	3	1	0	4	1	2
18.	WRL-657	Operation Maintenance and Management of Irrigation Systems	PEC	3	2	1	0	3	0
19.	WRL-658	Water and Land Laws	PEC	3	2	1	0	3	0
20.	WRL-659	Rural Sociology and Irrigation Economics	PEC	3	2	1	0	3	0
21.	WRL-660	Evaluation of Irrigation Project	PEC	3	2	1	0	3	0
22.	WRL-661	Theory of Seepage	PEC	3	2	1	0	3	0
23.	WRL-662	Cropping System Modeling	PEC	3	2	1	0	3	0
24.	WRL-663	Environmental Impact of Irrigated Agriculture	PEC	3	2	1	0	3	0
25.	WRL-664	Smart Irrigation Systems	PEC	3	2	1	0	3	0

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Science, Technology, and Advanced Research-tools Basket

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
1.	WRT-501	Artificial Intelligence (AI) & Machine Learning (ML) for Water Resources	STAR	3	2	0	2	2	1
2.	WRT-502	Automation in Water Resources Management	STAR	3	2	0	2	2	1

Social Sciences Course Basket

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
1.	WRS-501	Water and Society	SSC	2	2	0	0	2	0
2.	WRS-502	Policy and Strategies for DRR, Adaptation, Safety and Sustainability	SSC	2	2	0	0	2	0