भारत सरकार
जल शक्ति मंत्रालय
जल संसाधन नदी विकास एवं गंगा संरक्षण विभाग
केन्द्रीय जल आयोग
प्रशिक्षण निदेशालय

Government of India
Ministry of Jal Shakti
Dept. of Water Resources, RD & GR
Central Water Commission
Training Directorate

CIRCULAR

Subject: Sponsoring of officers for admission to M.Tech Degree/P.G. Diploma in WRD, IWM and DWS programmes for the academic session 2024-2025 —reg

It is proposed to nominate CWC officers for the course mentioned under the subject, to be held at lIT Roorkee. Accordingly, it is requested that any interested/suitable eligible officers may apply through proper channel in the prescribed application format so as to reach this office latest by **25.05.2024** with the approval of the Concerned Member/Chief Engineer (HRM) in respect of HRM Unit/Chief Engineer (NWA) in respect of NWA through concerned Establishment Section of CWC (for verification of eligibility criteria by the concerned Establishment) for taking further necessary action in the matter.

The detailed Information Brochure for admission to WRD, IWM and DWS PG Programmes of WRD&M during the Academic Session– 2024-2025 is **enclosed herewith** and also available on link: **(https://wr.iitr.ac.in/static/2024brochure.pdf)**.

The applicant must have minimum qualification for admission to aforesaid program. The M. Tech Program is of two years' duration and the P.G. Diploma Program is of one-year duration.

Encl: As Above

Signed by Sachin Gupta
Date: 08-05-2024 15:00:45
Reason: Approved

(Sachin Gupta)
Deputy Director

Copy to:

1. All Chief Engineers, Central Water Commission (HQ & Field Offices).
2. Director, (D&R/WP&P/RM)-Coordination, CWC, New Delhi.
3. Secretary/Director (TC)/Director (Admn.), CWC, New Delhi.
4. Prof. Thanga Raj Chelliah, Professor & Head Department of Water Resources Development and Management Indian Institute of Technology Roorkee, Uttrakhand-247667 Phone: +91-1332-284351/ +91-1332-285251. Email id : head@wr.iitr.ac.in.
5. CWC Website/E-Office Notice Board.

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New Library Building
R.K. Puram, New Delhi - 110066
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Conserve Water-Save Life

INFORMATION BROCHURE

(For Sponsored Candidates only) (2024-25)

For Admission to Post Graduate Programmes

in

Water Resources Development (WRD),

Irrigation Water Management (IWM)

&

Drinking Water and Sanitation (DWS)

जल संसाधन विकास एवं प्रबन्धन विभाग

DEPARTMENT OF WATER RESOURCES DEVELOPMENT & MANAGEMENT

भारतीय प्रौद्योगिकी संस्थान रुड़की

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

ROORKEE - 247 667, (UTTARAKHAND), INDIA

LAST DATE FOR APPLYING ONLINE - JUNE 25, 2024

Department of

WATER RESOURCES DEVELOPMENT & MANAGEMENT

Indian Institute of Technology Roorkee

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Director, IIT Roorkee

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Experts from field and other Departments of IIT Roorkee and Scientists of other Institutes are invited to deliver expert lectures.

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

(Formerly University of Roorkee)

INFORMATION BROCHURE

2024-2025

One-Year P.G. Diploma Programmes
and
Two-Year M.Tech. Degree Programmes
in

WATER RESOURCES DEVELOPMENT

(For Civil, Electrical, and Mechanical Engineers)

IRRIGATION WATER MANAGEMENT

(For Civil, Agricultural Engineers, and Agricultural Scientists)

&

DRINKING WATER AND SANITATION

(For Civil/Environmental/Mechanical/Agricultural/
Chemical Engineers/B.Arch and Planning)

Department of

Water Resources Development and Management

(Formerly Water Resources Development Training Centre)

IIT Roorkee, Roorkee – 247 667

Uttarakhand, INDIA

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E-mail : wrdtc@iitr.ac.in & head@wr.iitr.ac.in

Website : (https://wr.iitr.ac.in)

CONTENTS

IMPORTANT INFORMATION

The Department of Water Resources Development and Management (WRD&M), [formerly Water Resources Development Training Centre (WRDTC)] offers One-year P.G. Diploma and Two-year M.Tech. Degree in Water Resources Development (WRD), Irrigation Water Management (IWM) and Drinking Water and Sanitation (DWS).

Candidates are admitted in three categories:

1. Sponsored Candidates from India.
   - Candidates should apply through the link (link and procedure for applying online is attached at Annexure - I 'A')
2. Sponsored candidates from foreign countries
   - ITEC Candidates should apply through the Indian Mission
   Website Link: https://ir.iitr.ac.in/HowToApply
3. Fresh undergraduates with GATE
   - For more information candidates may visit the website of IIT Roorkee
   Website Link: https://iitr.ac.in/Academics/Admission%20To%20Postgraduate%20Programmes.html

Last date for submission of online application form for sponsored candidates (category 1 & 2): **25.06.2024**

Processing of applications for admission and sponsorship takes considerable time, therefore, the sponsored candidates should fill their application well in time to reach the department latest by **25.06.2024**

The Academic Session will start during the second week of **July 2024.**

The selected candidates shall be governed by rules and regulations of the Indian Institute of Technology Roorkee (IITR). In case of any dispute in the interpretation of these rules or any other matter not covered in the rules and regulations, the decision of the Chairman of Senate of IIT Roorkee shall be final and binding.

For further information, please visit the Institute and Department's website or contact:

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FOREWORD

The availability of water across the world is not uniform, having vastly varying spatial and temporal patterns. Hence, effectively planning and managing water resources is always challenging, especially in developing countries. Water resources projects are mainly devoted to improving irrigation, hydropower development and flood control. Besides the conventional way of approaching water-related problems, there is always a scope for developing new theories, methods, and policies, including the impacts of climate change and anthropogenic activities. Previously, the focus has always been to meet the present demands. However, there is a drastic shift in water resources management, including sustainability concepts, to meet the future needs. All these efforts require well-trained human resources, especially in countries from the global south. The Department of Water Resources Development and Management (WRD&M) at the Indian Institute of Technology Roorkee was established in 1955 as a follow-up of the Bandung (Indonesia) conference held under the UN's aegis in 1954, focusing on developing water-related infrastructure. This was the vision of Late Shri Jawahar Lal Nehru, the first Prime Minister of India to train engineers from Asian, African and Latin American countries.During that period, it was accelerated under the leadership of Dr. A.N. Khosla, an Eminent Water Resources Engineer and Vice-Chancellor of the erstwhile University of Roorkee, which is now known as the Indian Institute of Technology Roorkee.

The department of WRD&M has provided training to professionals from 56 countries. Many of its alumni have reached top-level decision-making positions in their respective organizations. The track record is evident in developing various River Valley Multipurpose Projects worldwide.The Department currently offers academic programmes in the following specializations:

1. Water Resources Development for Civil, Electrical, and Mechanical Engineers.
2. Irrigation Water Management for Civil/Agricultural Engineers and Agricultural Scientists.
3. Drinking Water and Sanitation for Civil/Environmental/Mechanical/Agricultural/ Chemical Engineers/B. Arch and Planning.

This brochure describes the available facilities in the Department as well as at IIT Roorkee. Also, it provides information about the academic programmes, including eligibility for admission, fellowships, curriculum, and opportunities for research and consultancy projects.

It gives me a great pleasure to invite the government and private enterprises dedicated to water resources development and management worldwide to sponsor their officers to pursue academic programmes for training at our Department of WRD&M.

Kamal Kishore Pant
Director, IIT Roorkee

PREFACE

Water, as an indispensable natural resource, plays a pivotal role in sustaining life and fostering economic development. Its significance extends across various sectors, holding tremendous potential in powering economies and fulfilling growing food and energy demands through sustaining crop productivity and development of hydropower. Recognizing the diverse regional needs, the formulation of water resource management policies becomes imperative for sustainable development. The complexity involved in efficient water resources management poses a multitude of challenges to water resources practitioners, especially engineers, in crafting unique solutions.

Over the last six decades, the Department of Water Resources Development and Management at IIT Roorkee, formerly known as the Water Resources Development Training Centre, has consistently excelled in training young water professionals. Globally acclaimed, the department has garnered a reputation for imparting knowledge and education to scientists and professionals, particularly from Asia, Africa, and other developing countries. Its alumni, dispersed worldwide, continue to excel while contributing to society at large.

The Department offers three distinguished Postgraduate programs: Water Resources Development (WRD), catering to Civil/Electrical/Mechanical Engineers, and Irrigation Water Management (IWM), tailored for Civil/Agricultural Engineers/Agricultural Scientists, and Drinking Water and Sanitation (DWS) for Civil/Environmental/Mechanical/Agricultural/Chemical Engineers/B.Arch and Planning. The 24-month curriculum encompasses comprehensive lectures, hands-on practical sessions, educational tours, and the completion of project reports and dissertations. These Master of Technology (M. Tech) programs stand out for their unique credit-based coursework structure, ensuring a robust foundation in the respective fields. Additionally, three 12-months diploma programs mirror the content of the Post Graduate programs, excluding dissertations. Our commitment to excellence is reflected in ongoing program updates, incorporating cutting-edge subjects like Machine Learning, Remote Sensing & GIS, Cropping System Modeling, On-farm Water Management, Climate Change impacts, Drinking Water and Sanitation, Sustainable Water Resources, etc., enhancing the contemporary relevance of our offerings.

The Department excels in specialized faculties, boasting extensive experience in planning, designing, constructing, operating, and maintaining multi-purpose water resources projects. Committed to advancing knowledge, faculty members conduct rigorous research. Our state-of-the-art teaching approach integrates practical and theoretical concepts, fostering a comprehensive learning experience. Renowned as a center of excellence in Water Resources Structure Design, Irrigation Planning and Management, Flood Control, Irrigation and Drainage, and Hydropower Development, the Department actively engages in research, consultancy, and several outreach activities. Also, the Department runs a registered office (headquarters) of the Indian Water Resources Society, founded in 1980, which has 7408 individual members, 335 Fellows, and 48 institutional members at present.

This Information Brochure elucidates comprehensive insights into diverse academic programs and admission procedures for sponsored candidates. Additionally, 13 seats in WRD, 8 seats in IWM, and 10 seats in DWS programs are allocated for Indian graduates through GATE, necessitating a distinct application in response to IIT Roorkee's postgraduate admission notifications. International students with fellowships are directed to apply through the ITEC of the Ministry of External Affairs, Govt. of India, or other fellowship programs. Sponsoring agencies are earnestly urged to motivate their officers to pursue training opportunities, leveraging the Department's and Institute's facilities. Your cooperation in facilitating this endeavor is highly valued.

Thanga Raj Chelliah
Professor & Head

1.0 INTRODUCTION

1.1 General

Droughts and floods continue to hamper agricultural production and other productive activities in most developing countries of Asia, Africa, and the Far East and cause widespread misery and thus requiring adequate control on rivers. In many developing countries, surface water resources remain untapped for irrigation, flood control, and hydropower potential because of their economic backwardness and the growing population. The urgency for food and economic betterment calls for efficient water use through proper water resources management to step up their agricultural and industrial production. There is always a demand for trained human resources who can confidently undertake any water resources development projects to accomplish several tasks from investigation to execution. During Bandung summit in 1954, the need for trained human resources in Water Resources Development and Management for developing countries was realized. Consequently, to undertake such a gigantic task, this Department was founded on 25th November 1955 at the erstwhile University of Roorkee, now Indian Institute of Technology Roorkee.

1.2 The Institute

Indian Institute of Technology Roorkee has its roots in the Roorkee College established in 1847 as the first engineering college in India, which was soon rechristened as Thomason College of Civil Engineering in 1854 after its greatest mentor James Thomason. After about 100 years of distinguished services, the college was elevated to the University of Roorkee as the first Engineering University of Independent India on November 25, 1949. It now has 23 academic departments covering engineering, applied sciences, humanities & social sciences & management programme, 1 school, 9 academic centres & 7 academic service centers, and 6 supporting units.

Prior to becoming an IIT, the University of Roorkee was accredited by the National Assessment and Accreditation Council (NAAC), an autonomous institution of the University Grant Commission (UGC), with FIVE STARS (*****) for five years in the year 2000. This is the highest grade that NAAC awards on five-point scale. In overall Engineering and Technology (Broad Area), IIT Roorkee has maintained its national position at 8th Rank. IITR secured 5thposition in NIRF ranking (Engineering) at the national level.

1.3 The Department

The proposal for establishing a training center in Water Resources Development originated with the United Nations Economic Commission of Asia and the Far East (now known as ESCAP) in 1951-52, and the Centre was established at the erstwhile University of Roorkee on 25th November 1955. The essential equipment was provided under the U.S. Technical Cooperation Mission and U.N. Technical Assistance Board. India's government provided funds for constructing the building and providing all other facilities and agreed to bear the entire recurring expenditure. The USAID, UNDP, and ECAEF provided specialists for short-term lecture arrangements.

India was decided as the place of choice for opening the Centre, which had the unique distinction of having the biggest network of irrigation works, the largest area under irrigation, and the most incredible variety of irrigation structures. After independence, India also had embarked on an ambitious programme for the construction of river valley projects. The erstwhile University of Roorkee being the successor to the Thomason College of Civil Engineering, the oldest and best-known technical institution in the East, and having the basic infrastructure for imparting such training was an obvious choice for establishing the Centre. Dr. A.N. Khosla, a legendary figure in Water Resources Engineering and then Vice-Chancellor of the erstwhile University of Roorkee was the founder Director of the Centre. Consequent to the conversion of the University of Roorkee in Indian Institute of Technology Roorkee, the Water Resources Development Training Centre (WRDTC) was renamed as the Department of Water Resources Development and Management (WRD&M). The Department offers M.Tech. and Post-Graduate programmes for specialization in the fields of Water Resources Development (for civil, electrical, and mechanical engineers), Irrigation Water Management (for civil engineers, agricultural engineers, and agricultural scientists) and Drinking Water and Sanitation (for Civil/ Environmental/Mechanical/Agricultural/Chemical Engineering/B.Arch and Planning) separately.

1.4 The Campus

The campus of the Indian Institute of Technology Roorkee is located at an elevation of 268m (880 ft) above mean sea level (longitude $77^{O}54'E$ and latitude of $29^{O}52'N$). The place is situated 30-60km (19-35 miles) south of the foothills of the Himalayas (Haridwar and Rishikesh). It is within easy reach of New Delhi, India's capital, at a distance of about 180 km by road. It is also connected by rail to Delhi, Bombay, and almost all State's capitals.

The temperature of Roorkee varies from $2.5^{O}C$ to $34^{O}C$ in winter and from $13^{O}C$ to $45^{O}C$ in summer. The average annual rainfall is 1170 mm, the bulk of which occurs during mid-June to mid-September. The months of May and June are hot. The rainy and winter months are generally pleasant. Clothes of cotton, silk, or terylene and mosquito nets are required during summer and rainy seasons, while woolen suits and blankets are essential during winter.

1.5 Medium of Instruction

The medium of instruction at the Department is English. Trainees officers are expected to have sufficient working knowledge of the English language.

1.6 Objectives and Achievements

The Department was established to train serving engineers from Asia, Africa, and other developing countries in various aspects of Water Resources Development and Management. This brings together the engineering talents for a first-hand understanding and appreciation of each other's problems and helps and evolve solutions by pooling knowledge & new techniques suited to Afro-Asian region conditions. Also, the Department's programs help foster a feeling of brotherhood amongst the engineers of various countries. Since its creation in 1955, the Department has admitted around 3045 serving engineers from 56 countries as detailed below:

Name of Country	No.of. Trainees	Name of Country	No.of. Trainees	Name of Country	No. of. Trainees
Afghanistan	56	Jordan	2	Sengal	1
Bangladesh	17	Kenya	6	Sierra Leone	7
Brazil	1	Kazhakistan	2	South Korea	3
Bhutan	4	Lao PDR	9	Singapore	1
China	3	Liberia	6	Somalia	1
Costarica	1	Malawi	5	Sri Lanka	39
Cuba	1	Malaysia	7	Sudan	37
Egypt	9	Maldives	1	South Sudan	6
Eritrea	3	Mauritius	2	Switzerland	1
Eswatini	1	Mangolia	1	Syria	10
Ethiopia	54	Mexico	1	Tanzania	47
Ghana	13	Myanmar	15	Thailand	20
Guyana	1	Nicaragua	1	UAE	1
Gambia	1	Nigeria	2	Uganda	2
India	1771	Nepal	231	Uzbekistan	12
Indonesia	502	Panama	1	Vietnam	52
Iran	1	Pakistan	1	Yeman	7
Iraq	16	Philippines	42	Zambia	3
Japan	1	Rwanda	4		
		Grand Total	3045		

2.0 FACILITIES

2.1 General

The Department and the Institute have all the required facilities to provide the Water Resource Development (WRD), Irrigation Water Management (IWM) and Drinking Water & Sanitation (DWS) training of the international standard, which is briefly described below.

2.2 Library

The Department has a library of its own equipped with the latest literature on the topics relating to Water Resources Engineering, Irrigation Water Management and Drinking Water Sanitation. The proceedings of many important conferences and symposia in the field of Water Resources Engineering, Irrigation Water Management and Drinking Water Sanitation are also available. Considerable efforts and resources are devoted for keeping the library up to date.

Apart from the departmental library, the Institute has a modern, well-equipped library housed in a separate block named Mahatma Gandhi Central Library. It has literature on all engineering subjects.

2.3 Laboratories

The Department has its laboratories including Soil and Water Quality Lab, Irrigation Water Management, Groundwater, River Engineering, Hydropower Simulation, Geospatial Science Laboratory and Electrical Testing Laboratory for experimental work associated with classroom teaching, training, and faculty research and consultancy. In addition to departmental laboratories, excellent laboratory facilities are also available in the Departments of Civil, Electrical, Hydrology, Mechanical, Earthquake Engineering and Earth Sciences etc.

2.4 Classrooms/Lectures Theatres and Seminar Rooms

The Department has spacious and well-ventilated classrooms and lecture theatres for regular classes. These rooms are well equipped with overhead projector, multimedia projection etc. Similarly, the seminar room is equipped with overhead projector & multimedia projection system.

2.5 Computer Laboratory

The Department has a computer laboratory with adequate facilities. The computer laboratory is being used for imparting education and development and use of various software for analysis of water resources problems. In addition to the departmental computer laboratory, the computer center of IIT Roorkee is equipped with high-end computing machines. The Department and Labs have internet accessibility for 24x7 in a week.

2.6 Lodging and Boarding

The Khosla International House (KIH), its Azad Wing, Himgiri Apartment and A. N. Khosla Bhawan provide non-AC accommodation (with attached bathroom and a balcony) for the sponsored married officer trainees of this department. Some rooms are equipped with a kitchenette. A common mess in the KIH (formerly known as Asian African Hostel) caters to Indian and Continental cuisine.

2.7 Demonstration Farm & Meteorological Observatory

A new demonstration farm for research work related to soil-water-plant relationship studies, various methods of irrigation, etc. has been developed. An agrometeorological laboratory has been established, which provides continuous information to the farmers in the region.

2.8 Other Facilities

The facilities such as PG students club, Multi-Activity Centre, Student Activity Centre, sports complex, swimming pool, and convocation hall of the IIT Roorkee can be availed by the trainee officers. Facilities of a well-equipped Hospital, Dairy, Bakery, and Coffee shops are available in the campus. A post office and the branches of State Bank of India & Punjab National Bank are also located within the campus. A computerized center for the reservation of railway tickets is available in the campus.

3.0 ACADEMIC PROGRAMMES, RESEARCH AND CONSULTANCY

3.1 General

Academic programs, research, and consultancy services offered at this Department are governed by the Institute's rules and regulations that are reviewed and modified from time to time to keep pace with changes in Water Resources Development. Brief information about the present status is given below.

3.2 Academic Programmes

The Department offers broad-based education and training programs in all aspects of Water Resources Development, Irrigation Water Management and Drinking Water Sanitation to in-service engineers and professionals having at least two years of work experience. The following programmes are offered by the Department:

- P.G.Diploma/M.Tech. in Water Resources Development
  (For Civil, Electrical, and Mechanical Engineers)
- P.G.Diploma/M.Tech. in Irrigation Water Management
  (For Civil Engineers, Agricultural Engineers and Agricultural Scientists)
- P.G.Diploma/M.Tech in Drinking Water and Sanitation
  (For Civil/Environmental/Mechanical/Agricultural/Chemical Engineers/B.Arch & planning)
- Ph.D. Programmes

The students may opt for either two-semester P.G. Diploma or four semesters M.Tech. Degree Programme or Ph.D. Programme depending on their eligibility as per Institute rules. The details for admission for Ph.D. Programme are announced by IIT Roorkee separately. The candidates are required to visit the Institute website or look for the Institute advertisement.

The students admitted to M.Tech. Programmes must carry out extensive research work in third and fourth semesters. A choice from several elective subjects is available for the course work. These subjects usually provide advanced level of knowledge, which can be applied to the field problems. The subject of dissertation covers useful practical or theoretical problems, and each student carries out his/her dissertation work under the guidance of one or two faculty members in general. Some of the unique features of academic programmes of this department are as follows:

3.2.1 Visits to project sites

Visits to various water resources projects in the Country form an important aspect of the academic programme. The visits are undertaken to existing projects or under construction or recently completed and to the command area development works. The students study the choice of the type of dam and its design, river diversion arrangements, construction organization, degree of mechanization, etc. and the problems of water use and command area development. Lectures are delivered at the project sites by the field engineers intricately connected with project problems. Discussions are oriented to bring out various problems faced in field along with their on-site solutions. After each site visit, students are required to submit a report showing an

objective appraisal of the project visited. These reports are examined and assessed by the faculty members accompanying the tours. A viva-voce examination of the students is also conducted before the final assessment.

3.2.2 Diagnostic Analysis

The students admitted to the Irrigation Water Management programme are required to carry out diagnostic analysis of a canal system. The study involves site visit for evaluation of main canal system, on-farm system, cropping pattern and socio-economic aspects. This important part of training involves interdisciplinary study and exposes students to the field problems of irrigated agriculture. The students collect field data, analyze it and prepare a report. These reports are examined and assessed by the faculty guiding the analysis. A viva-voce examination of the students is also conducted before final assessment.

3.3 Short Term Training Programmes

The Department has also been offering special short-term training courses in Water Resources Development, Irrigation Water Management and Drinking Water & Sanitation to benefit in-service engineers from time to time. The Department has organized several such special short-term courses at foreign and Indian Governments' request for training engineers, agriculturists, and administrators in specialized fields. These include the courses such as Irrigation efficiency, Hydropower system planning, Power electronics, Hydrological & geological aspects of hydropower developments, river basin planning, applications of system design techniques, groundwater development, on-farm development and area related to water supply, etc. The Department has also organized short-term courses to train senior-level executives and administrators in water resources development and administration under the sponsorship of the Training Division of the Department of Personnel and Administrative Reforms, Government of India.

In brief, the Department has all the facilities to conduct such short-term training programmes in Water Resources Development, Irrigation Water Management and Drinking Water & Sanitation, including environmental flow, sustainable development, rural and urban water supply, and so on.

3.4 Research Projects and Consultancy Activities

In addition to research activities through M. Tech and Ph.D. dissertations, the Department is actively engaged in carrying out sponsored research projects. The Department also renders useful technical services to various organizations. It helps in solving complex field problems through consultancy and research projects sponsored by national and international organizations of repute like the Ministry of Water Resources (MoWR), Indian Space Research Organization (ISRO), Department of Science and Technology (DST), Government of India. Faculty members are leading/have led several International projects, which includes Indo-Netherland, Indo-Norway, EU and IUCN projects. There has been a considerable expansion in research and consultancy activities in the Department in recent years. In the areas of Water Resources Planning, Design, Development, and Management (Hydropower, Water Supply, Flood, Control, Irrigation), Surface and Ground Water Hydrology, Environmental Impact Assessment,

Water Quality Modeling, Hydraulic, and Hydrologic Design Modeling, River Engineering, System Analysis, Inter basin Transfer, Basin Planning and Development, Irrigation Water Management, Agricultural Crop Planning, Natural Resources Management using Remote Sensing and GIS, variable Speed Pumped Storage Plants, Hydro-Electric Systems.

3.5 Placement Status of GATE Students

In the past, majority of the students admitted through GATE have been suitably placed in academic/research/industry after the completion of their M. Tech Programmes.

4.0 ADMISSION AND FELLOWSHIP

4.1 General

Admission and Fellowships for the sponsored candidates are governed by rules and regulations of the Institute and Government of India, which are reviewed and modified from time to time. Brief information about eligibility requirements for admission to various courses and fellowships/scholarships are given below:

4.2 Categories of P.G. Officer Trainees and Students

The P.G. Diploma and M.Tech. Programme in Water Resources Development (WRD) (for Civil / Electrical / Mechanical engineers) will have a total intake of 50 students with a maximum of 10 each from Mechanical Engineering and Electrical Engineering backgrounds, while remaining 30 seats are earmarked for those having Civil Engineering background. P.G. Diploma/M.Tech. Programme in Irrigation Water Management (IWM) (for Civil / Agricultural engineers / Agricultural Scientists) will have a total intake of 21 students. Besides, Indian graduates are also admitted through GATE for filing 13 seats in WRD and 8 seats in IWM programs. M.Tech Programme in Drinking Water & Sanitation will have a total intake of 20 Students. Besides, Indian graduates are also admitted through GATE for filling 10 seats.

For admission and award of scholarships, the officer trainees are grouped into five categories as follows:

Category	Group of Officers/Students
I	Officer trainees sponsored by Indian or foreign governments whose total expenses (including pay and allowances, tour expenses, etc.) are borne by the sponsoring government or met under some aid programmes.
II	Officer trainees sponsored by industry and public/private enterprises in India whose expenses are fully met by their sponsors as in category I.
III	Government nominees from India on study leave on full pay or half pay but not entitled to any other payments from their employers or Part-Time students.
IV	Government nominee on leave of a kind other than study leave.
V	Students admitted through GATE.

4.2.1 Eligibility for Admission

Eligibility criterion for admission to various programmes are given below:

Programme	Eligibility Qualification
P.G. Dip. / M. Tech (Water Resources Development)	Bachelor's degree in Civil/Electrical/Mechanical/ Electronics & Tele-Communication Engineering or its equivalent in relevant discipline.
P.G. Dip. / M.Tech (Irrigation Water Management)	Bachelor's Degree in Civil Engg. or equivalent in relevant discipline /Agricultural Engineering or M.Sc. Agriculture in Agronomy, Soil Science, Agro meteorology with mathematics as one of the papers at the level of B.Sc./B.Sc. Agriculture.
P.G. Dip. / M.Tech (Drinking Water & Sanitation)	Bachelor's degree in any one of the following - Civil/ Environmental/Mechanical/Agricultural/Chemical Engineers/ B.Arch & planning or equivalent in relevant discipline.
Requisite Experience (For sponsored Candidates): P.G. Dip. /M. Tech.	As per enclosed Annexure – I (attached at B)
Part time candidate	As per enclosed Annexure – I & II
Ph.D.	The details of admission to Ph.D. programmes are announced by IIT Roorkee separately. The candidates are required to visit the Institute website or look for the Institute advertisement.

Website Link: https://iitr.ac.in/Academics/Admission%20To%20Doctoral%20Programmes.html

Notes:

Eligibility for Ph.D. Admission

i. B.E./B.Tech./M.E./M.Tech. in Civil/Agricultrual/Environment/ Electrical/ Mechanical/Chemical/Computer/Electronics Engineering/Architecture and Planning or equivalent degree consistent with research areas of the Department. (OR)

ii. M.Sc. Degree in Agricultrial Science/ Natural (Land and Water) Science/ Environmental Science or equivalent consistent with research areas of the Department along with mathematics at bechelor's level.

Minimum - Marks: For General/OBC category candidates, minimum 60 % marks or CGPA 6.00 on 10 point scale or equivalent grade is required in the qualifying examination.

For SC/ST/PD (Person with Disability) candidates, minimum 55% marks or CGPA 5.5 on 10 - point scale or equivalent grade is required in the qualifying examination.

QIP: A few candidates can be admitted under Quality Improvement Programme (QIP) for which aspirants may contact the Coordinator (QIP), Indian Institute of Technology Roorkee, Roorkee -247667.

4.3 Procedure for Admission and Grant of Fellowship/Scholarship

Online applications for P.G. admission must be filled by 25.06.2024 positively so that candidates' selection is notified by second week of July, 2024. The estimated expenses for the two semesters PG Diploma and four semesters M.Tech. Degree programmes are given in Annexure -III.

Note: No offline application will be entertained.

4.3.1 Indian Candidates

Applications should be submitted online in all respect, and duly endorsed by the employer government or organization. No scholarship is available for sponsored Indian candidates, whether full-time & part-time. Sponsored candidates should produce a certificate of financial guarantee from the sponsoring government organization to meet all their expenses and provide allowances during their academic degree programmes.

4.3.2 Foreign Candidates

The application of candidates sponsored by foreign governments for admission should be submitted to the Indian mission in their country. These students should send the completed checklist given in the Annexure-V to Head, Dept. of WRD&M.

The procedure for obtaining various scholarship/fellowship is described below:

Postgraduate and Ph.D. Admissions

The students can apply through the following website links:

1. Through GATE Examination
   https://iitr.ac.in/Academics/Admission%20To%20Postgraduate%20Programmes.html
2. Through the International Relations Portal of IIT Roorkee
   https://ir.iitr.ac.in/HowToApply

For admission related queries, write to admission.ir@iitr.ac.in

4.4 HIV Test

The Govt. of India has made a test for HIV compulsory for all Foreign Students arriving in India. It is therefore desired that every Foreign Trainee (Fellowship/Scholarship holder or Self Financing) coming to India should get themselves checked for HIV before leaving his/her home country, irrespective of the fact that he/she will be subjected to HIV test after joining the program at this department.

4.5 COVID-19 Guidelines

All students will have to abide to the prevailing guidelines of Government of India, Government of Uttarakhand and IIT Administration.

4.6 VISA Regulations

Foreign students intending to come to India for studies whether on self-financing basis or on Govt. of India scholarships, are required to get STUDENT'S VISA from Indian missions abroad. For students on Govt. of India scholarships, respective Indian missions are instructed by ICCR to grant regular students Visa once their admissions in Indian Universities are confirmed. Students not having firm letters of admission from universities etc., will be issued Provisional Students

Visa by the Indian missions abroad based on provisional admission certificate issued by university/recognized college or educational institution in India. Such Provisional Students' Visa will be valid for a period of 3 months, and no extension of Provisional Students Visa will be allowed. Change of Purpose of the visit of foreign trainees to India is not allowed once they reach India. To avoid this situation, all international students on a self-financing basis are requested to obtain regular students' Visa from Indian Missions abroad by producing a confirmed letter of acceptance/admission certificate from the University/Institution.

5.0 CURRICULUM AND PERFORMANCE EVALUATION

5.1 General

Curriculum and Performance Evaluation is governed by the Institute's rules and regulations, which are reviewed and modified from time to time. Brief information about the present status of Curriculum and Performance Evaluation in various courses is given below:

5.2 Curriculum

Post-Graduate education demands the right kind of ambiance, a good infrastructure, an acclaimed and dedicated faculty, and considerable flexibility in the course structure. IIT Roorkee is the institute, which provides these ingredients in abundance. Every course has been assigned a certain number of credits depending on the workload it involves. The candidate's performance is continuously evaluated to motivate students to improve their performance throughout the duration of programme and a letter grade is awarded on the completion of the course. The course structure has enough flexibility and allows a student to progress at an optimum pace, commensurate with his intellectual quotient and convenience.

5.2.1 Teaching scheme

The course structures of the three academics Programmes provide sufficient flexibility for specialization in (i) Water Resources Development (for civil / electrical / mechanical engineers) and (ii) Irrigation Water Management (for civil /agricultural engineers / agricultural scientists) (iii) Drinking Water and Sanitation (for Civil/ Environmental/ Mechanical/ Agricultural/ Chemical Engineers/ B.Arch & planning). The academic curriculum for Master of Technology/PG Diploma is given in Tables 1 , 2 & 3.

5.2.2 Credits (Crs) and weekly contact Hours

Each course (subject) has several credits, which depend on the academic load and weekly contact hours for Lectures (L), Tutorial (T), and Practical (P). One credit is normally assigned to one hour of lecture or one hour of tutorial, or two hours of practical per week, and distribution is expressed as Crs (L-T-P).

Table 1 : Academic Curriculum for Master of Technology/P.G. Diploma in

WATER RESOURCES DEVELOPMENT (WRD)*

***This curriculum is likely to be revised with more flexibility in selecting courses from programme elective/social science/advanced research-tools baskets.**

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
1st YEAR		**I SEMESTER (AUTUMN)**												
1.		Program Core Course 1	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
2.		Program Core Course 2	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
3.		Program Core Course 3	PCC	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									
		Sub Total		**20**										
		II SEMESTER (SPRING)												
1.	WRN-501	System Design Techniques	PCC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
2.		Program Elective Course	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
3.		Program Elective Course	PEC	4	as per elective course									
4.		Program Elective Course	PEC	4	as per elective course									
5.	WRN-700	Research Methodology and Skill Development	SEM	2	-	-	-	-	-	20-35	-	20-30	40-50	-
		Sub Total		**20**										
		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*												
		Summer Internship / minor project for preparation of water resources project to be evaluated in the 3rd semester (2 credits)												
2nd YEAR		**III SEMESTER (AUTUMN)**												
1.	WRN-701A	Thesis Stage 1	DIS	12	-	-	-	-	-	20-35	-	20-30	40-50	-
2.		Summer internship or mini project		2										
		Sub Total		**14**										
		** to be continued and grade to be awarded in the next semester*												
		IV SEMESTER (SPRING)												
1.	WRN-701B	Thesis Stage 2 (continued from3rd Semester)	DIS	18	-	-	-	-	-	20-35	-	20-30	40-50	-
		Sub Total		**18**										
		Total		**70**										

PROGRAMME CORE SUBJECTS (maximum three to be selected)

1.	WRN-502	Design of Water Resources Structures	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
2.	WRN-503	Water Resources Planningand Management	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
3.	WRN-504	Applied Hydrology	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
4.	WRN-531	Hydro GeneratingEquipment	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
5.	WRN-532	Hydropower System Planning	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
6.	WRN-533	Power System ProtectionApplication	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
7.	WRN-551	Design of Hydro Mechanical Equipment	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
8.	WRN-552	Construction Planning and Management	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-

PROGRAMME ELECTIVES COURSE (WRD)

S. No	SUBJECT CODE	COURSE TITLE	SUBJECT AREA	CREDITS	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	WRN-511	Geotechnical Engineering	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
2.	WRN-512	Hydropower and Appurtenant Works	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
3.	WRN-513	Earth and Rockfill Dams	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
4.	WRN-514	Masonry and Concrete Dams	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
5.	WRN-515	Irrigation Structures	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
6.	WRN-516	Rural and Urban Water Supply	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
7.	WRN -517	River Engineering	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
8.	WRN -518	Finite Element Methods	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
9.	WRN-519	Water Resources System Reliability	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
10.	WRN-520	Environmental Impact Assessment of Water Resource Projects	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
11.	WRN-521	Groundwater Hydrology	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
12.	WRN-522	Climate Change and Water Resources	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
13.	WRN-534	Substation and Transmission line Design	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
14.	WRN-535	Installation Maintenance and Testing of Hydro Generating Equipment	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
15.	WRN-536	Maintenance Management in Power Plants	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
16.	WRN-537	Power System Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
17.	WRN-538	Electrical Design of Hydro Power Station	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
18.	WRN-539	Power System Operation and Control	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
19.	WRN-540	Control and Instrumentation of Hydro Power Plant	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
20.	WRN-541	Power System Analysis	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
21.	WRN-542	Power System Reliability	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
22.	WRN-543	Insulating Systems	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
23.	WRN-544	Planning and Design of Small Hydro Power Schemes	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
24.	WRN-545	Power Electronics Controlled Hydro-Electric Systems	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
25.	WRN-546	Modelling and Simulation of Hydro-Electric Energy Systems	PEC	4	1	1	4	2	2	20-35	20	20-30	40-50	20
26.	WRN-547	Synchronous and Asynchronous Generators Laboratory	PEC	4	1	-	6	-	3	-	50	-	-	50
27.	WRN-548	Power Electronics Laboratory	PEC	4	1	-	6	-	3	-	50	-	-	50
28.	WRN-549	Control and Instrumentation Laboratory	PEC	4	1	-	6	-	3	-	50	-	-	50
29.	WRN-553	Design of Construction Job Facilities	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
30.	WRN-554	Construction Plant Machinery	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
31.	WRN-555	Air Conditioning and Ventilation	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
32.	WRN-556	Construction Techniques	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
33.	WRN-571	Design of Irrigation Structures and Drainage Works	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
34.	WRN-572	Soil and Agronomy	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
35.	WRN-580	Renewable Energy System Technology	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
36.	WRN-581	Water Quality Monitoring and Modeling	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
37.	WRN-586	Groundwater Development and Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
38.	WRN-587	Watershed Development and Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
39.	WRN-588	Remote Sensing and GIS Applications in Water Systems	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
40.	WRN-596	Sustainable Water Resources	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
41.	WRN-597	Machine Learning Models in Water Resources Planning and Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-

Table 2: Academic Curriculum for Master of Technology /P.G. Diploma in

IRRIGATION WATER MANAGEMENT (IWM)*

***This curriculum is likely to be revised with more flexibility in selecting courses from programme elective/social science/advanced research-tools baskets.**

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
1st YEAR		I SEMESTER (AUTUMN)												
1.	WRN-571	Design of Irrigation Structuresand Drainage Works	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
2.	WRN-572	On Farm Development	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
3.	WRN-573	Principles and Practices ofIrrigation	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
4.		Program Elective Course	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
5.		Program Elective Course	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
Sub Total				20										
		II SEMESTER (SPRING)												
1.	WRN-501	System Design Techniques	PCC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
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	3	1	-	3	-	20-35	-	20-30	40-50	-
5.		Program Elective Course	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
6.	WRN-700	Research Methodology and Skill Development	SEM	2	-	-	-	-	-	-	-	-	100	-
Sub Total				20										
Note: P.G. Diploma course in IWM shall be of ONE YEAR duration comprising of semesters I and II only, with a minimum credits of 40														
Summer Internship / minor project for diagnostic analysis to be evaluated in the 3rd semester (2 credits)														
2nd YEAR		III SEMESTER (AUTUMN)												
1.	WRN-701A	Thesis Stage 1	DIS	12	-	-	-	-	-	-	-	-	100	-
2.		Summer internship or mini project		2										
Sub Total				**14**										
** to be continued and grade to be awarded in the next semester*														
		IV SEMESTER (SPRING)												
1.	WRN-701B	Thesis Stage 2 (contd. From 3rdSemester)	DIS	18	-	-	-	-	-	-	-	-	100	-
Sub Total				**18**										
Total				**70**										

PROGRAMME ELECTIVES COURSES (IWM)

S.No	SUBJECT CODE	COURSE TITLE	SUBJECT AREA	CREDITS	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	WRN-503	Water Resources Planningand Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
2.	WRN-504	Applied Hydrology	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
3.	WRN-513	Earth and Rockfill Dams	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
4.	WRN-516	Rural and Urban WaterSupply	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
5.	WRN-520	Environmental Impact Assessment of Water esource rojects	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
6.	WRN-522	Climate Change and WaterResources	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
7.	WRN-572	Soil and Agronomy	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
8.	WRN-576	Operation Maintenance andManagement of Irrigation Systems	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
9.	WRN-577	Water and Land Laws	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
10.	WRN-578	Rural Sociology and IrrigationEconomics	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
11.	WRN-579	Evaluation of Irrigation Project	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
12.	WRN-580	Renewable Energy SystemTechnology	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
13.	WRN-581	Water Quality Monitoring andModeling	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
14.	WRN-582	Theory of Seepage	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
15.	WRN-584	Cropping System Modeling	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
16.	WRN-585	Environmental Impact ofIrrigated Agriculture	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
17.	WRN-586	Groundwater Developmentand Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
18.	WRN-587	Watershed Development andManagement	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
19.	WRN-588	Remote Sensing and GIS Applications in Water Systems	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
20.	WRN-596	Sustainable Water Resources	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
21.	WRN-597	Machine Learning Models in Water Resources Planning and Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
22.	WRN-598	Smart Irrigation Systems	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-

Table-3 Academic Curriculum for Master of Technology /P.G. Diploma in DWS

DRINKING WATER AND SANITATION (DWS)*

***This curriculum is likely to be revised with more flexibility in selecting courses from programme elective/social science/advanced research-tools baskets.**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1st YEAR		Semester – I (Autumn)												
1.	WRN-503	Water Resources Planning and Management	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
2.	WRN-507	Drinking-Water and Sanitation Sustainability	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
3.	WRN-509	Water Sanitation, Hygiene and Infrastructural Management	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
4.		Program Elective-I	PEC	4	-	-	-	-	-	-	-	-	-	-
5.		Program Elective-II	PEC	4	-	-	-	-	-	-	-	-	-	-
		Total		**20**										
		Semester – II (Spring)												
1.	WRN-506	Mini Project on Drinking Water and Sanitation	PCC	2	-	-	4	-	3	-	50	-	-	50
2.	WRN-516	Rural and Urban Water Supply	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
2.	WRN-700	Research Methodology and Skill Development	SEM	2	-	-	-	-	-	-	-	-	100	-
3.		Program Elective - II	PEC	4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective - III	PEC	4	-	-	-	-	-	-	-	-	-	-
5.		Program Elective - IV	PEC	4	-	-	-	-	-	-	-	-	-	-
		Total		**20**										

2nd YEAR

Teaching Scheme								Contract Hours/Week				Exam Duration		Relative Weight (%)
S.No.		Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	WRN-701A	Thesis Stage-I (to be continued next semester)	DIS	12	-	-	-	-	-	-	-	-	100	-
		Total		**12**										
		Note: Students can take 1 or 2 audit courses as advised by the supervisor if required.												
		Semester –II (Spring)												
2.	WRN-701B	Thesis Stage-II (continued from III semester)	DIS	18	-	-	-	-	-	-	-	-	100	-
		Total		**18**										

Summary				
Semester	1	2	3	4
Semester-wise Total Credits	20	20	12	18
Total Credits	**70**			

PROGRAM ELECTIVE COURSES (DWS)

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	WRN-501	System Design Techniques	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
2.	WRN-580	Renewable Energy System Technology	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
3.	WRN-581	Water Quality Monitoring and Modeling	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
4.	WRN-586	Groundwater Development and Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
5.	WRN-587	Watershed Development and Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
6.	WRN-588	Remote Sensing and GIS Applications in Water Systems	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
7.	WRN-589	Drinking Water for Low-Income Societies	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
8.	WRN-590	Wastewater and Fecal Sludge Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
9.	WRN-591	Resilience, Shocks, and Emergencies	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
10.	WRN-592	Management and Operation of Water Utilities	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
11.	WRN-593	Water Works Engineering	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
12.	WRN-594	Flow Hydraulics and Urban Drainage	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
13.	WRN-595	Circular Water Economy	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
14.	WRN-596	Sustainable Water Resources	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
15.	WRN-597	Machine Learning Models in Water Resources Development and Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-

ANNEXURE – I

UNDERTAKING BY THE APPLICANTS FOR SUBMISSION OF THE REQUIRED CERTIFICATES TOWARDS ADMISSION TO M.Tech./ M.Arch./MURP PROGRAMMES 2024-25

I……S/o/D/o ……

R/o (address) ……want to apply to pursue my study in M.Tech./M.Arch./MURP programme at IIT Roorkee.

I hereby undertake that I will submit the following required documents:

1. ……
2. ……
3. ……

at the time of registration. In case, I fail to submit the required documents within the due date, or found ineligible or information/certificate found incorrect/false at any stage, the Institute reserves the right to cancel my admission offer and registration.

Signature of the Applicant: ……

Name of Applicant: ……

Email: ……

DETAILS OF ONLINE APPLICATION SUBMISSION

1. How to Apply:

Before applying, candidates are advised to read the PG information Brochure 2024 carefully.

Candidates must follow the following Steps while applying online:

a) Access the URL: https://iitr.ac.in/Academics/Admission%20To%20M.Tech.M.Arch.M.U.R.P.%20Programmes.html
b) M.Tech./M.Arch./MURP admission for Sponsored Candidates 2024-25 - Apply Online
c) Register
d) Complete Application Form
e) Pay fee online using option "Proceed for Payment"
f) Download Application Form (Take a print out of the entire file, If required. This printout is NOT to be sent to IIT Roorkee. It is only for candidate's own record purpose)
g) Students will receive one applicaton ID number after sumitting the application online. This ID number should be used in all correspondence in future.

2. Documents to be Uploaded

Before applying, candidates are advised to keep ready the scanned copies of following testimonials for uploading (Maximum size of each document: 5MB):

1. Applicant Photo (in JPG)
2. Applicant Signature (in JPG)
3. 10th Marksheet/Certificate (in pdf)
4. 12th/Diploma marksheet(s)/Certificate (in pdf)
5. UG all semesters/year marksheet and UG Degree/Provisional Certificate (In a single pdf)
6. PG All semesters/year marsheet and Degree/Provisional Certificate (if applicable) (In a single pdf)
7. PD Certificate (if applicable)(In pdf)
8. SC/ST/OBC-NC/GEN-EWS Category Certificate (If applicable)(in pdf)
9. Sponsorship, NOC, Experience Certificate (in pdf)
10. GATE score card, if applicable
11. In case of non availability of any of the certificate, upload an undertaking as per Annexure-I

3. Application Fee (Non-refundable)

For General/GEN-EWS/OBC Category: Rs. 300/-
for PD/SC/ST Category: Rs. 150/-

The requisite fee can be paid online using net banking or debit/credit card facilities. Additional Charges will be applicable as per the rule of the concerned bank.

The Fee will not be accepted through any other mode.

ANNEXURE – I 'B'

SPONSORSHIP CUM NO OBJECTION CERTIFICATE

(Required from sponsored candidate only)

The undersigned is pleased to sponsor Mr./Ms. ..... who is working in this organization from .....years, and is presently holding the rank/position of ..... for pursuing the M.Tech./M./Arch./MURP programme, at IIT Roorkee

His/her conduct and character has been good.

The Institution/Organization would relieve him/her immediately for joining the above course, if selected for admission.

If admitted the candidate will be permitted to be present at the Institute as required by the academic Schedule for a period of ..... years and will continue to remain in service of this organization for the duration of the course.

The Institution/Organization also agrees to pay the contigent/all expenses stipulated by the Institute. This is further certified that the sponsorship for admission will not be withdrawn midway till completion of the course.

Our enterprise is registered in a stock exchange/had an annual turnover of above Rs. 5.0 crores in the past two years (for candidates working in a Firm/Company/Industry).....(Yes/No/Not Applicable).

Place : .....

Signature of Head of the

Institution/Organization with seal

Date : .....

Name

.....

Designation

Part-Time Sponsored Candidates (Three years duration)

M.Tech (Part-Time)

(a) These candidates must have a minimum of two years of full-time work experience till the last date of submission of the application form in responsible Capacity in a Registered Firm/ Company/Industry/Educational and Research Institution/Govt./Quasi Govt./Autonomous Organization in the relevant field in which admission is being sought. The Firm/Company /Industry shall either be a public sector undertaking or a public limited undertaking registered in a stock exchange or a private concern whose annual turnover during the past 2 years exceeds Rs. 5.0 crores. For a candidate employed in an educational institution, it should be recognized by AICTE. Such organizations must be located either at Roorkee or within a radius of 20 km from Roorkee.

(b) The candidates seeking admission to programmes leading to M.Tech./M.Arch. /M.U.R.P. including post M.Sc. but not qualified in GATE, may also be considered for admission to different academic programmes but their admission will be based on performance in an Interview/Written Test to be held at IIT Roorkee. The candidates will be called for Interview/Written Test on the basis of their results of the qualifying degree. However, no self-sponsored candidate will be admitted for part time study.

(c) There will not be any age restriction. However, preference will be given to those who are below 45 years of age.

(d) For admission to a postgraduate programme as a part-time student, a certificate from the Head of the Institution/Organization as per Appendix-I B must be submitted along with the application.

(e) For part-time students, the concerned academic department will draw up the detailed academic programme on an individual basis.

(f) The part-time students will be required to attend all lectures, tutorials, and practical classes for the courses prescribed for them and must satisfy the attendance requirements.

(g) The part-time students will not be eligible for any scholarship, prize, etc.

(h) The status of a part-time student will not be changed from part-time to a regular full-time student.

(i) Members of the Staff of the Indian Institute of Technology Roorkee seeking admission as part-time sponsored candidates should submit the sponsorship certificate from the Registrar and the Staff working in different projects in the Institute should submit the sponsorship certificate from the appointing authority. Preference in admission will be given to those candidates who are GATE qualified.

Note: The candidates working in Institute/ University awarding PG degree itself are not eligible for admission as part-time or full-time candidates, except QIP candidates.

ANNEXURE – III

ESTIMATE OF EXPENSES

(For sponsored candidates only)

Approximate expenses under different heads are indicated below:

S.N	Particulars of Expenditure	Indian Officers	Foreign Officers on Fellowship from ITEC
For I[st] and II[nd] Semester Training / P.G. Diploma / Master of Technology *(First Year) 52 Weeks*			
1.	Institute Fee*	Rs. 70,500	Rs. 70,500 (In Indian Rs.)
2.	Lodging & Electricity charges**	-	Rs. 35,460
3.	Books and stationery**	-	Rs. 5,000.00
4.	Study Tour and visits to projects	Rs. 6,300	Rs. 6,300.00
5.	Pick Up and Drop From Airport Expenses		Rs. 7,560
	Sub Total	***Rs. 76,800***	***Rs. 1,24,820 Institute fee as applicable***
For III[rd] and IV[th] Semester Master of Technology *(Second Year)*			
6.	Institute Fee	Rs. 62,500	Rs. 62,500 (In Indian Rs.)
7.	Lodging and electricity charges**	-	Rs. 35,460
8.	Study tour and visits to project	6300	Rs. 6,300
	Sub Total	***Rs. 68,800***	***Rs. 1,04,260 Institute fee as applicable***
	Grand Total	***Rs.1,45,600***	***Rs. 2,29,080 Institute fee as applicable***

* Revision of **Institute fee** is under active consideration by the administration. The Institute fee includes: tuition, examination, enrolment, medical, internet, computer, extra curricular activity, and admission, grade card, student welfare, modernization, identity card, benevolent, alumni and library etc.

** As per terms & conditions of sponsoring agency.

Note: 1. In addition to above the boarding charges have to be borne by students/trainee officers themselves.

2. Charges at Sl. No. 2 & 7 are for ITEC sponsored candidates/TCS sponsored candidates.

ANNEXURE – IV

PROFORMA FOR CHECKING ELIGIBILITY OF FOREIGN CANDIDATES ONLY

(to be e-mailed to wrdtc@iitr.ac.in along with all related documents while applying to Indian Embassy / Mission in their countries)

1. Name of Candidate:……...

2. Educational Qualifications:

College/ Institution	Examination Passed	Year of Passing	% marks/Grade Point Average	Position / Distinction
	High School/Secondary			
	Intermediate/Higher Secondary			

3. Name of University/ Institute awarding Bachelor of Science/ Engg./Technology or any other equivalent Degree

……..……

4. Branch of Science/ Engg./Tech.: Civil / Elect./ Mech./ Agriculture or its equivalent

Details of Marks/Grade Secured: please attach Proof
(Note :leave the column blank if not applicable.)

Year	**Semester**	**Marks %**	**Range of % Marks**	**Grade**		**Total /Average/ SGPA**
				Letter	**Figure**	
	I					
	II					
	III					
	IV					
	V					
	VI					
	VII					
	VIII					
Total / Average / CGPA						

5. Employment Record and Experience: Please attach proof

Name of Department	Position Held	Period		Details of work done
		From (Exact Date) dd:mm:yy	To (Exact Date) dd:mm:yy	

(Candidate's Signature)

Process of submitting the application for P.G. Diploma / M. Tech Degree Programme in WRD&M Department, Indian Institute of Technology - Roorkee (only for foreign candidates)

1. Eligible candidates must submit their duly filled-in application forms along with all relevant documents to Indian Missions / Embassies in their countries through their employers for admission to Post Graduate Diploma / M. Tech Degree Programmes in Water Resources Development (WRD) / Irrigation Water Management (IWM) / Drinking Water and Sanitation (DWS), for onward transmission to Ministry of External Affairs (MEA), ITEC, Govt. of India, New Delhi.

After receiving the application forms by MEA from the concerned Indian Missions / Embassies, these application forms are sent to Department of Water Resources Development & Management (WRD&M), Indian Institute of Technology Roorkee for checking the eligibility of candidates and confirming the admission.

The application form sent directly to the Department of WRD&M, Indian Institute of Technology Roorkee (India) shall NOT be entertained.

2. Candidates are required to submit the following through e-mail "wrdtc@iitr.ac.in" to the Department of WRDM while applying to Indian Missions / Embassies in their countries.

(a) Duly filled Proforma given as Annexure -V of the Information Brochure

(b) Scanned copies of all academic qualifications beginning from High School/Secondary, mentioning the percentage of marks / SGPA/CGPA or any other equivalent grade.

Note: The total % marks or equivalent must not be less than 60%. Please attach a copy of the equivalence criteria.

(c) Experience certificate(s).

Note: The total experience at all levels must NOT be less than 02 years upto 25 June, 2024 of the academic year.

Experimental agri field of Indo-Dutch HIROS (Hindon) research project

Inauguration of Soil and Water Quality Lab. by Prof. K K Pant, Director IIT Roorkee

Experiment work in Ground Water Engineering Laboratory

Visit of in-service engineers from THDC India Limited

Experiment in Soil and Water Quality Laboratory

Visit of Prof. K K Pant, Director IITR to Hydropower Simulation Lab.

VISION

To attain global level of excellence in education and to create a sustainable and equitable society through innovative research in science and technology.

MISSION

To create an environment that shall foster the growth of intellectually capable, innovative and enterpreneurial professionals, who shall contribute to the growth of Science and Technology in partnership with industry and develop and harness it for the welfare of the nation and mankind.

कुल गीत

जयति जयति विद्या संस्थान,
हिम गिरि श्रृंगों से अभिनंदित,
गंगा जल करते कल गान। जयति।।

जन जीवन प्रासाद उठाकर,
सेतु बाँध भू खण्ड जुड़ाकर,
अंतरिक्ष में यान उड़ाकर,
नव युग को देता आह्वान। जयति।।

शिक्षा आदर्शों में उन्नत,
जीवन शिल्पी भू रचना रत,
'श्रमं बिना न किमपि साध्यम्' व्रत,
यन्त्र कला कौशल अभियान। जयति।।

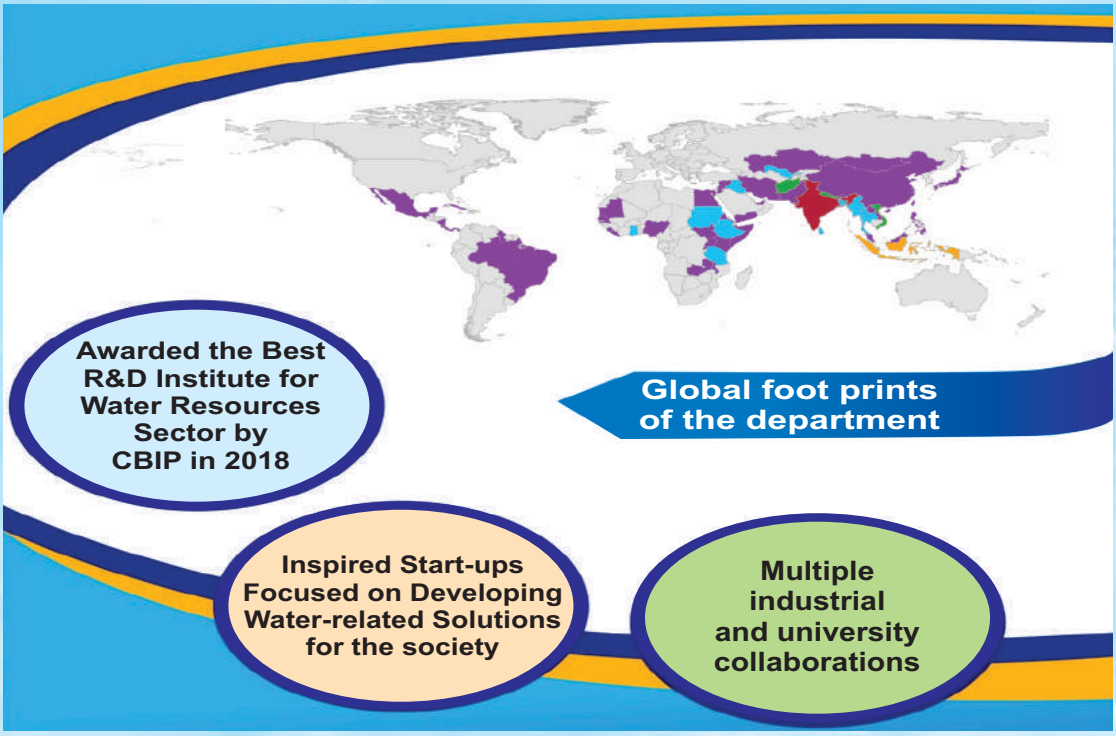
सृजन हित जीवन नित अर्पित,
धरा स्वर्ग शोभा कर निर्मित,
वैज्ञानिक युग पट में मूर्तित,
भू पर लाता स्वर्ण विहान। जयति।।

नयी प्रेरणा से दीपित मन,
नव स्वप्नों से हर्षित लोचन,
नए सत्य की उर में धड़कन,
ध्येय राष्ट्र जीवन कल्याण। जयति।।

(रचयिता – श्री सुमित्रानन्दन पन्त)

CORE VALUES

- Academic integrity and accountability
- Respect and tolerance for the views of every individual
- Attention to issues of national relevance as well as of global concern
- Holistic understanding, including knowledge of human sciences
- Appreciation of intellectual excellence and creativity
- An unfettered spirit of learning explorations, rationality and enterprise
- Sensitivity to social responsiblities



Awarded the Best R&D Institute for Water Resources Sector by CBIP in 2018

Global foot prints of the department

Inspired Start-ups Focused on Developing Water-related Solutions for the society

Multiple industrial and university collaborations

IWM Lab

River Engineering Lab

Soil and Water Quality Lab

Ground Water Lab

Agrometeorological Observatory

Hydropower Simulation

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