I/55705/2021

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

सत्यमेव जयते

Government of India
Ministry of Jal Shakti
Department of WR, RD&GR
Central Water Commission
Training Directorate

No: A-33022/31/2020-TRNG DTE-Part(1)/ Dt: .04.2021

CIRCULAR

Subject: Sponsoring Officers for admission to M.Tech Degree/P.G. Diploma in WRD and IWM programmes for academic session 2021-22 at IIT, Roorkee–reg.

It is proposed to nominate CWC officers (on study leave and as per DoWR,RD&GR attached sponsoring policy basis) for the course mentioned under the subject, to be held at IIT Roorkee. Accordingly, it is requested that any interested/suitable officer may apply through proper channel in the prescribed application format given in the attached information brochure so as to reach this office latest by **17.05.2021** 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 so that the same can be processed and forwarded to IIT Roorkee after approval of Competent authority by 30th June, 2021 as mandated by IIT Roorkee.

The detailed admission procedure is available at (https://wr.iitr.ac.in). It is mentioned that the candidate should be at least the level of AE/AEE/AD and above, having atleast 5 years of experience in CWC and not more than 45years of age as on **01.07.2021**. Those seeking nominations must also be fulfilling other eligibility conditions as mentioned in the programme brochure of IIT Roorkee.

Signature Not Verified
Digitally signed by VENKATESWARLU E.
Date: 2021.04.23 16:43:26 IST

(Venkateswarlu E.)
Dy. Director (Training)

Copy to:

1. All Chief Engineers, Central Water Commission (HQ & Field Offices).
2. Director, D & RC/WP & PC/ RMCD, CWC, New Delhi.
3. Secretary/Director (TC), CWC, New Delhi.
4. Steno, Training Dte, CWC, New Delhi for uploading this circular on CWC Website.

Copy also forwarded to the following for kind information and further action from their end.

1. Chairman, GFCC, Patna.
2. Member Secretary, Upper Yamuna River Board, WB-I, New Delhi.

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
Department of WR, RD&GR
Central Water Commission
Training Directorate

3. Chief Engineer (TCD), Central Electricity Authority, New Delhi.
4. Director (R&D), DoWR, RD & GR, WB-I, New Delhi.

File No.A-33/2/2017-E-I Section

F.No.33/2/2017-E-I
Government of India
Ministry of Water Resources, River Development & Ganga Rejuvenation
***

Shram Shakti Bhawan, Rafi Marg,
New Delhi, the 9th August, 2018

To
The Chairman,
Central Water Commission
Sewa Bhawan, R.K. Puram,
New Delhi-110066

Subject:-Sponsoring of Central Water Engineering Group 'A' Service Officers for undergoing M.Tech/Ph.D from IIT, Roorkee - new policy - regarding.

Sir,

I am directed to refer to the subject mentioned above and to say that this Ministry has been sponsoring CWES(Gr-A) Officers for undergoing one year PG Diploma and two year M.Tech courses at IIT, Roorkee, for some time past. The methodology, which was being followed so far in such cases was: one year was being considered as "Training" and the next year was being considered as "Leave".

2. Keeping in view the extant instructions for undergoing academic courses by a Central Government Officer, the aforesaid policy has been reviewed by this Ministry and it has been decided, with the approval of the Hon'ble Minister-in-charge of this Ministry that, for undergoing academic courses, CWES(Gr-A) Officers may be granted study-leave only, as provided in the CCS(Leave) Rules, 1972.

3. The matter relating to undergoing M.Tech and Ph.D courses by the CWES(Gr-A) Officers at IIT, Roorkee has also been considered by this Ministry in consultation with the IIT, Roorkee and the existing Memorandum of Understanding(MoU), signed between the Ministry & IIT, Roorkee in 25.08.2008 for establishment of a professional Chair at the IIT, has been revisited by the Ministry for sponsoring of CWES officers for undergoing M.Tech/Ph.D courses under the Chair contribution.

4. The Article-10 of the aforementioned MoU provides that "*The two programmes (regular or part time) will be made available for the officers of organizations under MoWR and its organizations in the specified field. Such sponsored candidates will be admitted as per the procedure of IIT/Roorkee. The tuition fee of such candidates will be charged from the unused annual interest of the endowment left after meeting all the expenses of the faculty chair.*"

5. Keeping in view the existing arrangement as per Article-10 of the aforesaid MoU, the following revised guidelines, in supersession of all existing instructions on the subject, are being issued for compliance in the matter:-

a. Eligible CWES Officers or Officers of other organisations of the Ministry, who are willing to undergo M.Tech or Ph.D Courses being offered by the Indian Institute of Technology, Roorkee will be sponsored by the Ministry on Study-Leave basis. Study-leave will be granted for a period of two years, subject to fulfillment of conditions for granting study-leave, as provided in the CCS (Leave) Rules, 1972.
b. All the officers sponsored under the said scheme will be entitled for only one set of

Travelling Allowance while on study-leave in terms of proviso to Rule 61 of CCS (Leave) Rules, 1972.

c. As per the arrangement with the IIT, Roorkee and in terms of proviso to Rule 62 of CCS (Leave) Rules, 1972, Academic Fees in respect of maximum 2 candidates for M.Tech in a year or 1 M.Tech + 1 Ph.D in a year will be adjusted from the interest accrued to the corpus of Rs.1.0 crore donated by this Ministry to IIT, Roorkee under the professional chair contribution.

d. Decision regarding remittance of the academic/tuition fee, in respect of all the officers willing to undergo the Diploma Course or M.Tech or Ph.D courses more than two number of officers, will be taken by the Ministry on case to case basis.

e. Powers to grant Study-leave for undergoing M.Tech/Ph.D Courses at IIT, Roorkee has been delegated to the Joint Secretary(Admn) of the Ministry. Application of only those officers will be considered who are eligible for grant of study leave as per the CCS (Leave) Rules, 1972.

6. This issues with the concurrence of the IFD of the Ministry vide e-Office Module and approval of the Hon'ble Minister-in-charge.

Yours faithfully,

Signature valid
Digitally signed by SHALINI JUNEJA
Date: 2018.08.09 17:27:56 IST
Reason: Approved

(Shalini Juneja)
Under Secretary to the Government of India
Tel: 23714350

Copy to:-

1. **Director, Indian Institute of Technology, Roorkee, Uttarakhand-247667**
2. **Prof.(Dr.) S.K. Mishra, Head, Department of Water Resources Development & Management, IIT, Roorkee, Uttarakhand-247667**
3. **Chief Engineer(HRM), CWC, Sewa Bhawan, R.K. Puram, New Delhi**
4. **Director(Trg), CWC, Sewa Bhawan, R.K. Puram, New Delhi**
5. **Director(E-II & GWE), MoWR, RD & GR for officers of other organizations**

(Shalini Juneja)
Under Secretary to the Government of India
Tel: 23714350

INFORMATION BROCHURE (2021-22)

For Admission to Post Graduate Programmes
in
Water Resources Development & Irrigation Water Management

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 of receipt of Application Form is June 30, 2021

Department of

WATER RESOURCES DEVELOPMENT & MANAGEMENT

Indian Institute of Technology Roorkee

Prof. Ajit Kumar Chaturvedi
Director, IIT Roorkee

Pandey, Ashish
Professor & Head
Irrigation Management, Remote Sensing and GIS Applications in Water Resources Management
ashish.pandey@wr.iitr.ac.in

Khare, Deepak
JPSS Chair Professor
Ground Water, Climate Change
Water Resources Structures
Water Resources Management
deepak.khare@wr.iitr.ac.in

Chelliah, Thanga Raj
Associate Professor
Application of Power Electronics to Hydro-Electric Systems, Control of Doubly-Fed Induction Machines
thanga.chelliah@wr.iitr.ac.in

Idhaya Chandhiran Ilampooranan
Assistant Professor
Ecohydrological Modeling
Nutrient Legacies and Dynamics
Tank Systems & GIS
idhayawt@iitr.ac.in

Singh, R.D.
Visiting Professor
Hydrological Modelling,
Flood Management, Climate Change
raj.singh@wr.iitr.ac.in

Mishra, R. N.
Adjunct Faculty
Project Management, Contract Management, Project Appraisal, Construction Management and Techniques, Harnessing Water Resources Projects, Regulatory Issues in Power Sector.
rnm57@iitr.ac.in

Tiwari, K. N.
Adjunct Professor
Land and water Resources Engineering and Management
kamlesh@iitkgp.ac.in

Kansal, M. L.
NEEPCO Chair Professor
Water Resources Systems, Hydropower, Water Supply Schemes, System Design Techniques, Operations Management
mlk@wr.iitr.ac.in

Mishra, S. K.
Bharat Singh Chair Professor
Hydrology, Hydraulics,
Irrigation Structures,
Dam Break Analysis
s.mishra@wr.iitr.ac.in

Kasiviswanathan K. S.
Assistant Professor
Reservoir operation, Flood forecasting, Hydrologic Modeling
Uncertainty and Risk analysis
k.kasiviswanathan@wr.iitr.ac.in

Yadav Basant
Assistant Professor
Ground Water Quality
Managed Aquifer Recharge
Water Resources Management
basant.yadav@wr.iitr.ac.in

Jha, P. K.
Professor
Water Flow Modeling, Flow Ananysis in Hydro-Mechanical Equipments, Computational Fluid Dynamics, Fanacial Analysis of Hydropower Projects
pradeep.jha@me.iitr.ac.in

Singh, Vijay P.
Distinguished Professor
Surface water Hydrology, Groundwater Hydrology, Hydraulics, Irrigation Engineering, Environmental Quality and Water Resources.
v.singh@wr.iitr.ac.in

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
2021-2022

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)

Department of
Water Resources Development and Management
(Formerly Water Resources Development Training Centre)
IIT Roorkee, Roorkee – 247 667
Uttarakhand, INDIA

Tel: + 91-1332-285251, 285872; Fax: +91-1332-273560
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/Training and Two year M.Tech. Degree in Water Resources Development (WRD) and Irrigation Water Management (IWM).
Candidates are admitted in three categories:

1. Government/Semi Government/PSU Sponsored Candidates from India.
   - Candidates should apply through this Information brochure (Format for the application form is appended)
   Link to download the application form: https://wr.iitr.ac.in/
2. Sponsored candidates from foreign countries
   - Candidates should apply through Indian Mission
   Website Link: https://www.itecgoi.in/index
3. Fresh undergraduates with GATE
   - Candidates should apply through website of IIT Roorkee
   Website Link: https://www.iitr.ac.in/admissions/pages/Postgraduate.html

Last date for submission of application form: 30.06.2021

Processing of applications for admission and sponsorship takes considerable time, therefore, the sponsored candidates should send their application well in time so as to reach the department latest by 30.06.2021

The Academic Session will start during the first week of **August 2021**.

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

Note: The candidates working in Government/Semi-Government/PSU Organizations ONLY are eligible to apply in the format of application provided in this Information Brochure. The remaining candidates can apply through the advertisement released by the PG Admission office of IIT Roorkee in March every year.

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

Prof. Ashish Pandey, Head
Department of Water Resources Development and Management
Indian Institute of Technology Roorkee
Roorkee - 247 667 (Uttarakhand) INDIA
Ph: + 91-1332-285251, 285872; Fax: +91-1332-271073, 273560
E-mail: wrdtc@iitr.ac.in; head@wr.iitr.ac.in
Website: (https://wr.iitr.ac.in)

FOREWORD

Conventionally, the projects related to water resources focus on irrigation, hydropower development, and flood control. In recent times, environmental concerns and climate change pose new challenges to engineers and decision-makers to conceive and execute water resources projects. There is a need for trained human resources to tackle these problems and undertake challenging water resources development and management projects, especially in Asian, African, and Latin American countries. The Department of Water Resources Development and Management (WRDM) at Indian Institute of Technology Roorkee was founded in1955 as a follow up of the Bandung (Indonesia) conference held under the UN's aegis in 1954 cater to the need for human resources in the water sector. Late Shri Jawahar Lal Nehru, the first Prime Minister of India, envisioned it and Dr. A.N. Khosla, an Eminent Water Resources Engineer and the Vice-Chancellor of the erstwhile University of Roorkee, which is now known as the Indian Institute of Technology Roorkee.

During the last 66 years, the Department of WRDM has provided training to professionals from 52 countries. Many of its alumni occupy top-level decision-making positions in their organizations (Water/Irrigation/Agriculture) in Asian, African, and Latin American countries. Even during COVID-19, the Department of WRDM had successfully organized online academic programs.

The Department of WRDM has expertise in planning, investigation, design, construction, operation, and maintenance of River Valley Multipurpose Projects and Irrigation and Drainage Systems (large/medium/small scales).

The Department strives to meet the trainees' aspirations and their sponsoring agencies by updating the curriculum with the latest developments to provide state-of-the-art academic and training programs. The Department currently offers the following academic programs:

1. Water Resources Development for Civil, Electrical, and Mechanical Engineers:
   - P.G. Training/Post Graduate Diploma (Two-Semester Course)
   - Master of Technology (Four-Semester Course)

2. Irrigation Water Management for Civil/Agricultural Engineers and Agricultural Scientists:
   - P.G. Training/Post Graduate Diploma (Two-Semester Course)
   - Master of Technology (Four-Semester Course)

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

It gives me great pleasure to invite government and private enterprises dedicated to water resources development and management worldwide to sponsor their officers for pursuing academic programs for training at our Department of WRDM.

Ajit Kumar Chaturvedi
Director, IIT Roorkee

PREFACE

Water is a necessity of life and hence an essential natural resource. Equitable resource allocation to meet various sectors' rising demands has been challenging for water resources managers. Therefore, water resources development and management policies should be rigorous and must meet the regional needs.

The Department of Water Resources Development and Management (formerly Water Resources Development Training Centre) of IIT Roorkee during the last six decades has achieved a high level of performance in training the young water professionals with the proper blend of theory and practice. This Department has earned reputation and fame globally by imparting knowledge and education to many scientists and professionals, especially from Asia, Africa, and other developing countries. Alumni of the Department are found worldwide who have performed with excellence while serving the society at large.

The Department offers two Post-Graduate programs, i.e., Water Resources Development (WRD) (for Civil/Electrical/Mechanical Engineers) and Irrigation Water Management (IWM) (for Civil/Agricultural Engineers/Agricultural Scientists). These programs' duration is 24 months, including lectures, practical, educational tours, project reports, and dissertations. These Master of Technology (M. Tech) programs are unique to provide knowledge in fields through credit-based course works. Furthermore, there are two diploma programs of 12 months duration covering the same course work as the Post Graduate programs excluding dissertation. The programs are updated continuously, and the latest subjects such as Remote Sensing, GIS, On-farm Water Management, Climate Change impacts, etc., are incorporated to add great contemporary value.

The Department's faculties are outstanding in their respective fields of specialization with diversified experience in planning, design, construction, operation, and maintenance of multipurpose water resources projects. They do extensive research to advance the existing knowledge. Teaching in the Department has a unique blend of both practical and theoretical concepts. The Department has been very actively involve in research, consultancy, and extension activities. It is also known as a center of excellence in the Design of Water Resources Structure, Irrigation Planning and Management, Flood Control, Irrigation and Drainage, and Hydropower Development. The Department helps society by sharing agro-climatic information to the farmers in the regions. Despite hardship during COVID-19, the Department of Water Resources Development and Management had successfully organized online teaching and other academic programs in 2020-21.

This Information Brochure provides details regarding different academic programs and procedures for admission to a sponsored category of candidates. Besides, Indian graduates are also admitted through GATE for filling 13 seats in WRD and 8 seats in IWM programs. These candidates are required to apply separately in response to IIT Roorkee notifications for post-graduate admissions; international students with fellowship need to apply through ITEC of Ministry of External Affairs, Govt. of India, or any other fellowship program. Sponsoring agencies are requested to encourage their officers to undergo training by taking advantages of the Department as well as Institute’s facilities.

Ashish Pandey
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 22 academic departments covering engineering, applied sciences, humanities & social sciences & management programme, 2 academic centers, 2 centers of excellence & 8 academic service centers, and 4 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 secured 156th position in the recent QS world ranking and maintained its national position at 7th Rank. IITR secured 6th position in NIRF ranking 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 & 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 training programmes for specialization in the fields of Water Resources Development (for civil, electrical, and mechanical engineers) and Irrigation Water Management (for civil engineers, agricultural engineers, and agricultural scientists) 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 77^0 54'E and latitude of 29^0 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^OC to 34^OC in winter and from 13^OC to 45^OC in summer. The average annual rainfall is 1170mm, 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 2877 serving engineers from 52 countries as detailed below:

Name of Country	No. of Trainees	Name of Country	No. of Trainees	Name of Country	No. of Trainees	Name of Country	No. of Trainees
Afghanistan	49	Indonesia	501	Mangolia	1	Somalia	1
Bangladesh	17	Iran	1	Mexico	1	Sri Lanka	38
Brazil	1	Iraq	15	Myanmar	15	Sudan	36
Bhutan	3	Japan	1	Nicaragua	1	South Sudan	6
China	3	Jordan	2	Nigeria	2	Syria	10
Costarica	1	Kenya	6	Nepal	187	Tanzania	35
Cuba	1	Kazhakistan	2	Panama	1	Thailand	20
Egypt	9	Lao PDR	9	Pakistan	1	UAE	1
Eritrea	1	Liberia	6	Philippines	42	Uganda	2
Ethiopia	34	Malawi	4	Sengal	1	Uzbekistan	12
Ghana	13	Malaysia	7	Sierra Leone	7	Vietnam	52
Guyana	1	Maldives	1	South Korea	3	Yeman	7
India	1699	Mauritius	2	Singapore	1	Zambia	3
						Grand Total	**2877**

2.0 FACILITIES

2.1 General

The Department and the Institute have all the required facilities to provide the Water Resource Development and Irrigation Water Management 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 and Irrigation Water Management. The proceedings of many important conferences and symposia in the field of Water Resources Engineering and Irrigation Water Management 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, Irrigation Water Management, Groundwater, River Engineering, Hydropower Simulation, Geospatial Science and Electrical Testing 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 Model Room

The Department has a model room wherein different models depict several important aspects of water resources projects including layout works, structural details, construction facilities, etc. A complete hydrological model shows the various aspects of water resources engineering. Working models of tunneling operations and some major construction equipment are also part of the model room.

2.5 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.

2.6 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 internal accessibility for 24x7 in a week.

2.7 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.

2.8 Other Facilities

The facilities such as PG students club, Multi-Activity Centre, sports complex, swimming pool, and cinema 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.

2.9 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.

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 and Irrigation Water Management to in-service engineers and professionals having at least two years of work experience. The following programmes are offered by the Department:

- Training/P.G.Diploma/M.Tech. in Water Resources Development (For Civil, Electrical, and Mechanical Engineers)
- Training/P.G.Diploma/M.Tech. in Irrigation Water Management (For Civil Engineers, Agricultural Engineers, and Agricultural Scientists)
- Ph.D. Programmes

The students may opt for either two-semester training/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 minimum qualification for admission to Ph.D. programme in the department is as follows:

1. Water Resources Development

B.E./B.Tech./M.E./M.Tech. or equivalent degree in Civil, Electrical, Mechanical & Agricultural Engineering.

2. Irrigation Water Management

M.Sc. Degree in Agricultural / Biological / Environmental / Natural / Social Sciences / Environmental Planning or equivalent consistent with research areas of the department.

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 and Irrigation Water Management 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 and Irrigation Water Management, 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/Training 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./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.

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 on half pay but not entitled to any other payments from their employers or as 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
Training / P.G. Dip. / M.Tech Water Resources Development	Bachelor Degree in Civil/Electrical/Mechanical/ Electronics & Tele-Communication Engineering or its equivalent.
Training / P.G. Dip. / M.Tech Irrigation Water Management	Bachelor Degree in Civil Engg. or equivalent /Agricultural Engineering or its equivalent 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.
Requisite Experience (For sponsored Candidates) : ***Training / P.G. Dip. / M.Tech***	As per enclosed Appendix - I

Training/P.G. Dip.//M. Tech. Part time candidate	As per enclosed Appendix - II & II (A)
PhD	The details of admission to PhD 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://www.iitr.ac.in/admissions/pages/Phd.html

Notes:

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.
Training	The department also offers 12 months training programme for sponsored candidates having less than 60% marks.
	Equivalent qualification of Bachelor degree in engineering shall be considered if found acceptable by the equivalence committee of the Institute.
	Educational Institutions of India should be recognized by All India Council for Technical Education (AICTE).
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 Fellowships/Scholarships

Applications for admission must reach the Department by 30.06. 2021 positively so that candidates' selection is notified by second week of July 2021. The estimated expenses for the two semesters PG Diploma and four semesters M.Tech. Degree programmes are given in Appendix - III.

4.3.1 Indian Candidates

Applications should be submitted in the prescribed form (Appendix-IV) completed 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 Appendix-V to Head, Dept. of WRD&M.

Postgraduate and Ph.D. Admissions

The students can apply through the following websites:

1. Through GATE Examination (https://www.iitr.ac.in/admissions/pages/Postgraduate.html)
2. Through the International Relations Portal of IIT Roorkee https://ir.iitr.ac.in/HowToApply

For admission related queries, international students may 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 by 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 two 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). The academic curriculum for Master of Technology/PG Diploma is given in Tables 1 & 2.

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 P.G. Diploma / 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
1st YEAR		**I SEMESTER (AUTUMN)**												
1.	WRN-501	System Design Techniques	PCC	4	3	1	-	3	-	25	-	25	50	-
2.		Program Core Course 1	PCC	4	3	1	-	3	-	25	-	25	50	-
3.		Program Core Course 2	PCC	4	3	1	-	3	-	25	-	25	50	-
4.		Program Core Course 3	PCC	4	3	1	-	3	-	25	-	25	50	-
5.		Program Elective Course	PEC	4	as per elective course									
Sub Total				**20**										
		II SEMESTER (SPRING)												
1.	WRN-505	Preparation of Water Resources Project Report	PCC	2	-	-	4	-	-	-	50	-	-	50
2.		Program Elective Course	PEC	4	3	1	-	3	-	25	-	25	50	-
3.		Program Elective Course	PEC	4	3	1	-	3	-	25	-	25	50	-
4.		Program Elective Course	PEC	4	as per elective course									
5.		Program Elective Course	PEC	4	as per elective course									
6.	WRN-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
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*														
2nd YEAR		**III SEMESTER (AUTUMN))**												
1.	WRN-701A	Dissertation Stage I *	DIS	12	-	-	-	-	-	-	-	-	100	-
Sub Total				**12**										
* *to be continued and grade to be awarded in the next semester*														
		IV SEMESTER (SPRING)												
1.	WRN-701B	Dissertation (continued from 3rd Semester)	DIS	18	-	-	-	-	-	-	-		100	-
Sub Total				**18**										
Total				**70**										

PROGRAMME CORE SUBJECTS

For Civil Background

1.	WRN-502	Design of Water Resources Structures	PCC	4	3	1	-	3	-	25	-	25	50	-
2.	WRN-503	Water Resources Planning and Management	PCC	4	3	1	-	3	-	25	-	25	50	-
3.	WRN-504	Applied Hydrology	PCC	4	3	1	-	3	-	25	-	25	50	-

For Electrical Background

1.	WRN-531	Hydro Generating Equipment	PCC	4	3	1	-	3	-	25	-	25	50	-
2.	WRN-532	Hydropower System Planning	PCC	4	3	1	-	3	-	25	-	25	50	-
3.	WRN-533	Power System Protection Application	PCC	4	3	1	-	3	-	25	-	25	50	-

For Mechanical Background

1.	WRN-532	Hydropower System Planning	PCC	4	3	1	-	3	-	25	-	25	50	-
2.	WRN-551	Design of Hydro Mechanical Equipment	PCC	4	3	1	-	3	-	25	-	25	50	-
3.	WRN-552	Construction Planning and Management	PCC	4	3	1	-	3	-	25	-	25	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	-	25	-	25	50	-
2.	WRN-512	Hydropower and Appurtenant Works	PEC	4	3	1	-	3	-	25	-	25	50	-
3.	WRN-513	Earth and Rockfill Dams	PEC	4	3	1	-	3	-	25	-	25	50	-
4.	WRN-514	Masonry and Concrete Dams	PEC	4	3	1	-	3	-	25	-	25	50	-
5.	WRN-515	Irrigation Structures	PEC	4	3	1	-	3	-	25	-	25	50	-
6.	WRN-516	Rural and Urban Water Supply	PEC	4	3	1	-	3	-	25	-	25	50	-
7.	WRN-517	River Engineering	PEC	4	3	1	-	3	-	25	-	25	50	-
8.	WRN-518	Finite Element Methods	PEC	4	3	1	-	3	-	25	-	25	50	-
9.	WRN-519	Water Resources System Reliability	PEC	4	3	1	-	3	-	25	-	25	50	-
10.	WRN-520	Environmental Impact Assessment of Water Resource Projects	PEC	4	3	1	-	3	-	25	-	25	50	-
11.	WRN-521	Groundwater Hydrology	PEC	4	3	1	-	3	-	25	-	25	50	-
12.	WRN-522	Climate Change and Water Resources	PEC	4	3	1	-	3	-	25	-	25	50	-
13.	WRN-534	Substation and Transmission line Design	PEC	4	3	1	-	3	-	25	-	25	50	-
14.	WRN-535	Installation Maintenance and Testing of Hydro Generating Equipment	PEC	4	3	1	-	3	-	25	-	25	50	-
15.	WRN-536	Maintenance Management in Power Plants	PEC	4	3	1	-	3	-	25	-	25	50	-
16.	WRN-537	Power System Management	PEC	4	3	1	-	3	-	25	-	25	50	-
17.	WRN-538	Electrical Design of Hydro Power Station	PEC	4	3	1	-	3	-	25	-	25	50	-
18.	WRN-539	Power System Operation and Control	PEC	4	3	1	-	3	-	25	-	25	50	-
19.	WRN-540	Control and Instrumentation of Hydro Power Plant	PEC	4	3	1	-	3	-	25	-	25	50	-
20.	WRN-541	Power System Analysis	PEC	4	3	1	-	3	-	25	-	25	50	-
21.	WRN-542	Power System Reliability	PEC	4	3	1	-	3	-	25	-	25	50	-
22.	WRN-543	Insulating Systems	PEC	4	3	1	-	3	-	25	-	25	50	-
23.	WRN-544	Planning and Design of Small Hydro Power Schemes	PEC	4	3	1	-	3	-	25	-	25	50	-
24.	WRN-545	Power Electronics Controlled Hydro-Electric Systems	PEC	4	3	1	-	3	-	25	-	25	50	-
25.	WRN-546	Modelling and Simulation of Hydro-Electric Energy Systems	PEC	4	1	1	4	2	2	20	20	-	40	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	-	25	-	25	50	-
30.	WRN-554	Construction Plant Machinery	PEC	4	3	1	-	3	-	25	-	25	50	-
31.	WRN-555	Air Conditioning and Ventilation	PEC	4	3	1	-	3	-	25	-	25	50	-
32.	WRN-556	Construction Techniques	PEC	4	3	1	-	3	-	25	-	25	50	-
33.	WRN-571	Design of Irrigation Structures and Drainage Works	PCC	4	3	1	-	3	-	25	-	25	50	-
34.	WRN-572	Soil and Agronomy	PEC	4	3	1	-	3	-	25	-	25	50	-
35.	WRN-580	Renewable Energy System Technology	PEC	4	3	1	-	3	-	25	-	25	50	-
36.	WRN-581	Water Quality Monitoring and Modeling	PEC	4	3	1	-	3	-	25	-	25	50	-
37.	WRN-583	Remote Sensing and GIS Applications in Agriculture	PEC	4	3	1	-	3	-	25	-	25	50	-
38.	WRN-586	Groundwater Development and Management	PEC	4	3	1	-	3	-	25	-	25	50	-
39	WRN-587	Watershed Development and Management	PEC	4	3	1	-	3	-	25	-	25	50	-

Table 2 - Academic Curriculum for P.G. Diploma / Master of Technology in IRRIGATION WATER MANAGEMENT (IWM)

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-501	System Design Techniques	PCC	4	3	1	-+	3	-	25	-	25	50	-
2.	WRN-571	Design of Irrigation Structures and Drainage Works	PCC	4	3	1	-	3	-	25	-	25	50	-
3.	WRN-573	Principles and Practices of Irrigation	PCC	4	3	1	-	3	-	25	-	25	50	-
4.	WRN-575	On Farm Development	PCC	4	3	1	-	3	-	25	-	25	50	-
5.		Program Elective Course	PEC	4	3	1	-	3	-	25	-	25	50	-
Sub Total				**20**										
II SEMESTER (SPRING)														
1.	WRN-574	Diagnostic Analysis	PCC	2	-	-	4	-	-	-	50	-	-	50
2.		Program Elective Course	PEC	4	3	1	-	3	-	25	-	25	50	-
3.		Program Elective Course	PEC	4	3	1	-	3	-	25	-	25	50	-
4.		Program Elective Course	PEC	4	3	1	-	3	-	25	-	25	50	-
5.		Program Elective Course	PEC	4	3	1	-	3	-	25	-	25	50	-
6.	WRN-700	Seminar	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*														
2nd YEAR			**III SEMESTER (AUTUMN)**											
1.	WRN-701A	Dissertation Stage I*	DIS	12	-	-	-	-	-	-	-	-	100	-
Sub Total				**12**										
* *to be continued and grade to be awarded in the next semester*														
IV SEMESTER (SPRING)														
1.	WRN-701B	Dissertation Stage II (contd. From 3rd Semester)	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 Planning and Management	PEC	4	3	1		3	-	25	-	25	50	-
2.	WRN-504	Applied Hydrology	PEC	4	3	1	-	3	-	25	-	25	50	-
3.	WRN-513	Earth and Rockfill Dams	PEC	4	3	1	-	3	-	25	-	25	50	-
4.	WRN-516	Rural and Urban Water Supply	PEC	4	3	1	-	3	-	25	-	25	50	-
5.	WRN-520	Environmental Impact Assessment of Water Resource Projects	PEC	4	3	1	-	3	-	25	-	25	50	-
6.	WRN-522	Climate Change and Water Resources	PEC	4	3	1	-	3	-	25	-	25	50	-
7.	WRN-572	Soil and Agronomy	PEC	4	3	1	-	3	-	25	-	25	50	-
8.	WRN-576	Operation Maintenance and Management of Irrigation Systems	PEC	4	3	1	-	3	-	25	-	25	50	-
9.	WRN-577	Water and Land Laws	PEC	4	3	1	-	3	-	25	-	25	50	-
10.	WRN-578	Rural Sociology and Irrigation Economics	PEC	4	3	1	-	3	-	25	-	25	50	-
11.	WRN-579	Evaluation of Irrigation Project	PEC	4	3	1	-	3	-	25	-	25	50	-
12.	WRN-580	Renewable Energy System Technology	PEC	4	3	1	-	3	-	25	-	25	50	-
13.	WRN-581	Water Quality Monitoring and Modeling	PEC	4	3	1	-	3	-	25	-	25	50	-
14.	WRN-582	Theory of Seepage	PEC	4	3	1	-	3	-	25	-	25	50	-
15.	WRN-583	Remote Sensing and GIS Applications in Agriculture	PEC	4	3	1	-	3	-	25	-	25	50	-
16.	WRN-584	Cropping System Modeling	PEC	4	3	1	-	3	-	25	-	25	50	-
17.	WRN-585	Environmental Impact of Irrigated Agriculture	PEC	4	3	1	-	3	-	25	-	25	50	-
18.	WRN-586	Groundwater Development and Management	PEC	4	3	1	-	3	-	25	-	25	50	-
19.	WRN-587	Watershed Development and Management	PEC	4	3	1	-	3	-	25	-	25	50	-

Experience (for sponsored candidates)

(A) Full time sponsored candidates must have a minimum of two years full-time work experience till the last date of submission of 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.

Note: The candidates working in Institute /University awarding PG degree itself are not eligible for admission as Part Time or Full Time candidates, if facilities are not available except QIP Candidates.

(B) Candidates having AMIE/AMIS/AMIIChE/AMIIM/Grad IETE, who possess B.Sc. or Diploma in engineering and have at least three years research, teaching or other professional experience at the last date of submission of application acquired after passing the qualifying examination in relevant field, are also eligible to apply for admission to M.Tech. Courses.

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-II A 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, if facilities are not available except QIP candidates.

No Objection Certificate
(Required from candidates seeking admission on part-time basis)

The undersigned is pleased to permit Mr./Ms. .....Who is working in this organization for the last .....years and is presently holding the rank/position of.....for pursuing the PG Programme (course) at IIT Roorkee in the Department of ....With specialization in the following areas.

1. ..... 2. .....
3. ..... 4. .....

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 three years and will continue to remain in service of this organization for the course duration.

Place.....

Date .....

Signature of Head of the
Institution/Organization with seal Name

Designation.....

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. Charges are to be deposited at the time of Registration in respective Semesters through a Demand Draft in favour of Chairman, P.G. Admission IIT Roorkee payable at any Nationalized Bank at Roorkee.

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

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

WATER RESOURCES DEVELOPMENT AND MANAGEMENT

Indian Institute of Technology Roorkee, Roorkee – 247667, India

(*Application Form for Sponsored Candidates only*)

Paste the Attested Photograph

APPLICATION FORM (2021-2022)

(*Please select one Academic Programme out of A* ***or*** *B and tick in appropriate box*)

A) **Water Resources Development** ☐	B) **Irrigation Water Management** ☐
Please check eligibility criteria to the Programme in which admission is sought	
☐ **Training Certificate** ☐ **P.G. Diploma** ☐ **M.Tech Degree**	

Name **(block letters)**
(Mr/Ms*)……
(Surname) (Middle name) (first name)

Present Address: ……

……

Tel. & Fax (with code) :
……

Email: ……

Permanent Address: ……

……

Tel. & Fax (with code):
……

Email: ……

Place/Country of birth ……. Date of birth…….. Citizenship…….

Marital Status*: *Married/Unmarried.*

Proof of proficiency in English (*for foreign students only*):……

Math at UG Level : Yes / No Math at 10+2 Level : Yes / No

A) Academic qualifications other than Engineering (beginning from High School):

College/Institution Name and address	Degree or Examination passed	Year of Passing	Division with % of marks/ Grade Point Av.	Position/ Distinction	Main Subjects

B) Professional/Engineering Qualification:

College/Institution Name and address	Degree or Examination passed	Year of Passing	Division with % of marks/ Grade Point Av.	Position/ Distinction	Main Subjects

C) Employment Record and Experience:

Name of Department	Position held	Period		Details of work done
		From	To	

Name & Signature of Applicant

NOTE:

1. Applicant should strike off whichever is not applicable to him/her.
2. Attach attested copies of the certificates.
3. In case of award of grade points, please attach a certificate from the issuing University/Institution explaining the conversion formula for converting grade point average to percentage marks.

D. Recommendations of Sponsoring/Nominating Authority

The undersigned is pleased to sponsor Mr./Ms. …… who is working in this organisation for the last ……..…… years and is presently holding the rank/position of ……..…… for pursuing the P.G. Diploma Programme / M.Tech. Degree Programme in …..…….. at IIT Roorkee in the WRD&M.

His/Her conduct and character is good.

The Institution/Organization would relieve him/her immediately for joining the above course, if selected for admission. The Institution/Organization also agrees to pay all the contingent/expenses stipulated by the Institute. This is further certified that the sponsorship for admission will not be withdrawn midway till completion of the course.

Place : …… Signature of Head of the Institution/ Organization with seal

Date : ……. Name: ……

Designation ……

NOTE: Medical Certificate in the enclosed Performa to be submitted with this application form.

MEDICAL CERTIFICATE PROFORMA

A. Candidate's Declaration

1. Name ……

2. Whether you have been treated for

(a) Hypertension (High Blood Pressure) Yes/No

(b) Diabetes Yes/No

(c) Mental illness Yes/No

3. Mark of Identification

(Signature of Applicant)
Dated…… ….

B. Doctor's Certificate

I certify that I have carefully examined Mr./Ms and find that he/she is healthy and he/she has no disease constitutional weakness or bodily deformity or medical infirmity rendering him/her unfit now or in future, for active outdoor service and strenuous studies except

……

I do not consider/do consider it a disqualification for admission to Indian Institute of Roorkee, Roorkee

1.Height (without shoes) Weight (with thin clothes)

2.Chest (over nipples) on complete expiration On full inspiration

3.Are gums and teeth healthy ?

4.Any evidence of Adenitis, skin or veneral diseases

5.Any evidence of Epilepsy

6.Any signs of mental illness or drug addiction

7.Is the chest symmetrical and lungs normal?

8.Is the hearth normal in size and sounds normal?

9.Blood pressure systolic ……..Diastolic……

10. Eye sight R/E ……..…..L/E……. (Distance and near vision)

Does he/she use glasses and if so, Power of glass R/E……L/E……..

1. Reading……..

2. Distant……...

11.Is there only other disease of eye including Colour/Night blindness? Is tracoma present?……..

12.Any evidence of enlargement of Liver of Spleen or Anaemia present?……

13.Is Hydrocele or Hernia present ? If operated, is the scar healthy?……

14.Urine RE …….

15.X-Ray Chest PA…….

16.ELISA test (foreign students and candidates who have visited a foreign country within the last 6 months)…….

For Female candidates
Any evidence of gynecological disorder…….
Condition of Breasts/Uterus……
Period of gestation (if pregnant)……..

(Signature of Doctor)
Name and Designation

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), 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 **Appandix -V** of the Information Brochure

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

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

(c) Experience certificate(s).

Note: The total experience at all levels must NOT be less than 02 years upto 15 June of the academic year

VISION

To be the fountainhead of new ideas and innovations in science and technology and continue to be a source of pride for all Indians.

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।।

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

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

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

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

STRENGTHS OF THE DEPARTMENT

Civil Engineering

- Water Resources System Planning and Management.
- Design and construction of Dams, Barrages, Weirs, Spillways, Regulators, Canal Systems etc.
- Design and construction of Hydropower Stations, Environmental impact assessment
- Rural and Urban Water Supply
- Climate Change and its impact on Water Resources
- Water Management for Sustainable Development

Electrical Engineering

- Hydropower potential Assessment, planning and design
- Power Generation, Transmission and Distribution

Water Resources Development

Mechanical Engineering

- Hydromechanical Equipments
- Hydro turbine installation and operation
- Construction Plant and Machinery
- Design, installation and operation of Gates

Civil/Agricultural Engineering

- Rehabilitation and Modernization of Irrigation System
- Canal Design and Networking
- Operation and maintenance of canal.
- Design of Irrigation and flood control structure
- Ground water assessment, development and management
- Remote Sensing and GIS applications

Irrigation Water management

Social Sciences

- Socio economic survey
- Participatory Irrigation Management
- Water Distribution Practices
- Water Productivity assessment
- Diagnosing System performance
- Water and Land laws

Sciences

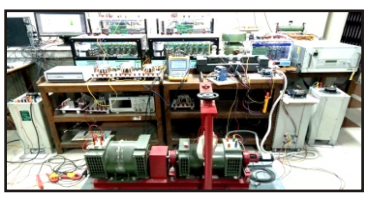
- Water quality degradation
- Land quality degradation
- Soil water conservation & Watershed management
- Surface and sub surface drainage
- Irrigability surveys

Agricultural Sciences

- Crop water requirement and management
- Cropping Systems Studies
- Irrigation System design and evaluation
- Command area development and management
- Pressurized irrigation system design and operation
- Land reclamation and on farm development





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