

**Admission**

**to**

***Post Graduate Programmes***

**M.Tech. / M.Arch. / M.U.R.P.**



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**Indian Institute of Technology Roorkee  
ROORKEE - 247 667**

# Indian Institute of Technology Roorkee

## Postgraduate Admission-2012

### INFORMATION BROCHURE (M.Tech./M.Arch./M.U.R.P.)

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<b>Important Dates</b>	
Opening of Online Application Process	<b>March 19, 2012 (Monday)</b>
Last Date of Uploading the filled Application Form ( <b>Online Submission</b> )	<b>April 20, 2012 (Friday)</b>
Last date for downloading the filled application form	<b>April 20, 2012 (Friday)</b>
Last date for receiving of downloaded signed Application Form at, IIT Roorkee	<b>April 25, 2012 (Wednesday)</b>
Last date for dispatch of letters for Interview/Written Test/Counselling	<b>May 14, 2012 (Monday)</b>
Medical Board for Persons with Different Abilities (PD) Candidates	<b>June 02, 2012 (Saturday)</b>
Interview/Written Test	<b>June 03, 2012 (Sunday)</b>
Announcement of merit list based on Normalized GATE Marks ONLY	<b>June 04, 2012 (Monday)</b>
Announcement of merit list based on Normalized GATE Marks & Interview/Written Test	<b>June 05, 2012 (Tuesday)</b>
Counselling for admission	<b>June 04-06, 2012(Mon-Wed)</b>
<b>Institute fee to be deposited by the selected and waitlisted candidates</b>	<b>June 04-06, 2012(Mon-Wed)</b>
Last date for Withdrawal of Admission by the candidate	<b>June 21, 2012 (Thursday)</b>
Display of upgraded list of Waitlisted Candidates (on Institute Website)	<b>June 28, 2012 (Thursday)</b>
Date of Registration	<b>July 22, 2012 (Sunday)</b>
Classes Begin	<b>July 24, 2012 (Tuesday)</b>
<b>Final Counselling cum Registration of the Waitlisted Candidates in order of Merit for the vacant seats, if any</b>	<b>July 30, 2012 (Monday)</b>

# IMPORTANT INSTRUCTIONS

1. The candidates are advised to read each and every instruction given in this Information Brochure very carefully before applying Online.
2. Application **found incomplete or received after the last date i.e. April 25, 2012, will be rejected** without any intimation to the candidate and no correspondence will be entertained in this regard.
3. Paste your photograph having good contrast, within the box only, on the Downloaded Application. Photograph must NOT be attested. Put your **signature using BLACK (INK OR BALL POINT) PEN only** within the blocks provided **on the Application**.
4. Candidates seeking admission to more than one department (maximum four departments and 14 programmes). The candidate must enclose the IITR's Copy of Challan with the Application for a total amount **(Rs. 400/- for General/OBC Category and Rs. 200/- for SC/ST/PD category candidate plus Rs.100/- per additional** number of Departments applied *for example GEN/OBC candidate applying for 3 departments required to pay Rs. 600/- and SC/ST/PD Rs. 400/- depending on their category*). **The Fee will not be accepted through any other mode.**
5. **A candidate should submit one Application only.**
6. **Choices (max. 14) once given shall not be changed for any reason after submission of Online application form).**
7. After submitting the Application all enquiries be made to the Office of Chairman, PG Admission, IIT Roorkee only.
8. ***For further information, please contact:***

<b>Contact Person</b>	<b>Telephone and Fax Nos.</b>
Chairman PG Admissions Office Indian Institute of Technology Roorkee, ROORKEE-247 667 (Uttarakhand)	(01332) 285875 (Tel.) (01332) 284010 (Tel.)  (01332) 285874/273560 (Fax)
<b>www.iitr.ernet.in or http://pgadm.iitr.ernet.in</b>	<b>e.mail: pgadm@iitr.ernet.in</b>

## 1. 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 University of Roorkee as the first Engineering University of independent India on November 25, 1949. It has now 22 academic departments/centres offering 11 undergraduate courses in engineering and architecture, 5 dual degree programmes and 6 Integrated Dual Degree courses in M.Sc./Engineering and over 51 postgraduate courses in engineering, architecture, sciences, computer applications and business administration besides research programmes at doctoral level. It has three campuses main campus at Roorkee and other two at Saharanpur & Noida

IIT Roorkee has a highly qualified and motivated faculty of about 380 members. They are also engaged in research and consultancy in addition to teaching. The faculty members offer their expertise through consultancy services to private/public sector industries as well as to Government agencies. The institute has about 3900 undergraduate students, 2000 postgraduates and about 1100 research scholars.

There are a number of academic and research centres engaged in interdisciplinary research, and many collaborative programmes exist with institutions in India and abroad. Several central facilities exist such as Central Library having more than 3.74 lac volumes of books and periodicals, Information Superhighway Centre with Internet connectivity, a modern Computer Centre and Institute Instrumentation Centre with highly sophisticated analytical instruments.

The Institute prepares students to meet ever-increasing technological and social challenges with its traditions of self-discipline, hard work, all-round personality development and innovative approach to problems.

IIT Roorkee is fully residential, with well-designed hostels (*Bhawans*) both for boys and girls, sprawling sports ground, hobbies club, Hospital, a modern swimming pool, boat club and a host of facilities for different games including Tennis, Squash and Billiards. Societies and Associations along with activities like NCC, Ranging and Rovering, Mountaineering and Trekking provide excellent opportunities for self-development.

## 2. ROORKEE TOWN

Roorkee, a quiet town of moderate size in the district of Hardwar (Uttarakhand), is located on the banks of the Upper Ganga Canal, which takes off at Hardwar. It is about 30 km south of the Shivalik range of the mighty Himalayas, about 170 km to the north of Delhi and is situated on the Amritsar-Howrah main railway line. Roorkee is linked by rail to many important mega cities such as Delhi, Kolkata, Chennai and Mumbai. Roorkee is also well connected by road, being located on the Delhi-Hardwar National Highway (NH 58), and on the Roorkee – Panch Kula Highway (NH 73). Roorkee (Latitude 29° 52' N and Longitude 77° 53'52" E) is 268 m above mean sea level and has a cold winter. The summer months, though hot, are moderated by the proximity of the Shivaliks. The rainy season is mainly between July and September with an average rainfall of 1050 mm.

Roorkee town is an important centre of engineering activity. Apart from the IIT Roorkee, which is situated in a 150-hectare campus, Roorkee also has the Central Building Research Institute, the National Institute of Hydrology, the Irrigation Research Institute, the Irrigation Design Organization, the

headquarters of Bengal Engineering Group & Centre along with an important Army base.

The Institute campus is 2.5 km from the Roorkee Railway Station and is only 200 m from the Roadways Bus Stand.

## 3. ACADEMIC DEPARTMENTS/CENTRES

### 3.1 Alternate Hydro Energy Centre (AHEC)

Alternate Hydro Energy Centre established in the year 1982, is engaged for the development of small hydropower, and other renewable energy sources and for the conservation of water bodies. The centre offers M Tech Programmes in two specialized areas, namely, Alternate Hydro Energy Systems and Environmental Management of Rivers and Lakes.

The M.Tech programme in "Alternate Hydro Energy Systems" covers the design/selection aspect of different structures/equipment associates with small hydropower and renewable energy projects and is suitable for candidates to take up the responsibilities of investigation, surveys, planning, designs, evaluation, installation of such renewable energy projects.

The second M. Tech Programme in "Environmental Management of Rivers and Lakes" is offered as an interdisciplinary programme to create the specialists for restoration, conservation and management of environmentally degraded rivers and lakes. Environmental Management of Rivers and Lakes involves planning, designing, preparing, executing and monitoring of projects to deal with catchment treatment, pollution and abutment in a sustainable manner in catchment area, rural areas and urban areas. Two institute elective courses for undergraduate students in each semester and Ph.D programme are also offered by AHEC.

The centre also provides expert support on different aspects of small hydropower and other renewable energy development to government and private organizations. International and national short-term training programmes are conducted regularly by AHEC to train the professionals.

### 3.2 Architecture and Planning

The Department of Architecture and Planning, Indian Institute of Technology Roorkee was started in the year 1956-57 when architectural education in the country was at its nascence. The department offers B. Arch., M. Arch./ MURP and PhD degree programmes. It carries the distinction of being the first in the country to Institute a Masters Degree course in architecture (M. Arch.) in 1969-70 followed by Masters of Urban and Rural Planning (MURP) in 1973-74. Students with degree in Architecture can pursue for M.Arch programme, whereas the MURP programme is offered to students with bachelor degree in Architecture and Civil Engineering.

The Department continues to be marked as a keystone of architectural education and research with a committed and well qualified faculty. The department also has the distinction of carrying out Doctoral and sponsored research work in the area of Architecture & Planning over the past three decades. Research Projects of national importance are carried out by the faculty and research scholars in the discipline of built environment and its associated issues. Short-term training programme on variety of relevant topics are offered by the Department regularly.

### 3.3 Biotechnology

The Department of Biotechnology, established in 1981, offers 2-year M. Sc. Biotechnology and Ph. D and B. Tech. Biotechnology programmes. Research is carried out in identified thrust areas in the field of Molecular Biophysics, Genetics, Microbiology, Animal and Plant Biotechnology, Protein Biochemistry and Crystallography,

Bioinformatics, Biochemical Engineering and Molecular Biology. Several sponsored research projects have been undertaken in the specialized areas of protein-DNA interactions, 3D structure and Molecular Dynamics of biological molecules based on Nuclear Magnetic Resonance (NMR) spectroscopy, DNA-Anticancer Drug interactions, Structure based Drug Designing, Plant defense proteins, Genetic Engineering of Nitrogen Fixation, Genome and Genomics of Wheat and Rice, Plasma Membrane based Enzymes, Therapeutically important Viral Enzymes and Proteins, Molecular Mechanism of Hormone Action and Endocrine Disruptors, Microbial Biosynthesis of Enzymes and Organic Acids, Biocatalysis, Biofuels, Biofilms, Bioremediation, Cell Surface Antigens, Molecular Biology of abiotic stress in plants, plant therapeutic proteins, biosensors, aptamers, drug discovery for antimicrobials and microbial pathogenesis. Research collaboration has been initiated/exists with institutions such as Tata Institute of Fundamental Research (TIFR) Bombay, Institute of Genomics and Integrative Biology Delhi, Central Drug Research Institute (CDRI) Lucknow, International Centre for Genetic Engineering and Biotechnology (ICGEB), All India Institute of Medical Sciences (AIIMS) New Delhi, Punjab Agricultural University Ludhiana, Indian Agricultural Research Institute (IARI) New Delhi, National Dairy Research Institute (NDRI) Karnal & Birla Institute of Technology & Science (BITS) Pilani-Goa campus.

### 3.4 Chemical Engineering

The Department of Chemical Engineering imparts instructions to students at the undergraduate and postgraduate level leading to B.Tech. and M.Tech. degrees in Chemical Engineering. M.Tech. programmes are offered in three specialized areas, namely, Computer Aided Process Plant Design, Industrial Pollution Abatement and Industrial Safety and Hazards Management. The Department also runs an Integrated Dual Degree Programme {B.Tech. (Chemical Engg) plus M.Tech. (Hydrocarbon Engg.)}. The Department also admits students for Ph.D. programme.

The M.Tech. programme of the Department has the highest approved intake in the country. The programmes in Industrial Safety and Hazards Management and Hydrocarbon Engineering are unique in the IIT system and fulfill the crucial needs of the industry. The Department has well equipped laboratory facilities with state-of-art equipment and instruments. New Research laboratories have been established in Air Pollution Abatement, Fire Engineering, Industrial Safety and Hydrocarbon Testing and Analysis. The Department is well recognized for its industrial academic programmes and fundamental and applied research. The research output of the department in terms of published articles in peer reviewed research journals and industrial consultancy projects is formidable and noteworthy. The Department conducts a large number of continuing education and training programmes for sponsored candidates from industries in the emerging areas of Chemical Engineering.

### 3.5 Chemistry

Department of Chemistry was established in the year 1960 and has completed 50 years of its evolution in the year 2010 maintaining the highest level of academic standards. This department has played an important role in science and scientific endeavours of IIT Roorkee and has remained an integral part of this institute since its inception. Its distinguished faculty members provide an environment, where the students in B. Tech., M. Tech., M. Sc. and Ph.D. programs learn, explore and discover new chemistry. General areas covered include physical, organic, inorganic and analytical chemistry. The department offers integrated M.Sc. (5 years), M.Sc. (2 years), M.Tech. (Advanced Chemical Analysis) and Ph.D. programs in chemistry. The faculty members of this department are also involved in interdisciplinary research in the areas of

environmental science and nanotechnology. This department is aiming to be one of the major centers for teaching and research in chemical sciences in India.

The department is equipped with the state-of-the-art facilities like IR spectrophotometer, UV-Vis spectrophotometers, Spectrofluorophotometer, Gas Chromatograph, GC-Mass, HPLC, AAS, Elemental analyzer, Cyclic voltammeter and ESI-MS to provide academic excellence as well as industry oriented training to its post-graduate students. Presently, about 100 students are pursuing their doctoral studies. The number of papers published in refereed journals from the department is nearly 100 every year. The department was supported by DST under FIST during 1999-2002 and is supported currently for the period 2009-2014.

### 3.6 Civil Engineering

The Department of Civil Engineering of the Indian Institute of Technology Roorkee (formerly University of Roorkee) has an illustrious history and a glorious past and is the oldest and the largest Civil Engineering Department in the country. It has its foundation in the Roorkee College that was established on November 25, 1847 as the first Engineering College, not only in India but also in the British Empire at the time, to train Civil Engineers for managing the construction and operation of the Upper Ganga Canal. The College laid the foundation for modern technical education and the use of Civil Engineering practices in the infrastructure development of the country.

The department has, in the past, produced several eminent engineers who have made notable contributions in the planning and execution of Civil Engineering projects in many parts of India and as well as in other countries. The department offers a four-year course leading to the Bachelor's degree (B. Tech.) in Civil Engineering. In addition to its high quality undergraduate program, the Department also realized quite early the importance of keeping pace with the latest developments in engineering education. Hence, the postgraduate courses in Structural Engineering and Hydraulic Engineering were started in 1953 followed by the postgraduate courses in Soil Mechanics and Foundation Engineering (now Geotechnical Engineering) in 1954, Highway Engineering (now Transportation Engineering) and Public Health Engineering (now Environmental Engineering) in 1957, Advanced Survey and Photogrammetry (now Geomatics Engineering) in 1958 and Building Science and Technology (now Building Technology) in 1974. Thus, at present the Department offers two-year courses leading to the Master's Degree (M. Tech.) in seven different specializations. Every year, 120 students are admitted to the B. Tech. courses in Civil Engineering and around 150 students to the M. Tech. courses in different streams of Civil Engineering. The Department has also provided education to a large number of sponsored foreign students through arrangements between the Government of India and the Governments of the concerned nations. A number of specialist and refresher courses are regularly organized by the faculty for practicing engineers and the faculty of other engineering colleges. The Department offers Ph.D. programmes in various disciplines mentioned earlier. About 80 research scholars are presently pursuing their research. The research programs of the Department are being funded by various agencies such as CSIR, DST, MoSRT&H, ISRO, BARC, AICTE etc. Besides teaching and research, the faculty of the Department offers consultancy and R&D services to various public and private sector organizations throughout the country.

### 3.7 Earthquake Engineering

Earthquake engineering education in India started at the Indian Institute of Technology Roorkee (erstwhile University of Roorkee) in 1960, through the establishment of School of Research and



Training in Earthquake Engineering. The School was renamed as Department of Earthquake Engineering and became an integral part of the University of Roorkee in 1979. Four major areas of earthquake engineering namely, Structural Dynamics, Soil Dynamics, Engineering Seismology and Seismotectonics, and Instrumentation have been nurtured for more than half a century. Major functions of the Department include teaching and research, and rendering expert advice to various organizations/agencies in all areas of earthquake engineering. This includes earthquake resistant design of structures and systems, such as dams, bridges, power plants, etc. The Department has played a key role at the national level in formulating Indian standard codes of practice for earthquake resistant design of structures.

Several major facilities exist in the department for conducting experiments related to earthquake engineering. The major facilities include: A low cost railway wagon shock table for dynamic testing of full scale structural models, a 3.5 m x 3.5 m computer controlled shake table with a maximum pay-load capacity of 20 tonnes to simulate earthquake ground motion, a quasi static testing laboratory having servo-controlled dynamic actuator systems and servo-controlled compression testing machine of 300 tonnes capacity, a soil dynamics laboratory equipped with facilities for dynamic testing of soils and foundations, liquefaction table, geotechnical centrifuge and cyclic triaxial testing system, and a seismological observatory having state-of-the-art 3-component digital broadband seismograph to record local, regional and tele-seismic events. The Department has deployed a strong motion network of 300 digital accelerographs in the Himalayan region covering seismic zones V, IV and parts of zone III for the purpose of measuring strong ground motion in the event of major earthquakes and a state-of-the-art 12-station telemetered network deployed in the Garhwal Himalaya to continuously monitor the local seismic activity around Tehri dam.

### 3.8 Earth Sciences

The Department of Earth Sciences is one of the leading departments in the country engaged in teaching and research in the field of Earth Sciences. The main strength of the department is amalgamation of two major divisions of Earth Sciences: Geology and Geophysics under one umbrella. In more than last four and half decades, department has produced large number of trained Earth Scientists who are the backbone of the Country's Mineral, Oil and Exploration Industry. The pioneer research contributions in different disciplines of Geology and Geophysics have been recognized through the awards and laurels conferred on many faculty members, and through the generous funding received from various funding agencies. The Department of Earth Sciences, formerly the Department of Geology and Geophysics, was established in 1960. During the span of more than five decades the department has become one of the foremost centres of post graduate teaching, research and consultancy in the field of Earth Sciences. The department has been recipient of financial aid under the prestigious Special Assistance and COSIST programmes of UGC (Ministry of Human Resources and Development, Govt. of India). The geological studies in the Institute date back to the middle of the last century when Colonel Sir Proby Cautley (who was responsible for establishing the Thomason College of Engineering) was elected as a Fellow of the Royal Society, London, for his pioneering work on the vertebrate fossils of the nearby Shivalik Ranges. Later Henry Benedict Medlicot, who was also admitted as the Fellow of the Royal Society in 1877, occupied the Chair in Geology and Experimental Sciences at Thomason College. Presently, the department is running two Five Year Integrated M.Tech. programmes and two three year M.Tech. programmes, each in Geological Technology and Geophysical Technology. These

two programmes were started from 2007 through JEE. One more course viz. M.Sc. (Applied Geology) of two years duration is also being run by the department. Research work leading to Ph.D. degree in several interdisciplinary areas and research and consultancy programmes constitute an integral part of the departmental activities. The faculty is engaged in a number of research projects sponsored by the Govt. of India agencies like UGC, CSIR, DST, ONGC, AICTE etc. and the consultancy projects sponsored by various industries, and government agencies. The department has Hamrock Society in which all faculty and students are members.

### 3.9 Electrical Engineering

The Electrical Engineering Department was a part of the Thomason College of Engineering from the year 1897, one of the earliest such specialisations in the world when the discipline itself was in its infancy. The first batch of Electrical Engineers passed out of the College in the year 1900. This department was, however, closed down in the year 1923 following the recommendation of a special committee that the college may be converted to a purely Civil Engineering Institution. This decision was not to be reversed until on the eve of being converted into a University. The Fortescu Committee advised the resumption of instructions in Electrical Engineering and thus, the present Department of Electrical Engineering came into being in 1946, the first graduates of the new department emerging in 1949. Initially, the department offered courses with options in both Electrical and Telecommunication Engineering. Subsequently, in 1964, the department was bifurcated to form the two Departments of Electrical Engineering and Electronics and Telecommunication Engineering. In 1954, this department was one of the first few ones in India, to start the postgraduate program. Since then, the department has never looked back and since 1964, over 125 Ph.D. degrees have been awarded. Presently the department is running the courses both at the undergraduate and the postgraduate levels and providing excellent facilities to carry out research work for Doctor of Philosophy (Ph.D.) degree, R&D work for sponsored and consultancy projects and testing and consultancy work for industrial problems. This is, of course, in addition to the regular courses in Bachelor of Technology (B.Tech.) and Master of Technology (M.Tech.) that are a part of the curriculum.

A new five year IDD programme has been started in July, 2007 with B.Tech. degree in Electrical Engineering + M.Tech. degree in Power Electronics, with an intake of 10 students.

The department has specialization in research areas such as : ANN and fuzzy logic applications, Distribution system planning and operation, Telemedicine, ECG signal analysis and classification, System analysis and optimization, Computer controlled system including process control, Computer controlled multi-quadrant solid-state converters, Condition monitoring of electrical machines/drives, Digital signal and image processing, Data base management, Economic dispatch and planning, Flexible AC transmission system, FPGA based control, High performance computer controlled DC and AC drives, Intelligent instrumentation, Industrial instrumentation, Medical system modeling, instrumentation and bio-informatics, Modeling and simulation of electric machines, Optimal system operation, Power system protection, monitoring, control and simulation, Power quality, System automation and monitoring, Relay coordination, Reliability engineering, Robotics, System modeling, Process instrumentation and control, Power system automation, Artificial intelligence applications and Voltage stability of power system, Embedded Systems, Sensors &

Sensor Networks.

In recognition of excellent R&D activities in the area of Embedded Systems, Power Quality Conditioning and Biomedical & Image Processing, DST has given financial assistance of Rs. 2.67 crore under the FIST programme, in 2008.

### 3.10 Electronics & Computer Engineering

From a relatively modest beginning with a B.E. programme in Telecommunication in 1957 as part of the Department of Electrical Engineering in the then University of Roorkee, Department of Electronics and Computer Engineering (E. & C.E.) at IIT Roorkee has been continuously striving for excellence in engineering education and research, and, at present, it is one of the largest departments in the Institute in terms of student strength and number of programmes. Right from its inception as a separate department in 1964, diversification, focussed growth and consolidation of earlier initiatives have been the mission of the Department.

The Department offers the following programmes covering the broad spectrum of Electronics & Communication and Computer Science disciplines at the Undergraduate and Post-Graduate levels:

- \* B. Tech in Computer Science and Engineering (CSE)
- \* B. Tech in Electronics and Communication Engineering (ECE)
- \* Integrated Dual Degree Programme – B. Tech (CSE) and M. Tech (Information Technology)
- \* Integrated Dual Degree Programme – B. Tech (ECE) and M. Tech (Wireless Communication)
- \* M. Tech in Communication Systems
- \* M. Tech in Computer Science and Engineering
- \* M. Tech in Information Technology
- \* M. Tech in Microelectronics and VLSI Technology
- \* M. Tech in RF and Microwave Engineering
- \* M. Tech in System Modeling and Control

The Department has always been on a high growth path to keep pace with the ever increasing importance of the major disciplines of study and current technology trends. A judicious mix of experienced and young faculty with strong commitment to academics has created an ambience for learning. Both the undergraduate and post-graduate curricular structure and syllabi are updated regularly to reflect recent technological developments, and industrial and national goals. The Ministry of Information Technology has established a Center for Manpower Development in VLSI in the Department and has funded a project on Information Security Education and Awareness. A great number of alumni of the Department have contributed significantly to national development objectives and to academics.

The Department has strong research programmes leading to Ph. D degree in all the areas of Electronics and Computer discipline. A large number of Ph. D scholars are currently engaged in cutting edge research in the Department. In addition to the well equipped curriculum related laboratories, the Department has many state of the art facilities for assisting research and development in high performance computing, network and information security, solid state devices, VLSI, RF engineering, digital signal processing, image processing and wireless technology. These have been set up with support from Government agencies and industries. The Information Security Laboratory was set up with assistance from CISCO and Data Mining research laboratory has recently been set up with support from IBM. The Department is also in the process of establishing a Cloud Computing facility shortly. The Department has successfully completed a large number of sponsored research projects funded by various agencies. The number and scope of

current projects funded by DIT, DST, MHRD, DOE, ISRO, DRDO, PRL, Naval Research and Army Technology Boards, IBM and the likes bear testimony to the research potential of the Department.

### 3.11 Humanities & Social Sciences

Established in 1966, the Department of Humanities and Social Sciences endeavors to integrate human values and social concerns with technical education. Started primarily to teach English and Social Sciences to engineering students, it now possesses a vibrant and distinct identity, with teaching and research programs encompassing almost all the departments of the institute with its core, elective, and Pre-Ph.D, courses numbering thirty one. The Department undertakes teaching and research programs in the areas of English, Economics, Psychology, Philosophy, Sociology, IPR, Fine Arts and related interdisciplinary subjects. Till date, about seventy scholars have been awarded Ph.D. degree in different disciplines of the department, and twenty-four students are currently registered for this program. The Department also runs an evening course in German language. To facilitate and constantly upgrade teaching and research, the Department has Economic Data Base, Computer Lab, Psychology Lab and a state-of-the-art Language Laboratory with 60 booths. The faculty members have been engaged in sponsored research projects and consultancy. So far 8 major and 12 minor projects and 10 consultancy projects have been undertaken by the members of faculty, besides organizing training programs for teachers through QIP. Further, 405 research papers and book chapters, 25 books have also been published by the departmental faculty, whose erudition has been highlighted through a range of national and international recognitions.

### 3.12 Hydrology

The Department of Hydrology came into existence with the inception of International PG Course in Hydrology in 1972 with the assistance from UNESCO, Govt. of India and IDRC Canada. The course aims to impart training to engineers and scientists from Asia, Africa and other developing countries. The courses offered by the Department of Hydrology are presently sponsored by Government of India, UNESCO and WMO. So far, 808 participants including 302 foreign trainee officers from 38 countries have participated in the Post Graduate Programme. Since 2003, GATE qualified fresh engineering and science graduates from India have also been admitted in this programme. A candidate can opt for pursuing any of the three specializations viz. Surfacewater Hydrology, Groundwater Hydrology and Watershed Management. The department has excellent laboratories in the field of Hydrometeorology, Hydrological Information Systems, Water Quality, and Ground Water. The department has made significant contributions in the field of flood estimation, flood routing, watershed management and environmental hydrology; and handled more than 100 major research and consultancy projects in different fields of hydrology. Some important investigations include hydrological estimates on the failure of Macchu Dam II in Gujarat, design floods of 21 sub-basins of the Sone river, studies on ground water modeling and subsurface drainage studies in command areas of Sardar Sarover and Narmada Sagar projects respectively and water availability/design flood estimations for various basins and hydropower projects of India including Tehri Dam.

### 3.13 Management Studies

The MBA programme was launched by the Institute to reflect the needs of present-day dynamic business and economic scenario and to enable its students to face the challenges of corporate world. The purpose behind this is to give the student a sustainable competitive advantage. It takes the onus to prepare a breed of managers who have the courage, skills

and resilience to excel in the corporate world.

### **3.14 Mathematics**

The Department of Mathematics attained its present status of an independent department in 1960. Growing steadily today the department not only teaches various topics in mathematics to undergraduate and post-graduate students of different engineering and science department, but also run its own 2 Years M.Sc courses in Applied Mathematics and Industrial Mathematics and Informatics and 5-Year Integrated M.Sc Course in Applied Mathematics. The department also conducts an interdisciplinary MCA course. Besides the central computing facilities of the Institute, the department has its own state of the art Computational Laboratory, a Mathematical Modeling Laboratory, Parallel Computing Lab, and Image Processing Lab. The department also offers the facilities for research work leading to Ph.D. degree in different branches of Pure and Applied Mathematics. The department has so far produced over 180 Ph.Ds including some foreign students. Department has collaborations with different national and international organizations and has expertise in various fields of mathematics and others consultancies in mathematical modeling and solution of various industrial and real life problems. The faculty also joins different industrial research and consultancy teams to mutually solve problems of higher mathematical contents.

### **3.15 Mechanical & Industrial Engineering**

The Department of Mechanical Engineering came into being in the year 1946 and the first batch of Mechanical Engineers graduated in the year 1949. In November 1973, the department was renamed as Department of Mechanical and Industrial Engineering. At present it offers both undergraduate and postgraduate teaching in various facets of Mechanical and Industrial Engineering. The department offers Master of Technology courses in Thermal Engineering, Machine Design Engineering, Production and Industrial System Engineering, Welding Engineering and CAD, CAM and Robotics. Besides doctorate level research facilities, the department has laboratory and workshop facilities with modern sophisticated equipment to carry out research in all areas related to Mechanical and Industrial Engineering. The faculty actively participates in sponsored research and consultancy work, conducts seminars/conferences and short term courses. The excellence of the department in Research and Development has been well recognized. The department has received funding from various agencies such as ISRO, DAE, DST, CSIR, etc.

### **3.16 Metallurgical & Materials Engineering**

The department was set-up in the year 1963 when several new disciplines were started in the Institute primarily to train students at the undergraduate level. Postgraduate programs in Physical and Extractive Metallurgy were started in 1969 followed by the Industrial Metallurgy program in 1979. The Doctor of Philosophy program was initiated along with the Bachelors program. In its brief history of nearly fifty years, the department has distinguished itself by making significant contribution to teaching, research and industrial consultancy. In 1997 the name of the department was changed to Metallurgical and Materials Engineering to meet the challenges posed by emerging materials including rapid advancements in the field of engineering polymers, ceramics and composite materials. Recently, a thermo mechanical simulator was procured under the DST sponsored FIST program. It is the first such facility available in an academic institution in India. The department has several on-going research activities in the area of development of alloys, metal matrix composites, modeling and simulation, materials joining, surface engineering, tribology of materials and corrosion engineering. Several faculty members

have international collaborations including exchange visits which have enhanced the research contribution of the department. In the last five years, the department has published more than 300 research papers and carried out 30 and 35 research and consultancy projects, respectively, sponsored by various national and international agencies. A number of patents have been filed for innovative research in process and materials development and some of them are under active consideration for industrial licensing. A number of our alumni have received several prestigious national and international awards.

### **3.17 Physics**

From a modest beginning in 1960, the Department has now grown into an active center of quality teaching and research. Today it stands as one of the leading departments in the country well known for its high quality teaching and research. Our programmes have special features, which are present only in a few institutions. The department offers M. Sc., M. Tech. (SSEM) and Ph.D. programmes to the students. A five year integrated M.Sc. (Physics) programme has been started in the session 2007-08 with admission through JEE. Besides teaching the undergraduate engineering students, the faculty of the department provides active leadership in training the postgraduate students, which is evidenced by their performance in GATE and NET. In fact, up to 75% of the total strength of the students has been qualifying in GATE often holding a few top ranking positions. Our achievements in research have been well recognized by U.G.C. and DST in selecting our department under Special Assistance Programme many times since 1979 and FIST programme respectively. The U.P. Council of Science and Technology has also selected this department as a Centre of Excellence in Physics. The department has research activities in the areas of Atmospheric Physics, Atomic Physics, Condensed Matter Physics, Photonics, Nuclear Physics, Particle Physics and High Energy Physics. The department is successfully running various major and minor research projects funded by DRDO, DAE, DST, MIT and CSIR.

### **3.18 Paper Technology, Saharanpur Campus**

The Department of Paper Technology at Saharanpur Campus, is an Industry oriented academic department of the Indian Institute of Technology, Roorkee. This department (erstwhile Institute of Paper Technology) originally started in 1964, with the assistance from Royal Swedish Government on the pattern of their Paper Technology School in Markryd, Sweden, with the aim of fulfilling the need of technically trained manpower for the paper industry. It has been offering various academic programmes in Pulp & Paper at UG and PG level. A new 5 years Integrated M.Tech. (Polymer Science and Technology) programme has already been started from July 2006. Another 5 years IDD B.Tech. (Process Engineering) with MBA has been started from July 2007. The department has well developed laboratories and its faculty is engaged in teaching, research and industrial consultancy covering many facets of Pulp and Paper Technology, Polymer Technology and Process Engineering. The Paper Industry has traditionally been an intensive industry in-terms of raw materials usage, energy use, man-power deployment and in discharge of effluents. With liberalization of economy, global competitiveness and high environmental pressures, coupled with growing demands for paper products of high quality and at competitive prices, the process industries have come under enormous pressure for change. This in-turn calls for a new vision in redesigning the academic program and in restructuring the research activities. Accordingly, the faculty keeps itself abreast about the latest development through research, consultancy and Industry Oriented Human Resources Development (HRD) programmes. The departmental faculty has executed successfully many



research projects, sponsored and consultancy projects and many such programmes are currently in progress.

### **3.19 Water Resources Development & Management**

The department was established in 1955 as an Asian African Centre to impart training to in-service professionals in the field of water resources development and management. At present, the department offers application based Postgraduate Degree programmes in Water Resources Development and Irrigation Water Management for imparting training to in-service professional & fresh GATE qualified graduates in Civil, Electrical, Mechanical and Agricultural Engineering and Agricultural Sciences. A balanced blend of academicians and field engineers in the faculty with long experience in planning, design, construction, operation, and maintenance of water resources development and irrigation water management projects help in implementation of application oriented academic programmes. The department is actively involved in research, development and extension activities in the areas of water resources and irrigation management. The objective of the Department is to develop manpower that can take the responsibility of sustainable development and environment friendly management of the available water resources. The department has so far trained about 2503 in service engineers and agricultural scientists from 49 countries including India.

### **3.20 Centre of Excellence in Disaster Mitigation and Management**

The Centre of Excellence in Disaster Mitigation & Management (CoEDMM) was established at Indian Institute of Technology Roorkee by the Ministry of Human Resource Development, Government of India in the year 2006, with a view to strengthening awareness, research and training in the frontier areas of research for Risk Reduction due to Natural and Manmade Hazards.

The demands of growing population have great pressure on the Natural Resources. This continues to over exploit the resources, causing catastrophe, mishap, calamity climatic changes arising from natural or man made causes and Industrial negligence or accidents. Consequent to this substantial loss of life, damage to the property and degradation of Environment takes place. To protect the environment degradation and preparing resilient and safe society, the Government of India through parliament has enacted Environment Protection Act in 1986 and Disaster Management Act 2005. These acts have notified the guidelines for Disaster Mitigation and Management and conservation of environment for sustainable development. The management of the above is a continuous and integrated process of planning, organizing, coordinating the efforts for capacity building towards resilient society and stable climatic conditions.

The Centre of Excellence in Disaster Mitigation & Management (CoEDMM) is aimed to focus on multidisciplinary research/training program involving faculty members from various departments from within and outside the Institute. The Centre of Excellence is a resource formed, to serve Governmental, Social organizations and Industrial groups from across the country. The Centre is setup to create technical manpower to undertake the social corporate responsibility, interact with industry, the government departments and create the required facilities to cater the needs of Multi-hazard Assessment and Risk Reduction.

### **3.21 Centre of Excellence in Nanotechnology**

Centre of Nanotechnology was established in December 2005 as one of the Centres of Excellence. The faculty of the centre, drawn from different departments is involved in developing state-of-the-art facilities at the institute and is vigorously pursuing interdisciplinary research on various current aspects of Nanoscience and Nanotechnology. For this purpose the

Institute has granted six MHRD assistantships to the centre. A wide range of sophisticated equipment related to nanotechnology has been made operational at IIC involving the multidisciplinary faculty of the centre.

In view of the major impact of 'Nanoscience' in vast disciplines of Science and Technology, M.Tech. program on 'Nanotechnology' was started in 2008. This course is aimed at providing the basic know how to B.Tech./M.Sc. students about various concepts of nanoscale materials, their synthesis, characterization, novel properties, applications and future perspectives. This being a multidisciplinary area, a number of electives have been designed to impart-knowledge on modeling and simulation, physics, chemistry, biological and technological aspects of nanomaterials. Besides, it is providing students a practical training on advanced methods being employed for the synthesis, characterization and elucidation of different nanostructures. This expertise could be utilized to fabricate new materials and nanodevices. This programme is coordinated by the Department of Met. & Mat. Engg.

### **3.22 Centre of Excellence in Transportation Systems**

CTRANS is a Centre of Excellence of IIT Roorkee in the area of Transportation Systems with an aim to promote multidisciplinary and high quality research and education in Transportation Systems with collective participation of Engineers, Scientists and Researchers from Science & Technology, Humanities and Social Sciences, Architecture & Planning and Management Studies background. The Research and Education in multidisciplinary areas covers all modes of transport like Road Transport, Rail Transport, Air Transport, Inland Navigation & Water Transport & Pipe Line Transport. The research areas are Public Transport System, Airfield and Highway Pavement Management System, Intelligent Transport System, Design of Comfort (Rail Transport), Environmental Impact Assessment, Environmental Management, Biofuels for Automobiles, Air Quality Modeling, Mathematical Modelling, Supply Chain Management & Logistics, Electric Trolley System, Traction Technology, Remote Sensing, GPS & GIS Applications, Inland Water Transport, Polymer Applications in Transportation Systems, Accident Modelling and Road Safety, Urban Transportation Policy, Management of Transport Systems, Visual Communication Design System, Aesthetics, etc. The Centre is equipped with a number of modern equipments i.e., Road Measuring Data Acquisition System (ROMDAS), Portable Automatic Traffic Counter-cum-Classifer, Trimble IR 5600 Robotic Total Station, Electrodynamic Vibration System, Falcon Handheld Stationary Radar with Data Logger for Measurement of Vehicular Speeds, Integrating-averaging Noise Level Meter, 50" Plasma TV for Traffic Analysis study, Portable Falling Weight Deflectometer, Diamond Core Drilling System, Portable Reference Measurement System, Ground Penetration Radar (GPR) for Utility Detection and High Cell Density Bio-Reactor, Electronic Portable Static Wheel/Axle Weight Scale, Hand held Analyser with Sound Level meter for Aircraft Noise measurement The Centre has Sound Plan, HEADS, TRANSCAD VISUM & VISSIM softwares for a variety of transportation system problem analysis. The Centre has a good computing facility for modelling and simulation of transportation systems. A multi-Institutional Nationally Co-ordinated Project entitled "Integrated Development of Public Transport System" Sponsored by AICTE is currently being executed at this Centre. The DST, GOI has sanctioned a R&D Project on "Design and Analysis of Urban Multimodal Mass Transportation System" CTRANS is also offering Advcie and Consultancy Services. The CTRANS is providing Consultancy Services to CPWD for Development of State Highways in Bihar State for a Consultancy amount of Rs. 5.6 crores. The completed part of this project found helpful for getting services quickly. A number of research scholars are pursuing Ph.D. on the

identified multi-disciplinary research areas at CTRANS. Five research scholars have completed their Ph.D. programmes, during the year 2011-2012. The Ministry of Road Transport and Highways, Govt. of India has established Professorial Chair at CTRANS in the area of "Development of Highway System in the Country". The CTRANS has research collaboration with Queensland University of Technology (QUT) Brisbane, Australia.

CTTRANS has research collaboration with Queensland University of Technology (QUT) Brisbane, Australia.

#### **4. ACADEMIC SERVICE CENTRES**

##### **4.1 Centre for Continuing Education**

A pioneering centre in the area of continuing education, has completed more than 50 years of service. This centre acts as a window to disseminate information and technology on latest developments in the globe to face with rapid technological advancements. Courses are being organized through the technical expertise available in various departments of the Institute, experts are also invited from industries and R&D organizations to upgrade knowledge, to provide a platform for generating ideas, and for stimulating the current needs of the in service professionals. These courses are organised in consultancy as well as in sponsored mode to fulfill the clients needs. The Centre has conducted about 200 courses/training programs during last three years in various disciplines of management, engineering, science and technology to professionals from India and neighbouring countries.

The Centre is fully equipped with modern teaching aids, internet, wi-fi and an excellent boarding and lodging facilities.

##### **4.2 Quality Improvement Programme Centre**

The Government of India has launched the Quality Improvement Programme in the year 1970-71. One of the main objectives of the programme is to upgrade the expertise and capabilities of the faculty members of the degree level engineering colleges/ institutions of the country. Since 1994-95, the programme is being implemented and monitored by All India Council for Technical Education. In "Quality Improvement Programme" only sponsored teachers are eligible for admission to both Master's and Doctoral Degree Programmes, with the aim to enable them to acquire Master's/Doctoral degrees and imbibe in them a culture of research and better teaching capabilities by exposing them to the environment of a higher level institute.

The Programme was launched to improve the overall quality of technical education in the degree level engineering colleges/ institutes. It was anticipated that placing the teachers on the campus of these institutes of excellence including 7 IIT's, and Indian Institute of Science, Bangalore, will expose them to an altogether different environment of sophisticated infrastructure and to improve the standard of technical education in their own institute.

##### **4.3 Institute Instrumentation Centre**

The Institute Instrumentation Centre has a wide range of analytical facilities for processing and characterizing materials. These facilities are available for use by researchers (students/faculty) in both academia and industry not only for the academic community of IIT Roorkee, but also to various research organizations and industries across the nation. Ever since its inception in 1978 as the University Science Instrumentation Centre of the erstwhile University of Roorkee, it has always been an essentially significant shared analytical facility. The Institute Instrumentation Centre has been consistently and enthusiastically providing these facilities not only IIT, Roorkee but also the users of other organizations of the country.

This centre provides modern facilities for advanced materials processing and characterization. The facilities include well established Nanoscience laboratory which consists of state of the

art nanomaterials synthesis facilities. More details are given below. IIC is equipped with more than twenty specialized and sophisticated equipments for analysis and solution of intricate scientific and industrial problems. These include, among others, Nuclear Magnetic Resonance (NMR), Thermal Ionization Mass Spectrometer (TIMS), Electron Probe Micro Analyzer (EPMA), Macromolecular Crystallographic Unit (MCU) for protein crystallography (All the required facilities for cloning to crystallization are available), X-Ray Fluorescence Spectrometer (WDS-XRF), Powder X-Ray Diffractometer (Powder-XRD), Glancing angle XRD, Single crystal XRD, Scanning Probe Microscope (SPM), Field Emission Scanning Electron Microscope (FE-SEM), 200 KV Transmission Electron Microscope (TEM), Scanning Electron Microscope (SEM), Superconducting Quantum Interference Device (SQUID) Magnetometer, Vibrating Sample Magnetometer (VSM), Atomic Absorption Spectrophotometer (AAS), Fluorescence Life Time System, Inductively Coupled Plasma Mass Spectrometer (ICP-MS) attached with Laser Ablation, Differential Thermal and Thermo Gravimetric Analyzer (DTA/TGA). Each laboratory generally has an operator working under the supervision of a faculty member or a scientific officer. Besides these, the Centre includes a training laboratory for summer training of the engineering students.

There are two faculty members each having several sponsored projects and research programmes in the areas of Earth Sciences and Nano-material sciences.

##### **Nanoscience Laboratory**

We have developed a Nanoscience laboratory with state of the art physical vapour deposition (PVD) techniques to fabricate nanostructured materials. We have Developed PVD techniques such as TMP based Dual Chamber RF/DC Magnetron sputtering system with the facility to deposit Nanocrystalline powder, thin films and multilayers by varying Substrate temperature from  $-150^{\circ}\text{C}$  to  $850^{\circ}\text{C}$  with a base pressure  $10^{-7}$  Torr. Recently an industrial sputtering system also have been installed with a facility to coat large area components for various applications. Multi-chamber Excimer (KrF) based PLD technique also have been installed to deposit nanostructured materials in the form of multilayers/heterostructures, Nanocrystalline thin films and nanopowders. The main part of the ablation system are Excimer LASER (KrF) and two 12-inch-diameter vacuum chambers. The chambers are based on HV (vacuum,  $5.0 \times 10^{-7}$  Torr) components in order to minimize the contamination of the substrate and the target. All flanges and feed throughs are standard CF flanges sealed with copper gaskets. These facilities have been developed from the sponsored research grants. So far 6 major research grants have been received from various funding agencies such as DST (Under Nanoscience program), DRDO, CSIR, DAE and CPRI Bangalore. These facilities are being heavily used by more than a dozen graduate and postgraduate students. Recently 4 B. Techs, 5 M. Techs and 7 Ph.D. Dissertations have been completed from Nanoscience Laboratory.

##### **4.4 Institute Computer Centre**

The Centre works towards the common goal of implementing the academic agenda of the Institute by constantly interacting, evaluating and updating the resources to meet the international standards.

##### **Computing Resources:**

- ICC, a central computing facility, is equipped for High Performance Computing, which includes infrastructure for Cluster Computing and Grid Computing, besides high-end Servers and Workstations on heterogeneous platforms.

- Centre has a wide range of servers from Intel processor based ones to high-end RISC servers from SUN, IBM, SGI and NAS (Network Attached Storage) servers of 2x1.6 TB (terabytes)

capacity.

- ICC has state-of-the-art facilities for applications such as: CAD/MCAD, Computational Fluid Dynamics (CFD), FEM & FEA, Image Processing / Scientific Visualization, 3DAnimation/Visual Simulation/ Geospatial imaging and analysis.
- It has mid-range to high-end configured graphics workstations with MIPS R16000 64 bit RISC based (SGI)/ 64 bit Quad-core Intel Xeon (dual cpu) with 4/16 GB 667 quad-channel DDR2 fully buffered DIMM memory and 512/768MB VRAM / AMD Opteron / Xeon EM64T with 2 GB RAM /PIV EM64T CPUs.
- Linux based HPC Cluster and all the other servers can be accessed within the campus including DPT Saharanpur Campus through campus LAN.

#### **Major Engineering and Scientific software resources:**

ICC's software licensing facilities provide the following major engineering and scientific softwares available throughout the campus over the LAN with network floating licenses:

- MATLAB R2010b with various Tool Boxes;
- ArcGIS 10: ERDAS Imagine 9.3.2 with Leica Photogrammetry Suite & Imagine Developer's Toolkit and ER Mapper 7.2;
- SPSS 16.0; Mathematica 5.0; NAG Libraries and Compilers; Intel Visual Fortran 9.0;
- MagNet64 bit v 6.22.1;
- LabVIEW 2010 academic site license with Campus Teaching;
- Pro/ENGINEER Wildfire 4.0; Solid Edge 18.0; Mechanical Autodesk Inventor Series 11;
- Abaqus/Standard & Abaqus/CAE 6.8; STAR-CD 4.08 for Computational Fluid Dynamics;
- SAP2000 for structural analysis and design of 3D structures & ETABS for analysis, design and drafting of building systems; Microstation and Bentley suite of products for Civil under academic subscription;
- AutoCAD Revit Architecture Suite 2010 & Educational Solution Set 2010(Architecture);
- ChemOffice Ultra 10.0;
- Felix for Nuclear Magnetic Resonance (NMR) spectral data off-line processing;
- Oracle 9i & 10g and MS Visual Studio.Net 2008

**Microsoft Campus Agreement** under academic pricing for major and latest software ranging from High Performance Computing(HPC) to latest versions of OSs (32/64 bit - Standard and Enterprise) for Server, Workstation and Desktop along with RDBMS, .NET development environment and Office Applications suites, have been licensed for the year 2010 under School and Campus Agreement.

#### **Computing Environment and Access Timings:**

- The Centre maintains a comfortable environment, conducive for research & training for both students and faculty.
- **It provides dedicated high-end systems with specialized software required by M. Tech and Ph.D. scholars during their dissertation/thesis period in Research Scholars Lab.**
- Short term training programmes /workshop/seminar for students, faculty members and office staff are also being organized by the centre.
- It has eight job-specific labs with about 250 desktops/thin clients of latest configuration in 100/1000 mbps CAT 6 based structured network having gigabit managed switches with internet connectivity at every system.
- Computer Centre runs in two shifts from Monday to Friday from 8:00 AM to 11:00 PM and on Saturday and Sunday 8:45 AM to 11:00 PM.
- It is rendering services all 7 days/week. Computing and software

license serving facilities are available on 24x7 basis within the campus including DPT Saharanpur.

#### **4.5 Information Superhighway Centre**

The Information Superhighway Centre(ISC) was established in March 1996. It is the nodal centre for outside/inside connectivity to the campus and serves as an Information Technology Center for promoting the effective use of IT, IT Systems, resource management and facilities for modernization/automation of the IP Infrastructure of the Campus

The Institute has a star topology Gigabit Ethernet Switch based, state-of-the-art Enterprise class network with data, voice and video communication capabilities. All departments, centres and Saharanpur campus are connected to the Information Superhighway through Optical Fiber. The network covers 365 acres of area through wired-line, Wireless access, and ADSL, providing internet/intranet, and e-mail facility to all faculty, students, staff, library, and laboratories.

Institute has 1 Gbps internet lease line link of National Knowledge Network (NKN) from NIC under MHRD Govt of India initiative. 100 Mbps internet leased line link from TATA Communication, New Delhi, 100 Mbps internet leased line link from BSNL Haridwar, 2 Mbps Lease Line link from ERNET India, New Delhi, 34 Mbps dedicated leased line (RailTel) in a close group to Saharanpur Campus.

The ISC also has an Information Management Group(IMG) which is managed by B.Tech. students for developing website and intranet applications.

#### **4.6 Central Library**

The Mahatma Gandhi Central Library serves as a central organ of the academic activities of the Institute. To this end, it continues to fulfill its obligation in providing necessary information support in the form of books, advanced treatises, works of reference, bibliographical tools, current and back volumes of journals, theses, dissertations, CD-ROMs, e-journals, e-books and other kinds of monographs to its members. It has well bound collection of more than 3.74 lakh volumes to meet the growing and varied requirements of its clientele consisting of undergraduate and postgraduate students, research scholars, faculty members and special members. The library strives to provide physical facilities with calm and cozy atmosphere conducive to study for long hours. It subscribes to over 975 current journals in all branches of Engineering, Physical Sciences, Bio-sciences and Humanities and Social Sciences. Besides this the library provides access to E-resources including 12,500+ e-journals and 20,000 e-books published by major Science and Technology publishers of the World. All the e-resources of library are accessible to the users 24x7x365 basis throughout the campus on Institute network. Library also maintains 5 servers and more than 135 Desktop PCs on its Local Area Network. Forty five CCTV cameras have been installed at various places of the library. The RFID based integrated library management system has been installed in library having the features of self check-in and check-out, anti theft, inventory, self management etc.

Mahatma Gandhi Central Library building is one of the most beautiful buildings in the country. It is the state-of-the-art facility, fully air-conditioned which provides the best possible environment to the students and faculty. It occupies an area of over 90,000 sq. ft. A small cafeteria, ample sunlight through dome and skylight provision, state-of-the-art cabling for Internet and light, fire services, cyber rooms, open terminals, Wi-Fi environment are some of the main features. A separate reading room with 80 seating capacity where students are allowed to study their own books till the opening hours of library, upto 12 midnight during examination period is a unique feature. The Central Library is on its way to provide library services



in such a way that Saakaar becomes Niraakaar and believes in being proactive rather than services on demand.

## 5. OTHER UNITS

### 5.1 Educational Technology Cell

Educational Technology Cell a part and parcel of IIT Roorkee is situated near the building of Centre for Continuing Education. This cell was primarily intended to produce high quality Video/web/multimedia based instructional material, Syllabus based content development for the National Programme for Technology Enhanced Learning (NPTEL) project, short courses/training programmes for faculty for development of video/web based course. Over the period of time its role has expanded to absorb new paradigms of e-learning, training of faculty to develop their own e-content and use of e-content developed by NPTEL, training of faculty about streaming of video & web based lectures in their respective institutes, streaming of round the clock video lectures on demand, at IIT Roorkee, creation of question banks, quality control of e-content generation through feedback mechanism, conduct of research related to pedagogies in e-learning, creation of innovative virtual experiments, support to "National Mission Challenges" undertaken by the Department of Higher Education, MHRD. The cell has state-of-art digital video camera, non-linear editing systems, audio and video systems, teaching aids, substantial number of computers, servers and softwares required to produce high quality Web based and Video based course. The cell has already produced 6 web based courses and 9 video based courses under NPTEL Project. These courses are accessible to anyone in India and abroad through the web site <http://nptel.iitm.ac.in>. This centre is also connected to satellite through EDUSAT (a facility provided by ISRO) to provided facility for the functioning of country-wide class room.

### 5.2 Intellectual Property Rights Cell

The intellectual Property Rights Cell of IIT Roorkee primarily functions to create awareness and to provide guidance to the academic and non-academic staff, students and research scholars on the practices and the rules and regulations of the Institute regarding Intellectual Property Rights (IPRs) and obligations within the frame work of the IPR policy of the Institute. It works to safeguard the interest of inventors regarding IP with legal support which is necessary. During last five years of January 2005- January 2010 IPR Cell has processed 36 Disclosures/applications for patent filing. A Technopreneur Promotion Programm (TePP) outreach centre (TUC) is also operating from teh IPR Cell. This is a programme of DSIR to support innovative ideas towards commercialization. Since 2007 this centre has received 27 proposals for financial support out of them 3 proposals have been considered for financial support from DSIR and 5 proposal are in active consideration for the same.

The IPR Cell also takes initiatives in developing syllabus on education of IPR for the UG and PG students, which are successfully running in this institute.

The institute IPR Cell organizes **hands on training session for students, research scholars and faculty members twice in a academic year** with the primary objective to brief them in (1) organizing the research work and innovation identification, (2) record keeping of the work (3) procedural aspect of patent search and (4) filing of disclosure for patent filing.

IPR Cell has initiated a programme to meet the investigators and scholars of various ongoing research projects of every department/ centre of the institute to discuss about the state of the art and objective of their studies. This is in order to explore the possibility to organize their work towards creation of IP in which IPR Cell extends its relevant support appropriately.

### 5.3 Training & Placement Cell

The Training & Placement Cell of the Indian Institute of Technology Roorkee, is committed to provide the best of placement opportunities to all the students (UG, PG and Ph.D.) graduating from this Institute. Under the Campus Recruitment Campaign, companies from all the sectors (i.e., Core, IT, PSUs, Government, Academics, R & D and Financial) are invited for the training/ internships and placement recruitment. Each student has to register with the placement office to avail this facility. Normally, the companies would deliver Pre Placement Talks (PPTs) followed with Written Test/ Group Discussions ad Personal interviews. The T & P Cell of teh institute is housed in a separate building with world class infrastructure to facilitate the recruitment process.

Every year, there is an increase in the number of companies visiting the campus. Approximately 150 new companies have been added in last three years. The highest and average annual salary package of offered during last three years are Rs. 65.00 lac per annum and Rs. 7.00 lac per annum respectively. The training and Placement Cell will continue to serve the student community.

## 6. POSTGRADUATE PROGRAMMES

### 6.1 The Objective

The main aim of the postgraduate education at this Institute is to inculcate in the students a deep understanding of the fundamental principles, concepts and practices in the chosen area of specialisation and to develop abilities for undertaking research and development through dissertation. To achieve the above goals, the curriculum is designed to motivate the students for self-study, train them for independent work and create environment conducive for innovation. The programme also offers design courses aimed at translating theoretical knowledge to practical application. It also provides opportunities to develop strong linkages with research institutions and industrial R&D units. The postgraduate programmes offer considerable flexibility to students in choosing the electives in pursuance of their academic goals.

Upon admission, the student is attached to a faculty advisor who guides the student in choosing the electives depending upon his/ her area of specialisation. Each course shall have certain number of credits assigned to it depending upon the academic load and weekly contact hours of lecture, tutorial and practical classes. Students shall be evaluated for their academic performance through tutorials, home work assignments, term papers, field work, surprise quizzes, mid-term examinations and the end-term examination on a 10-point grade system.

### 6.2 Postgraduate Academic Programmes leading to M.Tech./M.Arch./M.U.R.P.

The postgraduate programmes in Engineering and Architecture include 42 full-time programmes in different specialisations leading to M.Tech./M.Arch./M.U.R.P. degrees. In addition, the departments of Hydrology and Water Resources Development & Management, also offer PG Diploma programmes. Details of different academic programmes leading to M.Tech./M.Arch./M.U.R.P. degree available in different departments along with their codes, number of seats and the minimum educational qualifications for admission are given in **Table-1**. GATE discipline(s) to be considered for admission to different programmes are given in **Table-2**. The curriculum structure of these programmes is given on the Institute website: <http://www.iitr.ernet.in>

The ordinances and regulations in force determine the general academic requirements for the above programmes for full-time



and part-time students.

Admission is open to full time sponsored and part time sponsored candidates also.

### 6.3 Postgraduate Academic Programmes leading to M.Sc./M.Tech. (post B.Sc.)/MCA and MBA Degrees

These programmes include 6 courses of study leading to Master of Science (M.Sc.) degree in Geology, Applied Mathematics, Biotechnology, Chemistry, Industrial Mathematics & Informatics and Physics; Master of Technology (M.Tech.) degree in Geophysical Technology, and Geological Technology, one interdisciplinary programme leading to Master of Computer Applications (MCA) and another programme leading to Master of Business Administration (MBA).

### 6.4 Eligibility Requirements for admission to M.Tech./M.Arch./MURP Degree Programmes

#### Essential Requirements

Candidates who possess the minimum educational qualifications as given in **Table-1** are eligible to seek admission to these Postgraduate programmes. In addition, candidates of General and OBC category must have secured at least 60% marks or CGPA of 6.00 on a 10 point scale at the qualifying degree level; but for SC/ST/PD category candidates, this percentage is 55% or 5.50 CGPA on a 10 point scale. The aggregate marks awarded for the qualifying degree will be considered for eligibility.

In case of CGPA awarded on different point scale, **Table-3** as approved by the Senate of the Institute will be considered for deciding eligibility.

These essential eligibility requirements are applicable to all the categories of candidates, viz: regular, full-time sponsored and part-time sponsored candidates. Other conditions for these three categories are as follows:

#### A. Regular Candidates

- (a) Admission to Postgraduate programmes leading to M.Tech./M.Arch./M.U.R.P. degree as given in **Table-1**, will be open to the candidates qualified in GATE on the basis of either valid Normalized GATE marks only in the disciplines as given in **Table-2** or valid Normalized GATE marks in the disciplines as given in the **Table-2** alongwith Interview/Written Test to be conducted by the IIT Roorkee. **The normalized GATE marks of different papers will be used to prepare the merit list for programmes of a department. The Normalized GATE marks will be calculated as follows:**

$$\text{Normalized GATE Marks in the Paper} = \frac{\text{Marks Out of 100 of the candidate}}{\text{Maximum Marks Awarded in that Paper in that year}} \times 100$$

**Example:** Assume marks scored by the candidate is 64 out of 100 in EE Paper, where maximum marks in EE paper of that year is, say, 92. Then normalized GATE marks of the candidate in EE paper will be as follows:-

$$\text{Normalized Gate Marks in EE Paper of the candidate} = \frac{64}{92} \times 100 = 69.57$$

**There will be a cutoff on Normalized GATE marks for calling the candidates for Interview/Written Test and for preparing merit list for different programmes for different categories of candidates.**

- (b) **Final year students who will be completing all the requirements of their qualifying examination including backpaper(s)/supplementary(ies) before the date of registration may also apply.** Such candidates will be required to submit a certificate as per the proforma given in **Annexure-1** along with the application form. Such candidates may be admitted provisionally but they will be required to produce the proof of having passed the qualifying degree with the required percentage of marks or CGPA **latest by September 30, 2012, failing which their admission shall be cancelled.**

**A candidate appearing in any part of the qualifying examination including supplementary examination etc. after the date of registration shall not be considered to have qualified for admission in the year 2012-13 and if such a candidate is registered provisionally his/her admission shall be terminated.**

- (c) Direct admission upto 10% of the intake without GATE will be offered to IIT graduates with a minimum CGPA of 8.00 on a 10 point scale.
- (d) Candidates having AMIE/AMIS/AMIChE/AMIIM/Grad IETE, who possess B.Sc. or Diploma in engineering and have at least three years research, teaching or other professional experience acquired **after passing the qualifying examination in relevant field**, are also eligible to apply for admission to M.Tech. courses.

#### B. Full-Time Sponsored Candidates

- (a) These candidates must have a minimum of two years of full-time work experience (subject to provision A.[d] as for regular candidates) in responsible capacity in a Registered Firm/Company/Industry/Educational and Research Institution/ Govt./Quasi Govt./Autonomous Organisation 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.
- (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 on the basis of their results of the qualifying degree.
- (c) Candidates should submit the sponsorship certificate along with the application, duly signed by the Head of the Institution/ Organisation on the proforma as per **Annexure-2**.
- (d) A few candidates are also admitted under QIP, Early Faculty Induction Programme of AICTE and Defence Research & Development Organization Schemes, for which the admission procedure is separate. For further details, please contact **Chairman, PG Admission, Indian Institute of Technology Roorkee, ROORKEE-247667.**

The sponsored candidates who meet the above mentioned eligibility conditions, along with the minimum educational qualifications given in **Table-1** should apply on the prescribed Application Form.

**Preference in admission will be given to those candidates who are GATE qualified.**

### C. Part-Time Sponsored Candidates

- (a) These candidates must satisfy condition B (a) as for full-time sponsored candidates, with the additional requirement that such organisations 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/Organisation as per **Annexure-3** 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.**

### D. Foreign Candidates

- (a) Foreign nationals seeking admission to postgraduate courses should apply through the Govt. of India, if they wish to come through any Govt. supported programmes or under Cultural Exchange Programmes, or through Educational Consultants (India) Ltd., New Delhi. They may seek necessary help from the Indian Embassy in their country or their Embassy in India. In addition to these avenues, a provision of direct admission for Non-Resident Indians (NRI's) and self-financing Foreign National candidates exists for Postgraduate and Ph.D. degree programmes in Engineering, Architecture, and Sciences (PG only).
- (b) Foreign nationals are required to undergo medical examination as per medical rules of the Ministry of Human Resource Development, and have to undergo test for HIV at NICD, Delhi within one month of their admission. The admission of foreign nationals would be confirmed only after medical examination and the receipt of the test report regarding HIV.
- (c) Foreign nationals will be admitted only after obtaining the clearance from the Govt. of India. Foreign candidates having student's/provisional student's visa only are eligible for admission.

*Note: Admission to full time/part time sponsored candidates will only be offered over and above the sanctioned intake provided department concerned agree.*

### For NRI and Self Financing Foreign Nationals

Non-Resident Indian (NRI) nationals residing and studying abroad and self-financing, non-sponsored foreign nationals who are interested in obtaining admission are eligible for admission subject to medical and Government clearances as per Section 6.4 D.

Foreign candidates including NRI and Self Financing Foreign nationals must have fulfilled the following :

- (i) Qualifications equivalent to educational qualifications required for admission to PG programmes as given in **Table -1**,
- (ii) The candidates must have a minimum of two years of full-time work experience in a relevant field
- (iii) Certificate of good conduct and character from the Head of Institution last attended,
- (iv) TOEFL with average of 70 out of 120 or IELTS with 6 on 9 point scale as proof of proficiency in English.
- (v) Three reference letters.

## 7. ADMISSION PROCEDURE

### 7.1 Introduction

Admission to various Postgraduate (PG) academic programmes of the Institute is open to all Indian nationals irrespective of caste, creed and sex.

Admission to Postgraduate programmes for the academic session 2012-13 in different academic programmes leading to M.Tech./M.Arch./M.U.R.P. degrees including M.Tech. degree after M.Sc., for full time regular students with MHRD assistantship will be made on the basis of either valid Normalized GATE marks only or valid Normalized GATE marks alongwith Interview/Written Test to be conducted at IIT Roorkee. Sponsored candidates may be admitted through an Interview/Written Test. The eligible GATE disciplines for different programmes are in **Table-2**.

There are approved numbers of seats in different programmes as indicated in **Table-1** for which assistantships are given by the MHRD to GATE qualified candidates selected for admission within the sanctioned intake. However, the Institute may admit additional eligible (GATE qualified) candidates without assistantship, **provided the concerned departments agree to admit more than the sanctioned intake.**

All the candidates seeking admission to the PG programmes leading to M.Tech./M.Arch./M.U.R.P. degree will have to apply on proper Application Form.

There are few programmes like M.Tech./PG Diploma exclusively for sponsored candidates for which separate admission process is followed and is carried out by the concerned departments which may be contacted directly by the aspiring candidates.

### 7.2 General Information

- (a) Admission will be offered to the first semester of the various postgraduate programmes.
- (b) A candidate seeking admission to postgraduate programmes leading to M.Tech./M.Arch./M.U.R.P. degree is allowed to apply maximum for **4 departments** and may give prioritized preference for maximum of **14** academic programmes given in **Table-1**. **Choices (max. 14) filled-in in the Application Form once will not be changed for any reason after submission of application form.**
- (c) A student, who is admitted and registered for a postgraduate programme at the Institute but leaves without completing the programme, or discontinues his

studies for any reason whatsoever, including termination from the programme for not achieving the required SGPA/CGPA for continuation of his registration in the said programme, shall not be admitted again to a programme at the same level, that is to say that a student who has/is withdrawn from the M.Sc. programme cannot be admitted to any other M.Sc. programme; a student who has/is withdrawn from the M.Tech. programme cannot be admitted to any other M.Tech. programme, of the Institute.

- (d) Selected candidates will be offered admission only in one programme depending on their preference and the merit.
- (e) The Institute reserves the right not to run any particular programme, if the number of students in that programme is less than the minimum number specified by the Institute at the time of admission.
- (f) All the students have to generally reside in the Institute Campus at Roorkee except those admitted to postgraduate programmes in the Department of Paper Technology, Saharanpur Campus, who will reside at the Saharanpur Campus of the Institute located about 35 km from Roorkee.
- (g) The Institute reserves the right to change its statutes and regulations relating to academic programmes and the modalities of admission without prior notice.
- (h) Candidates belonging to SC, ST, OBC categories must submit along with filled Application Form the requisite certificate as applicable from the competent authority, as per the list given in **Annexure-4**, failing which their candidature will not be considered under Reserved Category. The candidates under Persons with Different Abilities (PD) category will submit the certificate from the Medical Board of the District concerned.

- (i) Candidates belonging to OBC category must submit Xeroxed copy of category certificate as per GOI, the format of the same is also available in the brochure, OBC Non-creamy layer certificate should have been issued after 31.03.2011 by a competent authority and duly attested by a Gazetted Officer.
- (j) Persons with Different Abilities (PD) candidates should submit along with the filled Application, the certificate in original, from a Govt. Medical Board. However, such a candidate shall have to appear before a Medical Board duly constituted by IIT Roorkee for this purpose. The Medical Board will decide the programmes which cannot be offered to a candidate, on the basis of the nature of his/her disability. The candidate will be offered admission out of the remaining programmes as per the Institute policy also.
- (k) There is no age restriction for admission to a postgraduate programme.
- (l) In matters of interpretation of the provisions or any matter not covered herein this Information Brochure, the decision of the Chairman, Senate IIT Roorkee shall be final and binding on both the parties.

### 7.3 Number of Seats

The number of seats in each academic programme are given in **Table-1**. The Institute, however, reserves the right to alter the number of seats in any programme without prior notice.

### 7.4 Reserved Seats

Certain number of seats are reserved for candidates belonging to various categories. The details of the seats reserved (in percentage) under different categories at present as per the directives of the Govt. of India, are given in **Table-4**.

**Table-1**  
**Details of Academic Programmes leading to M.Tech./M.Arch./M.U.R.P.**

Sl. No.	Academic Department/Centre & (Code)	Academic Programmes		No. of Seats	Minimum Educational Qualifications
		Code	Name		
1.	Architecture & Planning (ARD)	10	M.Arch.	18	B.Arch. or its equivalent
		11	M.U.R.P.	18	B.Arch. or its equivalent or Bachelor's degree in Civil Engg.
2.	Alternate Hydro Energy Centre (AHC)	12	M.Tech. Alternate Hydro Energy Systems	25	Bachelor's degree in Civil/Electrical/Mechanical/Industrial/Chemical/Electronics/Computer/Agricultural/Environmental Engg. or equivalent.
		13	M.Tech. Environmental Management of Rivers and Lakes	15	Bachelor's degree in Civil/Electrical/Mechanical/Industrial/Chemical/Agriculture/Environmental Engg./Biotechnology/Arch./Town Planning or its equivalent or Master in Science in any subject with Mathematics at graduation level.
3.	Chemical Engineering (CHD)	14	M.Tech. Computer Aided Process Plant Design	28	Bachelor's degree in Chemical/Biochemical/Pulp & Paper Engg./Chemical Technology/ Petrochemical/ Polymer Technology/ Petroleum Refining or equivalent
		15	M.Tech. Industrial Pollution Abatement	28	Bachelor's degree in Chemical/Pulp & Paper Engg./ Civil/ Biochemical/ Petroleum/ Environmental Engg./ Chemical Technology/ Polymer Technology or equivalent
		16	M.Tech. Industrial Safety and Hazards Management	15	Bachelor's degree in Chemical/Mechanical/Biochemical/ Petroleum/Environmental Engg./Chemical Technology/ Pulp & Paper Engg./Polymer Technology or equivalent
4.	Civil Engineering (CED)	17	M.Tech. Building Technology	18	Bachelor's degree in Civil Engg./ Structural Engg./Construction Tech. or equivalent, B.Arch. (Three seats are reserved for Architecture candidates).
		19	M.Tech. Environmental Engg.	18	Bachelor's degree in Civil Engg./Chemical Engg./Environmental Engg. or equivalent.
		20	M.Tech. Geomatics Engg.	24	Bachelor's degree in Civil Engg./Electronics Engg./Electrical Engg./Computer Science/ Information Technology/Marine Engg./ Mining Engg./Architecture or equivalent.
		21	M.Tech. Geotechnical Engg.	24	Bachelor's degree in Civil Engg./Mining Engg. or equivalent.
		22	M.Tech. Hydraulic Engg.	18	Bachelor's degree in Civil Engg./Mechanical Engg./ Chemical Engg./Agricultural Engg. or equivalent.
		23	M.Tech. Structural Engg.	18	Bachelor's degree in Civil Engg. or its equivalent.
		24	M.Tech. Transportation Engg.	24	Bachelor's degree in Civil Engg. or its equivalent.



Sl. No.	Academic Department & their (Code)	Academic Programmes		No. of Seats	Minimum Educational Qualifications
		Code	Name		
5.	Earthquake Engineering (EQD)	25	M.Tech. Soil Dynamics	18	Bachelor's degree in Civil/Structural Engg. or equivalent.
		26	M.Tech. Structural Dynamics	31	Bachelor's degree in Civil/Structural or equivalent.
		53	M.Tech. Seismic Vulnerability and Risk Assessment	15	Bachelor's degree in Civil/Structural or equivalent.
6.	Electrical Engineering (EED)	27	M.Tech. Electric Drives & Power Electronics	23	Bachelor's degree in Electrical Engg. or its equivalent.
		28	M.Tech. Instrumentation and Signal Processing	23	Bachelor's degree in Electrical/ Electronics & Communication/ Instrumentation Engg. or equivalent.
		29	M.Tech. Power System Engg.	23	Bachelor's degree in Electrical or its equivalent
		30	M.Tech. Systems and Control	23	Bachelor's degree in Electrical Engg. or Electronics & Communication/Instrumentation Engg. or equivalent.
7.	Electronics & Computer Engineering (ECD)	31	M.Tech. Communication Systems	18	Bachelor's degree in Electronics & Communication Engg. or its equivalent.
		32	M.Tech. System Modeling and Control	15	Bachelor's degree in Electronics & Communication/ Electrical Engg. or equivalent.
		33	M.Tech. R.F. & Microwave Engg.	15	Bachelor's degree in Electronics & Communication Engg. or its equivalent.
		34	M.Tech. Microelectronics and VLSI	15	Bachelor's degree in Electronics & Communication Engg. or its equivalent.
		35	M.Tech. Computer Science & Engg.	54	Bachelor's degree in any branch of Engg./ Tech. or M.Sc. in Electronics/Computer Science/ Physics/Mathematics/Statistics or MCA.
8.	Hydrology (HYD)	37	M.Tech. Hydrology	15	Bachelor's degree in Civil/Mechanical/Agricultural Engg./ Hydrology or equivalent. M.Sc./M.Tech. in Chemistry/ Geology/Geophysics/Applied Geology/Applied Geophysics/ Physics/Meteorology/ Geography Atmospheric Physics/ Environmental Science with Mathematics in B.Sc. as one of the subjects or M.Sc. (Master's) degree in Statistics with Physics or Mathematics at B.Sc. or M.Sc. degree in Mathematics with Physics in B.Sc. or its equivalent.
9.	Mechanical & Industrial Engineering (MED)	38	M.Tech. CAD, CAM & Robotics	15	Bachelor's degree in Mechanical/Industrial/ Production Engg./Mechatronics or equivalent.
		39	M.Tech. Machine Design Engg.	18	Bachelor's degree in Mechanical/Industrial/Production/ Automobile Engg. or equivalent.
		40	M.Tech. Production & Industrial Systems Engg.	18	Bachelor's degree in Mechanical/ Industrial/Production Engg. or equivalent.
		41	M.Tech. Thermal Engg.	18	Bachelor's degree in Mechanical/Industrial/Production/ Chemical/Aeronautical/ Automobile Engg. or equivalent.
		42	M.Tech. Welding Engg.	18	Bachelor's degree in Mechanical/Industrial/Production/ Metallurgical or equivalent.

Sl. No.	Academic Department & their (Code)	Academic Programmes		No. of Seats	Minimum Educational Qualifications
		Code	Name		
10.	Metallurgical & Materials Engineering <b>(MTD)</b>	43	M.Tech. Corrosion Engg.	18	Bachelor's degree in Metallurgical & Materials Engg. or its equivalent or B.Tech in Chemical/ Mechanical/ Industrial/ Production /Ceramics Engineering or M.Sc. degree in Physics/Chemistry/Material Science with Mathematics at Bachelor's Level.
		44	M.Tech. Industrial Metallurgy	18	Bachelor's degree in Metallurgical/Materials/Ceramics Engineering and its equivalent or B.Tech. in Mechanical/ Industrial/Production Engineering
		45	M.Tech. Physical Metallurgy	18	Bachelor's degree in Metallurgical/Materials/Ceramics Engineering and its equivalent or B.Tech. in Mechanical/ Industrial/Production Engineering or M.Sc. degree in Physics/Materials Science with Mathematics at Bachelor's level.
11.	Paper Technology Saharanpur Campus <b>(PPD)</b>	46	M.Tech. Pulp & Paper	18	B.Tech./B.E. degree in Chemical Engg. or Chemical Technology/Pulp & Paper Engg./Mechanical Engg./ Polymer Engg./Biotechnology/Cellulose Technology/Alcohol, food and Fermentation Technology or equivalent. <b>Note:</b> The two years post B.Sc. diploma awarded by the IPT/DPT plus a minimum of two years relevant experience in Industry/Research Organisation will be considered equivalent to a B.Tech./B.E. degree
12.	Water Resources Development & Management <b>(WRD)</b>	47	M.Tech. Irrigation Water Management	3	Bachelor's degree in Civil Engg. or its equivalent/ Agricultural Engg. or M.Sc Agriculture in Agronomy, Soil Science, Agrometeorology, with Mathematics as one of the papers at the level of B.Sc./B.Sc. Agriculture.
		48	M.Tech. Water Resources Development	12	Bachelor's degree in Civil/Electrical/Mechanical/ Electronics & Telecommunication Engg. or equivalent.
13.	Chemistry <b>(CYD)</b>	49	M.Tech. Advanced Chemical Analysis	15	B.Tech. (Chemical Engg.)/M.Sc. (Chemistry)/ M.Sc. (Environment Science) with Mathematics at least 10+2 level.
14.	Physics <b>(PHD)</b>	50	M.Tech. Solid State Electronic Materials	18	B.Tech. (Engg. Physics)/M.Sc. (Physics)/ Bachelor's degree in Electrical/Electronics/ Metallurgical Engg. or its equivalent.
15.	Nanotechnology <b>(NTC)</b>	51	M.Tech. Nanotechnology	15	B.Tech. (Met. & Mat. Engg./Mech. Engg./E&C/Electronics/ Chemical Engg./Pulp & Paper/Biotechnology) or equivalent; M.Sc. ( Physics/Chemistry/ Biotechnology), or equivalent with Mathematics at 10+2 or higher level.
16.	Disaster Mitigation and Management <b>(DMC)</b>	52	M.Tech. Disaster Mitigation and Management	15	B.Tech. (Civil, Structural, Mechanical, Industrial, Chemical, and Engineering/Computer Science or equivalent, B.Arch & B. Planning, or M.Tech. in Geological Technology and Geophysical Technology or equivalent, or M.B.A. or M.C.A. or M.Sc. in Physics/Geophysics/Geology/Mathematics/ Environmental Sciences (with Maths in B.Sc.) computer Science or equivalent.

**Notes:** 1. The seats given above shall be available with MHRD assistantship. However, additional candidates may be admitted to these programmes without any assistantship, including those sponsored by industry, QIP, foreign students, DRDO, Defence, Atomic Energy etc. and valid GATE qualified self financed candidates, as approved by the Chairman, Senate, subject to ratification by the Senate. The Institute reserves the right not to fill the seats in any programme and may drop any programme.

2. The minimum duration of all academic programmes would be four semesters for Full-Time candidates and six semesters for Part-Time candidates.

**Table-2**  
**Details of eligible GATE Discipline(s) for Admission to different Programmes**

Sl. No.	Academic Department & thier (Code)	Academic Programmes		Code of Eligible GATE Discipline(s) (Minimum No. of Seats)	Code of Other Eligible GATE Discipline (s) (Maximum No. of Seats)
		Code	Name		
1.	Architecture & Planning (ARD)	10	M.Arch.	AR (18)	—
		11	M.U.R.P.	AR (14)	CE (4)
2.	Alternate Hydro Energy Centre (AHC)	12	M.Tech. Alternate Hydro Energy Systems	CE (05)	AG/CH/EC/EE/ME/PI/XE (20)
		13	M.Tech. Environemntal Management of Rivers and Lakes	CE (05)	AG/CH/EE/ME/PI/XE/AR/CY/BT PH/MA/XL (10)
3.	Chemical Engineering (CHD)	14	M.Tech. Computer Aided Process Plant Design	CH (28)	—
		15	M.Tech. Industrial Pollution Abatement	CH (24)	CE (4)
		16	M.Tech. Industrial Safety and Hazard Management	CH (12)	ME (3)
4.	Civil Engineering (CED)	17	M.Tech. Building Technology	CE (15)	AR (3)
		19	M.Tech. Environmental Engg.	CE/CH (18)	—
		20	M.Tech. Geomatics Engg.	CE (12)	AR/CS/EC/EE/MN (12)
		21	M.Tech. Geotechnical Engg.	CE/MN (24)	—
		22	M.Tech. Hydraulic Engg.	CE (9)	ME/CH/AG (9)
		23	M.Tech. Structural Engg.	CE (18)	—
		24	M.Tech. Transportation Engg.	CE (24)	—
5.	Earthquake Engineering (EQD)	25	M.Tech. Soil Dynamics	CE (18)	—
		26	M.Tech. Structural Dynamics	CE (31)	—
		53	M.Tech. Seismic Vulnerability and Risk Assessment	CE (15)	—
6.	Electrical Engineering (EED)	27	M.Tech. Electric Drives & Power Electronics	EE (23)	—
		28	M.Tech. Instrumentation and Signal Processing	EE (12)	EC/IN (11)
		29	M.Tech. Power System Engg.	EE (23)	—
		30	M.Tech. Systems and Control	EE (16)	EC/IN (7)

Sl. No.	Academic Department & thier (Code)	Academic Programmes		Code of Eligible	Code of Other Eligible
		Code	Name	GATE Discipline (Minimum No. of Seats)	GATE Discipline (Maximum No. of Seats)
7.	Electronics & Computer Engineering (ECD)	31	M.Tech. Communication Systems	EC (18)	—
		32	M.Tech. System Modeling and Control	EC/EE/IN (15)	—
		33	M.Tech. R.F. & Microwave Engg.	EC (15)	—
		34	M.Tech. Microelectronics and VLSI	EC (15)	—
		35	M.Tech. Computer Science & Engg.	CS (54)	—
8.	Hydrology (HYD)	37	M.Tech. Hydrology	CE/ME/AG (10)	GG/CY/MA/PH/XE (5)
9.	Mechanical & Industrial Engineering (MED)	38	M.Tech. CAD, CAM & Robotics	ME/PI (15)	—
		39	M.Tech. Machine Design Engg.	ME/PI (18)	—
		40	M.Tech. Production & Industrial Systems Engg.	ME/PI (18)	—
		41	M.Tech. Thermal Engg.	ME/PI/AE (14)	CH (4)
		42	M.Tech. Welding Engg.	ME/MT/PI (18)	—
10.	Metallurgical & Materials Engineering (MTD)	43	M.Tech. Corrosion Engg.	MT (3)	ME/PI/CH/PH/CY/XE (15)
		44	M.Tech. Industrial Metallurgy	MT (3)	ME/PI/XE (15)
		45	M.Tech. Physical Metallurgy	MT (3)	ME/PI/PH/XE (15)
11.	Paper Technology Saharanpur Campus (PPD)	46	M.Tech. Pulp & Paper	CH/BT (13)	ME (5)
12.	Water Resources Development & Management (WRD)	47	M.Tech. Irrigation Water Management	CE/AG (3)	—
		48	M.Tech. Water Resources Development	CE/EE/ME (12)	—
13.	Chemistry (CYD)	49	M.Tech. Advanced Chemical Analysis	CY/CH (15)	—
14.	Physics (PHD)	50	M.Tech. Solid State Electronic Materials	PH(12)	EE/EC/MT (6)
15.	Nanotechnology (NTC)	51	M.Tech. Nanotechnology	MT/ME/EC/CH (6)	CY/PH (6) BT/XL (3)
16.	Disaster Mitigation and Management (DMC)	52	M.Tech. Disaster Mitigation and Management	CE/ME/PI/CS/CH/AR/GG/ PH/ MA/XL/XE (15)	



Codes of GATE disciplines are given below:

<b>GATE Discipline</b>	<b>Code</b>	<b>GATE Discipline</b>	<b>Code</b>	<b>GATE Discipline</b>	<b>Code</b>
Aerospace Engg.	A E	Chemistry	CY	Mining Engg.	MN
Agricultural Engg.	A G	Electronics & Comm. Engg.	E C	Metallurgical Engg.	MT
Architecture and Planning	A R	Electrical Engg.	E E	Physics	PH
Biotechnology	B T	Geology & Geophysics	G G	Production & Industrial Engg.	PI
Civil Engg.	C E	Instrumentation Engg.	I N	Textile Engg. and Fibre Sci.	T F
Chemical Engg.	C H	Mathematics	M A	Engineering Sciences	X E
Computer Science and Information Technology	C S	Mechanical Engg.	M E	Life Sciences	X L

**Table-3**

**Conversion between Grade Point Average and Marks for the Purpose of Eligibility Check**

<b>Marks</b>	<b>10 point scale</b>		<b>9 point scale</b>		<b>6 point scale</b>		<b>5 point scale</b>		<b>4 point scale</b>	
	<b>CGPA</b>	<b>% Mrks</b>	<b>CGPA</b>	<b>% Mrks</b>	<b>CGPA</b>	<b>% Mrks</b>	<b>CGPA</b>	<b>% Mrks</b>	<b>CGPA</b>	<b>% Mrks</b>
<b>40</b>	4.00	40	3.45	38.33	2.30	38.33	2.00	40	1.62	40.50
<b>45</b>	4.50	45	3.90	43.33	2.55	42.50	2.25	45	1.80	45.00
<b>50</b>	5.00	50	4.37	48.56	2.85	47.50	2.50	50	1.98	49.50
<b>55</b>	5.50	55	4.78	53.11	3.19	53.17	2.75	55	2.13	53.25
<b>60</b>	6.00	60	5.34	59.33	3.56	59.33	3.00	60	2.38	59.50
<b>65</b>	6.50	65	5.76	64.00	3.85	64.17	3.25	65	2.55	63.75
<b>70</b>	7.00	70	6.19	68.78	4.13	68.83	3.50	70	2.75	68.75
<b>75</b>	7.50	75	6.70	74.44	4.45	74.17	3.75	75	2.95	73.75
<b>80</b>	8.00	80	7.15	79.44	4.75	79.17	4.00	80	3.16	79.50
<b>85</b>	8.50	85	7.60	84.44	5.05	84.17	4.25	85	3.35	83.75
<b>90</b>	9.00	90	8.05	89.44	5.35	89.17	4.50	90	3.58	89.50
<b>95</b>	9.50	95	8.50	94.44	5.70	95.00	4.75	95	3.80	95.00
<b>100</b>	10.00	100	9.00	100.00	6.00	100.00	5.00	100	4.00	100.00

**Table-4**  
**Reservation of Seats for Different Categories**

Sl. No.	Category	Seats reserved
1.	Scheduled Castes (SC)	15%
2.	Scheduled Tribes (ST)	7.5 %
3.	Other Backward Classes	27%
4.	Persons with Disability (including leprosy-cured)	3%

**Notes:-**

- (1) **The provisions for reservation of seats given above are subject to modification in accordance with any Govt. Order, if issued subsequently by the Govt. of India.**
- (2) It will entirely be the responsibility of the candidate to prove his/her eligibility in terms of minimum educational qualifications and for claiming reservation under a specific category, if any, at the time of counselling and thereafter.
- (3) **Candidate must ensure that he/she possesses the required eligible qualification and has valid Normalized GATE marks in the required discipline.**

**7.5 Application Process**

For admission to PG programmes 2012 candidates need to register and fill the application ONLINE only by accessing <http://pgadm.iitr.ernet.in> from the Institute Website on or before April 20, 2012. The application process is complete only when a print out of the filled ONLINE application with the candidate's signature and a good quality photo affixed in the appropriate places is sent to the Chairman, PG Admissions office, IIT Roorkee, Roorkee along with necessary documents on or before April 25, 2012.

**7.5.1 Application Fee**

**For General/OBC Category Rs. 400/- + \*Rs. 100/-**  
**For PD/SC/ST Category Rs. 200/- + \* Rs. 100/-**  
**\*Rs. 100/- for each additional department**

Bank service charge is extra (maximum of ₹ 20/-)

The candidates are required to download Bank Challan Proforma from [pgadm.iitr.ernet.in](http://pgadm.iitr.ernet.in) and then deposit the above requisite fee in any branch of Punjab National Bank throughout the country **on or before the the last date i.e. April 20, 2012**. The Bank Challan will be printed in triplicate. It is only available on Institute website and pay the fees through it. Bank will retain a copy and will return two copies to you. In those two copies, retain the Candidate's copy with you and attach the IITR's copy with the application form. **The Fee will not be accepted through any other mode.**

**7.5.2 HOW TO APPLY**

**Before applying, candidates are advised to read the PG Information Brochure 2012 carefully.**

**Candidates must follow the following Steps while applying online Application Form.**

**Step 1:** a) **Download** the Challan Form from Institute website and pay cash at Punjab National Bank branches .

**Step 2: Apply Online**

- a) Register
- b) Apply for M.Tech
- c) Finalize Application Form

**Step 3:** Paste your recent photograph (3.5 cm X 3.5 cm) in the designated place.

Sign at the designated place.

**Step 4: Post/Submission**

Before posting your application form, make sure that, in addition to the other relevant attachments as indicated below:

- GATE Score Card
- Proof of Mathematics at 10+2 as applicable.
- Copy of the degree certificate or provisional certificate if they have passed their qualifying degree.
- Copy of OBC/SC/ST/PD category certificate if any)
- Annexure 1-5 as applicable.
- IITR Copy of challan for payment of fee.

Duly signed downloaded online Application with appropriate enclosures must be sent by Speed Post (preferably) or by Registered Post to The Chairman, PG ADMISSIONS OFFICE, INDIAN INSTITUTE OF TECHNOLOGY ROORKEE, ROORKEE-247667, so as to reach his office on or before April 25, 2012

It can also be handed over personally to the PG ADMISSIONS Office, IIT Roorkee, Roorkee on or before April 25, 2012.

**7.6 Scholarships/Assistantship**

- Assistantship @ Rs. 8000/- per month may be awarded to GATE qualified candidates as per norms for the duration of the programmes i.e. two years to the full time students for M.Tech./M.Arch./M.U.R.P. within the sanctioned intake excluding sponsored candidates. The number of assistantships in each programme will be as per guidelines of MHRD as given in **Table-1 (Note-1)**. However, GATE qualified candidates do not automatically become eligible for the sanction of this assistantship.
- B.Tech. degree holders from any IIT with minimum CGPA of 8.00 on a 10 point scale and given admission without GATE are also eligible for MHRD assistantship.
- Scholarship/Assistantship will not be awarded to those who are in receipt of salary from any source. However, teacher candidates may be granted scholarship/assistantship in addition to the study leave benefits provided that they are not in receipt of any deputation allowance from their employer, in addition to the study leave salary as per norms.
- The continuance of the assistantship/scholarship to a student shall depend upon his/her satisfactory progress report of work, attendance, conduct and the academic performance (SGPA/CGPA), as per Ordinances/Regulations in vogue.
- Under MoU with the Department of Atomic Energy, the candidates qualifying under Department of Atomic Energy Graduate Fellowship Scheme may be admitted to M.Tech. programmes. The details of the scheme may be obtained from [www.hrdbarc.gov.in](http://www.hrdbarc.gov.in)

- Some foreign scholarships may be available to selected M.Tech. students for doing their dissertation under exchange programmes such as DAAD Sandwich Model Programme of Germany, programme of KTH, Sweden, Macquarie University, Australia etc.

## 8. SELECTION AND ADMISSION

### 8.1 Basis of Selection for Admission

Admission will be made on the basis of either Normalized GATE marks only or Normalized GATE marks and Interview/Written Test. For Sponsored candidates the admission will be made on the basis of Interview/Written Test and relevant experience. The cut off for calling the full time regular candidates for Interview/Written Test and for preparing merit list will be based on Normalized GATE marks for different programmes for different categories of candidates.

Admission will be made strictly in order of merit and the preferences for the programmes given by a candidate in his/her Application. The basis for determining candidate's merit position is given in **Table-5**.

**Table-5**  
Basis for Selection

Candidate's Status	Basis for Selection
Regular candidates GATE qualified	Valid Normalized GATE marks only, or Valid Normalized GATE marks alongwith Interview/ Written
Regular B.Tech. degree holders from the IITs without GATE score	CGPA $\geq$ 8
Sponsored candidates (Full Time and Part Time)	Interview/Written Test & Relevant Experience

The candidates having B.Tech. degree from any IIT with CGPA  $\geq$  8 will be given direct offer without GATE requirement upto 10% of the sanctioned intake in a programme.

The number of candidates to be called for Counselling/ Interview/Written Test, in different categories, shall be decided by the PG Admission Committee with a cut off equal to or higher than the minimum cut off decided on Normalized GATE marks at Institute level for all PG programmes separately. The merit list of candidates shall be based on 70% Normalized GATE marks and 30% Interview/Written Test marks. For those programmes where no Interview/Written Test is required, the merit list will be based on 100% Normalized GATE marks of the candidates.

In case sum total of Normalized GATE Marks and Interview/ Written Test of the candidates becoming equal, preference will be given to the candidate securing higher marks in the Interview/Written Test conducted at IIT Roorkee and thereafter in the qualifying examination.

### 8.2 Criteria and Schedule of Interview/Written Test/ Counselling

The Interview/Written Test wherever required will be conducted by different Departments/Centres at IIT Roorkee Campus. The schedule for Interview/Written Test and Counselling is given in **Table-6**.

**Table – 6**

Department	Admission Criteria	Interview/ Written Test/ Counselling
<b>A. NORMALIZED GATE MARKS &amp; INTERVIEW / WRITTEN TEST CRITERIA</b>		
Arch. & Plang.	70% Normalized GATE marks and 30% Interview	<b>Interview/ Written Test on 03.06.2012 (for all regular, full- time and part- time sponsored candidates)  and Counselling on June 05- 06, 2012 .</b>
AHEC	70% Normalized GATE marks and 30% Interview	
Chemistry	70% Normalized GATE marks and 30% Interview	
Electrical Engg.	70% Normalized GATE marks and 30% Written Test	
Met. & Mat. Engg.	70% Normalized GATE marks and 30% Written Test	
Nanotechnology	70% Normalized GATE marks and 30% Interview	
WRD&M	70% Normalized GATE marks and 30% Interview	
Physics	70% Normalized GATE marks and 30% Written Test	
Disaster Mitigation & Management	70% Normalized GATE marks and 30% Written Test	
<b>B. ONLY NORMALIZED GATE MARKS CRITERIA</b>		
Chemical Engg.	Only Normalized GATE marks	<b>Interview for Sponsored Candidates on 3.06.12 and Counselling for all candidates on 04, 05 &amp; 06.6.2012</b>
Civil Engg.	Only Normalized GATE marks	
Earthquake Engg.	Only Normalized GATE marks	
E&CE	Only Normalized GATE marks	
Mech. & Ind. Engg.	Only Normalized GATE marks	
Hydrology	Only Normalized GATE marks	
Paper Technology#	Only Normalized GATE marks	

# Interview for M.Tech. (P&P) Sponsored Candidates will be held at Roorkee campus.

### Declaration of Merit List

The Merit List after the Written Test/Interview will be declared on June 05, 2012.

The Merit List and Waiting List after Counselling will also be available on the Institute Website:<http://www.iitr.ernet.in>

The candidate will have to accept the offer and deposit the requisite fee or the waitlisted amount or decline the offer at the time of counselling.

The offer of admission will be provisional subject to submission of all required documents and fee by the specified dates.

### 8.3 Offer of Admission

The candidates will be offered admission in the following manner:

- Candidates will be given offer after counselling according to merit list prepared based on either Normalized GATE marks only or Normalized GATE marks alongwith

### Interview/Written Test, as applicable.

A waiting list will also be prepared for the rest of the candidates as per the merit for each department provided they deposit requisite fee at the time of counselling and will also treat them as wait listed candidates for rest of the choices.

2. The vacant seats, if any, will only be filled from amongst the waitlisted candidates.
3. Just after the date of Registration there will be vacancies, if any, will be filled through final counselling on July 30, 2012 from amongst the remaining waitlisted candidates.

The candidates will be offered admission in a programme as per merit and their preferences given in Application.

The candidates offered admission will have to deposit Institute fee and Processing fee at the time of counselling. Rest of the candidates will be required to deposit Institute Fees and Processing Fees to get themselves waitlisted. This amount will be adjustable later on against the Institute fee at the time of registration. In case of non-acceptance of the offer by a waitlisted candidate by a specified date, the processing fee deposited will only be retained and rest will be refunded. Further, if institute is not able to offer admission to a waitlisted candidate, the entire amount will be refunded.

### **PROCEDURE FOR UP-GRADATION**

Up-gradation will be done automatically only for higher preferences as filled by the candidate in Application Form on the basis of merit prepared after the Interview/Written Test and normalized GATE marks whichever is applicable, availability of seats in respective category/programme. This process will continue till last date of Registration. Thereafter no up-gradation will be allowed even if a vacancy exists. However, candidate shall have an option in writing at the time of counselling whether he/she would like to freeze the seat allotted and do not want further up-gradation. In case such option is not given it will be presumed that the candidate is interested in upgradation and thereafter no such request be entertained.

### **8.4 Fee/Dues**

The existing Institute fee/dues for various programmes are given in **Table-7**. Any further details of the fee may be obtained from the Asst. Registrar (Academic), IIT Roorkee.

The fee structure given in **Table-7** is provisional and may be modified by the Institute as and when necessary, without intimation. Mess Advance of Rs. 10800/- and Electricity Advance of Rs. 2000/- per semester will be extra.

**Table-7**

### **Institute Fee\* to be Deposited for Admission**

S.No	Particulars	Amount
1	Semester fee: (a) Tuition Fee (b) Other Fee (c) Hostel Fee (c) Common Facilities in Hostel (payable by all students)	Rs. 5,000/- Rs. 2,350/- Rs. 4,800/- Rs. 1,800/-
2.	One Time Fee	Rs. 2,790/-
3.	Yearly Fee for Group Insurance Scheme, Bhawan fund	Rs. 100/-
4.	Medical Insurance fee	Rs. 280/-
5.	Refundable Deposits	Rs. 3,000/-
	<b>Total:</b>	<b>Rs. 20,120/-</b>

**Tuition Fee for Sponsored Candidates is Rs. 25,000/- per semester**

\* Tentative and subject to change.

Note: (1) Hostel Fee Rs. 6600/- and Mess Charges Rs. 10800/- per semester will be extra.

(2) Tuition fee is not chargeable from SC/ST students.

### **8.5 Registration**

A system of registration is followed for all the students joining the Institute. The selected candidates will have to register themselves **personally** on the date & time to be intimated to them. At the time of registration, the candidate is required to fill-up the registration cards and get himself/herself registered. After registration, students should report to the concerned Head of the Department/Centre and submit the joining report. The proof of joining the Institute shall be the registration card and the fee receipt. Scholarship/Assistantship will be granted only after receiving the joining report from the departments/centre and the undertaking as per the Institute norms (wherever applicable). Regular classes will start from the next working day as per the time schedule declared by the Institute. The candidates selected for admission to M.Tech. (P&P) shall have to report to the Head, Department of Paper Technology, Saharanpur (Campus) after registration.

### **8.6 Documents at the Time of Registration**

The candidates admitted to various PG programmes of study must present themselves for the registration **in person** along with the following documents as per the schedule specified by the Institute:

- The letter from the Institute offering admission.
- The original and attested copy of marks-sheet of the qualifying examination showing essential requirements. In case, the result for the qualifying examination has not been declared at the time of admission the same may be submitted till September 30, 2012. Under such circumstances, the admission will remain provisional until the candidate is able to submit the results indicating successful completion of the requirements of his/her qualifying degree, with the specified minimum percentage of aggregate marks/CGPA, by the specified date failing which the admission shall automatically be cancelled.
- The original and attested copies of certificate and marks-sheet of High School or equivalent examination
- The original and attested copy of GATE Score Card for GATE qualified candidates.
- A certificate from the College/University authority where from the candidate has to appear for the qualifying degree examination is given in **Annexure-1**.
- Relevant certificate (s) for Sponsored candidates are given in **Annexures-2 & 3** as applicable.
- The category certificate of SC/ST/OBC, in original (along with an attested copy), issued by a competent authority (list given in **Annexure-4**).
- A certificate from the candidate registered without production of proof of passing the qualifying examination/appeared in the backpaper(s)/supplementar(ies) till date of registration on **Annexure-5**
- A certificate from the Government Medical Board to support the physically disabled status, if applicable.

### **8.7 Cancellation of Admission/Programme**

The Institute reserves the right to cancel, at any stage, the admission of a candidate admitted to a programme and is later found that he/she is not entitled, being unqualified or ineligible in accordance with the Ordinances and Regulations in vogue, or suspension/termination of programme.



## 8.8 Matters of Dispute

Disputes, if any, arising out of or relating to any matter whatsoever shall be subject to the exclusive jurisdiction of the Roorkee Courts.

## 8.9 Ragging

Ragging is banned in the Institute and anyone indulging in ragging is likely to be punished appropriately and the punishment may include expulsion from the institution, suspension from the institution or classes for a limited period, or fine with a public apology. The punishment may also take the shape of: (i) withholding of scholarships or other benefits, (ii) debarment from representation in events, (iii) withholding of results, (iv) suspension, rustication or expulsion from hostel or mess, (v) monetary fine etc.

## 9. CATEGORY CODES

Category Codes for candidates of General and reserved categories are given below in **Table-8**:

**Table-8**

Category	Code
General	GEN
Scheduled Caste	SC
Scheduled Tribe	ST
Other Backward Classes	OBC
Persons with Different Abilities	PD

## 10. DEPARTMENTS/CENTRE CODES

The codes of all the Departments/Centres are given in **Table-9**.

**Table-9**  
**Code of Departments/Centres**

Sl.No.	Name of the Department/Centres	Code
1.	Alternate Hydro Energy Centre	AHC
2.	Architecture & Planning	ARD
3.	Chemistry	CYD
4.	Chemical Engg.	CHD
5.	Civil Engg.	CED
6.	Centre for Disaster Mitigation & Management	DMC
7.	Earthquake Engg.	EQD
8.	Electrical Engg.	EED
9.	Electronics & Computer Engg.	ECD
10.	Hydrology	HYD
11.	Mechanical & Industrial Engg.	MED
12.	Metallurgical & Materials Engg.	MTD
13.	Nanotechnology	NTC
14.	Physics	PHD
15.	Paper Technology	PPD
16.	Water Resources Development & Management	WRD

## 20. Amount of Application Fee including Fee for Additional Departments

If you are seeking admission in more than one department/centre, the fee will be Rs.400/(General and OBC Category) or Rs.200 (SC/ST category plus Rs.100/- per additional deptt.

Write the total amount of application fee including fee for additional department applied for in the boxes provided.

## 21. Details of Bank Challan

Write your **Challan No.**, **Date of Challan** and **Place**, in the space provided.

## 22. Mailing Address

Carefully write your complete mailing address including NAME, C/o (if any), House No./Street, Mohalla/Village, Post Office, City and its PIN CODE number. This address will be used for the dispatch of Admission Offer Letter, counselling letter etc. Also write legibly your e-mail ID, if any, in the space provided and the **Telephone No.**, **Fax No.**, if available, including **STD code** through which you may be contacted.

## 23. Declaration by the Candidate

The declaration is to be signed by the candidate. The place and date are to be filled in the places marked for this purpose. Unsigned Application Forms will not be considered.

## 24. Signature of the Candidate

Please put your signature on downloaded application in the space provided for the purpose.

## 25. Photograph

Paste a recent 3.5 cm x 4.5 cm, good quality colour photograph on the downloaded application. Note that the photograph must not be larger than the space (box) provided for pasting it. The candidates are advised to have some spare copies of this photograph with them. The photograph must not be attested.

## Notes:-

- Options filled by you in this form are final and cannot be changed at a later stage.
- Please note that your name, father's name and your date of birth should be exactly the same as in the mark-sheet of pre-final year or final year examination of the qualifying degree. Any departure, whenever discovered, may lead to cancellation of your candidature.
- Your application must be complete in all respects. Incomplete Application Form will be summarily rejected.

## 12. CHECK LIST OF DOCUMENTS SUBMITTED WITH THE APPLICATION FORM

Please **check the documents** to be submitted with the downloaded application against the list given below, before sealing the envelope for sending it to the Chairman, PG Admission-2012, IIT Roorkee.

- The Application duly signed and completed in all respects.
- A copy of the GATE SCORE CARD for GATE qualified candidates.
- An attested copy of the final marks sheet/CGPA for the qualifying degree.
- Certificate from the forwarding officer from those

candidates who have yet to appear in the final examination as per **Annexure-1** .

5. An attested copy of the sponsorship certificate for sponsored candidates in the format provided in **Annexure-2**.
6. An attested copy of the No Objection certificate for part-time candidates in the format provided in **Annexure-3**.
7. An attested copy of the category certificate for SC/ST/OBC candidates, issued by a competent authority (list given in **Annexure-4**).
8. Undertaking by the candidate registered without production of proof of passing the qualifying examination/appeared in the backpaper(s)/supplementar(ies) till date of registration as per **Annexure-5**.
9. An attested copy of the certificate from the Govt. Medical Board to support the persons with different abilities (PD)candidates, if applicable.

**CERTIFICATE FOR APPEARING IN THE FINAL SEMESTER/YEAR EXAMINATION  
(Required from candidates who are yet to appear in the qualifying examination)**

In connection with the application of Mr./Ms. .... for admission to PG programme(s) at IITR, I hereby certify that he/she is a bonafide student of our institution. He/She is yet to complete the requirements of qualifying examination including theory, practical, project examination and backpaper(s)/supplimentar(ies) for B.E./B.Tech./M.Sc./..... **which are scheduled before July 22, 2012**(Strike out the non-applicable ones and write in the blank space if the degree is not mentioned) and the result is likely to be announced by ..... 2012. The percentage of aggregate marks/CGPA obtained by him/her upto prefinal year examination is ..... His/her conduct and character during his/her stay at the Institute/University has been "GOOD".

Place: .....  
Date: .....

Signature of the Principal/Dean/Registrar/  
Dy. Registrar/Proctor/Administrative Officer/  
Asstt.Registrar of the institute attending/last attended with seal

**SPONSORSHIP CERTIFICATE  
(Required from full-time sponsored candidates only)**

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 PG programme (course) at IIT Roorkee in the Department of ..... with specialisation 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. The Institution/Organisation also agrees to pay the contingent/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 turn over of over Rs. 5.0 crores in the past two years (for candidates working in a Firm/Company/Industry).

Place: .....  
Date: .....

Signature of Head of the Institution/Organisation with seal  
Name .....  
Designation .....

**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 organisation 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 specialisation 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 a period of three years and will continue to remain in service of this organization for the duration of the course.

Place: .....  
Date: .....

Signature of Head of the Institution/Organisation with seal  
Name .....  
Designation .....

**AUTHORITIES WHO CAN ISSUE CASTE/TRIBE CERTIFICATE**

SC/ST/OBC candidates should submit certificate issued by any of the following authorities:

District Magistrate/Additional District Magistrate/Collector/Deputy Commissioner/Additional Deputy Commissioner/Deputy Collector/1st Class Stipendiary Magistrate/City Magistrate/Sub-Divisional Magistrate/Taluka Magistrate/Executive Magistrate/Extra Assistant Commissioner/Chief Presidency Magistrate/Additional Chief Presidency Magistrate/Presidency Magistrate/Revenue Officer not below the rank of Tehsildar/Sub-Divisional Officer of the area where the candidate and/or his/her family normally resides/Administrator/Secretary to Administrator/Development Officer (Lakshadweep Island).

*(Certificate issued by any other authority will not be accepted.)*

**UNDERTAKING BY THE CANDIDATE REGISTERED WITHOUT PRODUCTION OF PROOF OF PASSING THE QUALIFYING EXAMINATION/APPEARED IN THE BACKPAPER(S)/SUPPLEMENTAR(IES) TILL DATE OF REGISTRATION**

I, .....son/daughter/ward of Mr./Ms.....hereby give an undertaking that I have appeared in all the examinations including practicals/projects/theory/backpaper(s)/supplimentary(ies) before the date of registration i.e. July 22, 2012 and only result is awaited, which is likely to declare .....

Place: .....  
Date: .....

Signature  
Name  
Address

**Prescribed Format for OBC Certificate**

**FORM OF CERTIFICATE TO BE PRODUCED BY OTHER BACKWARD CLASSES APPLYING FOR ADMISSION TO  
CENTRAL EDUCATIONAL INSTITUTIONS (CEIs), UNDER THE GOVERNMENT OF INDIA**

This is to certify that Shri / Smt. / Kum. \_\_\_\_\_  
Son / Daughter of Shri / Smt. \_\_\_\_\_ of Village/Town \_\_\_\_\_  
\_\_\_\_\_ District/Division \_\_\_\_\_ in  
the \_\_\_\_\_ State belongs to the  
\_\_\_\_\_ Community which is recognized as a backward class under:

- (i) Resolution No. 12011/68/93-BCC(C) dated 10/09/93 published in the Gazette of India Extraordinary Part I Section I No. 186 dated 13/09/93.
- (ii) Resolution No. 12011/9/94-BCC dated 19/10/94 published in the Gazette of India Extraordinary Part I Section I No. 163 dated 20/10/94.
- (iii) Resolution No. 12011/7/95-BCC dated 24/05/95 published in the Gazette of India Extraordinary Part I Section I No. 88 dated 25/05/95.
- (iv) Resolution No. 12011/96/94-BCC dated 9/03/96.
- (v) Resolution No. 12011/44/96-BCC dated 6/12/96 published in the Gazette of India Extraordinary Part I Section I No. 210 dated 11/12/96.
- (vi) Resolution No. 12011/13/97-BCC dated 03/12/97.
- (vii) Resolution No. 12011/99/94-BCC dated 11/12/97.
- (viii) Resolution No. 12011/68/98-BCC dated 27/10/99.
- (ix) Resolution No. 12011/88/98-BCC dated 6/12/99 published in the Gazette of India Extraordinary Part I Section I No. 270 dated 06/12/99.
- (x) Resolution No. 12011/36/99-BCC dated 04/04/2000 published in the Gazette of India Extraordinary Part I Section I No. 71 dated 04/04/2000.
- (xi) Resolution No. 12011/44/99-BCC dated 21/09/2000 published in the Gazette of India Extraordinary Part I Section I No. 210 dated 21/09/2000.
- (xii) Resolution No. 12015/9/2000-BCC dated 06/09/2001.
- (xiii) Resolution No. 12011/1/2001-BCC dated 19/06/2003.
- (xiv) Resolution No. 12011/4/2002-BCC dated 13/01/2004.
- (xv) Resolution No. 12011/9/2004-BCC dated 16/01/2006 published in the Gazette of India Extraordinary Part I Section I No. 210 dated 16/01/2006.

Shri / Smt. / Kum. \_\_\_\_\_ and / or his family ordinarily reside(s) in the  
\_\_\_\_\_ District / Division of \_\_\_\_\_ State. This is also to certify that he/she does  
not belong to the persons/sections (Creamy Layer) mentioned in Column 3 of the Schedule to the Government of India, Department  
of Personnel & Training O.M. No. 36012/22/93-Estt.(SCT) dated 08/09/93 which is modified vide OM No. 36033/3/2004 Estt.(Res.)  
dated 09/03/2004.

**Dated:** \_\_\_\_\_

District Magistrate / Deputy Commissioner / Competent Authority  
Seal

**NOTE:**

- (a) The term 'Ordinarily' used here will have the same meaning as in Section 20 of the Representation of the People Act, 1950.
- (b) The authorities competent to issue Caste Certificates are indicated below:
  - (i) District Magistrate / Additional Magistrate / Collector / Deputy Commissioner / Additional Deputy Commissioner / Deputy Collector / Ist Class Stipendiary Magistrate / Sub-Divisional magistrate / Taluka Magistrate / Executive Magistrate / Extra Assistant Commissioner (not below the rank of Ist Class Stipendiary Magistrate).
  - (ii) Chief Presidency Magistrate / Additional Chief Presidency Magistrate / Presidency Magistrate.
  - (iii) Revenue Officer not below the rank of Tehsildar' and
  - (iv) Sub-Divisional Officer of the area where the candidate and / or his family resides.

**Declaration/undertaking - for OBC Candidates only**

I, \_\_\_\_\_ son / daughter of Shri \_\_\_\_\_ resident of village/town/  
city \_\_\_\_\_ district \_\_\_\_\_ State \_\_\_\_\_ hereby declare that I  
belong to the \_\_\_\_\_ community which is recognised as a backward class by the Government of India for the  
purpose of reservation in services as per orders contained in Department of Personnel and Training Office Memorandum No.36012/  
22/93- Estt. (SCT), dated 8/9/1993. It is also declared that I do not belong to persons/sections (Creamy Layer) mentioned in Column 3  
of the Schedule to the above referred Office Memorandum, dated 8/9/1993, which is modified vide Department of Personnel and  
Training Office Memorandum No.36033/3/2004 Estt.(Res.) dated 9/3/2004.

Signature of the Candidate

Place: \_\_\_\_\_

Date: \_\_\_\_\_