

**INDIAN INSTITUTE OF TECHNOLOGY (BANARAS HINDU UNIVERSITY)  
VARANASI – 221 005**

**Information Brochure for Admission to  
PG (M.Tech./M.Pharm./Ph.D.) Programmes**

The P.G. programmes of the Indian Institute of Technology (Banaras Hindu University), Varanasi are aimed at training manpower with sound theoretical and experimental background in frontier areas of research in the engineering, applied sciences and interdisciplinary subjects. The emphasis is on understanding the scientific basis and engineering principles involved in solving problems of practical importance in the relevant field using multidisciplinary approach. An important component of these programmes is to inculcate the habit of independent thinking and initiative by the candidates in planning and execution of the research work. These programmes seek to train manpower of the highest quality to cater to the needs of industry, R & D organizations and educational institutions.

The Institute has 10 Engineering Departments, 3 Science Departments, 3 Interdisciplinary Schools and 1 Humanities & Social Sciences Section (Ph.D. programme in English only), which offer PG programmes in the respective disciplines. Joint registrations for Ph.D. programme involving more than one department/ school are encouraged to promote multi-disciplinary research.

Duly filled-in applications on the prescribed form are invited for admission to M.Tech./ M.Pharm./ Ph.D. programmes for registration in July 2013 Session in various disciplines as given in Annexure – I. Candidates, whose results in the qualifying examination are not yet declared, or who are due to appear in the qualifying examination can also apply. However, at the time of test/interview for admission, they are required to produce the final mark sheet of the qualifying examination.

**ELIGIBILITY CONDITIONS**

Reservation of seats for various reserved categories of candidates shall be as per Government of India norms. Candidates belonging to the Scheduled Castes/Scheduled Tribes, who have passed the qualifying degree, are eligible to apply irrespective of the marks/CPI and will be considered for admission.

**M.Tech./M.Pharm. Programmes**

Candidates who possess the requisite qualifications as indicated in Table 1 of Annexure - I are eligible for admission to Post-Graduate programmes in the respective departments/schools of the Institute leading to M.Tech./M.Pharm. degree. The candidates should have secured a minimum of 60% marks / 6.0 CPI (on a 10.0 point scale) in the qualifying degree. In addition, they should have valid score in the Graduate Aptitude Test in Engineering (GATE) for M.Tech. Programmes/Graduate Pharmacy Aptitude Test (GPAT) for the M.Pharm. Programme.

Graduates from any of the IITs with a minimum CPI 8.0 (on a 10.0 point scale) in the qualifying degree are exempted from the requirement of having valid GATE/GPAT score for admission as well as for teaching assistantship, provided they perform at the desired levels in the written test/interview.

The number of seats available for M.Tech./M.Pharm. Programmes are given in Table 1A of Annexure-I.

### **Ph.D. Programmes**

Applicants having the requisite qualification with minimum marks/CPI as mentioned below in the discipline concerned or in an allied discipline/area are eligible for admission to Ph.D. programmes. A list of allied disciplines/areas are given in Table 2 of Annexure – I. In addition, applicants with Master's degree in Sciences, Humanities and Arts should be GATE/NET-LS/NET-JRF qualified.

### **Ph.D. in Engineering**

- a) Applicants with master's degree in engineering in the discipline concerned or in an allied discipline/area should have a minimum of 60% marks or 6.0 CPI (on a 10.0 point scale) at the master's degree level.
- b) Applicants with bachelor's degree in engineering in the discipline concerned or in an allied discipline/area should have a minimum of 75% marks or 7.5 CPI (on a 10.0 point scale) at the bachelor's degree level.
- c) Applicants with master's degree in science as an allied discipline/area (where science is an allied discipline/area), should satisfy each of the following criteria may also be considered:
  - (i) A minimum of 65% marks or 6.5 CPI (on a 10.0 point scale) at the master's degree level,
  - (ii) A minimum of 60% marks or 6.0 CPI (on a 10.0 point scale) at the bachelor's degree level, and
  - (iii) Qualified in GATE with 95 percentile or above or NET-LS or CSIR/UGC-NET-JRF.

### **Ph.D. in Pharmaceutics**

- a) Applicants with master's degree in pharmacy or in an allied discipline/area should have a minimum of 60% marks or 6.0 CPI (on a 10.0 point scale) at the master's degree level.
- b) Applicants with Bachelor's degree in Pharmacy should have a minimum of 75% marks or 7.5 CPI (on a 10.0 point scale) at the Bachelor's degree level.

### **Ph.D. in Sciences**

- a) Applicants with master's degree in science in the discipline concerned or in an allied discipline/area should have a minimum of 60% marks or 6.0 CPI (on a 10.0 point scale) at the master's degree level.

- b) Applicants with bachelor's degree in an allied discipline/area should have a minimum of 75% marks or 7.5 CPI (on a 10.0 point scale) at the bachelor's degree level.

### **Ph.D. in Interdisciplinary Programmes**

#### **a) Ph.D. in Industrial Management**

Applicants with bachelor's degree in any branch of engineering and master's degree in any branch of engineering/ management should have a minimum of 60% marks or 6.0 CPI (on a 10.0 point scale) at the master's degree level.

#### **b) Ph.D. in Bio-chemical Engineering/ Bio-medical Engineering/ Materials Science and Technology**

Applicants with master's degree in the discipline concerned or in an allied discipline should have a minimum of 60% marks or 6.0 CPI (on a 10.0 point scale) at the master's degree level.

Applicants with bachelor's degree in the discipline concerned or in an allied discipline should have a minimum of 75% marks or 7.5 CPI (on a 10.0 point scale) at the bachelor's degree level.

### **Ph.D. in Humanities and Social Sciences (English)**

Applicants with master's degree in arts (English) should have a minimum of 60% marks or 6.0 CPI (on a 10.0 point scale) at the master's degree level.

### **FINANCIAL ASSISTANCE**

Financial assistance in the form of Teaching Assistantships of the Institute is available to the M.Tech./ M.Pharm./ Ph.D. programmes as per the Table given below.

#### **M.Tech./M.Pharm. programmes**

M.Tech./M.Pharm.	Rs.8,000/- p.m. for 2 years
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#### **Ph.D. programmes**

a)	Ph.D. in Engineering / Industrial Management with Master's degree in Engineering / Management	Rs.18,000/- p.m. for first 2 years & Rs.20,000/- p.m. for next 2 years
b)	Ph.D. in Engineering / Industrial Management with bachelor's degree in Engineering or Master's degree in Science	Rs.16,000/- p.m. for first 2 years & Rs.18,000/- p.m. for next 3 years
c)	Ph.D. in Sciences with master's degree in science or Ph.D. in Humanities & Social Sciences (English) with Master's degree in Arts	Rs.16,000/- p.m. for first 2 years & Rs.18,000/- p.m. for next 3 years

A student shall be assigned duties up to eight hours per week by the departments/ schools. The renewal of assistantship is contingent on the student's satisfactory performance in the academic programme and in the discharge of assistantship duties on a semester to semester basis.

M.Tech./M.Pharm. candidates should have valid score in GATE/GPAT to avail Teaching Assistantships. As a special provision, graduates from any of the IITs with a minimum CPI 8.0 (on a 10.0 point scale) are exempted from this requirement for availing Teaching Assistantships.

For the current session, about 10 Teaching Assistantships of the Institute are available for Ph.D. programmes in each department/ school.

Candidates getting research fellowships/ assistantships through University Grants Commission (UGC), Council of Scientific and Industrial Research (CSIR), Department of Atomic Energy (DAE) or any other agency including sponsored research project are also eligible for admission to Ph.D. programme.

Those candidates who are getting any financial support (such as salary/ fellowship/ assistantship) from any other source shall not be eligible to avail the Teaching Assistantship of the Institute.

Admissions to the Ph.D. programme are limited only to those candidates who are qualified to get fellowship/ assistantship/ sponsorship from any of the above categories. No candidate shall be admitted to Ph.D. programme without any form of financial assistance.

## **SELECTION CRITERIA**

### **M.Tech./M.Pharm Programme**

Shortlisted candidates may be selected for M.Tech./M.Pharm programmes on the basis of valid GATE/GPAT Scores or a written test or interview or on the basis of any combination of these as declared by the individual department/school in the call letter.

### **Ph.D. Programme**

Shortlisted candidates may be selected for Ph.D programmes on the basis of a written test and/or interview conducted by the department/school. There also exists a provision of walk-in interview for admission to Ph.D programmes round the year for those candidates and foreign nationals who hold JRF/SRF of any national/ international level funding agency such as UGC, CSIR, DST, ICMR, etc.

### **RESERVATIONS TO SC/ST/OBC CANDIDATES:**

In each discipline, 15% seats are reserved for SC, 7.5% seats for ST and 27% seats for OBC (non creamy layer) candidates. SC/ST/OBC candidates must also satisfy the eligibility requirements for admission. However, while considering their cases, only suitability for the programme is ensured and the SC/ST/OBC candidates are not compared with those belonging to other categories. The following authorities are empowered to issue the SC/ST/OBC certificate:

- (a) District Magistrate/ Additional District Magistrate/ Collector/ Deputy Commissioner/ Addl. Deputy Commissioner/ Deputy Collector/ First Class Stipendiary Magistrate/ City Magistrate/ Sub-Divisional Magistrate/ Taluka Magistrate/ Executive Magistrate/ Extra Assistant Commissioner.

- (b) Chief Presidency Magistrate/ Additional Chief Presidency Magistrate/ Presidency Magistrate.
- (c) Revenue Officer not below the rank of Tehsildar.
- (d) Sub-Divisional Officer of the area where the candidate and/or his family normally resides.
- (e) Administrator/ Secretary to the Administrator/ Development Officer (Lakshadweep Islands).
- (f) Certificate issued by any other authority will be rejected.

### **RESERVATIONS TO PHYSICALLY CHALLENGED (PC) CANDIDATES**

In total, 3% reservation (horizontal) shall apply for candidates with physical disability as per Govt. of India norms (minimum 40% disability; attested copy of the certificate from District CMO must be furnished). Such candidates must satisfy the eligibility requirements for admission. However, while considering these applications, only suitability for the programme is ensured and they are not compared with those belonging to other categories. The candidates called for counseling may also be examined by a Medical Board constituted by the Indian Institute of Technology (BHU).

### **ADMISSION OF PART-TIME INTERNAL CANDIDATES**

The institute also offers part-time Ph.D. programmes for permanent faculty members of the institute provided they satisfy the eligibility criteria laid down for the programmes.

### **ADMISSION OF PART-TIME EXTERNAL CANDIDATES**

A candidate working in an external R&D organization recognized by the Institute (the list of external R&D organizations recognized by the Institute is given in Annexure – II), which is equipped with necessary research and library facilities may be considered for admission to M.Tech./ M.Pharm./ Ph.D. programmes. Such a candidate must show satisfactory performance in the interview and must be sponsored by his/her employer and must have been in employment with the sponsoring organization for at least two years at the time of admission. The employer must expressly undertake to pay full salary to the candidate and relieve him/her from the duty to enable the candidate to stay on the campus and to complete the course work requirements.

### **ADMISSION OF FULL TIME SPONSORED CANDIDATES**

A candidate who is sponsored by his/her employer and who meets the conditions specified below may be considered for admission to M.Tech./ M.Pharm./ Ph.D. programmes.

A sponsored candidate must show satisfactory performance in the interview and must have been in service of the sponsoring organization for at least two years at the time of admission. The sponsoring organization must specifically undertake to provide full salary to the candidate and to relieve him/her to pursue the programme for its full duration.

## ADMISSION OF QUALITY IMPROVEMENT PROGRAMME (QIP) CANDIDATES

Candidates are also admitted for Ph.D programmes under Quality Improvement Programme (QIP). The procedure for admission of QIP candidates will be as per the prescribed existing procedure. These candidates will have to satisfy the eligibility conditions for the programme as given in this information brochure.

The admission of QIP candidates will be done presently only in the following departments:

- 1) Department of Metallurgical Engg.
- 2) Department of Mining Engg.

## ADMISSION OF FOREIGN NATIONALS

1. Indian Nationals Residing Abroad (INRA): Candidates must have been residing abroad continuously for at least one year at the time of applying for admission. Their applications may be processed by the departments/schools as and when they are received or according to any schedule convenient to the departments/schools. The applications should be scrutinized to make sure that, in terms of qualifications, they are comparable with the candidates admitted in the general category.

2. The applications of foreign nationals, who are sponsored by the Indian Council of Cultural Relations (ICCR), will be scrutinized by the departments/schools concerned to assess their suitability for admission to the programme.

3. Candidates belonging to the above two categories should have qualified in TOEFL.

## GENERAL INFORMATION

**The course work, residency requirements, etc. for various programmes are listed in the table below:**

<i>Programme</i>	<i>Minimum Total Credits</i>	<i>Credits Through Course Work (Minimum)*</i>	<i>Credits Through Research (Minimum)</i>	<i>Minimum Residency (Semester)</i>	<i>Maximum Duration (Years)</i>
M.Tech./ M.Pharm.	86	47	39	04	04
Ph.D. (Engineering)/Inter-disciplinary subjects for students with B.Tech. or M.Sc.	96	40	32	06	07
Ph.D. (Engineering)/Inter- disciplinary subjects for students with M.Tech. (or MBA with B.Tech. or M.Sc. for specific disciplines)	64	16	32	04	06

Ph.D. (Sciences)/ Inter-disciplinary programmes/ Humanities and Social Sciences (English) for students with M.A. or M.Sc.	80	24	32	05	06
Ph.D. (Pharmaceutics) for students with B.Pharm	96	40	32	06	07
Ph.D. (Pharmaceutics) for students with MS/ M.Tech./ M.Pharm.	64	16	32	04	06

*\*May register for undergraduate courses as a special case with permission of the Director on the recommendations of SPGC and DPGC.*

**N.B.**

- 1. The ordinances/rules governing the PG programmes of the Institute are likely to get modified. The candidates admitted to the PG programmes based on this advertisement shall be governed by the new ordinances/rules as and when they come into force.**
- 2. Mere fulfillment of eligibility criteria does not guarantee admission in a programme. The candidates' performance in the written test and/or interview should be at the levels expected for the respective programmes.**

**CORRESPONDENCE:**

All correspondence concerning admissions should be addressed to the Department/ School concerned as follows:

**The Convener, DPGC**

**Department/School (Please write the name of the Department/School) .....**

**Indian Institute of Technology**

**(Banaras Hindu University)**

**Varanasi – 221005.**

**Table 1: Requisite Qualifications for M.Tech./M.Pharm. Programmes**

Most of the Bachelor's and Master's degrees that are being awarded in the disciplines/areas in the country and abroad are listed in the following. However, a candidate possessing a degree that does not exactly conform to the degrees listed below may be considered for admission, based on the performance in written test and/or interview and provided that the interview/admission committee (DPGC), upon scrutiny of the list of courses done and credits earned by the candidate, finds that the degree concerned is at par with those listed below.

**A. Programmes with specializations**

Discipline	Specialization	Eligibility
Civil Engineering	a) Environmental Engineering b) Geotechnical Engineering c) Hydraulics and Water Resources Engineering d) Structural Engineering e) Transportation Engineering	B.Tech. or an equivalent degree in the respective branch of engineering.
Mechanical Engineering	a) Machine Design b) Thermal and Fluid Engineering c) Production Engineering	B.Tech. or an equivalent degree in the respective branch of engineering.
Metallurgical Engineering	a) Extractive Metallurgy b) Alloy Technology	B.Tech. or an equivalent degree in Metallurgical Engg., Materials Science/Engineering, Mineral/Chemical/Ceramic /Mechanical Engg., Chemical Tech. or M.Sc. (Physics/ Chemistry) with specialization in Solid State Physics, Physical/ Inorganic Chemistry provided the candidate passed B.Sc./ B.Sc. (Hons.) Examination with Mathematics as one of the subject at undergraduate level
Mining Engineering	a) Mine Environment b) Rock Mechanics c) Mine Planning	B.Tech. or an equivalent degree in the respective branch of engineering.
Electrical Engineering	a) Power Systems b) Electrical Machines and Drives	B.Tech. or an equivalent degree in Electrical Engg.



	c) Control Systems	B.Tech. or an equivalent degree in Electrical/ Electronics/ Control Systems/ Instrumentation Engg.
	d) Power Electronics	B.Tech. or an equivalent degree in Electrical/ Electronics Engg.
Electronics Engineering	a) Microwave Engg. b) Digital Techniques and Instrumentation c) Microelectronics d) Communication System Engg.	B.Tech. or an equivalent degree in Electrical or Electronics Engg. with valid GATE Score in Electronics Engg.
Pharmaceutics	a) Pharmaceutics b) Pharmaceutical Chemistry c) Pharmacology d) Pharmacognosy	B.Pharm. or an equivalent degree in Pharmacy.

### B. Programmes without specializations

Discipline	Eligibility
Ceramic Engineering	B.Tech. or an equivalent degree in Ceramic/ Civil/ Electronics/ Electrical/ Mechanical/ Metallurgical Engg./ Chemical Engg. and Technology/Materials Science & Technology/ Silicate Technology or M.Sc. Physics (with special papers in Solid State/ Electronics) or Electronics or Chemistry (with special papers in Physical/ Inorganic/ Solid State Chemistry) provided the candidate has passed B.Sc./ B.Sc.(Hons.) Examination with Physics, Chemistry and Mathematics
Chemical Engineering	B.Tech. or an equivalent degree in Chemical Engg. or Bio-Chemical Engg. /Electrochemical Engg. /Energy Engg. /Environmental Engg. /Food Processing Engg./Petrochemical Engg./Petroleum Engg./Chemical Technology/Oil Technology/Paint Technology/Petroleum Technology/Plastic Technology/Polymer Technology/Bio-Technology/Food Technology

### C. Inter-disciplinary programmes

Discipline	Eligibility
Industrial Management (Offered by the Mechanical Engineering Department)	B.Tech. or an equivalent degree in any branch of engineering

Systems Engineering (Offered by the Electrical Engineering Department)	B.Tech. or an equivalent degree in any branch of engineering
Materials Science and Technology (Offered by the School of Materials Science and Technology)	B.Tech. or an equivalent degree in Aeronautical/ Ceramic/ Chemical/ Civil/ Computer/ Electrical/ Electronics/ Mechanical /Metallurgical/ Mining Engg./ OR M.Sc. degree in Materials Science/ Physical Sciences/ Chemical Sciences provided the candidate has passed B.Sc./B.Sc. (Hons.) Examination with Physics, Mathematics and Chemistry/ Computer Science/Statistics.
Biochemical Engineering (Offered by the School of Biochemical Engineering)	B.Pharm./ B.Tech. or an equivalent degree in Biochemical/ Biotechnology/ Chemical/ Food Engg./ OR M.Sc. degree in Biochemistry/ Bio-Technology/ Microbiology or in Chemistry with specialization in Biochemistry or Physical Chemistry.
Biomedical Engineering (Offered by the School of Biomedical Engineering)	B.Tech. or an equivalent degree in Biomedical/ Ceramic/ Chemical/ Computer/ Electrical/ Electronics/ Mechanical/ Metallurgical Engg. / OR M.Sc. degree in Physics.

- NOTE:**
1. Candidates desirous of applying for admission to different M.Tech. programmes must send separate applications to the Department/School concerned for M.Tech. programmes being offered by the Department/School. Separate applications are also required for inter-disciplinary programmes offered by the same department.
  2. Not more than 40% of the total seats in the Departments, wherever candidates from allied disciplines are declared eligible for admission, shall be open for any one allied discipline. However, preference will be given for eligible candidates from the discipline based on their performance in the written test/interview.
  3. Not more than 40% of the total seats in interdisciplinary programmes in Schools will be open for any ONE branch of Engineering or Science.

**Table 1A : Number of Seats Available for M.Tech. / M.Pharm. Programmes**

<b>Department / School</b>	<b>Total Number of Available Seats</b>
1. Ceramic Engineering	19
2. Chemical Engineering	47
3. Civil Engineering	47
4. Electrical Engineering	47
5. Electronics Engineering	47
6. Mechanical Engineering	47
7. Metallurgical Engineering	47
8. Mining Engineering	29
9. Biochemical Engineering	09
10. Biomedical Engineering	09
11. Materials Science & Technology	19
12. Industrial Management	09
13. Systems Engineering	09
14. Pharmaceutics	29

**Table 2 : Departments/Schools/Disciplines and Allied Disciplines / Areas for Ph.D. Programmes.**

Most of the Bachelor's and Master's degrees that are being awarded in the disciplines/areas in the country and abroad are listed in the following. However, a candidate possessing a degree that does not exactly conform to the degrees listed below may be considered for admission, based on the performance in written test and/or interview and provided that the interview/admission committee (DPGC), upon scrutiny of the list of courses done and credits earned by the candidate, finds that the degree concerned is at par with those listed below.

<b>Departments/Schools</b>	<b>Allied Disciplines/ Areas</b>
Ceramic Engineering	<p>Bachelor's / Master's degree in any branch of Engineering.</p> <p>Master's degree in Chemistry/Applied Chemistry/Physics/Applied Physics/Geology or Geophysics (with Mathematics as a subject at Bachelor's Degree level).</p> <p>Master's degree in Modern Medicine / Indian Medicine (for the areas related to Bioceramics). Preference would be given to candidates with B.Tech./M.Tech. in Ceramic Engineering/with some background of ceramics.</p>
Chemical Engineering & Technology	<p>Bachelor's/Master's degree in any branch of Engineering/Technology with Mathematics at Senior Secondary (Plus 2)/Intermediate level.</p> <p>Master's degree in Chemistry/Biochemistry/Environmental Science/ Biotechnology/Industrial Chemistry with Mathematics at Senior Secondary (Plus 2)/Intermediate level.</p>
Civil Engineering	<p>M.Sc.(Eng.)/M.E./M.Tech. degree in Applied Mechanics, Mining Engineering, Chemical Engineering, Chemical Engineering and Technology, Chemical Technology, Agricultural Engineering.</p> <p>M.Sc.(Eng.)/M.E./M.Tech. in Geoinformatics, Geomatics, Remote Sensing, Remote Sensing and GIS.</p> <p>B.Sc.(Eng.)/B.E./B.Tech./ M.Sc.(Eng.)/M.E./M.Tech. in Computer Science and Engineering, Computer Engineering.</p> <p>B.Sc.(Eng.)/B.E./B.Tech./M.Sc.(Eng.)/ M.E./M.Tech. or equivalent degree in Environmental Engineering, Environmental Science and Engineering, Environmental Science and Technology.</p> <p>M.Sc./M.Tech. in Geophysics, Geology.</p>

	<p>M.Sc.(Eng.)/M.E./M.Tech. in Aerospace Engineering, Earthquake Engineering, Naval Architecture, Ocean Engineering, Mechanical Engineering.</p> <p>M.Tech./M.B.A. or equivalent degree in Construction Management, Operations Management, Environmental Management.</p>
Computer Engineering	B.Tech./B.E./M.Tech./M.E. Degree in Computer Technology/ Information Technology/ Electronics Engineering/ Electronics and Communication Engineering/All related subjects of Computer Engineering at M.Tech. Level/ M.Tech. in Mathematics & Computing.
Electrical Engineering	B.Tech. & M.Tech. in Electronics Engg.
System Engineering	B.Tech. & M.Tech. in (i) Electronics Engg. and (ii) Computer Science & Engineering
Electronics Engineering	<p>Master's degree in any of the following areas:</p> <p>Digital Communication Systems, Information and Coding Theory, Telecom Networks, Mobile and Wireless Communication Systems, Digital Systems and Microprocessors, Digital Signal and Image Processing, Computer Vision and Robotics, Signal and Systems Theory, Control Systems, Fuzzy Logic, Neural Networks and their applications, Power Electronics, Microelectronics and VLSI Systems, Semiconductor Device Modelling and Simulation, Solid State Devices, Organic Electronics, Transparent Semiconductors and Photovoltaics, Sensors and Pattern Recognition, Electronic Instrumentation and Virtual Instrumentation, Electromagnetics, RF Engineering and Microwaves, Antennas, Optoelectronics and Optical Communication, Photonic Networks and Systems, Information Technology.</p>
Mechanical Engineering	Bachelor's degree in Production Engineering and Master's degree in any discipline/ area relevant to Mechanical Engineering.
Industrial Management	Bachelor's degree in any branch of Engineering and Master's degree in any branch of Engineering/Management.
Metallurgical Engineering	Bachelor's / Master's degree in Mechanical / Chemical / Production Engg./Manufacturing Engg./Mineral Engg./ Ceramic Engg.

	<p>Master's degree in Materials Science / Engg./ Technology</p> <p>Master's degree in Physical Sciences (Solid State Physics)/Chemical Sciences (Inorganic / Physical Chemistry/Industrial Chemistry)/ Biological Sciences/Geology with Mathematics as a subject at Bachelor's level.</p>
Mining Engineering	<p>Master's degree in Geology/ Geophysics/Geohydrology/Mathematics/ M.Sc. in Petroleum Geosciences/Chemistry/Environmental Science with Mathematics at Intermediate level.</p> <p>M.Tech./M.S./IDD in Chemical Engineering/ Environmental Engineering/ Civil Engineering/ Industrial Engineering/ Mechanical Engineering/ Electrical Engineering/ Computer Engineering/ Electronics Engineering.</p>
Pharmaceutics	<p>MS/M.Tech. in Pharmacy/Pharmaceutical Sciences/ Pharmaceutical Engineering/Pharmaceutical Technology/ Pharmaceutical Biotechnology/ Bioinformatics/ biochemical Engineering/ Biomedical Engineering with graduation in Pharmacy (B.Pharm.).</p>
Physics	<p>M.Sc./M.Tech. in Applied Physics, Engineering Physics, Bio-Physics, Electronics Engg., Materials Science, Ceramics Engg., Metallurgical Engg., Electrical Engg., Bio-Informatics, Computer Science, Computer Engg., Mechanical Engg., Mathematics, Chemistry, Remote Sensing, Astrophysics, Space Physics, Applied Optics, Atmospheric Physics, Fibre Optics &amp; Photonics.</p>
Chemistry	<p>Master's degree in Physics/ Biotechnology/ Biochemistry/ Medicinal Chemistry/ Environmental Science/ Materials Science and Technology/ Industrial Chemistry/ Applied Chemistry/ Nanotechnology with Chemistry as a subject at Bachelor's level.</p> <p>Bachelor's/Master's Degree of Engineering/Technology in Chemical/ Ceramics/ Metallurgical/ Pharmaceutics/ Materials Science and Technology as well as engineering disciplines related to chemical sciences.</p>
Mathematics	<p>Masters degree in Statistics/ Computer Science/ Computer Engineering, with Mathematics as a subject at Bachelors level.</p> <p>Bachelors degree (B.Tech./B.E.) in Mathematics and Computing/ Computer Engineering/Computer Science.</p>

<p>Biochemical Engineering</p>	<p>Master's degree in Biochemistry / Biotechnology/Microbiology/ Environmental Science.</p> <p>Bachelor's/Master's Degree in Biochemical Engg./ Food Technology/Pharmacy/Chemical Engineering/Biotechnology</p>
<p>Biomedical Engineering</p>	<p>Bachelor's/Master's degree in Bioengineering/Electrical Engg./ Electronics Engg./Instrumentation Engg./Mechanical Engg./Computer Engg./Materials Science &amp; Technology.</p> <p>Master's degree in Biomedical Sciences/Physics/Chemistry/Polymer Science/Biochemistry.</p>
<p>Materials Science &amp; Technology</p>	<p>Master's degree in Physics/ Applied Physics/ Chemistry/ Applied Chemistry/Polymer.</p> <p>Bachelor's/ Master's degree in any branch of Engineering.</p> <p>Master's degree in Dentistry/ Orthopedics/ E.N.T./ Rasa Shastra.</p>

**LIST OF EXTERNAL R&D ORGANIZATIONS  
RECOGNIZED BY THE INSTITUTE**

1. All R & D Laboratories/Institutions of CSIR, DAE, DOS, DRDO, DST and Ministry of Telecommunication & Information Technology.
2. Bharat Heavy Electricals Limited (BHEL), Research and Development Laboratories.
3. Indian Pharmacopoeia Commission, Ghaziabad.
4. Central Mine Planning and Design Institute Limited, Ranchi.
5. Central Power Research Institute, Bangalore.
6. Central Pulp and Paper Research Institute, Saharanpur.
7. Diesel Locomotive Works (DLW), Varanasi
8. Hindustan Aeronautics Limited, Lucknow & Korwa.
9. Hindustan Machine Tools (R & D Division), Bangalore.
10. Indian Bureau of Mines, Nagpur.
11. Jyoti Limited, Baroda.
12. Kirloskar Electric Limited, Bangalore.
13. Mechanical Engineering Research and Development Organization, Pune.
14. National Institute of Rock Mechanics, Kolar.
15. National Council for Cement and Building Materials (NCCBM), New Delhi.
16. Raman Research Institute, Bangalore.
17. Tata Steel, Jamshedpur.
18. National Metallurgical Laboratory Extension Centre, Chennai.

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