

**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, 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 and 3 Sciences Departments, 3 Interdisciplinary Schools and 1 Humanities & Social Sciences Section<sup>s</sup> (Section in English: only Ph.D. programme in English), 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.

*[<sup>s</sup>At present, this Section is associated with the Department of Mathematical Sciences for all administrative purposes. The candidates are required to communicate with the Convener, DPGC, Department of Mathematical Sciences of the Institute.]*

Duly filled-in applications on the prescribed form are invited for admission to M.Tech./ M.Pharm./ Ph.D. programmes for registration in July 2014 Semester in various disciplines as given in Annexure – I and II. Candidates whose qualifying examination results are not declared at the time of written test / interview are also eligible to apply. However such candidates are required to get a certificate on the prescribed form from the institute that the candidate has already appeared in all the subjects of the qualifying examinations and the result is not yet declared. In case the candidate is selected, he/she has to submit the proof of having passed the qualifying examination on or before the last date for document submission specified in the academic calendar of the institute.

## **ELIGIBILITY CONDITIONS**

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

Candidates who possess the requisite qualifications as indicated in Table 1A 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.

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

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

Applicants must have the requisite qualification with minimum marks/CPI as mentioned below in the discipline concerned or in an allied discipline/area. A list of allied disciplines/ areas is given in Table 2A of Annexure – II. The number of seats available for Ph.D. Programmes in different disciplines are given in Table 2B of Annexure-II.

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

- a) Applicants with master's degree in engineering in the discipline concerned or in an allied discipline/area must 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 must have a minimum of 75% marks or 7.5 CPI (on a 10.0 point scale) at the bachelor's degree level. The applicants should be qualified in GATE for the award of Institute Assistantship.
- c) Applicants with master's degree in science or in an allied discipline/area (where science is an allied discipline/area), must satisfy each of the following criteria:
  - (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 or NET-LS or CSIR/UGC-NET-JRF or DBT-JRF or ICMR-JRF or DST-INSPIRE fellowship.

#### **Ph.D. in Pharmacy**

- a) Applicants with master's degree in pharmacy or in an allied discipline/area must 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 must have a minimum of 75% marks or 7.5 CPI (on a 10.0 point scale) at the bachelor's degree level. The applicants should be qualified in GPAT or GATE or NET-LS or CSIR/NET-JRF or DBT-JRF or ICMR-JRF or DST-INSPIRE fellowship.

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

- a) Applicants with master's degree in science in the discipline concerned or in an allied discipline/area must have a minimum of 60% marks or 6.0 CPI (on a 10.0 point scale) at the master's degree level and qualified in GATE or NET-LS or CSIR/UGC-NET-JRF or DBT-JRF or ICMR-JRF or DST-INSPIRE fellowship.
- b) Applicants with four year bachelor's degree in science in the discipline concerned or in an allied discipline/area must have a minimum of 75% marks or 7.5 CPI (on a 10.0 point

scale) at the bachelor's degree level. They should be qualified in GATE or NET-LS or CSIR/UGC-NET-JRF or DBT-JRF or ICMR-JRF.

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

#### **a) Ph.D. in Systems Engineering**

Applicants with bachelor's and master's degree in any branch of Engineering must 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 any branch of engineering must have a minimum of 75% marks or 7.5 CPI (on a 10.0 point scale) at the bachelor's degree level. The applicants with bachelor's degree should also be qualified in GATE for the award of Institute Assistantship.

#### **b) 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 must 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 any branch of engineering must have a minimum of 75% marks or 7.5 CPI (on a 10.0 point scale) at the bachelor's degree level. The applicants with bachelor's degree should also be qualified in GATE for the award of Institute Assistantship.

#### **c) 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 must 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. The applicants should be qualified in GATE/NET-LS for the award of Institute Assistantship.

### **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.

Applicants should be qualified in UGC-NET-LS or UGC-NET-JRF.

### **Admission to Ph.D. Programme for Candidates having National-level Scholarships**

There is a provision for admission to Ph.D. programmes for candidates who fulfill the eligibility criteria for the respective programmes and also have qualified in any of the national level JRF/SRF tests conducted by UGC, CSIR, Department of Biotechnology, Indian Council of Medical Research or DST-INSPIRE fellowship.

### **Admission to External Registration Programme**

A candidate working in an external R&D organization or in an industry recognized by the Institute (the list of external R&D organizations and industries recognized by the Institute is given in Annexure – III), which is equipped with necessary research and library facilities can also apply for admission to M.Tech./M.Pharm. and Ph.D. programmes, provided he/she satisfies the eligibility criteria laid down for the programme concerned. Such a candidate must show satisfactory performance in the interview, 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 requirement of qualifying in GATE/GPAT is waived off for such candidates for the purpose 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.

The candidate should submit a certificate obtained from his/her organization that the research facilities of his/her organization would be made available to him/her for carrying out research. He/she should also provide the bio-data of the prospective supervisor along with his/her consent, who would be supervising the candidate's work at his/her organization.

[N.B. Letter of appointment and Form – 16 for two years of service is required from the employer at the time of written test / interview.]

An application for admission from a candidate working in the approved organization will be considered only if he/she wishes to work in the approved area.

### **Admission of Sponsored Candidates**

A candidate who is sponsored by a teaching institution or by an R&D organization or by an industry can also apply for admission to M.Tech./M.Pharm and Ph.D. programmes, provided he/she satisfies the eligibility criteria laid down for the programme concerned. He/she must have been in service of the sponsoring institution/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. Such candidates have to complete the requirements of the programme by staying on-campus for the full duration of the programme.

The requirement of qualifying in GATE/GPAT is waived off for such candidates for the purpose of admission.

[N.B. Letter of appointment and Form – 16 for two years of service is required from the employer at the time of written test / interview. In addition, the candidate must submit an undertaking that he/she will continue to submit Form – 16 for the subsequent years till he/she completes the programme.]

### **Admission of Part-time Candidates**

The Institute also offers part-time Ph.D. programmes for permanent staff and faculty members of the Institute as well as research assistants/JRFs/SRFs working in an externally funded research project running in the Institute, provided they satisfy the eligibility criteria laid down for the programme concerned.

They will be required to attend to normal duties assigned to them by the Department/School/ the Principal Investigator of the research project and attend classes to complete the course work requirements.

## FINANCIAL ASSISTANCE

Financial assistance in the form of Teaching Assistantships of the Institute (referred to as Institute Assistantships) is available to the students admitted to M.Tech., M.Pharm. and Ph.D. programmes as per the Table given below.

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

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

a)	Ph.D. students admitted with M.Tech./M.Pharm./MBA qualifications	Rs.18,000/- p.m. for first 2 years & Rs.20,000/- p.m. for next 2 years
b)	Ph.D. students admitted with B.Tech./B.Pharm./ 4 yr B.S./M.Sc./M.A. qualifications	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 to avail the Teaching Assistantship. 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.

Students admitted to M.Tech./M.Pharm. programmes should have valid score in GATE/GPAT to avail Institute Assistantships.

Students admitted to Ph.D. Programme with Master's degree in Science/Arts or Bachelor's degree in Engineering/Pharmacy/4 Yr. Bachelor's degree in Science should be qualified in GATE/GPAT to avail the Institute Assistantships.

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 interview conducted by the department/school.

However, outstanding candidates, who have acquired their M.Tech./M.Pharm. degrees from the premier institutions such as IITs and other Centrally Funded Technical Institutions may be offered admission directly, provided they have obtained a CPI of 8.0 or above (on a 10.0 point scale). This may be done at the time of short listing itself.

The short listing for calling for written test and interview may be done based on the percentage marks/CPI in the qualifying examination. If the results of the qualifying examination are not declared, the marks/CPI obtained by the candidate up to and including the previous semester may be considered for short listing.

### **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.

A relaxation of 5% marks or 0.5 CPI (on a 10 point scale) shall be admissible on qualifying marks to SC and ST candidates in the admission.

The SC/ST/OBC certificates must be produced at the time of written test / interview on the prescribed form. 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).

## **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 FOREIGN NATIONALS**

Admissions to M.Tech./M.Pharm. and Ph.D. Programmes are available for Indian nationals residing abroad (INRA) and foreign nationals as per details given below.

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. The recommendations of the Department/School will be sent to the Chairman, Senate through the Chairperson, SPGC for approval.
3. Candidates belonging to the above two categories should satisfy the eligibility conditions and should have qualified GRE.

## **GENERAL INFORMATION**

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

<b>Programme</b>	<b>Minimum Total Credits</b>	<b>Minimum Credits through Course Work</b>	<b>Minimum Credits through Thesis Work</b>	<b>Minimum Number of Courses<sup>1</sup></b>	<b>Minimum Residence<sup>2</sup></b>	<b>Maximum Duration</b>
M.Tech.	220	88	99	8	4 Semesters	4 Years

M.Pharm.	220	88	99	8	4 Semesters	4 Years
Ph.D. in Engineering for students with B.Tech. or M.Sc.	330	110	110	10	6 Semesters	7 Years
Ph.D. in Engineering for students with M.Tech.	220	44	110	4	4 Semesters	6 Years <sup>3</sup>
Ph.D. in Interdisciplinary programmes for students with B.Tech. or M.Sc.	330	110	110	10	6 Semesters	7 Years
Ph.D. in Interdisciplinary programmes for students with M.Tech. (or MBA together with B.Tech.)	220	44	110	4	4 Semesters	6 Years <sup>3</sup>
Ph.D. in Pharmacy for students with B.Pharm. or M.Sc.	330	110	110	10	6 Semesters	7 Years
Ph.D. in Pharmacy for students with M.Pharm.	220	44	110	4	4 Semesters	6 Years <sup>3</sup>
Ph.D. in Sciences for students with 4-year B.S.	330	110	110	10	6 Semesters	7 Years
Ph.D. in Sciences for students with M.Sc.	275	66	110	6	5 Semesters	6 Years <sup>3</sup>
Ph.D. in Sciences for students with M.Tech.	220	44	110	4	4 Semesters	6 Years <sup>3</sup>
Ph.D. in Humanities and Social Sciences (English) for students with M.A.	275	66	110	6	5 Semesters	6 Years <sup>3</sup>

1. The 'Minimum Number of Courses' is only indicative and in case of any difference, the minimum number of credits through course work will be required to be fulfilled.
2. Students admitted to Ph.D. under External Registration programme will be required to stay on the campus at least as long as it takes to (i) complete the required course work, (ii) pass the comprehensive examination, and to (iii) give the state-of-the-art seminar.
3. Add an additional year in case of part-time/external students.



The minimum specified for each category is arrived at on the basis of optimum credits per semester. This gives flexibility to a student to choose more/less credits between courses and research work to make up for the minimum credit requirement for a programme.

A Department/School may prescribe, with prior approval of the SPGC, additional credits of courses/thesis over and above the minimum specified in the above Table.

**N.B. : Mere fulfillment of eligibility criteria does not guarantee admission in a programme. The candidates' performance in the written test / 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.**

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**Table 1A: 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 / interview and provided that the interview /admission committee, 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 without specializations**

<b>Department/ School offering the Programme</b>	<b>Discipline</b>	<b>Eligibility</b>
Department of Ceramic Engineering	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
Department of Chemical Engineering & Technology	Chemical Engineering	B.Tech. or an equivalent degree in Chemical Engg. or Biochemical Engineering/ Electrochemical Engineering/ Energy Engineering/ Environmental Engineering/ Food Processing Engineering/ Petrochemical Engineering/ Petroleum Engineering/ Chemical Technology/ Oil Technology/ Paint Technology/ Petroleum Technology/ Plastic Technology/ Polymer Technology/ Bio- Technology/ Food Technology with a valid GATE score in Chemical Engineering

## B. Programmes with specializations

<b>Department/ School offering the Programme</b>	<b>Discipline</b>	<b>Specialization</b>	<b>Eligibility</b>
Department of Civil Engineering	Civil Engineering	a) Hydraulics and Water Resources Engineering b) Geotechnical Engineering c) Structural Engineering d) Environmental Engineering e) Transportation Engineering	B.Tech. or an equivalent degree in the respective branch of engineering.
Department of Mechanical Engineering	Mechanical Engineering	a) Machine Design b) Thermal & Fluid Engineering c) Production Engineering	B.Tech. or an equivalent degree in the respective branch of engineering.
Department of Metallurgical 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
Department of Mining Engineering	Mining Engineering	a) Mine Environment b) Rock Mechanics c) Mine Planning	B.Tech. or an equivalent degree in the respective branch of engineering.

Department of Electrical 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.
Department of Electronics Engineering	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 and Communication Engineering
Department of Pharmaceutics	Pharmacy	a) Pharmaceutics b) Pharmaceutical Chemistry c) Pharmacology d) Pharmacognosy	B.Pharm. or an equivalent degree in Pharmacy.

### C. Inter-disciplinary programmes

Department/ School offering the Programme	Discipline	Eligibility
Department of Mechanical Engineering	Industrial Management	B.Tech. or an equivalent degree in any branch of engineering
Department of Electrical Engineering	Systems Engineering	B.Tech. or an equivalent degree in any branch of engineering

School of Materials Science and Technology	Materials Science and Technology	B.Tech. or an equivalent degree in Ceramic/ Chemical/ Civil/ Electrical/ Electronics/ Polymer/ Plastic Technology/ Materials Technology/ Nanotechnology/ Mechanical / Metallurgical Engineering OR M.Sc. degree in Chemical Science/ Materials Science/ Physical Science provided the candidate has passed B.Sc./ B.Sc. (Hons.) Examination with Chemistry/ Physics/ Mathematics and Computer Science/ Statistics.
School of Biochemical Engineering	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.
School of Biomedical Engineering	Biomedical Engineering	B.Tech. or an equivalent degree in Biomedical/ Ceramic/ Chemical/ Computer/ Electrical/ Electronics (Telecommunication/Instrumentation/Control)/ 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 interdisciplinary programmes offered by the same Department. Candidates desirous of applying for admission to different M.Tech. programmes must send their original application to the Department/School which is their first preference and copy of their application to each of their other preferred Departments/Schools.
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 1B : Number of Seats Available for  
M.Tech. / M.Pharm. Programmes**

<b>Discipline</b>	<b>Total Number of Available Seats</b>
Ceramic Engineering	19
Chemical Engineering	47
Civil Engineering	47
Electrical Engineering	47
Systems Engineering	09
Electronics Engineering	47
Mechanical Engineering	47
Industrial Management	09
Metallurgical Engineering	47
Mining Engineering	29
Biochemical Engineering	09
Biomedical Engineering	09
Materials Science & Technology	19
Pharmacy	29

**Annexure-II**

**Table 2A : 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 degree(s) that do not exactly conform to the degree(s) listed below may be considered for admission, based on the performance in written test / 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 offering the Programme</b>	<b>Discipline</b>	<b>Allied Disciplines/ Areas</b>
Department of Ceramic Engineering	Ceramic Engineering	Bachelor's / Master's degree in any branch of Engineering. Master's degree in Chemistry/Applied Chemistry/Physics/Applied Physics/Geology or Geophysics (with Mathematics as a subject at Bachelor's Degree level). 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.
Department of Chemical Engineering & Technology	Chemical Engineering	Bachelor's/Master's degree in any branch of Engineering/Technology with Mathematics at Senior Secondary (Plus 2)/Intermediate level. Master's degree in Chemistry/Biochemistry/Environmental Science/ Biotechnology/Industrial Chemistry with Mathematics at Senior Secondary (Plus 2)/Intermediate level.
Department of Civil Engineering	Civil Engineering	M.Sc.(Engg.)/M.E./M.Tech. degree in Applied Mechanics, Mining Engineering, Chemical Engineering, Chemical Engineering and Technology, Chemical Technology, Agricultural Engineering. M.Sc.(Engg.)/M.E./M.Tech. in Geoinformatics, Geomatics, Remote Sensing, Remote Sensing and GIS. B.Sc.(Engg.)/B.E./B.Tech./ M.Sc.(Engg.)/M.E./M.Tech. in

		<p>Computer Science and Engineering, Computer Engineering.</p> <p>B.Sc.(Engg.)/B.E./B.Tech./M.Sc.(Engg.)/ 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.(Engg.)/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>
Department of Computer Science & Engineering	Computer Science & 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.
Department of Electrical Engineering	Electrical Engineering	B.Tech. & M.Tech. in Electronics Engineering.
Department of Electrical Engineering	Systems Engineering	Bachelor's and Master's Degree in any Branch of Engineering or Bachelor's Degree in any Branch of Engineering.
Department of Electronics 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,</p>



		RF Engineering and Microwaves, Antennas, Optoelectronics and Optical Communication, Photonic Networks and Systems, Information Technology.
Department of Mechanical Engineering	Mechanical Engineering	Bachelor's degree in Production Engineering and Master's degree in any discipline/ area relevant to Mechanical Engineering.
Department of Mechanical Engineering	Industrial Management	Bachelor's degree in any branch of Engineering and Master's degree in any branch of Engineering/Management.
Department of Metallurgical Engineering	Metallurgical Engineering	Bachelor's / Master's degree in Mechanical / Chemical / Production Engg./Manufacturing Engg./Mineral Engg./ Ceramic Engg. Master's degree in Materials Science / Engg./ Technology 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.
Department of Mining Engineering	Mining Engineering	Master's degree in Geology/Geophysics/Geohydrology /Mathematics/Petroleum Geosciences /Chemistry/ Environmental Science/Materials Science/Botany/ Zoology/Polymer Science/Computer Science Master's degree in Chemical Engg. / Environmental Engg. /Civil Engg./Industrial Engg./Mechanical Engg./Electrical Engg./Computer Engg./Electronics Engg./Polymer Engg. or Technology/ Ceramic Engg./Materials Engg./Information Technology
Department of Pharmaceutics	Pharmacy	MS/M.Tech. in Pharmacy/Pharmaceutical Sciences/ Pharmaceutical Engineering/Pharmaceutical Technology/ Pharmaceutical Biotechnology/ Bioinformatics/ biochemical Engineering/ Biomedical Engineering with graduation in Pharmacy (B.Pharm.).
Department of Physics	Physics	M.Sc./M.Tech. in Applied Physics, Engineering Physics, Bio-Physics, Electronics Engg., Materials Science, Ceramic Engg., Metallurgical Engg., Electrical Engg., Bio-Informatics,

		Geomatics and Geoinformatics, Computer Science, Computer Engg., Mechanical Engg., Mathematics, Chemistry, Remote Sensing, Astrophysics, Space Physics, Applied Optics, Atmospheric Physics, Fibre Optics & Photonics.
Department of Chemistry	Chemistry	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. Bachelor's/Master's Degree of Engineering/Technology in Chemical/ Ceramics/ Metallurgical/ Pharmaceuticals/ Materials Science and Technology as well as engineering disciplines related to chemical sciences.
Department of Mathematical Sciences	Mathematical Sciences	Master's degree in Statistics/ Computer Science/ Computer Engineering, with Mathematics as a subject at Bachelor's level. Bachelor's degree (B.Tech./B.E.) in Mathematics and Computing/ Computer Engineering/Computer Science.
School of Biochemical Engineering	Biochemical Engineering	Master's degree in Biochemistry / Biotechnology/Microbiology/ Environmental Science. Bachelor's/Master's Degree in Biochemical Engg./ Food Technology/Pharmacy/Chemical Engineering/Biotechnology
School of Biomedical Engineering	Biomedical Engineering	B.Tech./M.Tech. degree in Bioengineering/Electrical Engg./ Electronics Engg./Instrumentation Engg./Mechanical Engg./ Computer Engg./Materials Science & Technology/ Chemical Engg./ Bio-technology. M.Sc. degree in Physics/Chemistry/Polymer Sciences/ Biochemistry.
School of Materials Science & Technology	Materials Science & Technology	Master's degree in Chemical Sciences, Materials Science and Physical Sciences. Bachelor's / Master's degree in Ceramic/ Chemical/ Civil/ Electrical/ Electronics/ Mechanical / Metallurgical/ Polymer Engineering/ Plastic Technology/ Materials Technology/ Nanotechnology. Master's degree in Dentistry/ Orthopedics/ E.N.T./ Rasa Shastra.

**Table 2B: The number of seats available for  
Ph.D. Programmes in different Disciplines with Institute Assistantship**

<b>Discipline</b>	<b>Total Number of Available Seats</b>
Computer Science & Engineering	04
Ceramic Engineering	08
Chemical Engineering	20
Civil Engineering	10
Electrical Engineering	20
Systems Engineering	04
Electronics Engineering	10
Mechanical Engineering	20
Industrial Management	04
Metallurgical Engineering	06
Mining Engineering	10
Biochemical Engineering	Nil
Biomedical Engineering	05
Materials Science & Technology	13
Pharmacy	16
Physics	08
Chemistry	10
Mathematical Sciences	05

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

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. Central Indian Pharmacopoeia Laboratory, 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.