

INFORMATION BROCHURE

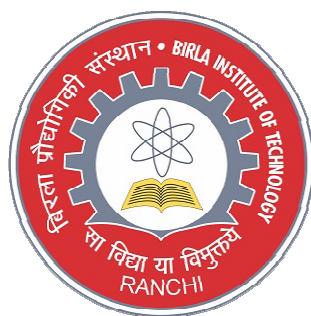
for

Admission to

5 Year (10 Semester) Full-Time
Integrated M.Sc. Programs 2020-21
in
Chemistry, Food Technology,
Mathematics & Computing, and Physics

at

Birla Institute of Technology, Mesra



BIRLA INSTITUTE OF TECHNOLOGY

(Deemed to be University u/s 3 of UGC Act 1956)

MESRA RANCHI – 835215

(Jharkhand)

Website: www.bitmesra.ac.in

Contact details

Campus	Addresses and contact details
Mesra (Main Campus)	Dean Admissions & Academic Coordination Birla Institute of Technology Mesra, Ranchi - 835215 Phone: PBX: 0651-2275444 / 896 / 2276496, Extn 4469, & 2275868 (D) Fax: 0651- 2275401, 2276007 E-mail: admissions@bitmesra.ac.in

Contents

Section	Table of Contents	Page No.
1	Introduction and How to Apply	3
2	Eligibility Criteria	4
3	List of Documents to carry at the time of reporting for physical verification of documents	5
4	Selection Procedures	5
5	Total number of seats, Reservations and Distribution of seats	6
6	Fee Structure	7
7	Profiles of the Departments	8-13
8	Discipline, Rules & Regulations and Medical Examination	14-15
9	Anti-ragging Affidavit	16

IMPORTANT DATES

Filling of online form commences from	24 th June 2020
Last date for Applying Online	5 th August 2020
Declaration of FIRST shortlisted candidates for Documents Verification cum Admission	7 th August 2020
Classes will commence from 1 st / 2 nd week of September 2020 [Exact date will be announced at later stage]	

Note:

- All the dates mentioned above are tentative, and liable to be changed. Hence, please check Institute website periodically.
- Please fill and submit the application online only, take printout of the same and retain with you as the same will have to produce during physical verification of documents.

Sec 1. An Introduction and How to Apply

This Information Brochure covers admissions to full-time 5-year (10-semester) Integrated M.Sc. in Chemistry, Food Technology, Mathematics & Computing, and Physics programs at Mesra Campus, which will commence in Sept. 2020.

How to Apply:

1. To fill online application form, click on the link “**APPLY ONLINE**” to register and create password for the application process. Do not share the password with anybody. [Please see instructions for filling online application form.](#)
2. Eligible candidates must complete and submit the application form online only [link available on the Institute website www.bitmesra.ac.in]. Pay application fee of Rs.1,500/- (General / OBC candidates) and Rs.1,000/- (SC/ST candidates) through ICICI Payment Gateway (net banking / debit / credit card of any nationalized bank) in favour of “**Birla Institute of Technology**” till the last date of application process. **Fee once remitted shall not be refunded under any circumstances.**
3. **Use separate application form, in case applying for more than one program and pay additional application fee. Use different mobile number and email id for each application form.**

Important Instructions:

1. Candidates should proceed to fill the Online Application Form only after they satisfy themselves that they fulfill all the eligibility criteria.
2. Candidate must have adequate proficiency in written & spoken English to cope with the program as all instruction and examinations will be in English only.
3. **Please fill and submit the application online only, take printout of the same and retain with you as the same will have to produce during physical verification of documents.**

Form / Application Numbers:

The Form / Application numbers on each online application form may be noted and cited in correspondence if required. **No individual intimation will be sent to candidates.**

Sec 2. Eligibility Criteria

Programs	Eligibility criteria
Integrated M.Sc. in Chemistry	Pass in Class 12 / equivalent examination with English, Physics, Chemistry, Mathematics and having at least 60% (50% for SC/ST/PwD) marks in average of 4 subjects - English, Physics, Chemistry, Mathematics
Integrated M.Sc. in Food Technology	Pass in Class 12 / equivalent examination with English, Physics, Chemistry, Mathematics and having at least 60% (50% for SC/ST/PwD) marks in average of 4 subjects - English, Physics, Chemistry, Mathematics
Integrated M.Sc. in Mathematics & Computing	Pass in Class 12 / equivalent examination with English, Physics, Chemistry, Mathematics and having at least 60% (50% for SC/ST/PwD) marks in average of 4 subjects - English, Physics, Chemistry, Mathematics
Integrated M.Sc. in Physics	Pass in Class 12 / equivalent examination with English, Physics, Chemistry, Mathematics and having at least 60% (50% for SC/ST/PwD) marks in average of 4 subjects - English, Physics, Chemistry, Mathematics

Notes:

- Only those candidates whose date of birth falls on or after 1 October 1995 in case of General category and 1 October 1990 in case of SC/ST/PwD are eligible for admission. Date of Birth as recorded in the Secondary Education Board Class X (High School) certificate only will be considered as authentic.
- Candidates with foreign diplomas should see the EdCIL website for equivalence (<http://www.edcil.co.in>), and if required should obtain an equivalence certificate from the evaluation division of the AIU (website <http://www.aiuweb.org>).
- In case any Board awards grades instead of marks, the calculation of equivalent marks would be based on the procedure prescribed by the Board.
- At the time of document verification, candidates will be required to produce originals of Pass Certificate of Class X, Marksheets of Class X and Class XII showing requisite minimum marks, as well as Caste or Special Category certificates in proper format signed by appropriate authority (please see instructions).
- At any level of the studies [Class X or Class XII], a candidate / applicant must have passed all the required subjects at that level from the same Board.

Sec 3: List of documents to carry at the time of reporting for Physical verification of documents

1. A print-out of the duly completed online form (original copy)
2. One recent colour photograph [same as uploaded on the form]
3. **Original of the following documents / certificates:** Candidates must carry the originals of the following documents along with one set of photocopies at the time of reporting for physical verification of documents:
 - a) Pass certificate of Class X (for age proof)
 - b) Marksheet of Class X
 - c) Marksheet of Class XII / Intermediate or equivalent
 - d) School Leaving Certificate
 - e) Migration Certificate
 - f) Caste certificate (if applicable), which **should be in proper format and signed by appropriate authority of rank not less than SDO.**
 - g) Candidates belonging to other special categories (Persons with Disability [PwD] / Kashmiri Migrant) must provide photocopy of certificate in proper format from appropriate authority.
 - h) Photo identification: (Driving license, Passport, PAN Card, Voter ID, Aadhaar Card, School / College ID, are acceptable)

Sec 4: Selection Procedure

- **Provisional selection will be based on marks obtained by the candidates in Class 12 / Intermediate / equivalent qualifying examination.** However, candidates must meet the age criteria and other minimum academic requirements (see Eligibility Criteria).
- The provisional selection list will be published on the Institute website only.

Exit option: There will be a “NO Exit” option from the academic session 2020-21.

Cancellation of Admission Offer:

- The admission of a candidate will be automatically cancelled
 - (a) if any information provided in the application form is found incorrect or missing.
 - (b) those who fail to submit the marksheet of Class XII or equivalent qualifying examination in time as stipulated.

Note: *Eligible SC/ST, OBC, PwD students admitted to above programs at the Campus should submit their scholarship form in the Scholarship Section of the Campus for the academic year by February for processing scholarship to SC/ST, OBC, PwD students each year, as per UGC guidelines.*

Sec 5. Total number of Seats, Reservations and Distribution of seats

The number of seats to be offered in 2020 for the following programs, as given below:

Programs	No. of seats to be offered
Integrated M.Sc. in Chemistry	30
Integrated M.Sc. in Food Technology	30
Integrated M.Sc. in Mathematics & Computing	30
Integrated M.Sc. in Physics	30

Reservations:

1. For all programs at the Institute which are supported by the State Governments, the reservation criteria for the state quota are as per the norms of the State Government.
2. For all other programs the reservation criteria for SC & ST are as per the statutory norms of Central Govt. (SC -15% & ST - 7.5%)
3. The Institute observes statutory reservation for Persons with Disability (5%).
4. Upto 1 seat may be allotted to candidates who are Sons or Daughters of Kashmiri Migrant who otherwise have qualified for admissions.
5. 50% of the total seats are reserved for candidates who have passed their qualifying examination (Class 12) from Jharkhand State. (The “State of Eligibility” of a candidate for the purpose will be determined based on location of his/her School / College where she/he has passed the qualifying examination (Class 12).

[In case sufficient numbers of suitable candidates from any group are not available, the Institute reserves the right to fill the seats from the other group].

However, the final reservation proportion will depend on notification, if any, issued by competent authority and as accepted by the Institute.

Notes:

1. The Institute reserves the right to lower the intake in a program without showing any reason.
2. The Institute also reserves the right not to offer a particular program in case the number of students found to be eligible / admitted is less than 30% in number.
3. Please see our website <http://www.bitmesra.ac.in> for course syllabus / any other matters related to admission procedures.

Examples for selecting the name of State while filling the application form:

	State of Eligibility
Qualifying examination (Class XII) from Jharkhand	Jharkhand
Qualifying examination (Class XII) from Rajasthan	Rajasthan
Qualifying examination (Class XII) from West Bengal	West Bengal
Qualifying examination (Class XII) from Uttar Pradesh	Uttar Pradesh
Qualifying examination (Class XII) from Delhi	Delhi

Sec 6. Fee Structure

Fees payable [in INR] for the full-time Integrated M.Sc. programs for the 2020 Batch

Fee payable at the time of admission and in each subsequent semester

Particulars	1 st Sem	2 nd Sem	3 rd Sem	4 th Sem	5 th Sem	6 th Sem	7 th Sem	8 th Sem	9 th Sem	10 th Sem
Tuition Fee	42500	42500	47000	47000	53000	53000	58500	58500	65500	65500
Development Fee	3000	3000	3500	3500	3500	3500	4000	4000	4500	4500
Institute Exam Fee	5500	5500	6000	6000	6500	6500	7000	7000	7500	7500
Total	51000	51000	56500	56500	63000	63000	69500	69500	77500	77500
Hostel Seat Rent*, Electricity and Transport etc.	16000	16000	21000	21000	23000	23000	25000	25000	27000	27000
Grand Total	67000	67000	77500	77500	86000	86000	94500	94500	104500	104500

* Hostel fees are subject to revision in future

Additional amount to be paid at the time of admission: (i) Admission Fee (One time only) =Rs. 15,000.00 and (ii) Caution Money (One time only-Refundable)=Rs. 10,000.00	Total Rs.25,000.00
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Notes:

- Hostel mess charges will range from approximately Rs.2,500/- to Rs.3,000/- per month. In addition to the above, students will be required to deposit Hostel Caution Money* (One Time only - Refundable) of Rs.5,000/- and also to pay suitable mess advance at the beginning of each semester, which will be adjusted against their mess charges. For the session July 2020, this mess advance* will be Rs.20,000/- [total of Rs. 25,000/-]

*Hostel Caution Money (One Time only - Refundable) and Hostel Mess Advance (each semester) are payable through SBI Collect in favour of "BIT Welfare Society".
- All payments must be made online using ICICI Payment Gateway through debit / credit card and net banking of any nationalized bank.
- Students will be expected to provide themselves with stationery and textbooks, etc, as prescribed for different subjects.
- The Institute reserves the right to revise the fees and other charges at any stage.
- For rules regarding refund of fees on withdrawal, please see separate Notice on Notice Boards.

Sec 7 Profiles of the Departments

Department of Chemistry

Department of Chemistry was established in 1955, offers undergraduate, postgraduate & Ph.D. programs in chemistry. The Department has received support under “Fund for Improvement in Science & Technology Infrastructure” (FIST-2012) program of the Department of Science and Technology, New Delhi for NMR and Computational Chemistry facility. The Department is actively involved in promoting environmental awareness amongst the tribal and rural population in Jharkhand. The Department is committed to high quality research programs supported by UGC, DBT, CSIR, AICTE, UNICEF and World Bank in major thrust areas like Fuels & Energy, Nonlinear Chemical Dynamics, Frontal Polymerization, Electrochemical Machining, Organic and Molecular Synthesis, Environmental controls and monitoring, Nanotechnology and Computational Chemistry.

Programs Offered	Course Duration	Sanctioned Intake
M.Sc. in Chemistry	2 Year (4-Semesters)	15
Integrated M.Sc. in Chemistry	5 years (10- Semesters)	30
Ph.D. program		

Vision of the Department:

To become a recognized centre of excellence for teaching, research and innovations and make significant contribution for producing academic professionals and entrepreneurs in frontier area of chemical sciences.

Mission of the Department:

- To impart quality education and fundamental concepts of chemical sciences to students & scholars through our state of art laboratory, teaching and research facilities
- Building a scientific environment and motivation towards innovation with quality research in chemical sciences and interdisciplinary areas

Program Educational Objectives

- To impart high quality education and research to develop future academicians, scientists and technocrats for national needs
- To nurture professional graduates to develop capability in analysing real life problems of chemical sciences
- To foster attitude towards continuous learning for improving the talents for research, academia and industry
- To improve professional skills for achieving the academic goal

Program Outcomes

- Ability to explore knowledge in solving the practical problems of chemical science independently
- Ability to compete national level Tests such as UGC-CSIR NET, GATE, etc., for higher studies and research
- Ability to explore academic acquaintancy at par with global standards
- Comprehending the technological challenges and advancements in the subject of chemistry through continuous learning process
- An ability to write and present problems and findings their solution through scientific approaches

Research Facilities

- The Department is equipped with state - of - art instruments and research facility to meet the requirement of modern day chemistry
- The Department has a unique research facility of Nuclear Magnetic Resonance (NMR) spectroscopy, 400 MHz, JEOL which fulfil the requirements of solution-state analytical needs for both students and researchers.
- Advanced equipment such as AUTOLAB workstation, Electrochemical Analyzer (CHI), Microwave Reactor, UV/VIS/NIR Spectrophotometer, Solar Simulator, Rotational Viscometer, Ultra Low Immersion Chiller, Digital Osmometer, XYT Chart Recorder, Millipore, Refractometer, Ultra Low etc., are available for training and research.
- Department has a computational lab facility for conducting training and research in the area of theoretical and computational chemistry.

Department of Chemical Engineering

The Department of Chemical Engineering with well qualified faculty provides high standard of education in the diversified fields of Chemical Engineering and Chemical Technology. The Department received national recognition by winning the Gold Trophy for Plasticon Award 2012 in the category of Best Educational Institution Contributing to Plastics. The Plasticon Award was conferred on 1st February 2012, at 8th International Plastics Exhibition and conference. The program was supported by Ministry of Chemicals and Fertilizers, Department of Chemicals and Petrochemicals, Government of India. Faculty members are working on sponsored projects and collaborative research with various organizations. The Department is also recognized under DST-FIST. Department is recipient of a major grant from Ministry of Food Processing Technology, Govt. of India, for infrastructure development for programs in Food Technology.

Programs Offered	Course Duration	Sanctioned Intake
B.Tech. in Chemical Engineering	4 Years (8 Semesters)	60
B.Tech. in Chemical Engineering (Plastic & Polymer)	4 Years (8 Semesters)	30
Integrated M.Sc. (Food Technology)	5 Years (10 Semesters)	30
Ph.D. Program		

Vision of the Department:

To be a centre of excellence for the provision of effective teaching/learning, skill development and research in the areas of Chemical Engineering and allied areas through the application of Chemical Engineering principles.

Mission of the Department:

- To educate and prepare graduate engineers with critical thinking skills in the areas of chemical engineering & polymer science and engineering, who will be the leaders in industry, academia and administrative services both at national and international levels.
- To inculcate a fundamental knowledge base in undergraduate students which enable them to carry out post-graduate study, do innovative interdisciplinary doctoral research and to be engaged in long-life learning.
- To train students in addressing the challenges in chemical, petrochemical, polymer and allied industries by developing sustainable and eco-friendly technologies.

The undergraduate program B.Tech. (Chemical Engineering) and B.Tech. (Chemical Engineering-Plastics and Polymer) imparts high standard training, emphasizing on Chemical Engineering fundamentals - Heat Transfer, Mass Transfer, Fluid Flow, Process Control, Reaction Engineering, Computer Aided Engineering etc to groom them to carry out economic and environment friendly design, technology development and operation of a wide range of chemical plants - Industrial chemicals, petroleum, polymer material, processing, composite material, cement, fertilizer, fuel etc. The core curriculum is complemented by electives in the important emerging areas like Nanotechnology, Biotechnology, Food Technology, Polymer Engineering, Energy Engineering etc.

Food Processing Industry in India is growing at a very fast pace. Envisaging a great demand for qualified food technologists in our country, from 2014 academic year with support from Ministry of Food Processing Industries 5 year Integrated M.Sc. (Food Technology), with exit option as well as lateral entry after three years, has been introduced. The courses include training in the area of Food Composition and Chemistry, Food Biochemistry and Human Nutrition, Food Microbiology, Food Plant sanitation, Food Analysis and Quality Control, Food Preservation and Processing Technology, Chemical Engineering unit operations in Food Processing Industries, Food Packaging, Post-Harvest Technology etc.

The Department also offers facilities for Ph. D. program in fields of i) Chemical Engineering, ii) Polymer Science and Technology and iii) Food processing and Technology.

Apart from standard Chemical Engineering laboratories like Fluid Flow, Heat Transfer, Mass Transfer, Reaction Engineering, Process Control etc. the Department of Chemical Engineering has state of the art facilities for Post Graduate and Doctoral Research in Reaction Engineering, Instrumental Analysis of chemicals and Polymer, Polymer Processing, Product Development Laboratory etc. The major facilities include computer controlled reactors, Haake Minilab Micro Compounder and Haake Minilab micro injection Moulding, Air Bearing Rotational Rheometer, Malvern, HAAKE Torque Rheometer with Mixer and Extruder, Oscillating Disc Rheometer, Instron Tensile Testing machine, ATLAS accelerated weathering system, Dynamic Mechanical Thermal analyzer (TA), Gas Chromatograph. The Polymer Processing and Product development facilities include Injection Moulding machines - 80 ton L&T Ergotech and 25 ton Windsor, Extrusion Blow moulding machine with parison programming, Kolsite Single screw extruder, Kolsite Film blowing plant and PVC pipe Extrusion plant, Two roll mixing mills, Thermoforming, Compression moulding, Welding facilities - Ultrasonic and Hot air, 3 axis CNC EDM machine etc.

The students are trained in various CAE applications ASPEN Plus, Accelerys -Material Studio for molecular simulation, MATLAB, PROENGINEER, ANSYS, CATIA, FLUENT, POLYFLOW, MOLDFLOW etc. E-learning facility has been created with Paulsons Training Basic Injection Moulding, Simtech, Single Screw Extrusion, and Compounding with Twin Screw Extruder.

Laboratories in the area of Food Technology include Food Processing Laboratory, Food Microbiology Laboratory, and Food Analysis Laboratory. The Food Processing Laboratory includes Pulper machine, vegetable dicing machine, Juice Extraction, Homogenizer, Twin Screw Extrusion cooker, Homogenizer, Colloidal Mill, Grinders, Can Body Reformer, Canning Retort, Steam generator, Steam jacketed cooker, Tray dryer, fluidized bed dryer, Vacuum bottle Filling machine, Form Fill and Seal packaging etc. Food Microbiology lab with Autoclave, Laminar flow clean air workstation, BOD incubator has the expertise of microbiological tests of water and food. The Food Analysis and quality Control facilities included Flame photometer, HPLC, Digital colorimeter, NIR Spectral Analyzer, UV-VIS Spectrophotometer etc. The other required equipment are available in Central Instrumentation Facility are also available. The facilities are being augmented with capability for determination of protein by Kjeldahl method, dietary and crude fibre determination, Fat determination, Food Texture Analysis, Atomic Absorption Spectrophotometry, Spray drying, etc.

RESEARCH AREA:

Nanoparticle synthesis, Catalysts, Advanced Polymer Composites, Alternative Energy, Pollution Control, Water Treatment Technologies, Polymer Blends and Interpenetrating Polymer Networks, Nano filtration Membrane, Recycling of Polymer Waste, Specialty Polymer, Colloids and Interfacial Science, Tissue Engineering, Sensors, Fuel Cell Membrane etc.

Department of Mathematics

The Department of Mathematics was founded in 1956, under the name Department of Applied Mathematics. It started with only undergraduate program offering to engineering students. Mathematics play an important role in engineering and it is clearly reflected from the fact that it conducts all the mathematics courses offered in different branches of engineering, management, pharmaceutical sciences, architecture and the University polytechnic.

Programs Offered	Course Duration	Sanctioned Intake
M.Sc. in Mathematics -	2 Years (4 Semesters)	15
Integrated M.Sc. in Mathematics & Computing	5 Years (10 Semesters)	30
Ph.D. Program	-	-

Vision of the Department:

- To become a globally recognized centre of excellence in teaching and research, producing excellent academicians, professionals and innovators who can positively contribute towards the society.

Mission of the Department:

- Imparting strong fundamental concepts to students in the field of Mathematical Sciences and motivate them towards innovative and emerging areas of research.
- Creation of compatible environment and provide sufficient research facilities for undertaking quality research to achieve global recognition.

The department started its five-year integrated M.Sc. program in Mathematics and Computing in the year 2011 with the aim of imparting the knowledge of mathematics arising in real world problems with a strong focus on Computing. A similar Masters course, MSc in Mathematics, has also been running in the department to impart the knowledge of pure and applied mathematics among the students.

The courses in both the programs have been designed with special emphasis on applications of mathematics and computing. The courses, such as, Numerical Analysis, Advanced Operations Research, Fluid Dynamics, Advanced Differential Equations, Difference Equations, Mathematical Modelling, Mathematical Ecology in MSc Mathematics, and Data Structures, Fuzzy Logic, Computer System Architecture, Probability and Statistics, Financial Mathematics, Stastical Computing, Discrete Mathematics, Partial Differential Equations, Real and Complex Analysis, Numerical Techniques, Software Engineering, and several other courses designed in IMSc in Mathematics and Computing give a glimpse of the importance of the programs.

Our curriculum attracts several software companies, such as, Wipro, Infosys, Wipro Turbo, Capital float, Fastenal, PWC, Crisil, Cleartax, Ericsson and many more, where our students have been employed.

Several of our students have joined for higher study in different institutes of International repute, such as, IIT's in India and foreign universities.

Department of Physics

The Department of Physics since its inception in 1955 has played a pivotal role in the institute. The Department of Physics has a strong pool of highly qualified and motivated faculty members. They have, to their credit, numerous research publications and several R&D projects. Some faculty members have been awarded international fellowships from universities abroad and some have received different types of international fellowship awarded by DST, Government of India. The Department is well supported financially through “Fund for Improvement in Science & Technology Infrastructure” (FIST) programme of the Department of Science and Technology, New Delhi twice and under Special Assistance Programme (SAP) of the UGC. The Department has also received significant funds under TEQIP-I, II & III phases. The Department has been funded by agencies, viz. UGC, DST, BRNS, ARDB, ISRO, DRDO and CSIR for pursuing different research projects. Recently, the Department has completed several international (Indo-German, Indo-Russian, Indo-Israel) projects as well.

Programs Offered	Course Duration	Sanctioned Intake
Integrated M.Sc. in Physics	5 Years (10 Semesters)	30
M.Sc. in Physics	2 Years (4 Semesters)	15
Ph.D. Program	-	-

Salient Features of the Program

The main thrust of the Department of Physics is the 5 year Integrated M. Sc. Program which has been offering since 2011. The course aims to train the young students with the following objectives:

- To impart high quality Science education in a vibrant academic ambience.
- To prepare students to take up challenges as a researcher in diverse areas of theoretical and experimental physics.
- Excellent lab and internet facilities.
- Opportunity of pursuing high end research as project work.
- Exit option available after completion of three years with a B.Sc. Degree that enables students to take admission in the Integrated M.Sc. plus Ph.D. programs of different prestigious research organizations.
- During 9th and 10th semester, students may opt special papers for the following areas: Condensed Matter Physics, Electronics, Photonics and Plasma Sciences.

Achievements of alumni

- Availing exit option, some of the previous students have been admitted to the Integrated Ph.D. programs of Tata Institute of Fundamental Research, Bombay; Indian Institute of Science, Bangalore; Harish-Chandra Research Institute, Allahabad; etc.
- Some students have excelled in the GRE and TOEFL for higher studies in US universities.

Vision of the Department

To become an internationally recognized centre of excellence in academics, research and technological services in the area of Physical Sciences and related inter-disciplinary fields in the development of new knowledge.

Mission of the Department

- To train the students to be lifelong learners who will contribute to the creation of new knowledge, new technology, and innovation through excellence in research in emerging areas
- To educate students to be the future leaders in science, technology, industry, education and other professions and succeed in a globally competitive environment
- To create national and international collaborations for research engagement in strategic areas of research
- To impart high quality education in a vibrant academic ambience
- To provide beneficial service to local, state, national and international communities

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO1: To provide an intuitive physical understanding as well as rigorous mathematical analysis of involved concepts, which would help the students to grasp new concepts quicker.

PEO2: To solve complex problems with commensurate research methodologies as well as modern tools (mathematical, computational and experimental), keeping in view of socio- cultural and environmental factors.

PEO3: To be able to readily use techniques suitable to the problem at hand and be able to guess the asymptotic properties of solutions in case an exact solution is not possible.

PEO4: To communicate with Physics community and society at large adhering to relevant safety regulations as well as quality standards.

PEO5: To inculcate the ability for life-long learning to acquire professional and intellectual integrity, ethics of scholarship and to reflect on individual action for corrective measures to prepare for leading edge position in industry, academia and research institutes.

PEO6: To keep in mind the effects of undertaken projects on the society at large, and to avoid techniques that may flout social interests.

PEO7: To equip the students with state-of-the-art topics in research and development and working knowledge about a wide spectrum of research areas, so that they can take up interdisciplinary research.

PROGRAM OUTCOMES (POs)

PO1: An ability to independently carry out research /investigation and development work to solve practical problems.

PO2: An ability to write and present a substantial technical report/document.

PO3: Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program.

PO4: They will be prepared to take up challenges as globally competitive physicists/researchers in diverse areas of theoretical and experimental physics.

PO5: They will have a sense of academic and social ethics.

PO6: They will be capable of taking up higher studies of interdisciplinary nature.

More about the Department

The department has well equipped laboratories having several systems viz., RF magnetron sputtering, Plasma Enhanced Chemical Vapour Deposition (PECVD), thermal CVD, RF/DC magnetron co-sputtering, plasma nitriding, anodic vacuum arc deposition, plasma arc generator, Raman spectrometer, nanoindenter, solar simulator, D33 meter, PE loop-tracer, UV Visible Spectrometer, 10K cryostat etc.

At present the department has 17 faculty members and 14 research scholars. Besides two Indo-Russian projects, the department has been pursuing several sponsored projects funded by the UGC, DST, AICTE, BRNS, ISRO, ARDB, DRDO, NRB and CSIR. The current broad areas of research in the department include quantum optics, nonlinear optics, nanotechnology, condensed matter physics. Specific sub-areas are plasma processing of materials, surface engineering with plasma coating, surface modification using ion beam, anodic vacuum arc deposition of thin films, carbon nanotubes, diamond-like carbon (DLC) films, nano and ultra nanocrystalline diamond films, carbon nanotubes, solar cells, nanocrystalline superhard coatings, high temperature superconductivity, colossal magneto resistive materials, dilute magnetic semiconductors, piezoelectric materials, electronic composite materials, magnetic composites, soliton and light propagation, optical communication, photonic crystal fibres, optoelectronics, etc.

The department has organized various seminars and symposia, recent ones include:

- SERC School on Science and Technology of Plasmas, from 15th-27th December, 2008
- DST-INSPIRE Camp on Basic Sciences from 27th-31st January, 2010
- Recent Developments in Engineering Materials, from 12th - 14th May 2011
- CMDAYS - 2012, from 29th - 31st August 2012
- One Day Workshop on Solar Cell, on 15th May 2014
- National Conference on Nanoscience, Nanotechnology and Advanced Materials (NCNNAM-2016), September, 26-27, 2016
- National Workshop on Aero Satellite, March 14 - 15, 2019
- One Day Workshop on "Intellectual Property Rights" on 7th September, 2019

Sec 8. Discipline, Rules & Regulations (including UGC Regulations on Ragging) and Medical Examination

Institute Rules & Regulations: For details of Institute rules and regulations, please see booklet provided at the time of admission.

Discipline

The Institute places a very high emphasis on discipline of students both inside and outside the campus. Students must abide by the Institute and agree to conform to the rules and regulations enforced from time to time. They must not do anything either inside or outside the Institute that will interfere with its orderly governance, discipline and image. Students must attend lectures, tutorials and practical classes regularly. A minimum attendance of 75% in lectures, tutorials and sessionals for each subject is essential for appearing in the Semester Examinations. Thus, students should attend all theory and laboratory classes from the first day of the academic year. In case of absence due to unavoidable circumstances, students are advised to take prior permission from the Dean / Head. In case of absence due to illness, students will have to produce a Medical report signed by attending Physician / Surgeon with an application from their parents or guardians. In such a case, parents/guardians should inform the authorities immediately. Students should strike a proper balance between extracurricular activities and academic requirements. A student's participation in extra-curricular activities should not be allowed to interfere in his/her academic schedule.

During teaching hours, the main lobby, the library, the corridors of the Institute and the area surrounding the Institute are to be observed as silence zones. Students must not cause any disturbance / obstacle in these zones. Students must not indulge in any kind of misconduct or indiscipline or anti-social activities within or outside the campus. Students must not form a group causing any hindrance to the academic and administrative activities of the Institute. Those found doing so will be punished and strict disciplinary action will be taken by the authorities. Students shall not damage the property of the Institute. Cost of such damage will be recovered from students, parents/guardians of the students.

Students must always carry their Identity Card and produce it on request. In case of loss or damage of Identity Card, the concerned authorities should be informed immediately.

Students are not permitted to enter and use the laboratory / workshop / sports ground if they do not wear appropriate dress. For example, they should enter the laboratory only with apron, cap or mask as instructed. Students should park their cycles in an orderly manner at the cycle stands. Students should follow the rules of the Canteen. Students are advised to read the Notice Boards regularly.

Students are strictly prohibited from possessing or consuming spirits, tobacco products and narcotic drugs either within or outside the campus, and if found violating this will be rusticated immediately, without warning.

Ragging in any form inside or outside the campus is strictly prohibited by law. Any students found ragging other students will be summarily expelled from the Institute and dealt with as per the directive of Hon. Supreme Court/Hon. High Court.

Each student must read the “UGC Regulations on Curbing the Menace of Ragging in Higher Educational Institutions, 2009” on the UGC website. Each student admitted to any of the Institute's programs must submit the two completed affidavits [one from candidate and one from parents] at the time of admission. [for details please see Sec-9 of this Information Brochure].

Hostel

Hostel facilities are provided at BIT Mesra. All students admitted are required to reside in one of the Institute hostels, to which they are allotted and must take food along with other inmates of the hostel in the common mess. There are separate hostels for girls students.

Medical

All selected students will be required to undergo medical examination by a Medical Officer of the Institute and their admission is subject to being found medically fit for the Program. Therefore, candidates, for their own satisfaction, are advised to get themselves examined by a registered medical practitioner.

Applicability of Regulations for the time being in force, Disclaimer and Legal Jurisdiction:

In Force

Notwithstanding the nature of a program spread over more than one academic year, the regulations in force at the time a student joins a program shall hold good only for the examinations held during or at the end of the semester. Nothing in these regulations shall be deemed to debar the Institute from amending the regulations subsequently and the amended regulations, if any, shall apply to all students old or new, as specified therein.

Disclaimer

The statements made in this Information Brochure and all other information, contained herein are believed to be correct at the time of publication. However, the Institute reserves the right to make at any or without notice, changes in and additions to the regulations, conditions governing the conduct of students, requirements for degree, fees and any other information, or statements contained in this Information Brochure. No responsibility will be accepted by the Institute for hardship or expense encountered by its students or any other person for such changes, additions, omissions or errors, no matter how they are caused.

Legal Jurisdiction

All disputes will be subject to jurisdiction of the Civil Courts at Ranchi city only.

Sec 9. Anti-ragging Affidavit

How can fill Online affidavits and Why?

1. It is mandatory for every student and his/her parents to submit an anti-ragging affidavit at the time of admission. These are UGC's regulations.
2. It is the order of the Hon. Supreme Court that contact details of students must be collected from these affidavits and stored electronically at a central location.

It is a simple procedure comprising 3 steps

Step 1: Log on to

www.ANTIRAGGING.in

or

www.AMANMOVEMENT.org

Click on the button called 'On line affidavits'

Step 2: Fill in the information as desired and submit the form.

Step 3: On successful completion, you will receive affidavits, both for Students and Parents, through E-mail.

Note:

- If you do not have an E-mail address, please create one before you fill an affidavit forms.
- If your mother or father or guardian does not have a phone, or a mobile phone or email then please give the numbers / email of their friends or relations or neighbors.
- If you do not have a mobile number, then please give the mobile number of your friend in the Institute.

After filling this form successfully, you will receive the Student's Anti Ragging Affidavit and the Parents Anti Ragging Affidavit in your Email. Please print both the Affidavits, sign them yourself, request your parents to read the details and request them to sign their affidavit and then submit both during admission.