

INFORMATION BROCHURE

for

Admission to
2 Years [4 Semesters] Full-Time

M.Tech., M.Pharm., MUP & M.Sc. Programs

at

Birla Institute of Technology, Mesra
and
its Patna Campus



BIRLA INSTITUTE OF TECHNOLOGY

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

MESRA RANCHI – 835215

(Jharkhand)

www.bitmesra.ac.in

CONTACT DETAILS

Campus	Addresses and contact details
Mesra	Dean Admission & Accreditation Coordination OR Controller of Admissions Birla Institute of Technology Mesra, Ranchi - 835215 Toll-Free:18003457057, 18003457058 Phone: PBX: 0651-2275444 / 896 / 2276496, Extn 4469, & 2275868 (Direct) E-mail: daac@bitmesra.ac.in , coa@bitmesra.ac.in , admissions@bitmesra.ac.in
Patna	Director Birla Institute of Technology, Patna Campus Near Patna Airport, P.O. Bihar Veterinary College, Patna - 800014 Mobile No.: 9264450104 E-mail: bitpatna@bitmesra.ac.in

The addresses and contact details of other Campuses located in India are as given below.

Deoghar	Director Birla Institute of Technology Deoghar Campus P.O. - Ratanpur, Jasidih Dist. Deoghar, 814142, Jharkhand Mobile No: 7463881115, 7463881103, 7463881140 -WhatsApp No. e-mail: bitdeoghar@bitmesra.ac.in
Jaipur	Director Birla Institute of Technology, Jaipur Campus 27, Malviya Industrial Area, Jaipur - 302017 Phone No.: 0141 - 4019819 / 4019798 E-mail: bitjaipur@bitmesra.ac.in
Lalpur	Director Birla Institute of Technology, Lalpur Campus Lalpur Ranchi 834001 Phone: 0651-2531229; Mobile No: 9905745754 e-mail: bitlalpur@bitmesra.ac.in
Noida	Director Birla Institute of Technology, Noida Campus A-7, Sector-1 Noida 201301 Phone: 0120-2440408 / 4264080/ 4263080 / 2553661 /2553662 e-mail: bitnoida@bitmesra.ac.in

Table of Contents

Section	Contents	Page No.
1	Admission to Postgraduate Programs - an Introduction	4
2	Eligibility criteria for: <ul style="list-style-type: none"> • M.Tech programs • M.Pharm programs • Master of Urban Planning (MUP) • M.Sc. programs 	5
3	How to Apply	12
4	Selection Procedures and Required list of documents	13
5	Number of Seats, Scholarships and Reservations	15
6	Financial Information	17
7	Profile of the Departments	20
8	Placement	48
9	Discipline, Rules and Regulations, Hostel, Medical Examination	49
Annexure -I	Format of undertaking for candidates appearing for final examinations in 2021	51
Annexure -II	Procedure for submission of Anti-ragging Affidavit [during admission]	52

Important Dates

Filling of online Application Form commences from	31 st March 2021
Last date for submission of Online Application Form	25 th May 2021
Tentative date for notification of schedule for Written Test & Counselling	30 th May 2021
Tentative dates for Written Test and Counselling	21 st - 22 nd June 2021
Classes will commence 3rd week of July at all Campuses (exact date will be announced at later stage)	

Note: All the dates mentioned above are tentative, and liable to be changed. Hence, please check our Institute website periodically.

Sec 1. Admission to Postgraduate Programs 2021 - An Introduction

The Institute offers the following postgraduate programs at its Mesra and Patna Campuses. Please see the Institute website for details about the Institute, Departments, including course structures and syllabi, etc. and Other Campuses.

1. **M.Tech. program in various specializations in the following disciplines:** [Duration: 2-year/ 4-semester] at Mesra Campus

a)	Automated Manufacturing Systems	b)	Biotechnology
c)	Civil Engineering i). Soil Mechanics & Foundation Engineering ii). Structural Engineering	d)	Computer Aided Analysis and Design (CAAD)
e)	Computer Science & Engineering	f)	Electrical Engineering i). Power Systems ii). Control Systems iii). Power Electronics
g)	Electronics & Communication Engineering (i) Instrumentation (ii) Microwave (iii) Wireless Communication	h)	Energy Technology
i)	Environmental Science & Engineering	j)	Information Security
k)	Information Technology	l)	Mechanical Engineering (i) Heat Power (ii) Design of Mechanical Equipment
m)	Remote Sensing	n)	Space Engineering & Rocketry i). Aerodynamics ii). Rocket Propulsion

2. **M.Tech. program at Off Campus Patna** [Duration: 2-year/ 4-semester]

- a) ECE (Wireless Communication)
- b) Computer Science & Engineering

3. **M.Pharm program in the following specializations at Mesra Campus** [Duration: 2-year/ 4-semester]

a)	Pharmaceutical Chemistry	b)	Pharmaceutics
c)	Pharmacology	d)	Pharmacognosy
e)	Pharmaceutical Quality Assurance		

4. **MUP - Master of Urban Planning at Mesra Campus** [Duration: 2-year / 4-semester]

5. **M.Sc. program in the following disciplines at Mesra Campus** [Duration: 2-year/ 4-semester]

a)	Chemistry	b)	Biotechnology
c)	Geo-Informatics	d)	Mathematics
e)	Physics		

Sec 2 Eligibility criteria for the M.Tech., M.Pharm., Master of Urban Planning (MUP) and M.Sc. Programs

2 A) Minimum Eligibility Criteria for the M.Tech. programs (MEC - PG1):

1. Candidates must hold EITHER a
 - a). B.E. / B.Tech. / AMIE / MCA / equivalent degree in the appropriate disciplines / branches mentioned below for the respective courses, with a minimum 55% marks in average (50% for SC/ST) in graduation / MCA.
OR
 - b). M.Sc. / M.A. degree or equivalent in the appropriate disciplines / branches mentioned below for the respective courses with 55% (50% for SC/ST), after graduating with a Bachelor's Degree or equivalent qualification in 10+2+3 system from a recognized University.
2. Candidates should preferably be GATE 2019 / GATE 2020 / GATE 2021 qualified. Non-GATE candidates may also apply. However, their applications will be considered only after applicants who have qualified in GATE have been considered for admission.
3. Candidates appearing for final examinations of their Bachelor's program in 2021 can also apply and if selected can join the program provisionally. At the time of the Test & counselling / interview they must bring a certificate in original from the Principal of Institute stating that:
 - a) by 30 June 2021, he/she will have appeared for examination in all subjects required for obtaining his/her Bachelor's degree.
 - b) He/she has obtained requisite marks [55% (50% for SC/ST) upto pre-final year / semester] or equivalent based on latest available grades / marks.

Provisionally selected candidates will be required to sign an undertaking at the time of admission on Non-Judicial Stamp Paper of Rs. 20/- (as format given in Annexure -I).

Further, their admission will be confirmed only when they submit the mark sheet and a certificate of having passed the Bachelor's degree / equivalent qualification with at least 55% marks (50% in case of SC/ST). They must submit proof of passing their final examinations with requisite marks by 31 October 2021. Non-fulfillment of this condition will automatically result in the cancellation of the provisional admission.

4. Candidates with qualifications acquired through correspondence or distance-learning programs are eligible only if (a) the programs are recognized by the tripartite panel of AICTE-UGC-DEC, (b) they have passed the qualifying examination at the time of applying, with minimum 55% marks in average (50% for SC/ST) calculated as per item (1) above. They must bring the original pass certificate, marksheets of qualifying examination and proof that the program is recognized by the AICTE-UGC-DEC in letter head of the Institute / College / University with their application form at the time of reporting for test & counselling / interview. [Appearing candidate in distance learning programs, whose results are yet to be declared, are not eligible to apply].

Please see Selection Procedures for details. Please also see footnote below.

Notes:

1. 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>).
2. In case any Board / University awards grades instead of marks, the calculation of equivalent marks would be based on the procedure prescribed by the Board / University. In case a University does not have any scheme for converting CGPA into equivalent marks, the equivalence would be established by dividing obtained CGPA with the maximum possible CGPA and multiplying the resultant with 100.
3. At any level of the studies [class X, class XII or graduation], a candidate / applicant must have passed all the required subjects at that level from the same board/ University.

M.Tech. Programs at its Mesra & Patna Campuses:

Other Criteria in addition to the Minimum Eligibility Criteria (MEC - PG1) above:

Department offering the course	M.Tech. Program	Specialization(s) offered	Eligible Branches	GATE Scholarships available
Production and Industrial Engineering	Automated Manufacturing Systems	-	B.E. / B.Tech. in Production / Manufacturing / Mechanical / Industrial Engineering / Electronics & Communication / Computer Science / Mechatronics / Electrical	Available
Bio-Engineering	Biotechnology		B.E. / B.Tech. in Biotechnology / Biochemical Engineering / Chemical Engineering / Food Technology / B. Pharm or equivalent OR M.Sc. in Biotechnology / Biochemistry / Microbiology / Plant Biotechnology	Available
Civil & Environmental Engineering	Civil Engineering	a) Soil Mechanics & Foundation Engineering	B.E. / B.Tech. in Civil Engineering	Available
		b) Structural Engineering	B.E. / B.Tech. in Civil	Available
	Environmental Science & Engineering	-	B.E./ B.Tech. or equivalent in any branch of Engineering OR M.Sc. in Environmental Sciences or equivalent degree in any branch of Life Sciences and Biological Sciences	Available
Mechanical Engineering	Mechanical Engineering	a) Heat Power	B.E. / B.Tech. in Mechanical / Chemical / Marine	Available
	Mechanical Engineering	b) Design of Mechanical Equipment	B.E. / B.Tech. in Mechanical / Production	Available
	Energy Technology	-	B.E. / B.Tech. in any discipline / B.Arch. OR M.Sc. in Physics / Chemistry / Mathematics	Available
	Computer Aided Analysis & Design (CAAD)	-	B.E. / B.Tech. in Mechanical Engineering / Production Engineering / Manufacturing Engineering / Automobile Engineering / Aeronautical Engineering	Available

Postgraduate Programs 2021 at its Mesra and Patna Campuses

Department offering the course	M.Tech. Program	Specialization(s) offered	Eligible Branches	GATE Scholarships available
Computer Science & Engineering	Computer Science & Engineering	-	B.E. / B.Tech. in Computer Science / Information Technology / Electronics / Electrical or equivalent OR MCA or M.Sc. in Computer Science / Information Technology / Electronics or equivalent with Mathematics at Graduate level	Available at Mesra & Patna
	Information Security	-	B.E. / B.Tech. in Computer Science / Information Technology / Electronics / Electrical or equivalent OR MCA or M. Sc in Computer Science / Information Technology / Electronics or equivalent with Mathematics at Graduate level	Available
	Information Technology	-	B.E. / B.Tech. in Computer Science / Information Technology / Electronics / Electrical or equivalent OR MCA or M. Sc in Computer Science / Information Technology / Electronics or equivalent with Mathematics at Graduate level	Available
Electrical & Electronics Engineering	Electrical Engineering	a) Power Systems	B.E. / B.Tech. in Electrical / Electrical & Electronics or equivalent	Available
		b) Control Systems	B.E. / B.Tech. in Electrical / Electronics & Communication / Electrical & Electronics / Electrical Instrumentation & Control or equivalent	Available
		c) Power Electronics	B.E. / B.Tech. in Electrical / Electrical & Electronics / Electronics & Communication / Instrumentation & Control or equivalent	Available
Electronics & Communication Engineering	Electronics & Communication Engineering	a) Instrumentation	B.E. / B.Tech. in Electronics & Communication / Instrumentation or equivalent OR M.Sc. Physics (Specialization in Electronics) / Electronics / Radio Physics and Electronics	Available
		b) Microwave	B.E. / B.Tech. in Electronics & Communication or equivalent OR M.Sc. Physics (Specialization in Electronics) / Electronics / Radio Physics and Electronics	Available
		c) Wireless Communication	B.E. / B.Tech. in Electronics & Communication or equivalent OR M.Sc. Physics (Specialization in Electronics) / Electronics / Radio Physics and Electronics	Available at Mesra & Patna

Department offering the course	M.Tech. Program	Specialization(s) offered	Eligible Branches	GATE Scholarships available
Remote Sensing	Remote Sensing	-	a) B.E. / B.Tech. in any branch of Engineering or B.Arch., OR b) Masters degree in Agriculture / Atmospheric Sciences / Botany / Climatology / Chemistry / Computer Applications / Computer Science / Disaster Management / Electronics / Environmental Science / Fisheries / Forestry / Geography / Geology / Geophysics / Geo-Informatics / GIS / Information Science / Mathematics / Meteorology / Oceanography / Physics / Remote Sensing / Soil Science / Statistics / Town Planning / Zoology / allied disciplines. c) Candidates must have stereoscopic vision and normal colour vision.	Available
Space Engineering & Rocketry	Space Engineering & Rocketry	a) Aerodynamics	B.E. / B.Tech. in Mechanical/Aeronautical/ A.M.Ae.S.I. / AMIE or equivalent	Available
		b) Rocket Propulsion	B.E. / B.Tech. in Mechanical / Aeronautical / Chemical / A.M.I.Ch.E. / A.M.Ae.S.I. / AMIE or equivalent	Available

Note:

- a) Candidates admitted in M.Tech. programs with valid GATE 2019 / GATE 2020 / GATE 2021 score will be considered to receive scholarships only if approved and amount released by the funding agency.
- b) In addition to the above, upto 20 % of tuition fee waiver may be awarded to GATE qualified candidates having GATE score better than 90 percentiles.

2 B) Minimum Eligibility Criteria for the M.Pharm. program (MEC - PG2):

1. Candidates must hold a B.Pharm. degree from a PCI and AICTE approved Institute. Candidates must have minimum 55% marks in average (50% for SC/ST) in graduation.

Candidates should preferably be GPAT 2019 / GPAT 2020 / GPAT 2021 qualified. Non-GPAT candidates may also apply. However, their applications will be considered only after applicants who have qualified in GPAT have been considered, admitted (for details, please see the selection procedure).

2. Candidates appearing for final examinations of their Bachelor's program / qualifying examination in 2021 can also apply and if selected can join the program provisionally. At the time of the counselling they must bring a certificate in original from the Principal of Institute stating that:
 - a). by 30 June 2021, he/she will have appeared for examination in all subjects required for obtaining his/her Bachelor's degree.
 - b). He/she has obtained requisite marks [55% (50% for SC/ST) upto pre-final year / semester] or equivalent based on latest available grades / marks.

Provisionally selected candidates will be required to sign an undertaking at the time of admission on Non-Judicial Stamp Paper of Rs. 20/- (as format given in Annexure -I).

Further, their admission will be confirmed only when they submit the mark sheet and a certificate of having passed the Bachelor's degree / equivalent qualification with at least 55% marks (50% in case of SC / ST). They must submit proof of passing their final examinations with requisite marks by 31 October 2021. Non-fulfillment of this condition will automatically result in the cancellation of the provisional admission.

Please see Selection Procedures for details. Please also see footnotes below.

Notes:

1. 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>).
2. In case any Board / University awards grades instead of marks, the calculation of equivalent marks would be based on the procedure prescribed by the Board / University. In case a University does not have any scheme for converting CGPA into equivalent marks, the equivalence would be established by dividing obtained CGPA with the maximum possible CGPA and multiplying the resultant with 100.
3. At any level of the studies [class X, class XII or graduation], a candidate / applicant must have passed all the required subjects at that level from the same board/ University.

Other Criteria in addition to the Minimum Eligibility Criteria (MEC - PG2) above:

Name of the Department	Specialization(s) offered	Eligibility	GPAT Scholarship available
Pharmaceutical Science & Technology	M.Pharm in a) Pharmaceutics b) Pharmaceutical Chemistry c) Pharmacology d) Pharmacognosy e) Pharmaceutical Quality Assurance	Candidate must hold a B.Pharm. degree from PCI & AICTE approved Institute	Available

Note: The candidates admitted in M.Pharm. program with valid GPAT 2019 / GPAT 2020 / GPAT 2021 score will be considered to receive scholarships only if approved and amount released by the funding agency.

2 C) Minimum Eligibility Criteria for Master in Urban Planning (MUP) program (MEC - PG3):

1. Candidates must hold EITHER a
 - a) B.Arch / B.Planning or equivalent or B.E. in Civil Engineering with minimum 55% marks in average (50% for SC/ST) in graduation.
 - OR**
 - b) M.A. / M.Sc. degree or equivalent in Geography, Economics, Sociology or Statistics with 55% marks (50% for SC/ST) after graduating with a Bachelor's Degree or equivalent qualification in 10+2+3 system from a recognized University

Candidates should preferably be GATE 2019 / GATE 2020 / GATE 2021 qualified. Non-GATE candidates may also apply. However, their applications will be considered only after applicants who have qualified in GATE have been considered, admitted.

2. Candidates appearing for final examinations in 2021 can also apply and if selected can join the program provisionally. At the time of the counselling they must bring a certificate in original from the Principal of Institute stating that:
 - a) by 30 June 2021, he/she will have appeared for examination in all subjects required for obtaining his/her qualifying degree.
 - b) he/she has obtained requisite marks or equivalent based on latest available grades / marks.

Provisionally selected candidates will be required to sign an undertaking at the time of admission on Non-Judicial Stamp Paper of Rs. 20/- (as format given in Annexure -I).

Further, their admission will be confirmed only when they submit the mark sheet and a certificate of having passed the qualifying examination with requisite marks. They must submit proof of passing their final examinations with requisite marks by 31 October 2021. Non-fulfillment of this condition will automatically result in the cancellation of the provisional admission.

3. Candidates with qualifications acquired through correspondence or distance-learning programs are eligible only if (a) the programs are recognized by the DEC-IGNOU for M.A./M.Sc. and tripartite panel of AICTE-UGC-DEC for others, (b) they have passed the qualifying examination at the time of applying, with minimum requisite marks, calculated as per item (1) above. They must carry original pass certificate, marksheets of qualifying examination and proof that the program is recognized by the DEC-IGNOU for M.A./M.Sc. and tripartite panel of AICTE-UGC-DEC for others in letter head of the Institute / College / University with their application form at the time of reporting for test & counselling / interview. [Appearing candidate in distance learning programs, whose results are yet to be declared, are not eligible to apply].

Please see Selection Procedures for details. Also see footnote below.

Notes:

1. 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>).
2. In case any Board / University awards grades instead of marks, the calculation of equivalent marks would be based on the procedure prescribed by the Board / University. In case a University does not have any scheme for converting CGPA into equivalent marks, the equivalence would be established by dividing obtained CGPA with the maximum possible CGPA and multiplying the resultant with 100.
3. At any level of the studies [class X, class XII or graduation], a candidate / applicant must have passed all the required subjects at that level from the same board/ University.

Other Criteria in addition to the Minimum Eligibility Criteria (MEC - PG3) above:

Program (With Department Offering the course)	Qualifying Examinations / Disciplines Eligible	GATE Scholarship Available
Master in Urban Planning (MUP) (Architecture)	B. Arch / B. Planning or equivalent / B.E. Civil with 55% marks in aggregate (50% for SC/ST), OR M.A. / M.Sc. Geography, Economics, Sociology or Statistics with 55% marks (50% for SC/ST)	Available

Note:

- a) Candidates admitted in M.Tech. programs with valid GATE 2019 / GATE 2020 / GATE 2021 score will be considered to receive scholarships only if approved and amount released by the funding agency.
- b) In addition to the above, upto 20 % of tuition fee waiver may be awarded to GATE qualified candidates having GATE score better than 90 percentiles.

2 D) Minimum Eligibility Criteria for the M.Sc. programs offered at BIT Mesra (MEC - PG4):

- Candidates must hold a Bachelor's Degree or equivalent qualification of any of the Universities incorporated by an act of the central or state legislatures in India or other educational institutions established by an act of Parliament or declared to be deemed as a University under section 3 of UGC Act, 1956, or possess an equivalent qualification recognized by the Ministry of HRD, Government of India / AIU. This degree must entail a minimum of three years of education after completing higher secondary schooling [Class 12 or equivalent] (10+2+3 system).
- Candidates of B.Sc. / B.A. Honours must have minimum 55% marks in average (50% for SC/ST) in their Honours subject. Candidates of other graduate courses must have minimum 55% marks in average (50% for SC/ST) in graduation.
Candidates should preferably have JAM / CUET 2021 scores. Non-JAM / CUET candidates may also apply. However, their applications will be considered only after applicants who have JAM / CUET scores have been considered, admitted.
- Candidates appearing for final examinations of their Bachelor's program in 2021 can also apply and if selected can join the program provisionally. At the time of the counselling they must bring a certificate in original from the Principal of Institute stating that:
 - by 30 June 2021, she/he will have appeared for examination in all subjects required for obtaining his/her qualifying degree.
 - He/she has obtained requisite marks or equivalent based on latest available grades / marks.

Provisionally selected candidates will be required to sign an undertaking at the time of admission on Non-Judicial Stamp Paper of Rs. 20/- (as format given in Annexure -I). Further, their admission will be confirmed only when they submit the mark sheet and a certificate of having passed the Bachelor's degree / equivalent qualification with at least 55% marks (50% in case of SC/ST). They must submit proof of passing their final examinations with requisite marks by 31 October 2021. Non-fulfillment of this condition will automatically result in the cancellation of the provisional admission.
- Candidates with qualifications acquired through correspondence or distance-learning programs are eligible only if (a) the programs are recognized by the DEC-IGNOU, (b) they have passed the qualifying examination at the time of applying, with minimum 55% marks in average (50% for SC/ST) calculated as per item (2) above. They must carry original pass certificate and marksheets of qualifying examination with their application with their application form at the time of reporting for counselling. [Appearing candidate in distance learning programs, whose results are yet to be declared, are not eligible to apply].

Notes:

- 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 / University awards grades instead of marks, the calculation of equivalent marks would be based on the procedure prescribed by the Board / University. In case a University does not have any scheme for converting CGPA into equivalent marks, the equivalence would be established by dividing obtained CGPA with the maximum possible CGPA and multiplying the resultant with 100.
- At any level of the studies [class X, class XII or graduation], a candidate / applicant must have passed all the required subjects at that level from the same board/ University.

Other Criteria in addition to the Minimum Eligibility Criteria (MEC - PG4) above

S.No.	M.Sc. Program (With Department Offering the course)	Qualifying Examinations / Disciplines Eligible
1	Biotechnology (Bio-Engineering)	B.Sc. with Biotechnology / Physical / Chemical / Biological / Agricultural / Pharmaceutical or equivalent
2	Chemistry (Chemistry)	B.Sc. with Chemistry
3	Geoinformatics (Remote Sensing)	a) Graduate in Agriculture / Atmospheric Sciences / Botany / Chemistry / Computer Applications / Computer Science / Disaster Management / Ecology & Environmental Sciences / Fisheries / Forestry / Geography / Geology / GIS / Information Science / Mathematics / Oceanography / Physics / Soil Science / Statistics / Town Planning / Zoology / allied disciplines. b) Candidates must have stereoscopic vision and normal colour vision.
4	Mathematics (Mathematics)	B.Sc. with Mathematics, Physics, Chemistry or equivalent
5	Physics (Physics)	B.Sc. Honours with Physics, Chemistry, Mathematics or Physics, Chemistry, Statistics or equivalent

No scholarships are available for these programs.

Sec 3. How to Apply

How to Apply:

1. To fill online application form, click on the link “**CLICK HERE TO APPLY ONLINE**” to register for the program 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].
3. Pay application fee of Rs.2,500/- (General / OBC candidates) and Rs.1,500/- (SC/ST candidates) through ICICI payment Gateway (candidates may use net banking / debit card / credit card of any nationalized bank) till the last date of application process. **Fee once remitted shall not be refunded.**
4. **Candidates should proceed to fill the Online Application Form only after they satisfy themselves that they fulfill all the eligibility criteria.**

Notes:

1. **The candidates can use one application form for applying multiple courses within the Department, subject to fulfilling the eligibility conditions.**
2. **Candidates applying for M.Tech. ECE- Wireless Communication and M.Tech. Computer Science & Engineering programs, may apply for multiple campuses (Mesra and Patna), in order of preference.**
3. **Please use separate application form(s) for applying two or more programs such as M.Tech. (EE), M.Tech. (ECE), M.Tech. (CSE) etc.**
4. **Written Test / Counselling schedules (wherever applicable) for the above programs will be announced by 10th June 2021, only on Institute website. Candidates are advised to visit the Institute website periodically for updates and any other matter pertaining to the admission procedures.**
5. **Candidates appearing for their final examinations in 2021 can also apply, and if selected can join the program provisionally. Provisionally selected candidates will be required to sign an undertaking at the time of admission on Non-Judicial Stamp Paper of Rs. 20/- to the effect that if they fail to obtain the requisite marks in graduation / postgraduation their admission will be cancelled. The deadline for submission of mark-sheet / degree certificate is **31 October 2021**, failing which the provisional admission will liable to be cancelled. (Please refer Annexure -I for format of the above undertaking).**

Sec 4. Selection Procedures and Required list of Documents

(A) Selection Procedures for the M.Tech. and MUP programs:

GATE qualified candidates: Provisional selections to the M.Tech. and MUP programs will be based on scores obtained in GATE 2019 / GATE 2020 / GATE 2021 and Academic performance, provided that the candidates fulfill the eligibility criteria mentioned in Sec - 2A & 2C [80% weightage would be given to GATE score and 20% weightage to Academic performance].

Non-GATE candidates: Provisional selections of Non-GATE candidates will be based on written test and Academic performance, provided that the candidates fulfill the eligibility criteria mentioned in Sec - 2A & 2C. However, their admission will be considered only after applicants who have qualified in GATE 2019 / GATE 2020 / GATE 2021 have been considered and admitted, subject to the availability of seats. **There will be no scholarships for these candidates.** Syllabus of the test will be same as for GATE [80% weightage would be given to Written test and 20% weightage to Academic performance].

(B) Selection Procedures for the M.Pharm program:

GPAT Qualified candidates: Provisional selections to the M.Pharm. program in Pharmaceutical Chemistry, Pharmaceutics, Pharmacognosy, Pharmacology and Pharmaceutical Quality Assurance will be based on scores obtained in GPAT 2019 / GPAT 2020 / GPAT 2021 and Academic performance, provided that the candidates fulfill the eligibility criteria mentioned in Sec 2B [80% weightage would be given to GPAT score and 20% weightage to Academic performance].

Non-GPAT candidates: Provisional selections of Non-GPAT candidates will be based on written test and Academic performance, provided that the candidates fulfill the eligibility criteria mentioned in Sec-2B. However, their admission will be considered only after applicants who have qualified in GPAT 2019 / GPAT 2020 / GPAT 2021 have been considered and admitted, subject to the availability of seats. **There will be no scholarships for these candidates.** Syllabus of the test will be same as for GPAT [80% weightage would be given to Written test and 20% weightage to Academic performance].

(C) Selection Procedures for the M.Sc. programs:

JAM / CUCET candidates: Provisional selections to the M.Sc. programs will be based on JAM /CUCET 2021 score and Academic performance [80% weightage would be given to JAM / CUCET and 20% weightage to Academic performance].

Non-JAM / CUCET candidates: Provisional selections of Non- JAM / CUCET candidates will be based on Written test and Academic performance, provided that the candidates fulfill the eligibility criteria mentioned in Sec-2E. However, their admission will be considered only after applicants who have **JAM / CUCET 2021 scores** have been considered and admitted, subject to the availability of seats. **There will be no scholarships for these candidates.** Syllabus of the test will be same as for JAM / CUCET [80% weightage would be given to Written test and 20% weightage to Academic performance].

Note:

1. Candidates applying for M.Tech. - ECE (Wireless Communication) and M.Tech. (Computer Science & Engineering) should appear for the written test / counselling (whichever applicable) at the Campus of their first preference.
2. Provisional selection lists, along with procedures for admissions, will be notified the day after the counselling, on the Institute website.
3. Provisionally selected candidates will be required to take admission by the date given, failing which vacant seats may be allotted to waitlisted candidates, if any. The list of waitlisted candidates will also be announced on Institute website.

Thus, candidates are advised to visit our Institute website <http://www.bitmesra.ac.in> periodically for updates / any other matters related to admission procedures.

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 equivalent qualifying examination in time as stipulated.

Required list of Documents

Candidates must carry the originals of the following documents at the time of reporting for counselling and admission, as well as one set of photocopies:

1. Pass certificate of Class 10 for proof of age
2. Marksheet of Class 10
3. Marksheet of Class 12 / Intermediate or equivalent
4. Certificates and marksheets of Graduation / qualifying examination

OR

Marksheets upto pre-final year for appearing candidates of graduation / qualifying examination in 2021. They must bring a certificate in original from the Principal of Institute stating that:

- c). by 30 June 2021, he/she will have appeared for examination in all subjects required for obtaining his/her qualifying degree.
 - d). He/she has obtained requisite marks or equivalent based on latest available grades / marks.
5. **Candidates with qualifications acquired through correspondence or distance-learning programs must carry proof of pass certificate, marksheets of qualifying examination and approval of DEC (Distance Education Council).**
 6. GATE 2019 / GATE 2020 / GATE 2021 Admit card and Score card for M.Tech. and MUP programs (if applicable).
 7. GPAT 2019/ GPAT 2020 / GPAT 2021 Admit card and Score card for M.Pharm. program (if applicable)
 8. JAM / CUCET 2021 Admit card and Score card for M.Sc. program (if applicable)
 9. Caste certificate / special category certificate (if applicable) should be in proper format and signed by appropriate authority.
 10. **GPA to Percentage Conversion formula duly attested by Head of the Institute/ Principal/ HOD (in case, procedure for calculation of percentage of marks not mention on marksheet).**
 11. One passport size photograph, identical to the photograph uploaded during filling of online application form.
 12. Photo identification: (Driving license, Passport, PAN Card, Voter ID, Aadhaar Card, College ID, Employee Identification Card are acceptable).
 13. College Leaving Certificate
 14. Migration Certificate

They should also carry a photocopy of their duly completed form.

Documents required at the time of admission:

If provisionally selected, candidates will be required to submit all the above documents in original (except the Photo ID) at the time of admission, along with the requisite fees.

Note: Eligible SC/ST and PwD students admitted to above programs 2021 at its Mesra and other campuses, should submit their scholarship form in the Office of Registrar, for the academic year by February for processing scholarship to SC/ST and PwD students each year, as per UGC guidelines.

Sec 5. Number of Seats, Scholarships and Reservations

Number of seats:

Programs	Total Seats
(A) M.Tech. Programs (2 years/4 Semesters) at Mesra Campus	
Automated Manufacturing Systems	12
Biotechnology	18
Civil Engineering (Soil Mechanics & Foundation Engineering - 12, Structural Engineering -12)	24
Computer Aided Analysis and Design (CAAD)	12
Computer Science & Engineering	16
Electrical Engineering (Control Systems - 12, Power Systems - 12, Power Electronics - 18)	42
Electronics & Communication (Instrumentation - 12, Microwave - 12, Wireless Communication - 18)	42
Energy Technology	12
Environmental Science & Engineering	18
Information Technology	18
Information Security	18
Mechanical Engineering (Heat Power - 12, Design of Mechanical Equipment - 12)	24
Remote Sensing	18
Space Engineering & Rocketry (Aerodynamics - 12, Rocket Propulsion - 12)	24
(B) M.Tech. Programs (2 years /4 Semesters) at Patna Campus	
Electronics & Communication (Wireless Communications)	18
Computer Science & Engineering	18
(D) M. Pharm Program (2 years / 4 Semesters) at Mesra	
M. Pharm (Pharmaceutics-15, Pharmaceutical Chemistry-15, Pharmacology-15, Pharmacognosy - 15, Pharmaceutical Quality Assurance -15)	75
M. Pharm. Programme under AICTE Q.I.P.	8
(E) Master of Urban Planning (MUP) Program (2 years /4 Semesters) at Mesra	
	18
(F) M.Sc. Programs# (2 years/ 4 Semesters)	
	Total Seats
M.Sc. in Biotechnology	30
M.Sc. in Chemistry	15
M.Sc. in Geoinformatics	20
M.Sc. in Mathematics	15
M.Sc. in Physics	15

Notes: The Institute reserves the right to lower the intake in a program without showing any reason. The Institute also reserves the right not to offer a particular program in case the number of students found to be eligible to be admitted is less than 30% in number.

Scholarships:

1. Candidates admitted in M.Tech. or MUP program with valid GATE 2019 / GATE 2020 / GATE 2021 score and M.Pharm. program with valid GPAT 2019 / GPAT 2020 / GPAT 2021 score will be considered to receive scholarships only if approved and amount released by funding agency.
2. In addition to the above, upto 20% fee waiver may be awarded to the candidates admitted in M.Tech. or MUP program having GATE score better than 90 percentile.
3. **No scholarships are available for M.Sc. programs.**

Reservations:

1. For all programs at the Institute which are supported by any of the respective State Governments, the reservation criteria for the state quota are as per the norms of the respective 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 at all campuses in each program is reserved for candidates who are Sons or Daughters of Kashmiri Migrant who otherwise have qualified for admissions.
5. Upto 10% seats (over and above of sanction intake) at all Campuses are reserved for candidates belonging to Economically Weaker Section (EWS).
6. At Mesra and Patna Campuses 50% of the total seats are reserved for Home State candidates and remaining 50% of the total seats are distributed in the rest of the states. The domicile of a candidate for the purpose shall be determined based on place of passing his/her qualifying examination (the location of his/her Institute).

[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.

Sec 6. Financial Information

Fees payable for 2021-22 Batch Students

Fees payable for M.Tech. and MUP Programs at its Mesra Campus in each subsequent semester

Particulars	1st Sem	2nd Sem	3rd Sem	4th Sem
Tuition Fee	96500	96500	107000	107000
Development Fee	7000	7000	7500	7500
Institute Exam Fee	6000	6000	6500	6500
Total:	109500	109500	121000	121000

Hostel Seat Rent, Electricity and Transport etc.	16000	16000	21000	21000
G. Total:	125500	125500	142000	142000

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

Fees payable for M.Pharm. Program at its Mesra Campus in each subsequent semester

Particulars	1st Sem	2nd Sem	3rd Sem	4th Sem
Tuition Fee	106500	106500	118000	118000
Development Fee	7500	7500	8000	8000
Institute Exam Fee	6000	6000	6500	6500
Total :	120000	120000	132500	132500

Hostel Seat Rent, Electricity and Transport etc.	16000	16000	21000	21000
G. Total:	136000	136000	153500	153500

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

Notes:

- Hostel mess charges at Mesra Campus will be approximately Rs. 3,000/- to Rs. 3,500/- per month. Students will be required to deposit Hostel Caution Money* (One Time only - Refundable) of Rs.5,000/- and suitable mess advance at the beginning of each semester, which will be adjusted against their mess charges. For the session July 2021, 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”.
- Pay Institute fee (for 1st semester), using ICICI Payment Gateway through debit / credit card and net banking of any nationalized bank. [URL of payment gateway will be shared in applicant email ids during admission].
- 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.

Financial Information and fees payable 2021

(I) Fee payable at the time of admission and in each subsequent semester for M.Sc. in Chemistry, Mathematics and Physics programs at its Mesra Campus

Particulars	1st Sem	2nd Sem	3rd Sem	4th Sem
Tuition Fee	48000	48000	52000	52000
Development Fee	3500	3500	4000	4000
Institute Exam Fee	6000	6000	6500	6500
Total:	57500	57500	62500	62500

Hostel Seat Rent, Electricity and Transport etc.	16000	16000	21000	21000
G. Total:	73500	73500	73600	73600

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

(II) Fee payable at the time of admission and in each subsequent semester for M.Sc. in Biotechnology, and Geo-informatics programs at its Mesra Campus

Particulars	1st Sem	2nd Sem	3rd Sem	4th Sem
Tuition Fee	71500	71500	78500	78500
Development Fee	5000	5000	5500	5500
Institute Exam Fee	6000	6000	6500	6500
Total:	82500	82500	90500	90500

Hostel Seat Rent*, Electricity and Transport etc.	16000	16000	21000	21000
G. Total:	98500	98500	111500	111500

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

Notes:

- Hostel mess charges at Mesra Campus will be approximately Rs. 3,000/- to Rs. 3,500/- per month. Students will be required to deposit Hostel Caution Money* (One Time only - Refundable) of Rs.5,000/- and suitable mess advance at the beginning of each semester, which will be adjusted against their mess charges. For the session July 2021, 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”.
- Pay Institute fee (for 1st semester), using ICICI Payment Gateway through debit / credit card and net banking of any nationalized bank. [URL of payment gateway will be shared in applicant email ids during admission].
- 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.

Financial Information and fees payable 2021

Fee payable at the time of admission and in each subsequent semester for M.Tech. programs at its Patna Campus

Particulars	1st Sem	2nd Sem	3rd Sem	4th Sem
Tuition Fee	96500	96500	107000	107000
Development Fee	7000	7000	7500	7500
Institute Exam Fee	6000	6000	6500	6500
Total :	109500	109500	121000	121000

Hostel Seat Rent* and Electricity etc. (for Patna campus)	13500	13500	14500	14500
G. Total: (for Patna Campus)	123000	123000	135500	135500
G. Total (for Noida Campus)	109500	109500	121000	121000

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

Notes:

- Hostel facilities are available at Patna Campus only. Hostel mess charges will be approximately Rs. 3,000/- to Rs. 3,500/- per month. Students admitted at Patna campus will be required to deposit Hostel Caution Money (One Time only - Refundable) of Rs.5,000/- and suitable mess advance at the beginning of each semester, which will be adjusted against their mess charges. For the session July 2021, this mess advance will be Rs. 18,000/- (boys), Rs. 15,000/- (Girls).
- Pay Institute fee (for 1st semester), using ICICI Payment Gateway through debit / credit card and net banking of any nationalized bank. [URL of payment gateway will be shared in applicant email ids during admission].
- 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. Profile of the Departments

Department of Architecture

Birla Institute of Technology, Mesra, Ranchi, established the Department of Architecture in 1993. It offers Council of Architecture (COA) and All India Council of Technical Education (AICTE) approved undergraduate course in architecture (B.Arch); Institution of Planners, India (ITPI) recognized post-graduate course in urban planning (MUP) and PhD program in both Architecture and Urban Planning.

The Architecture Department closely cooperates with various State Government Departments and organizations of the Government of Jharkhand, related the field of Urban Development, Building Construction, Disaster Management and 'Administrative Training Institute'. Faculty members find representation in various committees of the State Government related to Architecture and Urban Planning and provide professional consultancy services as and when sought. They are also resource persons for various QIP and capacity building activities of the State Government and help in organizing and conducting seminars and workshops.

Programs offered	Course Duration	Sanctioned intake
Bachelor of Architecture (BArch)	5 Years (10 Semesters)	40
Master of Urban Planning (MUP)	2 Years (4 Semesters)	18
Doctoral program in architecture and planning (Ph.D.)	-	-

Vision of the Department: The Department has the vision to produce both Architects and Urban Planners with originality, creativity, along with aesthetic values embedded with execution mechanism: a holistic approach to make a better world for all of us to live in.

Mission of the Department: The Department aims to serve the community and students better, and thus intends to take up the following as its mission:

- To dedicate for serving the community through commitment and state of the art learning environment.
- To create and promote dynamic institution that keeps pace with the demands of the modern Architectural Industry.
- To play a pivotal role in the development of emergent research culture through PhD programme.
- To enrich the design disciplines so as to create ample opportunities to collaborate with the present day requirement of building industry.
- To outreach to industry by hiring some of the brightest and most talented practicing Architects as visiting/part-time teachers.
- To create a mixed culture of research and industry driven approaches for both the faculty and student.
- To help the students to develop a knowledge base that leads them towards the lifetime goal of both personal and professional front.

About the Courses: Architecture is primarily the art and science of designing spaces for serving the multifarious activities and specific needs of human beings in a meaningfully built environment. Also, the architectural profession calls for originality, creativity, conceptualization, perception, aesthetic values and a holistic judgment of people, places, objects and events. The course structure through its latest revision in 2018 as per CBCS system is therefore designed to sensitize the students to fulfill the above requirements of the profession and incorporates philosophic wholesomeness of humanities, the logical rationalism of science, the passionate imagination of art and the inexhaustible resources of technology.

The post-graduate course in Urban Planning (MUP) program was likewise revised in 2018 as per CBCS system which is currently on offer. It is designed to fulfill the great need of formal training requirement for holistic fulfillment of the duties of urban local bodies in the area of urban development, planning, town planning schemes and implementation of such development plans or living in urban settlements and various tools and techniques used for planning and management of the development process.

Research and innovation are important hallmarks of any worldclass university. Architecture Department has infrastructures and facilities for advanced research in the field of Architecture and Urban Planning. A number of Ph.D. degrees have been awarded besides a large number of scholars, registered for the ongoing Ph.D. in both the disciplines.

Ranking of the Department: The Architecture Department has ranked 13 among all Architecture colleges in India as per NIRF 2020. *The Department ranked 6th among all colleges of Architecture in India as per India Today 2020 survey.* The Department ranked 1st amongst all colleges of Architecture in India as per the survey of GHRDC in 2020. Department has been constantly featuring as one of the top Architecture Departments in the Country for last decades.

Faculty of the Department: The Department has highly qualified and competent faculty members. The faculty members contribute to the development of the subject area through consultancy, research activities and contributing research papers and articles in national and international journals. They constantly engage themselves and stay abreast with up-to-date academic development through participation in short term courses, seminars, conferences and workshops.

Projects of the department: The Department has the rare feat of being the first ever academic institute of Architecture to be awarded research grants under the Department Research Support (DRS) level of the Special Assistance Programme (SAP) of the University Grants Commission (UGC). The faculty members were involved in development of e-content for six architectural subjects at the under-graduate level, a project funded by MHRD “National Mission Project on Education through ICT: Developing suitable pedagogical methods for various classes, intellectual calibers and e-learning” anchored by IIT, Kharagpur. In 2020, the department has completed a project of Ministry of Panchayati Raj, Government of India titled “Gram Panchayat Spatial Development Plan for Neori (Ranchi District) and Kandra (Bokaro District)”. The department has also been identified as the nodal center for “Spatial development Plan for 15 rural clusters of Jharkhand” under Shyama Prasad Mukherji Rurban Mission scheme by Ministry of Rural Development, Government of Jharkhand.

Facilities in the Department: The Department is a seat of learning powered by state of art laboratories. Architecture students spend time in laboratories and design studios working on a wide variety of projects. The department houses within its laboratories various software including: AUTOCAD, ENVIMET 4.0, ARCGIS 10.4.1, Bentley Building Information Modeling, IBM SPSS Statistics 24, Rhinoceros, Grasshopper, Sketchup.

The department also houses a Building Science Laboratory which accommodates within it state of art instruments including Total weather station, Surface temperature measuring gun, Data logger, Light meter, Indoor Air Quality Handled meter. The department is also facilitated by A0 printing and scanning facility.

Department of Bio-Engineering

The Department of Biotechnology was established in 2002 with financial support from the Department of Agriculture, Government of Jharkhand, with objectives like providing education and training facilities, carrying out application-oriented research, developing in-house technologies and promoting consultancy services in various areas of Biotechnology. The Department name was changed to Bioengineering in 2013.

The Department of Bioengineering has a vision to impart international standard quality education in the field of Bio- science, Bio-technology and Bio-engineering. The mission is: To create state-of-the-art infrastructure for Research and Training in Biotechnology and Bioengineering; To provide globally acceptable technical education in Bio- science, Bio-technology and Bio-engineering; To nurture students for innovation and creativity in the field of Bio- science, Bio-technology and Bio-engineering having ethical and social concern.

Programs Offered	Course Duration	Sanctioned Intakes
B.Tech. Biotechnology	4 Years (8 Semesters)	30
M.Tech. Biotechnology	2 Years (4 Semesters)	18
M.Sc. Biotechnology	2 Years (4 Semesters)	30
Ph. D. Program (Biotechnology and Biomedical Engineering)	-	-

CBCS have been adopted in 2018 for all UG and PG programmes. All the programs are approved by All India council for technical education (AICTE).

Vision of the Department:

- The Department of Bioengineering has a vision to impart international standard quality education in the field of Bioscience, Biotechnology and Bioengineering.

Mission of the Department:

- To create state-of-the-art infrastructure for Research and Training in Biotechnology and Bioengineering.
- To provide globally acceptable technical education in Bioscience, Biotechnology and Bioengineering.
- To nurture graduates for innovation and creativity in the field of Bioscience, Biotechnology and Bioengineering having ethical and social concern.
- To promote collaboration with Academia, Industries and Research Organizations at National and International level.
- To contribute to socioeconomic development through education and bio-[entrepreneurship](#).

The future plans of this Department include extensive interdisciplinary research programmes by students and faculties in various areas of Biotechnology. The department is promoting collaborative activities at national and international level (IARI, CCSU Meerut, IIT Kanpur, IINRG, CT&TRI, RIMS, University of Padova, Italy etc.). Faculty members of the department are actively engaged in R&D funded by various Government Agencies (DST, DBT, UGC, AICTE, ICMR, CSIR, SERB etc.).

The achievements of the department are: A Center of Excellence (COE) under TEQIP, Phase II sponsored by World Bank; Establishment of BTISnet SubDIC Bioinformatics center for Jharkhand; Important Databases and Softwares have been developed by the Department.

The department has well-equipped high-end research laboratories dedicated to Molecular Biology, Genetic Engineering and Cell Biology, Plant and Animal Biotechnology, Microbiology, Biochemistry, Proteomics, Bioinformatics, Bioprocess Engineering, Chemical Engineering, Environmental Biotechnology, Biomedical Instrumentation and Signal analysis, Biophysics, Nanotechnology. The instrumentation facilities include: GC-Mass Spectrometer, Real Time PCR, FPLC, HPLC, QTOF, UPLC-MS/MS, Spray dryer, Rotary evaporator, Ultra water purification system, Typhoon Laser imager, Lypholizer, Thermal cyclers, Gene pulser, Microplate reader, 2D electrophoresis system, SCF extraction system, Spectrophotometers, Fluorimeters, Modern microscope with digital imaging system, Stereo microscope with colony counter, Fluorescence microscope, Lab and Pilot scale Bioreactors.....

The Fields of Study/ Research:

Biotechnology:

- Agriculture & Plant Biotechnology
- Algal Biotechnology
- Animal & Plant Tissue Culture
- Biofuel Production
- Bioinformatics
- Biophotonics
- Bioprocess Engineering
- Biosensor
- Down Stream Processing
- Environmental Biotechnology
- Food Biotechnology
- Industrial Biotechnology
- Medicinal Plant
- Microbial Resources
- Microbial Biotransformation
- Nanobiotechnology
- Value Addition to Biomass & Waste Materials

Biomedical:

- Biosignal Analysis
- Biomedical Instrumentation
- Artificial Intelligence in Healthcare
- Systems Biology
- Electrophysiology

The department's main endeavour is to achieve excellence in teaching and research and is committed to serve the academic and research community.

Further the learning approach encourages team spirit and leadership quality among students to prepare them for challenging careers, including:

- Research positions in laboratories
- Biotech industries including biopharmaceuticals, medical devices
- Careers in biotechnology applications
- Management positions in bioengineering sector
- Careers with Law firms in biotechnology
- Software development and management

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. The department offers programs at undergraduate (UG) and postgraduate (PG) levels leading to B.Tech., M.Tech., and PhD degrees. B.Tech. program in Chemical Engineering has been accredited by National Board of Accreditation (NBA). The Department is also recognized under DST-FIST. With the introduction of Choice-Based Credit System (CBCS) in 2018, students can get In-depth Specialization in Chemical Engineering as well as Minor in Chemical Engineering. Faculty members are working on sponsored research projects and collaborative research with various organizations. 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 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)	120
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 programme 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. programme 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, Energy engineering, Mechanical operation, etc. the Department of Chemical Engineering has state of the art facilities for Postgraduate and Doctoral Research in Reaction Engineering, Separation Processes, Instrumental Analysis of chemicals and Polymer, Polymer Processing, Product Development Laboratory etc. The major facilities include high pressure batch reactors, electrochemical workstation, electrospinning setup, membrane modules, tubular furnace, Vector network analyzer, Gas Chromatograph, Chemisorption analyzer, High-performance liquid chromatograph, Atomic absorption spectrometer, UV-Vis analyzer, Minilab Micro Compounder and Minilab micro injection Moulding, Air Bearing Rotational Rheometer, Malvern, Instron Tensile Testing machine, ATLAS accelerated weathering system, Dynamic Mechanical Thermal analyzer (TA). 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, Single screw extruder, 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, COMSOL Multiphysics, 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, 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, Spray drying, etc.

RESEARCH AREA:

Catalysis, Separation Processes, Multiphase fluid flow, Energy storage devices, Alternative Energy, Fuel Cell, Membrane Technology, Photocatalysis, Electrocatalysis, Nanotechnology, Molecular Simulation, Computational fluid dynamics, Water Treatment Technologies, Recycling of Polymer Waste, Sensors, Pollution Control, Colloids and Interfacial Science, Advanced Polymer Composites, Polymer Blends and Interpenetrating Polymer Networks, Specialty Polymer, Tissue Engineering, Food Analysis and Quality Control, Food Preservation and Processing Technology etc.

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 has a strong pool of well qualified, motivated and student friendly faculty members. The research is funded by agencies like DST, DBT, AICTE, UGC, CSIR and others. The department is well supported financially through “Fund for Improvement in Science & Technology Infrastructure” (FIST).

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 and research in Chemical Sciences through producing excellent academicians, researchers, professionals, entrepreneur and innovators.

Mission of the Department

Inoculate fundamental concepts of Chemical Sciences to students & scholars through our state of art laboratory, teaching, research facilities and building a scientific environment towards innovation with quality research.

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 Civil and Environmental Engineering

The Department of Civil Engineering was established in 1957. It was renamed as Department of Civil and Environmental Engineering in 2014. The Department has well established laboratory facilities in the areas of Concrete and Road Materials, Hydraulics, Soil Mechanics, Structural Engineering, Surveying, Computer & Environmental Engineering. The faculty members are well qualified having degrees from reputed Institutes. They are also actively involved in research and consultancy. The department continuously contributes to the infrastructural and industrial growth in Jharkhand by providing technical expertise. The Department facilitates the eastern region of India by providing Field-testing in Geotechnical Engineering, Transportation Engineering & Non-Destructive Testing of concrete. Many faculty members also possess work experience from reputed organizations from outside India. The Department is the STA for PMGSY. Students from the Department have the opportunity to pursue internship from universities of International repute such as the Illinois Institute of Technology, Chicago.

Programs Offered		Course Duration	Sanctioned Intake
B.E. in Civil Engineering		4 Years (8 Semesters)	60
M.Tech. in Civil - in two specializations	a) Soil Mechanics & Foundation Engineering	2 Years (4 Semesters)	12
	b) Structural Engineering	2 Years (4 Semesters)	12
M.Tech. in Environmental Science & Engineering		2 Years (4 Semesters)	18
Ph.D. Programme		-	--

Vision of the Department

- To develop quality intellectuals through education, research and motivation so that they could bring a positive contribution to society in the area of Civil and Environmental Engineering.

Mission of the Department

- To develop professional skills through quality education and research.
- To outreach various sectors of society through interdisciplinary programs and practical oriented approach.
- To create dynamic, logical, and effective leaders with inspiring mind sets.

Some salient features of the programs offered:

- All programs are NBA accredited.
- Offers Outcome Based Education in Choice Based Credit System
- Has well-equipped laboratories with state-of-the-art research facilities.
- Exercises regular industrial visits and internships.
- Professes holistic learning approach through integration of theory, sessional and research in the curriculum.
- Provides opportunity to attend National and International Conference, Seminars, and Workshops.
- Generous institutional research funding available to students for pursuing their UG project & PG thesis work.
- AICTE assistantship procured for GATE qualified PG candidates.
- Offers G P Birla Scholarships & Fee waiver up to 20% for PG students having above 90 percentile in GATE
- Prepare students for higher educational Entrance exams like NET, GRE etc.
- Alumni are well placed in highly reputed MNCs, NGOs, Governmental organizations, R & D labs or pursuing higher studies in India and abroad or have successfully developed their own startups.
- Arrangement of Guest lectures delivered by Distinguished & Eminent personalities from Industry/Academia/Research organizations from India & abroad.

Some major research areas in which faculty members and research scholars are involved include but not limited to the following:

Air Pollution, Applied Hydrology, Bioremediation, Composite Materials, Concrete Structures, Durability Of Concrete, Geo-Environmental Engineering, Groundwater Flow Modelling, Groundwater Quality Management, Heavy Metal Pollution Monitoring & Remediation, Intelligent Modelling in Geotechnical Engineering & Air Pollution, Mine Slope Stability Analysis, Open Channel Hydraulics, Pavement Materials, Soil Stabilisation, Solid Waste Management, Structural Dynamics, Wastewater Treatment, Water Quality Assessment, Assessment & Remediation of Emerging Pollutants in Water, Climate Change, Ecosystem Assessment & Management, Geotechnical Earthquake Engineering, Numerical Modelling in Geotechnical Engineering, Traffic Flow Modelling, Capacity, Level of Service, Driver Behaviour.

Some Major Laboratory Equipment include:

Carbonation chamber, Accelerated curing tank, ACM Instrumentation, Rapid Chloride Penetration, Concrete Maturity meter, Heat of hydration, half-cell potentiometer, Rebound hammer, Cover Meter, Core Cutter, Pulveriser, UPV tester, Static - cum- Cyclic triaxial testing machine, Laser diffraction particle size analyser, Automatic soil compactor, Relative density testing equipment, Consolidation bench, Large box shear test, Computerized direct shear apparatus, Digital meter, Shaking water bath, Probe Sonicator, TCLP Rotary Agitator, Peristaltic pump, Quartz distillation apparatus, Nephlo turbidity meter, Total Station, Microwave Digestion System, UV-Vis Spectrophotometer, Respirable Dust Sampler, Nox Analyser, CO Analyser, Muffle Furnace, BOD Incubator, Rotary Agitation Apparatus for TCLP. Some Computational Facilities include: PLAXIS, Geostudio (SLOPE/W, SEEP/W, QUAKE/W, SIGMA/W, TEMP/W), MODFLOW, STUDES, Bentley Academic Bundle, SPSS.

Department of Computer Science & Engineering

The Department of Computer Science & Engineering was established in the year 1983 and is now recognized as one of the leading departments with infrastructure and facilities to match the very best in the country. The department remains committed towards its mission, which is twofold. One is to provide students with the fundamental knowledge and problem-solving skills in Computer Science required for a fulfilling career. The other goal is to create and disseminate knowledge to improve Computer Science research, education and practice.

Link : https://www.bitmesra.ac.in/Show_Department_Section?cid=1&deptid=70

The department currently offers the following programs, all of which are approved by the All India Council for Technical Education (AICTE).

Programs Offered	Course Duration	Sanctioned Intake
B.Tech. in Computer Science & Engineering	4 Years (8 Semesters)	180
B.Tech. in Information Technology	4 Years (8 Semesters)	60
Master of Computer Applications (MCA)	2 Years (4 Semesters)	60
M.Tech. in Computer Science & Engineering	2 Years (4 Semesters)	16
M.Tech. in Information Technology	2 Years (4 Semesters)	18
M.Tech. in Information Security	2 Years (4 Semesters)	18
Ph.D. Programme	-	-

Vision of the Department:

The department strives to be recognized for outstanding education and research, leading to excellent professionals and innovators in the field of Computer Science and Engineering, who can positively contribute to the society.

Mission of the Department:

- To impart quality education and equip the students with strong foundation that could make them capable of handling challenges of the new century.
- To maintain state of the art research facilities and facilitate interaction with world's leading universities, industries and research organization for constant improvement in the quality of education and research.

Research Areas (Not limited to)

- Digital Image Processing
- Parallel Computing
- Soft Computing (Rough Sets & Near Sets, Fuzzy Sets, Neural Network)
- Machine Learning
- Natural Language Processing
- Information Retrieval
- Software Engineering
- Pattern Recognition
- Bigdata Analysis
- Network & Security
- Data Science

Facilities Available

The department is equipped with nine laboratories with over 450 computers available for conducting laboratory sessions in diverse topics like -

- i) Programming languages: C, C++, Java, and Oracle, Python, R
- ii) Matlab for Soft Computing and Image Processing.
- iii) Rational Rose for Software Engineering.
- iv) LDRA Centre of Excellence for Software Testing.
- v) Laboratories for Networking, Multimedia, Simulation, Parallel Computing, IoT, Machine Learning, High Performance Computing, Intelligent Systems etc.

All the Laboratories are internally networked allowing students to remotely access resources at any point in time. The department has a **HPC Server (Master Node- 2** no of Intel Xeon E5-2630 v3 2.4GHz processors with 8 core and 64 GB memory, 2*1 TB HDD, **CPU Compute Node-2** no of Intel Xeon processor E5 2630 V3@ 2.4 GHz with 8 core in each processor and 64 GB memory, 500 GB Disk capacity FDR infiniband, **GPU Compute Node- 1** no of GPU node with 2 no of Nvidia K20 GPU with node specifications of 2 processor(Each 8 core) and 64 GB memory. 2 Nos 500 GB HDD, FDR InfiniBand, **Cloud Node- 1** processors E5-2620 [V3@2.4](#) GHz,6 core and 64 GB Memory, 1 TB HDD, Dual Port FC HBA, **Storage(for HPC and Cloud)- 48 TB** of RAW capacity to be shared via NFS over infiniband for the entire cluster from Master node. The same storage in partition mode is be used for cloud also), HP Proliant ML 370 Server, Dell Poweredge Sever which provides support to numerous departmental and inter departmental research activities.

Faculty Strength

Highly experienced faculties with PhD from premier institutes of India & Abroad in various disciplines.

Department of Electronics & Communication Engineering

The Department of Electronics and Communication Engineering was established since the inception of BIT Mesra in 1955 and has been very actively and successfully involved in imparting teaching/training, supervision and motivation to undergraduate, post graduate and doctoral students. The department has a huge legacy of having produced top class engineers who are settled all across the globe at very high positions. The Department of Electronics and Communication Engineering is one of the largest departments of the institute having largest student and faculty strength. Department has all the modern infrastructure needed to teach students par excellence and exposes them to face day to day challenges in real world, making it one of the elite departments in India. The department has been identified for Center-of-Excellence.

In order to supplement right theory with proper practical exposure, department is having number of modern laboratories equipped with all types of advanced softwares and hardwares such as Advanced Communication Lab, Advanced Microprocessor and Microcontroller Lab, Wireless Networking Lab, Intelligent Instrumentation Lab, Microwave Lab, Digital Signal Processing Lab, Antenna Lab, Fibre Optics Communication Lab, VLSI Design Lab, Circuit Simulation Lab, & Embedded System Design Lab. In order to test the experiments designed, there are large number of virtual laboratory simulation packages such as MultiSim, VSim, Ultiboard, MATLAB, LABView, MDspice, Fidelity, NS-2, Cadence Design Tools, Active HDL and Synplify along with hardware assembly and testing practices. The department is having highly qualified experienced and dedicated faculty members with large number of publications in journals of national and international repute. Faculty members are actively engaged in good quality journal publication and publishing books. Department has large number of completed and ongoing projects sponsored by DST, SERB, DRDO, ISRO, MHRD, MeitY, and DBT etc.

Programs Offered		Course Duration	Sanctioned Intake
B.Tech. in Electronics & Communication Engineering Minor in - Signal Processing - Wireless Communication and Networking - Microwave Engineering - Electronic Instrumentation - VLSI Systems		4 Years (8 Semesters)	120
M.Tech. in Electronics & Communication- in 3 specializations	a) Instrumentation	2 Years (4 Semesters)	12
	b) Microwave	2 Years (4 Semesters)	12
	c) Wireless Communications	2 Years (4 Semesters)	18
Ph.D. Program		-	-

Vision of the Department:

- To become a centre of excellence in teaching and research for creating technical manpower to meet the technological, societal and environmental needs of the country in the field of Electronics and Communication Engineering.

Mission of the Department:

- To offer state of the art education of global standards through innovative methods of teaching and learning with practical orientation aiming to prepare the students for successful career and to provide required technological services.
- To prepare the students to think independently, take initiative, lead a team in an organization, take responsibility and solve the problems related to industry, society, environmental, health, safety, legal and cultural issues maintaining the professional ethics.
- To pursue high quality contemporary research through continued interaction with research organizations and industries.

The Department exposes the undergraduate students to all fundamental and advanced technology in the field of Electronics and Communication. Some of the advanced papers offered in the curriculum are Fibre Optic Communication, Data and Computer Communication, Satellite Communication Systems, Mobile and Cellular Communications, Telecommunication Switching Circuits, Antenna and Wave Propagation, Optical Fibre Network, Intelligent Instrumentation, Bio-electronic Instrumentation, Advanced Microprocessor, Microelectronic Engineering, VLSI Design, Digital Signal Processing Architecture, Digital Image Processing, Random and Stochastic Processes, Information and Coding Theory etc. Besides these the students also learn various computer related papers. The syllabi are frequently updated from time to time in consultation with the industry experts in order to incorporate latest trends in the industry. Students of the department are the first priority from recruiters like Microsoft, Intel, NXP Semiconductors, Qualcomm, Freescale and other core companies. The syllabi are frequently updated to incorporate recent developments in consultation to industry requirement and as per considering advancements achieved in the national and international scenario.

Scholarship / Stipend: (A) GATE Scholarship (B) G. P Birla Scholarship

Research Funding: Financial assistance up to INR 80,000 for final year research project

Career Options in:

- (A) **Microwave Engineering:** After M.Tech the candidate join the industry as RF / Analog RF/ RF-Hardware Design Engineers in reputed industries like ST Microelectronics, BOSCH, Qualcomm, Honeywell, Amdocs, Philips, NXP Semiconductors, Wipro, GE, Havells, Knowles Corp. India, DRDO, ISRO, HAL, BEL, SAMEER, BSNL etc. The candidate can also pursue research from reputed institutions in India and abroad.
- (B) **Wireless Communication:** An M.Tech in Wireless Communication from BIT Mesra is most sought after candidate to work as Development Engineer, System Engineer or Design Engineers in industry giants like Cisco, Broadcomm, Auruba Network, Qualcomm, Samsung, Ericsson, Intel, Apple, GE, IBM, Caterpillar, Cognizant and HCL. The candidate can also pursue research from reputed institutions in India and abroad.
- (C) **Instrumentation Engineering:** A candidate having M.Tech in Instrumentation Engineer from BIT Mesra can join industry as Field Instrumentation Engineer, Instrumentation Engineer, Process Instrumentation Engineer in National Semiconductor, ABB, ONGC, L & T, Robert Bosch, Invensys, GE, Suzlon, Whirylbird, Essar, and Johnson Control. The candidate can also pursue research from reputed institutions in India and abroad.

Major Research Areas in

- (A) **Microwave Engineering:** Microwave material characterization, Antennas, Filters, Filtenna, mm-wave Technology, Microwave Imaging, EMI-EMC
- (B) **Wireless Communication:** 5G Communication, Cooperative Cognitive Communication, SDR Networks, Wireless Visual Sensor Networks, Large Cooperative MIMO System, Green Communications
- (C) **Instrumentation Engineering:** Speech and Image Processing, Automation, Stochastic Signal and Biomedical Signal Processing, Sensors & Transducers, Advanced Instrumentation, Nano Electronic Devices and Circuits, RF Device Modeling, HEMT, Low Power VLSI, Power Conditioning Circuits, MEMS Sensor, Energy Harvester, Optical Networking, Optical Comb Filter, Fiber Optic Sensors

PhD Program: Department has very good research facilities in terms of infrastructure and guidance. Faculty members of the department along with their scholars have very good publications in Journal having high impact factors. 51 PhDs have already been awarded under the able guidance of faculty members in last 6 Years and 67 scholars are already under the guidance of proficient faculty members of the department to pursue their research.

Scholarship / Stipend: Institute Assistantship (Institute Research Fellow) Fellowship from CSIR, UGC, ISRO, DRDO, DAE, MeitY, DST, and DBT etc.

Department of Electrical & Electronics Engineering

The Department is dedicated to the current needs of industry with the flexibility to tune its programs according to different requirements in consonance with the vision to become an internationally recognized center of excellence in academics, research, and technological services in Electrical and Electronics Engineering and related inter-disciplinary fields. In pursuance of the mission of imparting strong fundamental concepts to students and motivating them to find innovative solutions to engineering problems independently, the department offers B.Tech. program in Electrical and Electronics Engineering (EEE) and M. Tech. in Electrical Engineering (EE) with specializations in Power System, Control System and Power Electronics and Ph.D. in Electrical Engineering. The department is committed to provide excellent technological services to industry and society. All the UG and PG programs offered by the department have adopted CBCS course structure and are accredited by NBA.

Programs Offered		Course Duration	Sanctioned Intake
B.Tech. in Electrical & Electronics Engineering		4 Years (8 Semesters)	60
M.Tech. in Electrical Engineering in 3 specializations	(i) Control System	2 Years (4 Semesters)	12
	(ii) Power System	2 Years (4 Semesters)	12
	(iii) Power Electronics	2 Years (4 Semesters)	18
Ph.D. Program			

Vision of the Department:

- To become an internationally recognized center of excellence in academics, research and technological services in the area of Electrical and Electronics Engineering and related inter-disciplinary field.

Mission of the Department:

- Imparting strong fundamental concepts to students and motivate them to find innovative solutions to engineering problems independently.
- Developing engineers with managerial attributes capable of applying latest technology with responsibility.
- Creation of congenial atmosphere and excellent facilities for undertaking quality research by faculty and students.
- To strive for more internationally recognized publication of research papers, books and to obtain patent and copyrights.
- To provide excellent technological services to industry for the benefit of society

The mission for creation of congenial atmosphere and ample research facilities for undertaking quality research to achieve national and international recognition by faculty along with PhD scholars is vibrant with thirty seven research scholars engaged in cutting-edge research domains related to Micro grid, Reliability, Hybrid Electric Vehicles, Multilevel Inverters, Robotics, Fault Tolerant Multi Phase Drives, Image Processing, Magneto-optic Sensors, Power System Voltage Stability, System Identifications, Applications of Soft Computing Techniques etc. We have diverse community of research trends focusing on different aspects of power, control, and power electronics applications. The publications in internationally reputed research journals published by professional organizations such as IEEE, IET, Wiley, Elsevier etc. by the faculty members and students have been one of the significant contributions.

Department of EEE is supported by the R&D project grants received from DST, UGC. In addition, the department also receives sponsored projects funded through FIST (DST), SAP (UGC), MODROB (AICTE), and TEQIP (Phase I, II, III) for laboratory restructuring and development. Institute also provide funds to the young faculties under seed money scheme and to the UG, PG students to undertake product-oriented projects to strengthen the research and postgraduate laboratory facilities.

The Department is continuously striving towards elevating the standard of diverse series of laboratories for furthering based research and teaching skills in the following major areas like:

- i). **Control System**-related labs are well equipped with modern research equipment, such as Twin Rotor MIMO System, NI ELVIS Rotary Inverted Pendulum, Magnetic Levitation System, DC Servo fundamental trainer kit, Temperature, Pressure, Level, and flow controller (both manual and PLC based), LCQ Meter. Department has also procured Coupled Tank System from Quanser and Thermal Control Process for Control Lab. NAO Humanoid Robot is another proud addition to the lab facility.
- ii). **Power Electronics** based infrastructure include Micro Lab box, DSPACE Kit, Data Acquisition system Integrated with Sensor, 3 Phase Multilevel Inverter based Induction Motor Drive, NI Data Acquisition Card, DC Motor Drive, AC motor Drive, BLDC Motor Drive, CNC Router-based PCB machine.
- iii). **Power System**-related lab includes many facilities such as ACB, SVC, Relay Testing System, Generator Protection System, PMU, Programmable Function Generator, Harmonic Analyser, Typhoon HIL, NI Power Measurement System, NI Data Acquisition Card CRIO, LabVIEW, 5kW Solar Photovoltaic System, Smart Energy Meter, and DC Motor, AC Three Phase Alternator etc.

Department also possesses many important software such as MATLAB, LabVIEW, ETAP, DigSILENT Power Factory, PSIM, CCS Studio, etc.

Besides these facilities, there are many other labs used for UG and PG teaching such as Machine Lab, Measurement Lab, Basic Electrical Lab, Signal Processing Lab, etc. Students are encouraged to develop projects using the facilities of all UG and PG labs.

In a nutshell, the application of new technology in various fields is one of the main focuses of the department for developing engineers and researchers with managerial attributes commensurate with fast-growing technology.

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, which reflects the 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)	60
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.

Mathematics is one of the major foundation subjects in sciences to study qualitative and quantitative relationships in various real-world problems.

Currently, Department of Mathematics consists of 10 regular faculty members with expertise in both pure and applied mathematics. In addition to the regular faculty members, the department has some faculty members who have joined through TEQIP. They are all well qualified, highly motivated towards teaching and always attempt to cooperate with students inside and outside the classroom. Faculties are also involved in research activities and have published their articles in high impact journals. They are skilled in diverse areas of Optimization, Mathematical Modeling, Differential Equations, Operations Research, Vedic Mathematics, Discrete Mathematics, Music and Mathematics, and Algorithmic Complexity.

The Department runs Ph.D. programme, 2-year M.Sc. programme in Mathematics and 5-year Integrated M.Sc. programme in Mathematics and Computing. It has also been actively engaged in organizing conferences, workshops, summer and winter schools, invited lecture series. It also has initiated organizing seminars (two seminars in each month) aiming at distribution of knowledge about research areas among graduate and Ph.D. students. The Department is equipped with a modern computer laboratory with latest scientific software such as MATLAB, Mathematica, Mathcad, Minitab, SPSS, LINGO, Systat etc.

Department of Mechanical Engineering

Since its inception in 1955, the Department of Mechanical Engineering has a wide reputation for the quality of teaching and research it offers. It has been awarded top grades for both teaching and research activities from independent and government bodies. The excellent laboratory facilities, modern computer clusters, systematically designed curriculum, and dedicated faculty members make this Department a dynamic place to study.

Programs Offered		Course Duration	Sanctioned Intake
B.Tech. in Mechanical Engineering		4 Years (8 Semester)	120
M.Tech. in Mechanical Engineering in following specializations	Heat Power	2 Years (4 Semesters)	12
	Design of Mechanical Equipment	2 Years (4 Semesters)	12
M.Tech. Computer Aided Analysis & Design		2 Years (4 Semesters)	12
M.Tech in Energy Technology		2 Years (4 Semesters)	12
<i>Ph. D. Programs: Ph.D. degrees are offered by the Department in Mechanical Engineering as well as in multi-disciplinary areas.</i>			

Vision of the Department:

- The Mechanical Engineering Department of Birla Institute of Technology, Mesra, Ranchi strives to be globally recognized for quality engineering education and research leading to well qualified engineers, academicians and researchers who are innovative, entrepreneurial and successful in achieving excellence in their field of study.

Mission of the Department:

- To impart quality education to the students and enhancing their knowledge and skills to be globally competitive Mechanical Engineers.
- To maintain state of the art research facilities to provide its students and faculty to create, interpret, apply and disseminate knowledge with an understanding of the limitations.
- To develop linkages and interaction with industry, R & D organisation and educational institution for excellence in consultancy practices, research and teaching.
- To provide conducive environment for learning, creativity and problem solving skill.

Mechanical Engineering Graduates from BIT Mesra are sought after by many prestigious companies. There is also an excellent careers center on campus, which helps the students to get entry into multinational companies.

All degree schemes offered are modular and structured to allow a gradual development of knowledge and skills. The courses also have a wide practical element based on the lecture modules, including laboratory work, team projects and industrial tours and seminars.

In addition, every student carries out a professional project in their final years. The professional project gives students a chance to apply their engineering skills to a real engineering problem. Many professional projects are industrially driven or linked, giving students direct exposure to industry as part of their studies. There is also a strong tutorial system, which provides students with a point of contact with a member of staff who can advise on welfare issues as well.

Faculty: All faculties are well experienced and most of the faculties hold their degrees from reputed IITs and NITs.

Achievement: Alumni's from the department is very strong and well established in different MNC companies.

Mr Karan Bajaj who holds the degree of BE for Mechanical Engineering from the batch 1996-2000 is the founder of "Whitehat Jr" an online coding platform for kids.

Facilities available and research

Class room: All rooms have internet access through wired/ wireless interfaces, laptop/desktop and printers.

Laboratories:

- Robotics Laboratory
- Advanced Solid Mechanics and Vibration Lab.
- Computational Methods Laboratory
- CAD Lab.
- Reverse Engineering Lab
- IC engine Lab
- Energy Lab

Research field: Thermal, CFD, Material Science, Fluid power and control, Equipment design, Fracture mechanics, Non-conventional energy, Renewable energy, Composites, Optimization techniques, Tribology, Non-Destructive Testing and others.

Department of Pharmaceutical Science & Technology

The Department of Pharmaceutical Sciences and Technology was established in 1972 at BIT Mesra and is a prosperous diverse scientific network which includes varied specializations working on particular scientific fields with highly qualified and competent faculties, postgraduate students, research fellows and visiting scientists within particular institutions with interdisciplinary and cross institutional activities. The Department is well equipped with the cutting-edge infrastructural facilities for teaching and research.

S. No.	Programs Offered	Sanctioned Intake
1	B. Pharm. - 4-years (8-semesters) programme	60
2	M. Pharm. - 2-years (4-semesters) programme in five specializations a. Pharmaceutics b. Pharmaceutical Chemistry c. Pharmacology d. Pharmaceutical Quality Assurance e. Pharmacognosy	15 15 15 15 15
3	M. Pharm. - 2-years (4-semester) programme under QIP	08
4	Ph.D. Program (including 8 under QIP)	Flexible

The Department encourages and supports studies involving a range of research strategies which are supported by various national and international funding agencies like UGC, AICTE, DRDO, CSIR, ICAR, ICMR, DST, BMBF (Germany), UGC-UKIERI etc. The Department also has collaboration with many renowned National and International Institutes of repute for research in various fields of Pharmaceutical Sciences and Technology.

Young faculties are also supported for post doctoral research abroad. A few faculties have also been on the panel of invited speakers at international conferences, held in USA, Singapore, Germany, Austria and UK.

Vision of the Department:

- To become a centre of excellence in teaching and research for creating technical manpower to meet the technological needs in the area of healthcare system contributing towards socio-economic development of the country.

Mission of the Department:

- To develop state of the art education and research at undergraduate, post graduate and doctoral levels in different areas of pharmaceutical sciences and technology.
- To provide excellent infrastructural facilities to strengthen research and development activities.
- To extend proper academic guidance and career counselling to students in order to bridge the gap between academia and industry as per needs of the society.
- To develop effective pedagogical and research potential among the faculties.
- To create pharmaceutical knowledge pool with innovative, ethical and leadership qualities to serve the cause of the society.
- To promote collaboration with academia, industries and research organizations at national and international levels in the areas of mutual interests.

Department of Pharmaceutical Sciences and Technology, Birla Institute of Technology, Mesra ranked 16th in Overall by National Institutional Ranking Framework (NIRF) 2020, Ministry of Human Resource Development, Government of India in category of Pharmacy.

The various areas of research are marked under various specializations such as:

Pharmaceutics

- New Drug Delivery Systems
- BA/BE Studies
- Nanotechnology Based Formulation Development
- Exploration of Natural molecules as Pharmaceutical Adjuvant

Pharmaceutical Chemistry

- *In silico* design, synthesis (conventional, microwave, development of combinatorial solution phase synthetic techniques) and evaluation of novel candidate compounds with special reference to heterocyclic moieties and small peptides in the field of antimicrobial, antiprotozoal, antiviral, antiHIV, anticancer, analgesic, antihistaminic, anticonvulsant, cardiovascular, antidiabetic and other activities.
- Molecular modeling, docking, QSAR and solution phase ADME studies using CADD based software like Sybyl 7.1, Autodock Vina, Flex X and Scigress Explorer.
- Natural products-chemistry/pharmacology/structure elucidation and standardization/ using spectroscopic methods (UV-VIS/IR/NMR/MS etc.)
- Studies on synthetic nutraceuticals

Pharmacology

- General pharmacological screening, in vitro and in vivo toxicological studies of new bioactive molecules from synthetic and natural sources.
- Neuropharmacological studies of bioactive molecules with special reference to cognitive functions.
- Studies of bioactive molecules on experimentally induced diabetes, and its implications in animal models.
- Biochemical and Molecular Pharmacological studies of bioactive molecules.
- Antioxidant and DNA protective properties of bioflavonoids

Pharmacognosy

- Validation of traditional systems of medicine
- Validated methodologies for development of new herbal formulations.
- Development of Drug molecules from natural sources and their enhancement by biotechnological approaches.
- Exploring natural resources for novel drug delivery systems.

Pharmaceutical Quality Assurance

- Analytical Method Development and Validation
- Bioanalytical Method Development and Validation
- Standardization of traditional drugs and polyherbal formulations
- Pharmaceutical Validation

Facilities

The Department houses two Instrumental laboratories with state-of-the-art instruments. It also houses a complete computational and molecular modelling laboratory with thirty-six computers, which are connected by LAN. Various molecular modelling software from BioSolve IT and Fujitsu has been installed in the laboratory. Wi-Fi facility is also available in the Department for easy accessibility of internet and intranet by students and staff.

An *in vitro* cell culture laboratory is also in the process of development in the Department. The Department also houses an FESEM from CIF.

Infrastructure added to the existing facilities include

- Biological Safety Cabinet
- Deep freezer(-86° C)
- Double Station Disintegration Tester
- DSC & TGA
- Electromagnetic Sieve Shaker
- ELISA reader
- FESEM
- HPLC(Waters) - PDA Detector
- Malvern Viscometer
- R & D COATER
- Refrigerated Centrifuge
- Stability Chamber
- TA-60 Thermal Analyzer
- Tabletop Ultracentrifuge
- Tap Densitometer Model ETD-1020
- Texture Analyzer of Load Frame
- Ultrasonic Homogenizer
- Viscometer

Department of Physics

The Department of Physics (previously known as Department of Applied Physics) since its inception in 1955 has played a pivotal role in the institute. A group of highly motivated, well qualified and talented faculty are actively engaged in teaching as well as research in areas of theoretical and experimental physics and technology. They have, to their credit, numerous research publications and several R&D projects. Faculty members have been awarded international fellowships from universities abroad (e.g., UCLA, USA; CNRM, France...), BOYSCAST fellowship awarded by DST, Government of India, Young Scientist from India and abroad, SERB-DST Overseas Postdoctoral Fellowship, and Associateship of International Center of Theoretical Physics, ICTP, Italy. The Department is also leading the institute in the process of its nomination as Institute of Repute (IoR) to serve under the National Clean Air Mission.

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	-	-

Vision of the Department:

- The vision of the department is to achieve excellence in education at undergraduate and postgraduate levels and in research for scholarly inquiry and creation 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 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 provide service beneficial to local, state, national and international communities.
- Impart high quality education in a vibrant academic ambience.
- Prepare students to take up challenges as researchers in academic and R & D organizations.
- To train students for participation in multidimensional academic activities.
- To impart scientific knowledge and inculcate ethical values.

The department has well equipped laboratories having several systems viz., RF magnetron sputtering, Plasma Enhanced Chemical Vapour Deposition (PECVD), Microwave CVD, thermal CVD units, RF/DC magnetron co-sputtering, plasma nitriding, anodic vacuum arc deposition, plasma arc generator, polishing setup, Raman spectrometer, optical microscope, nanoindenter, solar simulator, D33 meter, PE loop-tracer with high temperature measurement facility (upto 600 °C), LCR meter, Impedance analyzer (-100 °C - 800 °C), UV Visible Spectrometer, Photoluminescence spectrometer, High temperature tube and box furnaces, 10K cryostat, magnetoresistance measurement unit, Probe station, Semiconductor parameter analyzer, etc. The computational facilities include two high-end computer workstations to assist in theoretical studies, that can be used for parallel computation. The Department also has various computational softwares like, Medea VASP, Wien2K, LabVIEW, Maple, Matlab, Mathcad, etc.

The department is supported by DST New Delhi through “Fund for Improvement in Science & Technology Infrastructure (FIST)” programme of the Department of Science and Technology, New Delhi and “Special Assistance Programme” (SAP) of the UGC. The Department has also received significant funds under TEQIP Phases - I & II.

At present the department has 18 faculty members and around 22 research scholars. Besides two Indo-Russian projects, the department has been pursuing several sponsored projects funded by the UGC, DST, SERB, AICTE, NPIU (TEQIP-III), BRNS, ISRO, MoES, ARDB, DRDO, NRB and CSIR. In addition, the MoU with GSFC, NASA, USA is continuing for the study of the Arid zone and dust storm. The department has also completed an Indo-German project under Indo-German Bilateral Cooperation in Science and Technology (DST-BMBF) and an Indo-Israel project.

Academic Collaborations

Faculty members of the department have foreign collaborations with research groups of NASA Goddard Space Flight Center, University of Strasbourg, France, Moscow State University, Russia, Ioffe Physical Technical Institute, St. Petersburg, Russia, Institute of Physics, Acad. Sci. Czech Rep., Na Slovance 2, Czech Republic, Magnetic Research Division, Institute of Low Temperature & Structure Research, Polish Academy of Sciences, Poland, etc. In addition, they also have active collaborations with several premier institutes of India, like ICTS-TIFR, IIT Delhi, University of Calcutta, Institute of Physics (IOP) Bhubaneswar, Banaras Hindu University, IIT Chennai,, IITM Pune, National Centre for Medium Range Weather Forecasting (NCMWRF), etc.

Research Areas

The current broad areas of research in the department include quantum optics, nonlinear optics, nanotechnology, condensed matter physics and atmospheric physics. Specific sub-areas are plasma processing of materials, surface engineering with plasma coating, surface modification, anodic vacuum arc deposition of thin films, carbon nanotubes, diamond-like carbon (DLC) films, nano and ultra-nanocrystalline diamond films, carbon nanotubes, transparent conducting oxides, solar cells, nanocrystalline superhard coatings, high temperature superconductivity, colossal magnetoresistive materials, dilute magnetic semiconductors, piezoelectric materials, electronic composite materials, magnetic composites, soliton and light propagation, optical communication, photonic crystal fibres, optoelectronics, etc. In atmospheric physics the prime areas of research are air pollution studies, validation of satellite data, numerical modeling and application of the artificial neural network in atmospheric physics.

Students Progression for Higher Education from Department

Many of our graduate and post graduate students are currently pursuing research careers at top institutions around the globe, such as, International Max Planck Research School, Germany, PennState Eberly College of Science, USA, Swinburne University of Technology, Australia, University of Calgary, Canada, Harish-Chandra Research Institute, Allahabad, including different IITs.

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.
- Science Academies' Refresher Course on Experimental Physics organized during 14th - 29th June 2018.
- National Anveshika Experimental Skill Test (NAEST) 2019
- One day Webinar on the topic "Challenges Involved in Simulating the Complex Systems" (25 July 2020)
- Hands-on training on MedeA VASP, from 11th Feb 2021 - 17th Feb 2021.

Production and Industrial Engineering

The Department of Production and Industrial Engineering at BIT Mesra is committed to impart knowledge in cutting edge manufacturing techniques complemented with management of production enterprises. Since its inception in 1964, the department has closely collaborated with the industry, R&D organizations, consultancy organizations and academic institutes to establish a comprehensive curriculum which trains students in both technical as well as managerial aspects of their job. The department sees itself as pathfinder of emerging technologies and techniques in production engineering, develops students to be technologically and managerially sound to meet the challenges of the rapidly changing manufacturing scenario.

Programs Offered	Course Duration	Sanctioned Intake
B.Tech. in Production & Industrial Engineering	4 Years (8 Semesters)	60
M.Tech. in Automated Manufacturing System	2 Years (4 Semesters)	12
Ph.D. Program - Manufacturing and Industrial Engineering		

Vision of the Department:

- To become a center of repute striving continuously towards providing quality education, research and innovation in the field of production engineering.

Mission of the Department:

- To provide quality education at both undergraduate and postgraduate levels.
- To provide opportunities and facilities for research and innovation.
- To produce engineering graduates to meet the demands of manufacturing industries and R&D organizations.
- To emphasis on integrating manufacturing technology with management.
- To impart latest technological knowledge to students by continuous development of curricula and faculty.

The program B.Tech. in Production & Industrial Engineering is aimed to equip the students with the necessary technical and managerial skills which are in rampant demand in today's competitive job market. Throughout the graduate course, the student would be made conversant with in demand concepts, e.g., Industry 4.0, Smart Manufacturing, Supply Chain Management, and new manufacturing concepts like sustainable manufacturing, automation in engineering, Analytics in engineering etc., aimed at catering to the dynamic nature of industries and making students job ready. This program is in tune with the Govt. of India initiatives like; Make in India, Atmanirbhar India & Vocal for Local, as this program trains students in emerging technologies in the area of manufacturing and managerial aspects of it.

Automated Manufacturing Systems is a post graduate course offered by Production Engineering department. Automated manufacturing system engineers are not only specialized in automation, but also in the integration and interoperability of technological systems.

This is an interdisciplinary course seeking expertise in several branches of engineering viz. Manufacturing/Production, Mechanical, Electronics and Computer Science.

The Department of Industrial and Production Engineering values the significance of research as an integral part of any educational institute and upholds its mission values. The state of art laboratories such as Computer Integrated Manufacturing Lab, Modelling and Simulation lab are equipped with the software used by prominent companies across the globe.

The department is hub to the latest equipment used in industries aimed at emulating the real-world manufacturing firms and can also be used by doctoral and graduate students to bolster their research and innovate and improve upon novel manufacturing techniques.

The department is supported by various funding agencies like:

- DST FIST 1
- DST FIST 2
- UGC-MRP
- Ministry of MSME Gov. of India
- UGC-SAP

Major recruiters:

Tata Motors, Maruti Suzuki, Box 8, Delloite, Stellium, Capgemini, Cognizant, Axis Bank, NBC Bearings, Future First, Mu Sigma, Volvo Eicher

Major State of art equipment:

- Micro Tools DT-110 Hybrid Micro Machining Machine Tool
- Elektra CNC Wire Cut EDM
- Erichsen Cupping Test Machine
- Ultrasonic Flow Detector
- TIG/MIG Welding
- Stir Casting & Attachments (squeeze casting, centrifugal casting, ultrasonic, vacuum cast, preheater oven)
- Carl Zeiss Microscope AXIO Metallurgical Microscope
- Taylor Hobson Contour Tracer
- CNC Plasma Cutting Machine
- CNC Lathes
- CNC 3 axis Milling Machine
- CNC 5 axis Milling Machine
- CNC Surface Grinder
- Kristler Tool Force Dynamometer
- Flexible Manufacturing system Setup
- PLC, Mechatronics System

Major Software available:

- NX10 (siemens NXACAD100+101)
- Mini Tab-17
- WITNESS software
- GPSS
- AFDEX
- Z-Cast
- V-CNC

Department of Remote Sensing

Department of Remote Sensing was established in 1996 with an aim to meet the increasing demand for qualified manpower in this rapidly developing Geospatial field. Application of Remote Sensing / Geoinformatics techniques using tools such as Geographic Information System (GIS), Global Positioning System (GPS) and Global Navigation Satellite System (GNSS) in various activities including natural resources evaluation, land use/land cover mapping/change, environmental monitoring, climate change, forest vegetation health/phenology, geospatial modelling, disaster management, remote sensing of cryosphere etc., has grown considerably during in recent times. RS data products are increasingly being used for plan formulation at all levels requiring geospatial inputs. An essential pre-requisite to partaking in these opportunities is building varied indigenous capacities for the development and utilization of space science and technology.

Programs Offered	Course Duration	Sanctioned Intake
M.Tech in Remote Sensing	2 Years (4 semesters)	18
M.Sc. in Geoinformatics	2 Years (4 semesters)	20
Ph.D. in all branches of Remote Sensing, GIS, Earth Sciences		

Vision of the Department:

- Be a centre of excellence in the field of Remote Sensing and Geoinformatics Technology education and research to match the needs of ever increasing requirement of human resources in these fields and to cater to the larger interest of the Society and Nation.

Mission of the Department:

- Impart quality education and equip the students with strong foundation that could make them capable of handling challenges of the ever advancing technologies.
- Maintain state-of-the-art in research facilities in phase with the world's leading universities and research organisations for constant improvement in the quality of education and research.

THE SIGNIFICANCE OF REMOTE SENSING

The world is being continuously scanned by highly sophisticated Earth Resources Satellites like IRS/CARTOSAT/RISAT (India), LANDSAT (USA), SPOT (FRANCE), RADARSAT (Canada), IKONOS and Quickbird, etc. to study and understand Earth's processes. Recent technological advancements like GPS, UAV, Web & Mobile GIS have accelerated Geospatial domain applications in various activities, including resources evaluation, environment monitoring and landuse / landcover mapping, etc. An essential pre-requisite to avail these opportunities is the building of various indigenous capacities, especially qualified manpower.

The Department of Remote Sensing is striving to keep updated with technological development and has expanded with DST-FIST, UGC-SAP, TEQIP fund support. The Department offers Post Graduate courses and Ph.D. programme in inter-disciplinary mode. The Department has state-of-art laboratories equipped with the latest software, hardware to provide hands-on training to its postgraduate students. A multi-disciplinary team of faculty members is the strength of the Department, and they are also engaged in various R&D project & consultancy jobs from multiple Government and international organizations. The Department also participates in the Distance learning Programmes (EDUSAT) conducted by IIRS, ISRO, Dehradun.

FACILITIES

The Department has seven dedicated labs catering to DIP, GIS, Digital Photogrammetry, Satellite Navigation Systems including DGPS, Remote Sensing Research & Project, and a Departmental library for Satellite Data and Maps.

These laboratories are equipped with state-of-the-art computing systems, smart station, DGPS, UAV with multi-sensors, Field Spectro-radiometer, LAI meter and advanced software for GIS, Image Processing and Digital Photogrammetry.

ABOUT THE COURSES

M.Sc. Geoinformatics and M.Tech. Remote Sensing courses are two years degree programme. These Degree Programs generally start each year in July, but the application and advertisement process starts from February onwards. All the courses are conducted in English language.

DETAILED ACTIVITIES UNDER THE COURSE

In M.Tech. Course, the first-year contents are focused on Theoretical and Practical Aspects of Remote Sensing, GIS, GNSS, Photogrammetry, Programming, Geostatistics, and various geo-spatial applications. The second-year contents are focused mainly on developing Independent Research skills.

In the first Semester, the basic concepts of Geospatial Technology are taught to the students. The second Semester delves deep into advanced concepts, modelling in GI domain, and modern photogrammetry using Satellite and UAV and various Elective Modules. The students are also provided with an opportunity to select OPEN ELECTIVE courses provided across the university. Students are also taught additional skills such as project management, research methods, data acquisition, etc. The Third and Fourth semesters focus only on the RESEARCH THESIS. During the Research, the student is supervised or co-supervised by the faculty.

Option for a summer internship at various leading research centers in India is also provided from time to time to encourage Academia-Industry Partnership. Students are also taken to a field and other National Mapping organisations to expose them to actual processes and activities in GI domain.

For MSC, the theoretical study period is spread over three semesters with examination requirements at the end of each Semester. The fourth Semester will be allocated only for Research Project. Also, in the 3rd Semester, there will be a mini Project that helps the student orient towards research for one year (i.e., 3rd and 4th semester project together) when they complete their degree course. The Master's program requires 80 credit points. The detailed credit information is provided in the Course Structure.

The Masters's program (both M.Tech. and M.Sc.) will help the student to take their future career path in the direction of Natural Resources planning/management, regional planning, GIS Analyst in the growing private market and various application domains. At present the qualified Geoinformatics personnel is lacking in most of the Government departments and hence our degree will provide an excellent career enhancement opportunity. Graduates from geography, agriculture, forestry, geology, physics, mathematics, and engineering in Civil, ECE, EEE and Computer Science can apply for our programmes. For M.Sc. programme one needs to have a simple Bachelors's degree but for M.Tech. programme, the candidate needs to have either a Master's degree or four years Bachelors's degree.

PLACEMENT

M.Tech. Remote Sensing and MSc Geoinformatics degrees from BIT are highly recognised, reputed and well accepted in India and Abroad. State Remote Sensing centers, IMD (Indian Meteorological Department), Indian Space Research Organisation (ISRO) establishments such as SAC, NRSC, IIRS, NESAC etc. and several other reputed governmental organizations such as IITs, ICAR, NITs, NGOs and diverse private sectors are the places our students often get placed. Students obtaining their degrees from this department have good scope of getting admissions in International Universities and many of them are carrying out higher education in the countries such as USA, Canada, UK, Netherlands, Australia, China etc. Our alumni are also working as Scientists, GIS Analyst/experts, JRF/SRF/Project Fellows, Consultants, Faculty Members in reputed Institutions including IIT/IIST/NIRD. Our students are also placed at various leading Institutions in India and reputed multi-national companies in the field of geospatial and remote sensing technologies as well as other positions requiring Remote Sensing and Geoinformatics skills.

FELLOWSHIP/SCHOLARSHIP OPPORTUNITIES

The Indian Government provides numerous scholarships for pursuing a Ph.D. degree after these courses, such as Rajiv Gandhi Fellowship for SC/ST candidates, Maulana Azad fellowship for Minority Communities, Prime Minister Fellowship, National Fellowship for OBC Candidate, Post-Graduate Indira Gandhi Scholarship for Single Girl Child, Post-Graduate Merit Scholarship for University Rank Holder, "Ishan Uday" for North Eastern Region, UGC-JRF, CSIR-JRF etc.

Department of Space Engineering and Rocketry

The Department of Space Engineering and Rocketry - the first of its kind in the country was established in 1964 to train scientists and engineers in the important areas of Aerospace Engineering and Rocket Technologies. Since 1968 it has been offering a post- graduate degree course in Space Engineering and Rocketry with in-depth specialization in two specific areas: Aerodynamics and Rocket Propulsion. The Department aims to provide state of art education and training to its students to enable them to contribute efficiently in the National efforts being made in the fields of Space and Defence related technologies and challenging future missions.

Programs Offered	Course Duration	Sanctioned Intake
M.Tech. in Space Engineering & Rocketry in two specializations	2 Years (4 Semesters)	12
a) Aerodynamics		12
b) Rocket Propulsion		
Ph.D. Program	-	-

Vision of the Department:

- To effectively integrate teaching, research and innovation for significant contribution towards National Aerospace Programmes and related activities.

Mission of the Department:

- To impart quality education and advanced research training leading to postgraduate and doctoral degree.
- To generate modern infrastructure and conducive research atmosphere for carrying out innovative sponsored research projects.
- To nurture spirit of excellence and professional leadership in students and faculty members through exposure to leading academic/ research organisations and external experts.
- To create attractive opportunities for sustained interaction and collaboration with academia and industry.

The Department also provides research facilities at doctoral and postdoctoral levels in the fields of Aerodynamics and Flow Studies, Propellant Technology, Rocket Propulsion and Combustion.

The Rocket Propulsion Laboratory has static test set-ups equipped with a computer controlled firing facility and data acquisition and analysis system for solid, liquid and hybrid rocket motors. Basic infrastructure for design and fabrication of rocket motors is also available in the Department. The Department has developed and flight tested its own rockets of different calibers.

In the area of Propellant Technology, complete processing and characterization facilities are available for rocket propellants and igniters. Advanced techniques and equipments for carrying out research in the areas of high-energy materials, igniters, inhibitors and insulators, and high performance metalized gelled propellants are also available in the Department. High pressure and sub-atmospheric pressure combustion facility and equipments to conduct research on premixed and diffusion flames also exist.

Modern equipments like simultaneous thermal analyzer, thermo-gravimetric analyzer, differential scanning calorimeter, viscometers, rheometers, calorimeters, spectrophotometer, Double Planetary Mixture, Micronizer, flame propagation and stability unit etc. are also available for training and research.

In the Aerodynamics Laboratory, 3 wind tunnels, free jet, anechoic chamber and, water tunnel facilities are available to train students and carry out research work in the fields of High speed/ Low speed Aerodynamics, and unsteady Aerodynamics. Different types of pressure sensors and flow visualization techniques are available to study the flow field on scaled models of aerospace vehicles. Commercial software ANSYS to carry out CFD related activities is available with high end research licenses. Apart from this, open source CFD Software open FOAM is extensively used for research activities. In-house CFD code developmental activities are also undertaken.

Sec 8. Placement

The Campus Recruitment Programme of BIT Mesra has, for more than three decades, successfully met the needs of IT Professionals of different IT Industry. The Training & Placement (T&P) Division maintains a steady rapport with the partnering organisations and sometimes several organisations prefer to contact through on-line registration modules on the official website of the institute. In addition to T&P activities, the division is also engaged in organising placement seminars and workshops, conducting training programs and guest lectures by industry captains and alumni of our institute. The T&P division is equipped with well-trained experienced executives and staff as well as devoted student coordinators who take active part to conduct the placement process efficiently. Moreover, our well established and accomplished alumni play a very important role for making the process robust. Every year a good number of companies visit the Institute for placement and internships for our students.

A few of leading recruiters visited in last couple of years for ME / M.Tech. are National Payment Corporation (NPCI), Cognizant, Wipro, IBM, Infosys, Sapient, NIIT University, Aakash Institute, Frost and Sullivan, Collabera, Deloitte Consulting India Pvt Ltd, Federal Bank, Oracle- OFSS, Affine Analytics etc.

Few of leading recruiters visited in the last couple of years for M.Pharm are Nova Nordisk Pharma, Dr. Reddy's, Mylan, Torrent Pharma, DDreg Pharma, Troikaa Pharma, Sun Pharma, Macleods Pharma etc..

Few of the leading recruiters visited in the last couple of years for M.Sc. Azim Premji Foundation, Aakash Institute, Avanti Learning, Cognizant, Infosys, Shivalik College of Engineering, OCL India ltd, Novartis, Deloitte Consulting India Pvt Ltd, Byjus, Pricewaterhouse Coopers (Pwc), ADROSONIC IT Consultancy Services Pvt Ltd, etc.

Sec 9. Discipline, Rules & Regulations, Hostel 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 Hostel rules 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 Certificate with an application from their parents or guardians. In such a case, parents/guardians or Hostel Warden 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 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 College. 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 Hostel Mess / 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 refer Annexure -II].

Hostel

Hostel facilities are provided only at Mesra & Patna Campuses. All students admitted at Mesra and Patna Campuses 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.

The Institute at Mesra is located in a spacious green campus. There are small forests with a large number of trees - mostly sal trees which are native to Chotanagpur. These sal trees and a number of other trees and plants have their flowering season during mid-February to early April, and this sometimes leads to a large pollen content in the air. It has been noted that some people who are allergic or susceptible to pollen from these sal trees / other plants may develop some health problems / breathing problems or their existing problems may be aggravated during these weeks, as also during some other months of the year when other plants flower. Thus, such candidates who are known to be sensitive or susceptible to pollen from trees or other plants are required to get allergy tests done / take advice from their physicians / a specialist before taking admission at Birla Institute of Technology, Mesra, Ranchi.

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.

Annexure -I

Format of undertaking for candidates appearing for final examinations in 2021

Format of Undertaking to be typed and submitted on Non- Judicial stamp Paper, signed by Public Notary, at the time of admission, by those candidates who are provisionally selected for the Postgraduate Programs of the Institute, and who are appearing for their final examinations in 2021.

Please fill in all blanks, select relevant items, and delete whatever is not applicable.

1. I, _____ son/daughter of _____ resident of _____ P.S. _____ Dist. _____ hereby declare that I am fully aware that minimum marks for admission to the M.Tech / M.Pharm / MUP / M.Sc. Program in _____ of the Birla Institute of Technology is _____ % (_____% for SC/ST) in Honours / aggregate of all subjects in all years in graduate/postgraduate level (qualifying examination) and therefore I shall be disqualified for admission to the above Program of Birla Institute of Technology, if I do not secure minimum _____ % (_____% for SC/ST) in Honours / aggregate of all subjects in all years in graduate / postgraduate level or equivalent eligibility qualification (qualifying examination).
2. I belong to SC / ST / OBC / General category (strike out whichever is not applicable)
3. I do hereby undertake that since I have been provisionally allowed to appear in the selection procedure to above Postgraduate Program although results of my graduate / postgraduate / equivalent eligibility qualifying examination has not yet been published, I shall not insist on extension / conversion of the provisional admission, if
 - i). I fail to secure minimum _____ % (_____% for SC/ST) in Honours / aggregate in all subjects in all the years in such graduation/postgraduation or equivalent eligibility qualifying examination, or
 - ii). I fail to produce the official result by the **31st October 2021**.
4. I undertake that all the certificates / documents submitted by me are authentic and are issued by competent authority.
5. I undertake that if at any time during the program I am found not to be eligible for admission for not having required marks in graduation / postgraduation, my admission shall be cancelled.

Counter Signed

(Guardian)
Name & Address in Block Capitals

Name_____

Address_____

(Applicant)
Name & Address in Block Capitals

Name_____

Address_____

Annexure - II

Procedure for submission of Anti-ragging Affidavit [during admission]

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.