

INFORMATION BROCHURE - 2020

for

Admission to

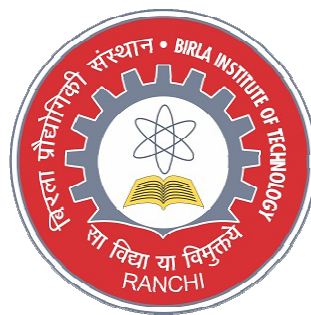
M.Tech., M.Pharm., MUP & M.Sc. Programs

at

Birla Institute of Technology, Mesra

and

Its Off Campuses at Noida & Patna



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, Admissions & Academic Coordination Birla Institute of Technology Mesra, Ranchi 835215 Phone: 0651-2275868 (Direct), PBX: 0651-2275444 / 896, Extension- 4469 E-mail: admissions@bitmesra.ac.in
Noida	Director, Birla Institute of Technology, Off Campus A-7, Sector-1 Noida 201301 Phone: 0120-2440408 / 4264080/ 4263080 / 2553661 /2553662 E-mail: bitnoida@bitmesra.ac.in
Patna	Director, Birla Institute of Technology, Off Campus Near Patna Airport, P.O. Bihar Veterinary College, Patna - 800014 Phone: 0612- 2223545, 9264450104 E-mail: bitpatna@bitmesra.ac.in

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

Deoghar	Director Birla Institute of Technology Deoghar Off Campus P.O. - Ratanpur, Jasidih Dist. Deoghar, 814142, Jharkhand Phone: 7463881140, 7463881103 e-mail: bitdeoghar@bitmesra.ac.in
Jaipur	Director Birla Institute of Technology, Off Campus 27, Malviya Industrial Area, Jaipur - 302017 Phone: 0141 - 4019819 / 4019798 E-mail: bitjaipur@bitmesra.ac.in
Lalpur	Director Birla Institute of Technology, Off Campus Lalpur, Ranchi - 834001 Phone: 0651-2531229 / 2531817 E-mail: bitlalpur@bitmesra.ac.in

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Important Dates

Filling of online form commences from	4 th March 2020
Last date for Applying Online	25 th May 2020
Tentative date for notification of schedule for Written Test & Counselling / Interview (on the Institute website only)	30 th May 2020
Tentative dates for Written Test and Counselling	10 th -12 th June 2020
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 2020 -
An Introduction and How to Apply**

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

1. **M.Tech. program in various specializations in the following disciplines:** [Duration: 2-year, 4-semester] at Mesra (Main 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. Computer Science & Engineering program at Off Campus Noida**
[Duration: 2-year, 4-semester]

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

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

4. **M.Pharm program in the following specializations: at Mesra (Main Campus)**
[Duration: 2-year, 4-semester]

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

5. **MUP - Master of Urban Planning at Mesra (Main Campus)** [Duration: 2-year, 4-semester]

6. **M.Sc. program in the following disciplines at Mesra (Main Campus)**
[Duration: 2-year, 4-semester]

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

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]. 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.**
3. **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 program, may apply for multiple campuses (Mesra and Patna), in order of preference.**
3. **Candidates applying for M.Tech. Computer Science & Engineering programs, may apply for multiple campuses (Mesra, Noida and Patna), in order of preference.**
4. **Please use separate application form(s) for applying two or more programs such as M.Tech. (EE), M.Tech. (ECE), M.Tech. (CSE) etc.**

The Test & counselling / interview schedules (wherever applicable) for the above programs will be announced by 30th May 2020, only on Institute website and Notice Boards of concerned Campuses. Candidates are advised to visit the Institute website periodically for updates and any other matter pertaining to the admission procedures. No individual intimations will be sent to candidates.

Candidates appearing for their final examinations in 2020 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 2020, failing which the provisional admission will be cancelled. (Please see Sec 9 for format of the above undertaking).

**Sec 2 Eligibility criteria for the M.Tech., M.Pharm., Master of Urban Planning (MUP)
and M.Sc. Programs 2020**

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 2018 / GATE 2019 / GATE 2020 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 2020 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 2020, 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 Sec-9).

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 2020. 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.

**Postgraduate Programs 2020 at BIT Mesra (Main Campus) and
its Off Campuses at Noida and Patna**

M.Tech. Programs at BIT Mesra (Main Campus) & its Off Campus, Patna:

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 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	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 2020 at BIT Mesra (Main Campus) and
its Off Campuses at Noida and Patna**

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

**Postgraduate Programs 2020 at BIT Mesra (Main Campus) and
its Off Campuses at Noida and 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 2018 / GATE 2019 / GATE 2020 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.

**Postgraduate Programs 2020 at BIT Mesra (Main Campus) and
its Off Campuses at Noida and Patna**

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 2018 / GPAT 2019 / GPAT 2020 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 2020 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 2020, 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 Sec-9).

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 2020. 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 2018 / GPAT 2019 / GPAT 2020 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 2018 / GATE 2019 / GATE 2020 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 2020 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 2020, 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 Sec-9).

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 2020. 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 2018 / GATE 2019 / GATE 2020 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 appearing for final examinations of their Bachelor's program in 2020 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 2020, 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 Sec-9).

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 2020. 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, Physics, Mathematics or equivalent and Mathematics as a subject at Class 12 level
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. Selection Procedures, Expected Dates of Written Tests & Counselling

(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 2018 / GATE 2019 / GATE 2020, provided that the candidates fulfill the eligibility criteria mentioned in Sec - 2A & 2C.

Non-GATE candidates: Provisional selections of Non-GATE candidates will be based on written test and interview, 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 2018 / GATE 2019 / GATE 2020 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.

(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 2018 / GPAT 2019 / GPAT 2020, provided that the candidates fulfill the eligibility criteria mentioned in Sec 2B.

Non-GPAT candidates: Provisional selections of Non-GPAT candidates will be based on written test and interview, 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 2018 / GPAT 2019 / GPAT 2020 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.

(C) Selection Procedures for the M.Sc. programs: Provisional selections to the M.Sc. programmes will be based on previous academic record, provided that the candidates fulfill the eligibility criteria mentioned in Sec-2E. **There will be no scholarships for students of these programs.**

Expected Dates of Written tests & counselling / interview for all programs:

- The list of candidates along with Test & counselling / interview schedules (wherever applicable) for the above programs will be announced by 30th May 2020 only on the Institute website and Notice Boards of concerned Campus(es). No individual intimations will be sent to candidates.**
- Candidates are advised to visit our Institute website periodically for any updates pertaining to admission.
- The written tests and counselling / interview (wherever applicable) of shortlisted candidates will be conducted during 10-12 June 2020.

Note, FOR: M.Tech. - ECE (Wireless Communication) and M.Tech. (Computer Science & Engineering) - Candidates should appear for the written test and counselling / interview (whichever applicable) at the Campus of their first preference.

Provisional selection lists, along with procedures for admissions, will be notified the day after the counselling, on the Institute website and Notice Boards of the Institute / its concerned Off Campus only. No separate intimations will be sent to candidates.

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 our website and Institute Notice Boards only. No separate intimations will be sent to candidates.

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,

- if any information provided in the application form is found incorrect or missing.
- those who fail to submit the marksheet of equivalent qualifying examination in time as stipulated.

Documents required to carry at the time of counselling and admission

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 2020. They must bring a certificate in original from the Principal of Institute stating that:

c). by 30 June 2020, 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 2018 / GATE 2019 / GATE 2020 Admit card and Score card for M.Tech. and MUP programs (if applicable).
7. GPAT 2018 / GPAT 2019 / GPAT 2020 Admit card and Score card for M.Pharm. program (if applicable)
8. Caste certificate / special category certificate (if applicable) should be in proper format and signed by appropriate authority.
9. **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).**
10. One passport size photograph, identical to the photograph uploaded during filling of online application form.
11. Photo identification: (Driving license, Passport, PAN Card, Voter ID, Aadhaar Card, College ID, Employee Identification Card are acceptable).

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.

Provisionally selected candidates appearing for their final examinations in 2020 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 marksheet / degree certificate is **31 October 2020**, failing which the provisional admission will be cancelled. **(Please see Sec 10 for format of the above undertaking).**

Note: Eligible SC/ST and PwD students admitted to above programs 2020 at Mesra and its Off campus, 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 4. Number of Seats, Scholarships and Reservations

Number of seats:

Programs	Total Seats
(A) M.Tech. Programs (2 years, 4 Semesters) at Mesra	
Automated Manufacturing Systems	25
Biotechnology	18
Civil Engineering (Soil Mechanics & Foundation Engineering - 12, Structural Engineering -12)	24
Computer Aided Analysis and Design (CAAD)	18
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	18
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. Program (2 years, 4 Semesters) at BIT Off Campus, Noida	
Computer Science & Engineering	18
(C) M.Tech. Programs (2 years, 4 Semesters) at BIT Off Campus, Patna	
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	
	20
(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 2018 / GATE 2019 / GATE 2020 score and M.Pharm. program with valid GPAT 2018 / GPAT 2019 / GPAT 2020 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. At Mesra 50% of the total seats are reserved for candidates from Jharkhand State, and the 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.

**Postgraduate Programs 2020 at BIT Mesra (Main Campus) and
its Off Campuses at Noida and Patna**

Sec 5. Financial Information and fees payable 2020

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

Particulars	1st Sem	2nd Sem	3rd Sem	4th Sem
Tuition Fee	91000	91000	101000	101000
Development Fee	6500	6500	7000	7000
Institute Exam Fee	5500	5500	6000	6000
Total:	103000	103000	114000	114000

Hostel Seat Rent, Electricity and Transport etc.	16000	16000	21000	21000
G. Total:	119000	119000	135000	135000

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 Mesra (Main Campus) in each subsequent semester

Particulars	1st Sem	2nd Sem	3rd Sem	4th Sem
Tuition Fee	100500	100500	111500	111500
Development Fee	7000	7000	7500	7500
Institute Exam Fee	5500	5500	6000	6000
Total :	113000	113000	125000	125000

Hostel Seat Rent, Electricity and Transport etc.	16000	16000	21000	21000
G. Total:	129000	129000	146000	146000

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 will be approximately Rs. 2,500/- to Rs. 3,000/- per month. Students at Mesra 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 2020, this mess advance will be Rs. 20,000/- [Total of Rs. 25,000/-]
*Hostel Caution Money (One Time only - Refundable) and Hostel Mess Advance (each semester) are payable by crossed Demand Draft in favour of "BIT Welfare Society" payable at Ranchi.
- All fees must be paid by crossed Demand Draft in favour of "Birla Institute of Technology" payable at Ranchi.
- 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.

**Postgraduate Programs 2020 at BIT Mesra (Main Campus) and
its Off Campuses at Noida and Patna**

Financial Information and fees payable 2020

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

Particulars	1st Sem	2nd Sem	3rd Sem	4th Sem
Tuition Fee	45500	45500	49500	49500
Development Fee	3000	3000	3500	3500
Institute Exam Fee	5500	5500	6000	6000
Total:	54000	54000	59000	59000

Hostel Seat Rent, Electricity and Transport etc.	16000	16000	21000	21000
G. Total:	70000	70000	80000	80000

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 Mesra

Particulars	1st Sem	2nd Sem	3rd Sem	4th Sem
Tuition Fee	67500	67500	74500	74500
Development Fee	4500	4500	5000	5000
Institute Exam Fee	5500	5500	6000	6000
Total:	77500	77500	85500	85500

Hostel Seat Rent*, Electricity and Transport etc.	16000	16000	21000	21000
G. Total:	93500	93500	106500	106500

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 will be approximately Rs. 2,500/- to Rs. 3,000/- per month. Students at Mesra 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 2020, this mess advance will be Rs. 20,000/- [Total of Rs. 25,000/-]

*Hostel Caution Money (One Time only - Refundable) and Hostel Mess Advance (each semester) are payable by crossed Demand Draft in favour of "BIT Welfare Society" payable at Ranchi.

- All fees must be paid by crossed Demand Draft in favour of "Birla Institute of Technology" payable at Ranchi.
- 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.

**Postgraduate Programs 2020 at BIT Mesra (Main Campus) and
its Off Campuses at Noida and Patna**

Financial Information and fees payable 2020

Fee payable at the time of admission and in each subsequent semester for M.Tech. program at Noida and Patna campuses

Particulars	1st Sem	2nd Sem	3rd Sem	4th Sem
Tuition Fee	91000	91000	101000	101000
Development Fee	6500	6500	7000	7000
Institute Exam Fee	5500	5500	6000	6000
Total :	103000	103000	114000	114000

Hostel Seat Rent* and Electricity etc. (for Patna campus)	13500	13500	14500	14500
G. Total: (for Patna Campus)	116500	116500	128500	128500
G. Total (for Noida Campus)	103000	103000	114000	114000

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

Notes:

- Hostel facilities are available at Patna Campus only. Hostel mess charges at Patna campus will be approximately Rs. 2,500/- to Rs. 3,000/- 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 2020, this mess advance will be Rs. 18,000/- (boys), Rs. 15,000/- (Girls).
- All fees must be paid by crossed Demand Draft in favour of "Birla Institute of Technology" payable at Noida (for admission at Noida Campus) and payable at Patna (for admission at Patna Campus).
- 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 6. Profile of the Departments

Department of Architecture

Birla Institute of Technology, Mesra, Ranchi, established the Department of Architecture in 1993. It is the only institute in Jharkhand offering 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 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 Program (SAP) of the University Grants Commission (UGC).

Programs offered	Course Duration	Sanctioned intake
Bachelor of Architecture (BArch)	5 Years (10 Semesters)	40
Master of Urban Planning (MUP)	2 Years (4 Semesters)	20
Doctoral program in architecture and planning (Ph.D.)	-	-

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.

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 program.
- 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 is therefore designed to sensitize the students to fulfill the above requirements of the profession and incorporates philosophic wholeness of humanities, the logical rationalism of science, the passionate imagination of art and the inexhaustible resources of technology.

Postgraduate Programs 2020 at BIT Mesra (Main Campus) and its Off Campuses at Noida and Patna

The post-graduate course in Urban Planning (MUP) program is likewise 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 world class 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 10 among all Architecture colleges in India as per NIRF 2019. *The Department ranked 6th among all colleges of Architecture in India as per India Today 2019 survey.* The Department ranked 2nd among all colleges of Architecture in India as per the survey of GHRDC in 2019. Department has been constantly featuring as one of the top 10 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. They 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.

Department of Bio-Engineering

The Department of Bioengineering, renamed in 2014, was established in 2002 as Department of Biotechnology 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.

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	-	-

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).

The Vision & Mission of the Department are: -

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 different programmes seek to provide students with education and training in:

- Scientific principles and knowledge underlying advances in bioengineering
- Basic laboratory techniques in research and development
- Legal and intellectual property issues
- Tools involved in bioinformatics, imaging and signal processing
- Skill and attributes important in business and bio-[entrepreneurship](#)

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 at a Glance:

- Independent building about 35000 sq. ft.
- 12 well equipped high end research laboratories dedicated to carry out basic and advanced research in the field of Molecular Biology, Genetic Engineering and Cell Biology, Plant and Animal Biotechnology, Microbiology, Biochemistry, Proteomics, Bioinformatics, Bioprocess Engineering, Chemical Engineering, Environmental Biotechnology, Biomedical Instrumentation and Imaging.
- A Center of Excellence (CoE) under TEQIP, Phase II sponsored by World Bank, BTISnet SubDIC Bioinformatics centre for Jharkhand.
- More than 50 externally funded projects from funding agencies like DST, DBT, DST-SERB, UGC, AICTE, ICMR, CSIR, NAIP, MoFPI etc.
- A mixed and balanced well recognized faculty members with rich academic and research profile.
- All academic faculty members hold PhD degree and vary in their field of specialisation. Department provides high end computational software / platform for students.

Department of Chemical Engineering

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

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

Vision of the Department:

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

Mission of the Department:

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

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

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

Postgraduate Programs 2020 at BIT Mesra (Main Campus) and its Off Campuses at Noida and Patna

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

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

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

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

RESEARCH AREA:

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

Department of Chemistry

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

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

Vision of the Department:

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

Mission of the Department:

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

Program Educational Objectives

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

Program Outcomes

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

Research Facilities

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

Department of 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. There are well established laboratories in the department. The faculty members are well qualified and are having degrees from reputed Institutes. They are actively involved in research and consultancy. The department had contributed a lot in the infrastructural and industrial growth in Jharkhand by providing technical expertise and consultancy.

Programmes 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		-	--

The following are the important research areas in which faculty members and research scholars are working.

Air Pollution, Applied Hydrology, Bioremediation, Composite Materials, Concrete Structures, Durability of Concrete, Geo-environmental Engineering, Groundwater Flow Modelling, Groundwater Quality Management, Heavy Metal Pollution, Intelligent Modelling in Geotechnical Engineering, Mine Slope Stability Analysis, Open Channel Hydraulics, Pavement Materials, Soil Stabilisation, Solid Waste Management, Structural Dynamics, Wastewater Treatment, Water Quality Assessment.

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 programmes and practical oriented approach.
- To create dynamic, logical, and effective leaders with inspiring mind sets.

About the Programmes:

M.Tech. Soil Mechanics & Foundation Engineering

Programme Educational Objectives

1. To impart students with strong knowledge base through theory courses & sessionals in Soil Mechanics & Foundation Engineering that makes them suitable for industries, academics, research & consultancy.
2. To enrich research and practices, by inspiring the leaders of tomorrow to take on the challenge with ease and confidence.
3. To train the students on developing practical, efficient & cost effective solutions on problems & challenges on Soil Mechanics & Foundation Engineering.
4. Implant sensitivity towards ethics, public policies and their responsibilities towards the society.

Programme Outcomes

The Students will develop ability

1. An ability to independently carry out research /investigation and development work to solve practical problems.
2. An ability to write and present a substantial technical report/document.
3. Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.
4. To apply in-depth knowledge gained during the PG Soil Mechanics and Foundation Engineering program in analysing and interpreting real life problems for providing the optimal and achievable solutions considering its technical, professional, and ethical aspects.
5. To enable him/ her in identifying & understanding the impact of Geotechnical Engineering problems and their solutions in global, economic, environmental, and social context.
6. To learn and unlearn throughout his professional career, and be willing to learn new techniques, methods and processes related to Geotechnical Engineering from simple to complex, with an understanding of the associated limitations.

M.Tech. in Structural Engineering Programme Educational Objectives

1. To impart students with strong knowledge base through theory courses and sessional that makes them suitable for industries, academics, research and consultancies.
2. To develop students analytical, computational and research skills through assignments, weekly presentations and modelling software.
3. To train the students on developing practical, efficient and cost-effective solutions on problems and challenges on structural engineering.
4. To inculcate among student's sensitivity towards social and corporate responsibilities.

Programme Outcomes

1. An ability to independently carry out research /investigation and development work to solve practical problems.
2. An ability to write and present a substantial technical report/document.
3. Students should be able to demonstrate a degree of mastery for designing and solving structural engineering problems.
4. An ability to use appropriate modern tools in structural engineering. In doing so he should demonstrate sufficient knowledge of competing tools and their relative merits and demerits.
5. An ability to demonstrate the traits of learning and unlearning throughout his professional career, and be willing to learn new techniques, methods and processes.
6. Tune his knowledge to be a responsible engineer adhering to all established practices of his profession.

M.Tech. in Environmental Science & Engineering Programme Educational Objectives

1. To impart students with strong knowledge base through theory courses and sessional that makes them suitable for industries, academics, research and consultancies.
2. To develop students analytical, computational and research skills through assignments, weekly presentations and modeling software.
3. To train the students on developing practical, efficient and cost effective solutions on problems and challenges on environmental sciences and engineering.
4. To inculcate among students sensitivity towards social and corporate responsibilities.

Programme Outcomes

1. Develop an ability to independently carry out research /investigation and development work to solve practical problems.
2. Develop an ability to write and present a substantial technical report/document.
3. Acquire a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.
4. Acquire in-depth knowledge about various environmental processes, analyze and design solutions for complex problems related to environmental and public health.
5. Be able to critically evaluate environmental sustainability and sensitize communities through effective communications and assess alternative solutions for adequate decision making for overall environmental management.
6. Acquire professional and intellectual integrity and ethics to produce socially responsible and competent environmental scientists and engineers.

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

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.
- 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.

Placement Record

- In 2018-19, 121 recruiters across the campus visited and offered 915 positions.
- The average salary was INR 10.34 lakhs per annum and the highest national offer was 40.63 lakhs per annum for B.Tech program. For M.Tech program the average salary was INR 4.90 lakhs per annum and the highest national offer was 9.68 lakhs per annum. And for MCA, the average salary was INR 5.25 lakhs per annum and the highest national offer was 8.05 lakhs per annum. Most of the CSE students got 2 jobs through campus.

Department of Electronics & Communication Engineering

The Department of Electronics and Communication Engineering was established in the year 1960 and has been very actively and successfully involved in imparting teaching/training, supervision and motivation to undergraduate, post graduate and doctoral students. The Department of Electronics and Communication Engineering is one of the largest departments of the institute having largest student and faculty strength. Due to its modern infrastructure and exposure given to the students, it is one of the elite departments in India. There are several ongoing/completed sponsored projects from DST, SERB, DRDO, ISRO, MHRD, MeitY, and DBT etc. The department is supported by TEQIP fund for attending workshop, conference (national & international), developing laboratories. etc. The department has been identified for Center-of-Excellence.

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:

1. 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.
2. 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.
3. To pursue high quality contemporary research through continued interaction with research organizations and industries.

Bachelor of Technology:

The Department has implemented Choice Based Credit System(CBCS), where have students versatile facility to opt the industry or research oriented courses in the form of minor specialization. It 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 to incorporate recent developments considering advancements achieved in the national and international scenario.

Postgraduate Programs 2020 at BIT Mesra (Main Campus) and its Off Campuses at Noida and Patna

The Department has several well-equipped laboratories such as Fibre Optics Communication Lab, Microprocessor Lab, Advanced Communication Lab, Microwave Lab, VLSI Design Lab, Intelligent Instrumentation Lab, Antenna Lab, Circuit Simulation Lab, Wireless Networking Lab & Digital Signal Processing Lab, where students are given rigorous practical sessions. The students are also exposed to virtual laboratory simulation packages like MultiSim, CommSim, Ultiboard, MATLAB, LABView, HSPICE, Fidelity, NS-2, Cadence Design Tools, Xilinx's and Visual TCAD, VCU108 Kit as well as to hardware assembly and testing practices. Department has signed MoUs with Aarhus University Denmark and BSNL Ranchi for collaborative research and academic in advanced communication related research areas such as 5G radio & network and 3D printing of MmWave components.

This serves to help the students in gaining practical exposure to these developing technologies. Undergraduate students have to successfully complete a departmental project spanning 3 semesters. Seminars are presented by the students, which give them an opportunity to develop their communication skills. The culmination of these efforts has been the achievement of nearly 100% campus placement in various leading industries and organizations for the last many years.

Master of Technology:

The Department is currently running three postgraduate programs with specializations in (a) Instrumentation (b) Microwave (c) Wireless Communications.

The students are exposed to some of the specialized software tools such as Cadence design tools, IE3D, Microwave Office, Sonnet, Fidelity, Beampro, SystemView and NS-2 etc. apart from various other software tools like LABView and MATLAB.

The department has devoted and qualified expert team of faculty members, who are continuously, involved in various research activities. The department is recipient of UGC assistance of 52.5 Lacs in the form of "Departmental Research Support" under the "Special Assistance Program (SAP II)" of UGC. Several R & D projects are also being taken up by the faculty members of the department from various agencies like UGC, DST, AICTE, ISRO etc.

Around fifty full time/part-time scholars are registered in the department for Ph. D. program.

Focused research area:

Microwave and wireless communication: Microwave material characterization, Antennas, Filters, mm-Wave Tech., uW Imaging, EMI-EMC, 5G comm., Cooperative Cognitive Communication, SDR Networks.

Instrumentation and signal processing: Speech and Image Processing, Stochastic Signal and Biomedical Signal Processing, Sensors & Transducers, Advanced Instrumentation.

Optical communication: Visible Light Comm., MIMO, OFDM, Optical Networking, Optical Comb Filter, Fiber Optic Sensors.

Microelectronics and VLSI design: Nano Electronic Devices & Circuits, RF-Device Modeling, HEMT, Low Power VLSI, Power conditioning circuits, RF Circuit Design, MEMS sensor, transducers, Energy Harvester, RFMEMS.

Department of Electrical & Electronics Engineering

The Department of Electrical Engineering was started in 1955. The B.E. curriculum was redesigned in 1986 to accommodate several Electronics and Computer subjects in order to tune its programs according to changing requirements and since then it has been renamed as Electrical & Electronics Engineering. The Department is dedicated to the current needs of industry primarily focusing on application of new technology in various fields. As recognition of the activities of faculty members, different agencies like UGC, DST, AICTE, CDAC, TEQIP, etc have sanctioned funds to support the on-going research work.

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: At present 35 scholars are registered in Ph.D. Program of the Department			

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 interdisciplinary 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

Programs Accredited:

All the above courses are approved by AICTE. B.Tech. (EEE), M.Tech. (Control System) and M.Tech. (Power System) and M.Tech. (Power Electronics) programs are accredited by NBA.

Undergraduate Program:

The emphasis is given on fundamentals of science, mathematics and their application to the solution of contemporary problems. The program provides ample flexibility to the students to undertake various elective and breadth courses that provide exposure to various disciplines of EEE. The detail information about the course structure and syllabus is given in the website.

Electives offered:

Computer Aided Power System Analysis, Bio Electronics Instrumentation, Artificial Neural Network (ANN), Advanced Power Electronics, Robotics, High Voltage Engg., EHV Power Transmission, Artificial Intelligence, Soft Computing Techniques, Renewable Sources of Electrical Energy, Testing & Commissioning of Electrical Equipment, Embedded System & its Applications.

List of Breadth Papers:

Environment Psychology, Organisation Behaviour, Industrial Organisation & Management, Financial Management, Business Ethics, Intellectual Property Rights, Entrepreneurship & Small Business Management, etc.

Postgraduate Programs:

M.Tech. in Control System:

In M.Tech. Control Systems Programme focuses on cutting edge control techniques like modern control system, nonlinear control analysis, discrete control techniques, optimal control, robotics, ANN based adaptive control methods, fuzzy logic controllers with advanced model reference learning and stability analysis, etc.

M.Tech. in Power System:

M.Tech. Power systems aims at imparting knowledge on advanced analysis techniques, modern tools in power system operation and control, techniques to improve the performance of EHV AC and HVDC transmission, advanced power system protection systems, planning and reliability analysis, technologies involved with renewable energy sources, DSP applications, etc.

M.Tech. in Power Electronics:

M.Tech. Power Electronics emphasizes on imparting skilled knowledge of advanced semiconductor devices, power electronic converters, their design and control methodology, dynamics of Electrical Machines, Power Electronics applications, Control of electrical drives etc.

Ph. D. Program:

Currently a number of research scholars are working in the areas of non-stationary signal analysis, intelligent control techniques applied to Phasor Measurement Unit (PMU), Reliability analysis for power system and its components like PMU, Protection Systems, etc., Multi-Agent System (MAS) modelling, Wide Area Monitoring System (WAMS), Distribution System Planning, Automatic Generation Control and non-linear dynamic systems, Real-time Image processing for robotic application, development of new architecture for neural networks, soft computing based intelligent controller design, Fault diagnosis of 3 - ϕ Induction motor, bi-directional dc-to-dc converters, matrix converter, resonant converter, current source inverter for hybrid electric vehicles, control of induction motor drive, three-phase and multi-phase PM BLDC drive, estimation and identification of plants.

Research Activity:

The faculty members of the department (with different specializations) actively pursue research with funding from various national agencies like UGC, AICTE, DST. The current areas of research include Laboratory Prototype of Smart Grid, digital relaying of transmission using DSP techniques, reliability analysis, generation scheduling, distribution systems planning, voltage stability analysis, Fault tolerant permanent magnet drives, Energy Storage and Management, Grid Interactive Solar Photovoltaic System, Microgrid, bi-directional converters for contactless energy exchange, Image processing applied to vehicular traffic surveillance system, etc.

The research outputs are published in reputed journals like IEEE transactions, IET Proceedings, Elsevier, Taylor & Francis, Polish Academy of Science & Tech., IE (I), etc.

The department has also got two patents in the area of power systems.

Collaboration with Industries and Universities:

The department has collaborated with the Texas Instruments, NI, Research and Development Center for Iron and Steel (RDCIS), SAIL, Metallurgical Consultants Limited (MECON), Meditron (Ranchi), etc.

Conventions/Seminars/Conferences/Short-term Training Programs:

The Department regularly organizes conventions, seminars, conferences short term training programs/courses under aegis of AICTE- ISTE, TEQIP, UGC (FIST), NaMPET. Specialized courses for industry (SAIL, Indian Railways) have also been organized.

Keeping in view the development of nearby villages, the Department is also involved in conducting short term training programs in electrical technical skills to youth.

**Postgraduate Programs 2020 at BIT Mesra (Main Campus) and
its Off Campuses at Noida and Patna**

Facility:

The department has following well-equipped laboratories; Basic Electrical Engineering lab., Measurement Lab., Electrical Machines lab., Power Electronics lab., Electrical Drives lab., Control Systems lab., Process Control Lab., Power Systems lab., Smart Grid lab., Digital Signal Processing lab., Simulation lab., Electrical Workshop.

The main equipment in measurement lab are - Optical transducer, thermal transducer, Kelvin double bridge, LVDT setup, strain gauge setup, setup to determine breakdown voltage of transformer oil. Electrical Machines lab. houses all static and rotating machines like transformer, induction motor, DC motor, DC generator, synchronous generator (alternator) and motor.

The major equipment in power Electronics lab are - device characterization system, AC - DC, DC-DC, DC - AC conversion systems, Programmable signal generators, signal analyzer, etc.

The department is in the process of establishing a drive lab for enhancing research facility in the field of Power Electronics. The main equipment in Electric Drives Lab which is in the process of upgradation consist of single phase and three phase inverter, rectifier, BLDC Motor, DC Motor, three phase induction motor, etc.

Department of Mathematics

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

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

Vision of the Department:

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

Mission of the Department:

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

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

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

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

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

Department of 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)	18
M.Tech in Energy Technology		2 Years (4 Semesters)	18
<i>Ph. D. Programmes: Ph.D. degrees are offered by the Department in Mechanical Engineering as well as in multi-disciplinary areas.</i>			

Mechanical Engineering Graduates of BIT Mesra are sought after by many prestigious companies. There is also an excellent career center in 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. During the first two semesters of B.Tech. Program, students follow a syllabus of core engineering modules, which are common to all branches of engineering, plus some modules that are specific to the degree scheme. The courses also have a wide practical element based on the lecture modules, including laboratory work assignments, team projects and industrial tours and seminars.

In addition, every student carries out a professional project in their final year. The professional project gives students a chance to apply their engineering skills to real engineering problems. 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. Final year students are getting financial assistance of Rs. 50,000/- to convert their innovative ideas in the form of projects.

Last but not least, Department offers four major PG programs with specialized areas in focus. Students getting entry through GATE score and also through exam conducted for those with Non-Gate score. Ample of opportunities are extended like Internships and Jobs and good dedicated labs for their better enhancement. Students have also been extended with 1.0 Lakh rupees of grant through college for completion of their Projects in the Third and Final semester.

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.*

The department has following well equipped laboratories:

Various specific labs with latest machines and techniques impart good expertise to the students for having hands on experience for real time problems. Some specific labs are :Heat Transfer Lab., Strength of Materials Lab., CAD Lab., Hydraulics and Hydraulic Machines Lab., Theory of Machines Lab., Renewable Energy Lab., Automotive/Adv. Fluid Mechanics Lab., I.C. Engine/Thermal Engg. Lab., Computational Lab., Refrigeration & Air-conditioning Lab. and Autonomous Systems Lab.

Certain new labs are in pipeline like Vibration lab and Reverse Engineering labs. Many interdisciplinary projects are being conducted and students look forward to new dimensions of engineering , Machine language and Artificial Intelligence.

Department of Pharmaceutical Science & Technology

The Department of Pharmaceutical Sciences & Technology was established in 1972. It offers the following programs:

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 above programs are recognized by the Pharmacy Council of India (PCI) and the All India Council for Technical Education (AICTE). **The B. Pharm. Programme is accredited by NBA for Five Years (2017-2022).** The Department is recipient of assistance under the Special Assistance Programme (SAP) of the UGC and FIST of the DST. The Department is also recognized and approved by AICTE as one of the Centres for Quality Improvement Programmes (QIP) for postgraduate and Ph.D. programmes.

The course syllabi are updated frequently to incorporate newer developments in Pharmaceutical Sciences & Technology and also to cater the need of Pharmaceutical Industries, Academic Research and Drug Regulatory agencies. Department has facilities for doctoral research in different areas of Pharmaceutical Sciences. A number of Ph.D. degrees have been awarded besides a large number of scholars, registered for Ph.D. in different disciplines of Pharmaceutical Sciences. The Department has highly qualified and competent academic staff.

The faculties of the Department have been handling several R&D projects sponsored by National (UGC, AICTE, CSIR, DST, ICAR, TRIFED, ICMR, etc.) and International (BMBF/New Indigo/UKIERI) funding agencies.

The Department has sophisticated state of the art laboratories besides a computational & molecular modeling laboratory for teaching and research. Some important facilities and instruments available are:

Field Emission Scanning Electron Microscopy (FESEM), ELISA Reader, GelDoc, Differential Scanning Calorimeter (Shimadzu DSC50 & DSC60), ELISA Reader (Perkin-Elmer), Automatic Video Tracking System (Ethovision), Fluorescence Spectrophotometer (Hitachi), Gas Chromatograph (Chemito Ceres 800 Plus), Gel Electrophoresis System, High Performance Liquid Chromatography (Waters and Knauer), Preparative HPLC (Agilent), High Performance Thin Layer Chromatography with WINCAT software (Camag), High Speed Refrigerated Centrifuge, FTIR 8400S (Shimadzu), Research Microscope with photomicrography (Carl-Zeiss) & High Resolution Research Microscope with Digital Camera with PC based screen (Leica), UV-VIS Spectrophotometers 1800 and 2450 (Shimadzu & Systronics), Rotational Viscometer (Wells Brookfield Cone/Plate), Nitrogen and Hydrogen Gas Generator (Claind), Milli Q Water Purification Unit (Millipore), Non - invasive B.P. Instruments (IITC Life Sciences), Plethysmograph (IITC Life Sciences), Microwave Synthesis System (Catalyst 4RI), Lyophilizer (Operon), Rotary Evaporator (Buchi), Probe sonicator, Dissolution Apparatus, Ultracentrifuge, Texture Analyzer, Malvern Viscometer, Nano spray dryer, Humidity chamber (as per ICH), Electromagnetic sieve shaker, Ball mill, Ultra turrax digital homogenizer, etc.

An overview of different areas of research at the Department is as follows:

Pharmaceutics group

New drug delivery system: Controlled release formulations, Transdermal drug delivery systems; Development of nasal delivery system; Colon targeted drug delivery system, self-emulsifying drug delivery system. Thermodynamic approach to drug excipient interactions, Cosmeceuticals (cost-effective skin care poly-herbal formulations), Nanotechnology based formulation development, Exploration of Natural Gum as Pharmaceutical Adjuvants and Standardization of Ayurvedic Drug/Polyherbal Formulations.

Pharmaceutical Chemistry group

In-silico design, synthesis (microwave, combinatorial solution phase synthetic techniques) and evaluation of novel candidate compounds with special reference to antimicrobial, antiprotozoal, antiviral, antiHIV, anticancer, analgesic, antihistaminic, anticonvulsant, cardiovascular, antidiabetic and other activities. Isolation and characterization of natural products using spectroscopic methods (UV-VIS/IR/NMR/MS etc.) besides studies on synthetic nutraceuticals, Molecular modeling, docking, QSAR and solution phase ADME studies using CADD based software like Maestro Glide, BioSolveIT FlexX, Sybyl 7.1, and Scigress Explorer.

Pharmacognosy group

Validation of traditional systems of medicine, validated methodologies for development of new herbal formulations, microcomputerized identification of indigenous drugs & development of standards, development of drug molecules from natural sources and their enhancement by biotechnological approaches, exploring natural resources for novel drug delivery systems.

Pharmacology group

Anti tumor & immunomodulatory studies of compounds from synthetic and natural sources, general pharmacological screening of new moieties from synthetic and natural sources, toxicological studies of bioactive molecules (natural and synthetic sources), neuropharmacological studies of bioactive molecules, studies of bioactive molecules on experimentally induced urolithiasis, nephropathy, neuropathy and diabetes in animal models, biochemical and molecular pharmacological studies of bioactive molecules.

The Department maintains a well-equipped animal house, which is accredited by the Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA). The Department also has a Medicinal Plant Garden spread over 10 acres of land within the Institute Campus. More than 200 plants of medical and aromatic importance have been cultivated and are being maintained in the Herbal Garden. A few aromatic oils such as Citronella (Java), *Cymbopogon martinii*, *Mentha arvensis*, *Mentha piperita*, *Eucalyptus citriodora*, Lemon Grass, are extracted from time to time.

The Department also extends support to other Departments like- Bio-Engineering, Chemical Engineering & Technology, Applied Chemistry, Environmental Science & Engineering, Medical Lab Technology at the University Polytechnic, Hotel Management & Catering Technology and other engineering departments.

Department of Physics

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

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

Salient Features of the Program

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

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

Achievements of alumni

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

Vision of the Department

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

Mission of the Department

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

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

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

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

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

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

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

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

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

PROGRAM OUTCOMES (POs)

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

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

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

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

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

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

More about the Department

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

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

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

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

Department of Production Engineering

Since its inception in 1964, The Department of Production Engineering has been imparting quality education to undergraduate and post graduate students by training them to meet the demands of the manufacturing industry. The department has established links with the industry, R&D organizations, consultancy organizations and academic institutes in the nearby area in furtherance of the cause of manufacturing engineering. The department sees itself as the 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.E. in Production Engineering	4 Years (8 Semesters)	60
M.Tech. in Automated Manufacturing System	2 Years (4 Semesters)	25
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 main objective of production engineering is integration of technology with management in planning and controlling the design, development and operation of manufacturing system. Rapid advances in manufacturing technology, e.g., computer-controlled processes and management information systems, ERP and new manufacturing concepts like TPS, agile manufacturing, pull system etc., are reinforcing the recognition of technological, organizational, economic and human factors. Furthermore, specialized training in manufacturing technology is necessary for industries in India and abroad.

Keeping the departmental vision in mind: To Become a Centre of Repute Striving Continuously Towards Providing Quality Education, Research and Innovation in the Field of Production Engineering, our department offers an M.Tech. course in Automated Manufacturing Systems.

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. These systems are indispensable in the areas of computer assisted design and manufacturing operations and the production and inspection of end products. This program trains experts in automation, integration and optimization of technological systems designed for technology transfer in the industry. There are sub wings for this course namely, system design and automation, intelligent systems.

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

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 field. Application of Remote Sensing / Geoinformatics techniques using tools such as Geographic Information System (GIS) and Global Positioning System (GPS) in various activities including resources evaluation, environmental monitoring and land use/land cover mapping etc, has grown considerably during the last few decades and RS data products are increasingly being used for plan formulation at all levels. An essential pre-requisite to partaking in these opportunities is the building of various 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		

THE SIGNIFICANCE OF REMOTE SENSING

The world is being scanned constantly by highly sophisticated Earth Resources Satellites like IRS (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 has accelerated the applications of Geospatial domain 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.

Keeping this in view the department of Remote Sensing is striving to keep updated with technological development, and has expanded with the help of fund from DST-FIST, UGC-SAP, TEQIP. The department offers Post Graduate courses and Ph.D. program in inter-disciplinary mode. The Department has state-of-art laboratories equipped with 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 various government and international organizations. The department also participates in the Distance learning Programs (EDUSAT) conducted by IIRS, ISRO, Dehradun.

FACILITIES

The Department has seven dedicated labs catering to DIP, GIS, Digital Photogrammetry, Satellite Navigation & GPS, Remote Sensing Research & Project, and departmental library for Satellite Data and Maps.

ABOUT THE COURSES

M.Sc. Geoinformatics and M.Tech. Remote Sensing courses are 2 year degree program. These Degree Programs generally starts each year in the month of July, but the application and advertisement process will start from February onwards. All the courses are conducted in English language.

DETAILED ACTIVITES UNDER THE COURSE

In M.Tech. course, First year focuses on Theoretical and Practical Aspects of Remote Sensing, GIS, GPS, Photogrammetry, Programming, Geostatistics and various geo-spatial applications. Second year focuses mainly on developing Independent Research Skill.

In the first semester, the basic concepts, know-how procedures related to Geospatial Technology are taught to the students. The second semester delves deep into advanced concepts, modelling in GI domain along with modern photogrammetry using Satellite and UAV along with various Elective Modules. In due course 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. In the Research duration the student is supervised or co-supervised by the faculty.

Postgraduate Programs 2020 at BIT Mesra (Main Campus) and its Off Campuses at Noida and Patna

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

For MSc, the period of theoretical study is spread over 3 semesters with examination requirements at the end of each semester. Fourth Semester will be allocated only for Research Project. Also in the 3rd semester there will be a mini Project which helps the student to orient towards research over a period of 1 year (i.e., 3rd and 4th semester project together) when they complete their degree course. The Masters program requires 80 credit points. The detailed credit information is provided in the Course Structure.

The Masters 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 private growing market and various application domain. 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, maths and Engineers in Civil, ECE, EEE and Computer Science can apply for our programs. For M.Sc. programme one need to have a simple Bachelors degree but for M.Tech. program the candidate need to have either Masters degree or 4 years Bachelors degree.

PLACEMENT

M.Tech. Remote Sensing and MSc Geoinformatics degrees from BIT are highly recognised, reputed and well accepted in India and Abroad. Our students are placed at Various Leading Institutions in India such as ISRO, IITs, ICAR, NITs, NGOs and Various Government Departments. Our students have good scope of getting admission in International Universities and many of our alumni are currently carrying out higher education in Beijing, Delft-Netherlands, New York etc. Our students also work as Scientist, GIS Analyst/expert, JRF, SRF, consultant, Lecturer and other positions requiring geoinformatics skills. State Remote Sensing centres, IMD (Indian Meteorological Department), SAC, NRSC, and many governmental organizations, and diverse private sectors are the places our students gets often placed.

FELLOWSHIP/SCHOLARSHIP OPPORTUNITIES

There are numerous scholarships provided by Indian Government for pursuing 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 & 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	-	-

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 also exists for solid propellants.

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

In the Aerodynamics Laboratory, 4 wind tunnels, free jet, water tunnel are available to train students and carry out research work in the fields 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 7. Training 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 sometime 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 very important role for making the process robust. Every year good number of companies visits the Institute for placement and internship 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 last couple of years for M.Pharma are Nova Nordisk Pharma, Dr. Reddy's, Mylan, Torrent Pharma, DDreg Pharma, Troikaa Pharma, Sun Pharma, Macleods Pharma etc..

Few of leading recruiters visited in 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 8. 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 see Sec-10 of this Information Brochure].

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.

Sec 9. Undertaking for candidates appearing for final examinations in 2020

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 2020.

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 2020**.
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 _____

Sec 10. Anti-ragging Affidavit

How can fill Online affidavits and Why?

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

It is a simple procedure comprising 3 steps

Step 1: Log on to

www.ANTIRAGGING.in

or

www.AMANMOVEMENT.org

Click on the button called 'On line affidavits'

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

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

Note:

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

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