

**INFORMATION BROCHURE - 2018**

**for**

**Admission to**

**M.E., M.Tech., M.Pharm., MUP and M.Sc. Programmes**

**at**

**Birla Institute of Technology, Mesra**

**and**

**Its Extension Centre at Patna**



**BIRLA INSTITUTE OF TECHNOLOGY**

(Deemed University under section 3 of UGC Act 1956)

**Mesra, Ranchi - 835215**

Jharkhand, India

Website: <http://www.bitmesra.ac.in>

The Postgraduate Information Brochure 2018 covers admission to the following postgraduate programmes of the Birla Institute of Technology:

1. M.E. programmes in various disciplines & specializations at BIT Mesra and its Extension Centre, Patna
2. M.Tech programmes in various disciplines at BIT Mesra and its Extension Centre, Patna
3. M.Pharm programme in various specializations at BIT Mesra
4. Master of Urban Planning (MUP) at BIT Mesra
5. M.Sc. programmes in various disciplines at BIT Mesra

The addresses and contact details of the concerned Centres where the above programmes are offered are given below.

Centre	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 Fax: 0651- 2276007, 2275401 e-mail: <a href="mailto:admissions@bitmesra.ac.in">admissions@bitmesra.ac.in</a>
Patna	Director Birla Institute of Technology Extension Centre Near Patna Airport, P.O. Bihar Veterinary College, Patna-800014 Phone: 0612- 2223545, 3200853 Fax: 2227050 e-mail: <a href="mailto:bitpatna@bitmesra.ac.in">bitpatna@bitmesra.ac.in</a>

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

Deoghar	Director, Birla Institute of Technology Deoghar Extension Centre P.O. - Ratanpur, Jasidih Dist. Deoghar, 814142, Jharkhand Phone: 9334654856 / 9308139037, Telefax: 06432-292565 e-mail: <a href="mailto:bitdeoghar@bitmesra.ac.in">bitdeoghar@bitmesra.ac.in</a>
Jaipur	Director, Birla Institute of Technology Extension Centre 27, Malviya Industrial Area, Jaipur 302018 Phone: 0141- 4019798 / 4019819, Fax: 2751601 e-mail: <a href="mailto:bitjaipur@bitmesra.ac.in">bitjaipur@bitmesra.ac.in</a>
Lalpur	Director, Birla Institute of Technology Extension Centre Lalpur, Ranchi - 834001, Phone: 0651-2531676, 2531229 Fax: 2531679 / 2531676 e-mail: <a href="mailto:bitlalpur@bitmesra.ac.in">bitlalpur@bitmesra.ac.in</a>
Noida	Director, Birla Institute of Technology Extension Centre A-7, Sector-1 Noida 201801 Phone: 0120-2440408 / 4264080/ 4263080 / 2553661 / 3662, Fax: 2554146 e-mail: <a href="mailto:bitnoida@bitmesra.ac.in">bitnoida@bitmesra.ac.in</a>

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### IMPORTANT DATES

Filling of online form commences from	12 March 2018
Last date to Apply Online	25 May 2018
Last date for receipt of printouts of electronically generated Application Form at BIT, Mesra	31 May 2018
Tentative date for notification of schedule for Written Test & Counselling (on the Institute website only)	15 June 2018
Tentative dates for Written Test and Counselling	1 <sup>st</sup> / 2 <sup>nd</sup> week of July 2018
<b>Classes will commence 2<sup>nd</sup> / 3<sup>rd</sup> week of July at all Centres (exact date will be announced at later stage)</b>	

**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 Programmes 2018 - An Introduction and How to Apply

The Institute offers the following postgraduate programmes at Mesra (Main Campus) and its Extension Centre at Patna. Please see the Institute website for brief details about the Institute, Departments, including course structures and syllabi, etc. and Extension Centres.

1. **M.E. programme in various specializations in the following disciplines:** [Duration: 2-year, 4-semester]
  - a) Automated Manufacturing Systems
  - b) Chemical Engineering
  - c) Computer Aided Analysis and Design (CAAD)
  - d) Civil Engineering
    - (i) Soil Mechanics & Foundation Engineering
    - (ii) Structural Engineering
  - e) Electrical Engineering
    - (i) Power Systems (ii) Control Systems
    - (iii) Power Electronics
  - f) Electronics & Communication Engineering
    - (i) Instrumentation (ii) Microwave
    - (iii) Wireless Communication
  - g) Mechanical Engineering
    - (i) Heat Power
    - (ii) Design of Mechanical Equipment
  - h) Space Engineering & Rocketry
    - (i) Aerodynamics (ii) Rocket Propulsion
2. **M.E. programme in ECE (Wireless Communication) at BIT Extension Centre, Patna** [Duration: 2-year, 4-semester]
3. **M.Tech programme in the following disciplines:** [Duration: 2-year, 4-semester]
  - a) Biotechnology
  - b) Computer Science & Engineering
  - c) Energy Technology
  - d) Environmental Science & Engineering
  - e) Information Security
  - f) Information Technology
  - g) Remote Sensing
  - h) Software Engineering
4. **M.Tech. programme in Computer Science & Engineering at BIT Extension Centre, Patna** [Duration: 2-year, 4-semester]
5. **M.Pharm programme in the following specializations:** [Duration: 2-year, 4-semester]
  - a) Pharmaceutical Chemistry
  - b) Pharmaceutics
  - c) Pharmacology
  - d) Pharmacognosy
  - e) Pharmaceutical Quality Assurance
6. **MUP - Master of Urban Planning,** [Duration: 2-year, 4-semester]
7. **M.Sc. programme in the following disciplines,** [Duration: 2-year, 4-semester]
  - a) Chemistry
  - b) Biotechnology
  - c) Geo-Informatics
  - d) Mathematics
  - e) Physics

**NB: Choice Based Credit System will be introduced from the academic session 2018-19.**

### How to Apply: (Please see Instructions also for details)

- To start online application, click on the link, create ‘username’ and ‘password’ by clicking on “New users register here” when prompted. Do not share the username and password with any body else.
- To apply for any programmes listed above, eligible candidates must complete and submit the application online only [link available on Institute website [www.bitmesra.ac.in](http://www.bitmesra.ac.in)]. Pay application fee of Rs.2,500/- (General / OBC candidates) or Rs.1,500/- (SC/ST candidates) through State Bank Collect - net banking or debit/credit card of any nationalized bank in favour of “Birla Institute of Technology” within the given time period. [Fee once remitted shall not be refunded under any circumstances].
- Send a printout of the completed form along with required enclosures (see List of Enclosures) by Speed Post / reliable courier (means by which sender may track its movement on internet) to the office of **Dean Admissions & Academic Coordination, Birla Institute of Technology, Mesra, Ranchi - 835215, to reach positively by the due date.**
- Write “Application for PG 2018” on top of the envelope.
- **Applications reaching us after the due date are liable to be rejected / may not be processed.**

#### Notes:

1. The candidate can use one application form to apply for ONLY one programme - M.E. or M.Pharm or M.Tech or MUP or M.Sc. etc, and ONLY one discipline within that programme - for example only M.E. in Mechanical or only M.Tech in Computer Science & Engineering or only M.Sc. in Biotechnology.

However, one application form can be used to apply for various specializations within some M.E. programmes (within a department) & within the M.Pharm programme.

For ME (ECE- Wireless Communication) and M.Tech (Computer Science & Engineering) programmes, you may also use one application form to apply for different Place for Study (Centre), in order of preference.

2. Please use separate application form(s) to apply for two or more programmes

#### Acknowledgement of receipt of Application Form and Registration Numbers

1. Lists of eligible candidates with registration numbers will be displayed on the Institute website, whose properly completed application forms with all required enclosures have been received within the stipulated time.
2. Candidates must make a note of their registration numbers carefully, as the same will be required at the time of Written Test and Counselling. No individual intimation will be sent to candidates.
3. Candidates, whose names do not appear in the lists of eligible candidates, may contact the Admission Office at Mesra by telephone or fax or email.

The counselling schedules and details of tests (wherever applicable) for the above programmes will be announced by 15<sup>th</sup> June 2018, only on Institute website and Notice Boards of concerned Centres. Candidates are requested 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 2018 can also apply, and if selected can join the programme 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 2018**, failing which the provisional admission will be cancelled. **(Please see Sec 10 for format of the above undertaking).**

## Sec 2 Eligibility criteria for the M.E., M.Pharm, M.Tech, Master of Urban Planning and M.Sc. Programmes 2018

### 2 A) Minimum Eligibility Criteria for the M.E. programmes (MEC - PG1):

1. Candidates must hold a B.E. / B.Tech / AMIE or equivalent degree in the appropriate disciplines / branches mentioned below for the respective courses. Candidates must have minimum 55% marks in average (50% for SC/ST) in graduation.

Candidates should preferably be GATE 2016 / GATE 2017 / GATE 2018 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 of their Bachelor's programme in 2018 can also apply and if selected can join the programme 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 2018, 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-10).

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 2018. 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 programmes are eligible only if (a) the programmes 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 enclose photocopy of pass certificate, marksheets of qualifying examination and proof of the programme recognized by the AICTE-UGC-DEC in letter head of the Institute / College / University with their application form. [Appearing candidate in distance learning programmes, whose results are yet to be declared, are not eligible to apply].

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

#### Notes:

(1) Candidates with foreign diplomas should see the EdCIL website for equivalence (<http://www.edcil.co.in>), and if required should obtain an equivalence certificate from the evaluation division of the AIU (website <http://www.aiuweb.org>).

(2) In case any Board / University awards grades instead of marks, the calculation of equivalent marks would be based on the procedure prescribed by the Board / University. In case a University does not have any scheme for converting CGPA into equivalent marks, the equivalence would be established by dividing obtained CGPA with the maximum possible CGPA and multiplying the resultant with 100.

(3) At any level of the studies [class X, class XII or graduation], a candidate / applicant must have passed all the required subjects at that level from the same board/ University.

**M.E. Programmes at BIT Mesra (Main Campus) & its Extension Centre at Patna:**

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

M.E. Programme (with Department Offering the course)	Specialization(s) offered	Eligible Branches	GATE Scholarships available
<b>Automated Manufacturing Systems</b> (Production Engineering)	-	Production / Manufacturing / Mechanical / Industrial Engineering / Electronics & Communication / Computer Science / Mechatronics / Electrical	Available
<b>Computer Aided Analysis &amp; Design (CAAD)</b> (Mechanical Engineering)	-	Mechanical Engineering / Production Engineering / Manufacturing Engineering / Automobile Engineering / Aeronautical Engineering	Available
<b>Chemical Engineering</b> (Chemical Engineering & Technology)	-	Chemical / Polymer / Metallurgical & Materials / Biotechnology, Food & Biochemical / Chemical Technology or equivalent	Not Available
<b>Civil Engineering</b> (Civil & Environmental Engineering)	a) Soil Mechanics & Foundation Engineering	Civil	Available
	b) Structural Engineering	Civil	Available
<b>Electrical Engineering</b> (Electrical & Electronics Engineering)	a) Power Systems	Electrical / Electrical & Electronics or equivalent	Available
	b) Control Systems	Electrical / Electronics & Communication / Electrical & Electronics / Electrical Instrumentation & Control or equivalent	Available
	c) Power Electronics	Electrical / Electrical & Electronics / Electronics & Communication / Instrumentation & Control or equivalent	Available
<b>Electronics &amp; Communication Engineering</b> (Electronics & Communication Engineering)	a) Instrumentation	Electronics & Communication / Instrumentation or equivalent	Available
	b) Microwave	Electronics & Communication or equivalent	Available
	c) Wireless Communication	Electronics & Communication or equivalent	Available at Mesra & Patna
<b>Mechanical Engineering</b> (Mechanical Engineering)	a) Heat Power	Mechanical / Chemical / Marine	Available
	b) Design of Mechanical Equipment	Mechanical / Production	Available
<b>Space Engineering &amp; Rocketry</b> (Space Engineering & Rocketry)	a) Aerodynamics	Mechanical/Aeronautical/ A.M.Ae.S.I. / AMIE or equivalent	Available
	b) Rocket Propulsion	Mechanical / Aeronautical / Chemical / A.M.I.Ch.E. / A.M.Ae.S.I. / AMIE or equivalent	Available

**Note:** Candidates admitted in M.E. programmes with valid GATE 2016 / GATE 2017 / GATE 2018 score will be considered to receive scholarships only if approved and amount released by the funding agency.



## 2 B) Minimum Eligibility Criteria for the M.Pharm programme (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 2017 / GPAT 2018 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 programme / qualifying examination in 2018 can also apply and if selected can join the programme 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 2018, 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-10).**

**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 2018. 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, 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. programme with valid GPAT 2017 / GPAT 2018 score will be considered to receive scholarships only if approved and amount released by the funding agency.

## 2 C) Minimum Eligibility Criteria for the M.Tech. programmes (MEC - PG3):

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.

Candidates should preferably be GATE 2016 / GATE 2017 / GATE 2018 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 2018 can also apply and if selected can join the programme 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 2018, 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-10).

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 2018. 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 programmes are eligible only if (a) the programmes are recognized by the tripartite panel of AICTE-UGC-DEC, (b) they have passed the qualifying examination at the time of applying, with minimum requisite marks, calculated as per item (1) above. They must enclose photocopy of pass certificate, marksheet of qualifying examination and proof of the programme recognized by the AICTE-UGC-DEC in letter head of the Institute / College / University with their application form. [Appearing candidate in distance learning programmes, 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, graduation or postgraduation], a candidate / applicant must have passed all the required subjects at that level from the same board/ University.

**M.Tech Programmes at BIT Mesra (Main Campus) & its Extension Centre at Patna**

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

M.Tech Programme (With Department Offering the course)	Qualifying Examinations / Disciplines Eligible	GATE Scholarships available
<b>Biotechnology</b> (Bio-Engineering)	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
<b>Computer Science &amp; Engineering</b> (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
<b>Energy Technology</b> (Mechanical Engineering)	B.E. / B.Tech. in any discipline / B.Arch. OR M.Sc. in Physics / Chemistry / Mathematics	Available
<b>Environmental Science &amp; Engineering</b> (Civil & Environmental 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
<b>Information Security</b> (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
<b>Information Technology</b> (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
<b>Remote Sensing</b> (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
<b>Software Engineering</b> (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

**Note:** Candidates admitted in M.Tech. programmes with valid GATE 2016 / GATE 2017 / GATE 2018 score will be considered to receive scholarships only if approved and amount released by the funding agency.

## 2 D) Minimum Eligibility Criteria for Master in Urban Planning (MUP) programme (MEC - PG4):

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 2016 / GATE 2017 / GATE 2018 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 2018 can also apply and if selected can join the programme 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 2018, 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-10).

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 2018. Non-fulfillment of this condition will automatically result in the cancellation of the provisional admission.

5. Candidates with qualifications acquired through correspondence or distance-learning programmes are eligible only if (a) the programmes 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 enclose photocopy of pass certificate, marksheets of qualifying examination and proof of the programme 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. [Appearing candidate in distance learning programmes, 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](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, graduation or postgraduation], 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:

Programme (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:** Candidates admitted in MUP programme with valid GATE 2016 / GATE 2017 / GATE 2018 score will be considered to receive scholarships only if approved and amount released by the funding agency.

## 2 E) Minimum Eligibility Criteria for the M.Sc. programmes offered at BIT Mesra (MEC - PG5):

- 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 programme in 2018 can also apply and if selected can join the programme provisionally. At the time of the counselling they must bring a certificate in original from the Principal of Institute stating that:
  - by 30 June 2018, 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-10).**

**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 2018. Non-fulfillment of this condition will automatically result in the cancellation of the provisional admission.**

- Candidates with qualifications acquired through correspondence or distance-learning programmes are eligible only if (a) the programmes 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 enclose photocopy of pass certificate and marksheets of qualifying examination with their application [Appearing candidate in distance learning programmes, whose results are yet to be declared, are not eligible to apply].

### 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 - PG5) above

S.No.	M.Sc. Programme (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 programmes.**



### Sec 3. Selection Procedures, Expected Dates of Written Tests & Counselling

#### (A) Selection Procedures for the M.E., M.Tech, and MUP programmes:

**GATE qualified candidates:** Provisional selections to the M.E., M.Tech and MUP programmes will be on the basis of scores obtained in GATE 2016 / GATE 2017 / GATE 2018, previous academic record and personal interviews / counselling, provided that the candidates fulfill the eligibility criteria mentioned in Sec - 2A, 2C & 2D.

**Non-GATE candidates:** Provisional selections of Non-GATE candidates will be on the basis of written test, previous academic record and counselling, provided that the candidates fulfill the eligibility criteria mentioned in Sec - 2A, 2C & 2D. However, their admission will be considered only after applicants who have qualified in GATE 2016 / GATE 2017 / GATE 2018 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 programme:

**GPAT Qualified candidates:** Provisional selections to the M.Pharm programme in Pharmaceutical Chemistry, Pharmaceutics, Pharmacognosy, Pharmacology and Pharmaceutical Quality Assurance will be on the basis of scores obtained in GPAT 2017 / GPAT 2018, and previous academic record and counselling, provided that the candidates fulfill the eligibility criteria mentioned in Sec 2B.

**Non-GPAT candidates:** Provisional selections of Non-GPAT candidates will be on the basis of written test, previous academic record and counselling, 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 2017 / GPAT 2018 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. programmes: Provisional selections to the M.Sc. programmes will be on the basis of previous academic record and counselling provided that the candidates fulfill the eligibility criteria mentioned in Sec-2E. **There will be no scholarships for students of these programmes.**

**Note:** Admission of Non-GATE / Non-GPAT candidates will be considered only after applicants who have qualified in GATE 2016 or GATE 2017 or GATE 2018 (for M.E. / M.Tech. / MUP programmes) / GPAT 2017 or GPAT 2018 (for M.Pharm. programme) have been considered and admitted, subject to the availability of seats.

**Candidates admitted in M.E. / M.Tech. / MUP with valid GATE 2016 or GATE 2017 or GATE 2018 and M.Pharm. with valid GPAT 2017 or GPAT 2018 score will be considered to receive scholarships only if approved and amount released by the funding agency (see also footnotes in Section 3).**

Candidates must visit our website <http://www.bitmesra.ac.in> periodically for updates / any other matters related to admission procedures.

### Expected Dates of Written tests and counselling for all programmes:

Counselling schedules and details of written tests (wherever applicable) for the above programmes will be announced by 15<sup>th</sup> June 2018, only on the Institute website and Notice Boards of concerned Centres. Candidates must visit our website periodically for updates and any other matter related to the admission procedures. No individual intimations will be sent to candidates.

The written tests (wherever applicable) and counselling of eligible candidates shall start from the 1<sup>st</sup> / 2<sup>nd</sup> week of July 2018.

**Note, FOR: M.E. - ECE (Wireless Communication) and M.Tech. (Computer Science & Engineering) -** the written test and counselling will be held at BIT Mesra (Main Campus) and BIT Extension Centre Patna, based on candidate's first choice of Place for Study (Centre).

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 Extension Centre 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. 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.

Candidates must visit our website <http://www.bitmesra.ac.in> periodically for updates / any other matters related to admission procedures.

#### **Cancellation of Admission Offer:**

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

### Documents required 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 2018. They must bring a certificate in original from the Principal of Institute stating that:

- a). by 30 June 2018, 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.
5. **Candidates with qualifications acquired through correspondence or distance-learning programmes must carry proof of pass certificate, marksheets of qualifying examination and approval of DEC (Distance Education Council).**
  6. GATE 2016 / GATE 2017 / GATE 2018 Admit card and Score card for M.E. / M.Tech and MUP programmes (if applicable).
  7. GPAT 2017 / GPAT 2018 Admit card and Score card for M.Pharm programme (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 2018 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 2018**, 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 programmes 2018 at Mesra and its Extension Centre, 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 for M.E. / M.Tech / M.Pharm / MUP / M.Sc.  
programmes, GATE / GPAT Scholarships\$, Reservations**

**Number of seats:**

Programmes	Total Seats
<b>(A) M.E. Programmes (4-Semester) at Mesra</b>	
Automated Manufacturing Systems	25
Chemical Engineering **	18
Computer Aided Analysis and Design (CAAD)	18
Civil Engineering (Soil Mechanics & Foundation Engineering - 12, Structural Engineering -12)	24
Electrical Engineering (Control Systems - 12, Power Systems - 12, Power Electronics - 18)	42
Electronics & Communication (Instrumentation & Control - 12, Microwave - 12, Wireless Communication - 18)	42
Mechanical Engineering (Heat Power - 12, Design of Mechanical Equipment - 12)	24
Space Engineering & Rocketry (Aerodynamics - 12, Rocket Propulsion - 12)	24

<b>(B) M.E. Programme (4-Semester) at BIT Extension Centre, Patna</b>	
Electronics & Communication (Wireless Communications)	18

<b>(C) M. Tech Programmes (4-Semester) at Mesra</b>	
Biotechnology	18
Computer Science & Engineering	16
Energy Technology	18
Environmental Science & Engineering	18
Information Technology	18
Information Security	18
Remote Sensing	18
Software Engineering	15

<b>(D) M.Tech Programme (4-Semester) at BIT Extension Centre, Patna</b>	
Computer Science & Engineering	18

<b>(E) M. Pharm Programme (4-Semester) at Mesra</b>	
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

<b>(F) Master of Urban Planning (MUP) Programme(4-Semester) at Mesra</b>	12
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**\$ Candidates admitted in M.E. / M.Tech. / MUP with valid GATE 2016 / GATE 2017 / GATE 2018 score and M.Pharm. with valid GPAT 2017 / GPAT 2018 score will be considered to receive scholarships only if approved and amount released by funding agency.**

**\*\*No scholarships are available for these programmes (UGC / AICTE approval applied for)\*\***

(G) M.Sc. Programmes	Total Seats
M.Sc. in Biotechnology (4-Semester)	30
M.Sc. in Chemistry (4-Semester)	15
M.Sc. in Geoinformatics (4-Semester)	20
M.Sc. in Mathematics (4-Semester)	15
M.Sc. in Physics (4-Semester)	15

**No scholarships are available for M.Sc. programmes.**

**The Institute reserves the right to lower the intake in a programme without showing any reason.**

**The Institute also reserves the right not to offer a particular programme in case the number of students found to be eligible to be admitted is less than 30% in number.**

### **Reservations:**

1. For all programmes 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 programmes 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 (3%).
4. Upto 1 seat at all Centres in each programme 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 on the basis of place of passing his/her qualifying examination (the location of his/her Institute).

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

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

## Sec 5. Financial Information and fees payable 2018

### Fees payable for M.E., M.Tech, M.Pharm and MUP Programmes at Mesra (Main Campus)

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

Particulars	1st Sem	2nd Sem	3rd Sem	4th Sem
Tuition Fee	82000	82000	91000	91000
Development Fee	5500	5500	6000	6000
Institute Exam Fee	5000	5000	5500	5500
<b>Total :</b>	<b>92500</b>	<b>92500</b>	<b>102500</b>	<b>102500</b>

Hostel Seat Rent*, Electricity and Transport etc.	13500	13500	14500	14500
<b>G. Total:</b>	<b>106000</b>	<b>106000</b>	<b>117000</b>	<b>117000</b>

\* Hostel fees are subject to revision in future

<b>Additional amount to be paid at the time of admission:</b>	<b>Total Rs.25,000.00</b>
(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 BIT Mesra will range from approximately Rs. 2,000/- 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/- .They will also be required to pay suitable mess advance at the beginning of each semester, which will be adjusted against their mess charges. For the session July 2018, 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.
- Other 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.

**NB: Students can also pay the admission fee online through State Bank Collect. For details, please visit Institute website [www.bitmesra.ac.in](http://www.bitmesra.ac.in).**

## Financial Information and fees payable 2018

### Fees payable for M.Sc. Programmes at Mesra (Main Campus)

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

Particulars	1st Sem	2nd Sem	3rd Sem	4th Sem
Tuition Fee	40000	40000	43500	43500
Development Fee	3000	3000	3500	3500
Institute Exam Fee	5000	5000	5500	5500
<b>Total :</b>	<b>48000</b>	<b>48000</b>	<b>52500</b>	<b>52500</b>

Hostel Seat Rent*, Electricity and Transport etc.	13500	13500	14500	14500
<b>G. Total:</b>	<b>61500</b>	<b>61500</b>	<b>67000</b>	<b>67000</b>

\* Hostel fees are subject to revision in future

<b>Additional amount to be paid at the time of admission:</b>	<b>Total Rs.25,000.00</b>
(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 programmes

Particulars	1st Sem	2nd Sem	3rd Sem	4th Sem
Tuition Fee	60500	60500	67000	67000
Development Fee	4000	4000	4500	4500
Institute Exam Fee	5000	5000	5500	5500
<b>Total :</b>	<b>69500</b>	<b>69500</b>	<b>77000</b>	<b>77000</b>

Hostel Seat Rent*, Electricity and Transport etc.	13500	13500	14500	14500
<b>G. Total:</b>	<b>83000</b>	<b>83000</b>	<b>91500</b>	<b>91500</b>

\* Hostel fees are subject to revision in future

<b>Additional amount to be paid at the time of admission:</b>	<b>Total Rs.25,000.00</b>
(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 BIT Mesra will range from approximately Rs. 2,000/- 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/-. They will also be required to pay suitable mess advance at the beginning of each semester, which will be adjusted against their mess charges. For the session July 2018, 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.

- Other 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.

**NB: Students can also pay the admission fee online through State Bank Collect. For details, please visit Institute website [www.bitmesra.ac.in](http://www.bitmesra.ac.in).**

## Financial Information and fees payable 2018

### Fees payable for M.E. / M.Tech. Programme at BIT Extension Centre at Patna

#### (I) Fee payable at the time of admission and in each subsequent semester

Particulars	1st Sem	2nd Sem	3rd Sem	4th Sem
Tuition Fee	82000	82000	91000	91000
Development Fee	5500	5500	6000	6000
Institute Exam Fee	5000	5000	5500	5500
<b>Total :</b>	<b>92500</b>	<b>92500</b>	<b>102500</b>	<b>102500</b>

Hostel Seat Rent* and Electricity etc.	13000	13000	14000	14000
<b>G. Total:</b>	<b>105500</b>	<b>105500</b>	<b>116500</b>	<b>116500</b>

\* Hostel fees are subject to revision in future

<b>Additional amount to be paid at the time of admission:</b>	<b>Total Rs.25,000.00</b>
(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 BIT Patna will range from approximately Rs. 2,000/- to Rs. 3,000/- per month. Students admitted at BIT Patna will be required to deposit Hostel Caution Money\* (One Time only - Refundable) of Rs.5,000/- .They will also be required to pay suitable mess advance at the beginning of each semester, which will be adjusted against their mess charges. For the session July 2018, this mess advance will be Rs. 15,000/- (boys), Rs. 10,000/- (Girls).
- All fees must be paid by crossed Demand Draft in favour of "Birla Institute of Technology" payable at Patna.
- 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.

**NB: Students can also pay the admission fee online through State Bank Collect. For details, please visit Institute website [www.bitmesra.ac.in](http://www.bitmesra.ac.in).**

## Sec 6. List of enclosures to be submitted along with the completed application form

1. A print-out of the duly completed online form
2. One recent colour photographs - [same as uploaded on the form]
3. **Payment receipt towards application fee of Rs.2,500/- (General / OBC) and Rs.1,500/- (SC/ST) candidates (non-refundable)**
4. **A set of photocopies of certificates** as listed below: (write your Name, telephone number and programme applying for, on the back of each of these papers):
  - a) Pass certificate of Class 10
  - b) Marksheet of Class 10
  - c) Marksheet of Class 12 / Intermediate or equivalent
  - d) Certificates and marksheets of Graduation / qualifying examinationOR  
Marksheets upto pre-final year for appearing candidates of graduation / qualifying examination in 2018. They must enclose photocopy of certificate from the Principal of Institute stating that:
  - a) by 30 June 2018, 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.
  - e) **Candidates with qualifications acquired through correspondence or distance-learning programmes must enclose with their application a photocopy of pass certificate, marksheets of qualifying examination showing that they have passed the qualifying examination with requisite marks and approval of DEC (Distance Education Council) [Appearing candidate in distance learning programmes, whose results are yet to be declared, are not eligible to apply].**
  - f) Admit Card of GATE 2016 or GATE 2017 or GATE 2018 / GPAT 2017 or GPAT 2018 (if applicable)
  - g) Score Card of GATE 2016 or GATE 2017 or GATE 2018 / GPAT 2017 or GPAT 2018 (if applicable)
  - h) Caste certificate (if applicable), which **should be in proper format and signed by appropriate authority of rank not less than SDO.**
  - i) Candidates belonging to other special categories mentioned in Sec 4 (Person with Disability [PwD] / Kashmiri Migrant) must provide photocopy of certificate in proper format from appropriate authority.
  - j) **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).**
  - k) Photo identification: (Driving license, Passport, PAN Card, Voter ID, Aadhaar Card, College ID, Employee Identification Card are acceptable)

**Incomplete applications or applications received without all required enclosures are liable to be rejected / may not be processed.**

## Sec 7. 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) 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.

Programmes offered	Course Duration	Sanctioned intake
Bachelor in Architecture (BArch)	5 Years (10 Semesters)	40
Master in Urban Planning (MUP)	2 Years (4 Semesters)	12
Doctoral program in architecture and planning (Ph.D.)	-	-

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

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

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

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.

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.

Since its inception, the department has contributed to the field of architecture and urban studies by hosting an array of seminars, conferences, workshops and training courses at both national and international level. The department in association with the civil engineering department of the institute was identified as state level research centre/institution for conducting training programme for Capacity Building of Architects/ Engineers in Earthquake Risk Management. The Department signed a MoU with INTACH (Indian National Trust for Art and Culture Heritage) for conservation and upkeep of heritage properties of Jharkhand. The Department received the departmental research support under the special assistance program (SAP) of the UGC.

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.

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.

The Department boasts of students' achievements as they actively participate in regional, national and international competitions and win prizes at various Zonal and National meets of the "National Association of students of Architecture" (NASA), "Institute of Steel Development & Growth" (INSDAG), etc over the years. Students of the department have also credited with "Best student Award" by Council of Architecture. The department is ranked amongst the top ten best architectural colleges in the country by Outlook Express through a nationwide survey over the years.

Graduate students of the Department find gainful employment in design consultancy and construction sector, and many alumni of the department are engaged in various top ranking consultancy organizations, while some have established themselves as successful entrepreneurs by owning architectural firms. A sizable number of students opt to pursue higher studies in India and abroad in related disciplines, like urban design, city planning, landscape architecture, conservation and construction management and other diversified fields, related with architecture and perform extremely well, thereby spreading the legacy of the Department and the Institute to rest of the world.



## 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.

Programmes Offered	Course Duration	Sanctioned Intakes
B.E. Biotechnology	4 Years (8 Semesters)	60
M. Tech. Biotechnology	2 Years (4 Semesters)	18
M.Sc. Biotechnology	2 Years (4 Semesters)	30
Ph. D. Programme	-	-

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](#)

*All the programs are approved by All India council for technical education (AICTE) and BE and M.Tech Biotechnology programs are accredited by National Board of Accreditation (NBA)*

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 programme 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 programmes in Food Technology.

Programmes Offered	Course Duration	Sanctioned Intake
B.E. in Chemical Engineering	4 Years (8 Semesters)	60
M.E. in Chemical Engineering	2 Years (4 Semesters)	18
Integrated M.Sc. (Food Technology)	5 Years (10 Semesters)	30
Ph.D. Programme		

### 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:

- 1) 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.
- 2) 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.
- 3) To train students in addressing the challenges in chemical, petrochemical, polymer and allied industries by developing sustainable and eco-friendly technologies.

The undergraduate programme BE (Chemical Engineering) 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, polymers, pharmaceuticals, cement, fertilizer, fuel, processed food etc. The core curriculum is complemented by electives in the important emerging areas like Nanotechnology, Biotechnology, Food Technology, Polymer Engineering, Energy Engineering etc.

The M.E.(Chemical Engineering) programme deals with topics on advanced Transport Phenomena, Reaction Engineering, Thermodynamics along with elective courses on Polymer Processing, Specialty Polymers, Nano-science and Nanotechnology, Plant Design, Surface Engineering

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

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

Apart from standard Chemical Engineering laboratories like Fluid Flow, Heat Transfer, Mass Transfer, Reaction Engineering, Process Control 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, Fused Deposition Modeling system, Stratasys, for rapid prototyping, MCP-HEK vacuum casting machine for prototyping, 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

The Department of chemistry was established in 1956 and is dedicated to providing a high quality chemistry education at both undergraduate & postgraduate level. The department supports the institute's undergraduate, postgraduate and Ph.D. programmes in pure and applied chemistry.

Programmes Offered	Course Duration	Sanctioned Intake
M.Sc. in Chemistry	2 Year (4-Semesters)	15
Integrated M.Sc. in Chemistry	5 years (10- Semesters)	40
Ph.D. programme		

The M.Sc. and Integrated M.Sc. courses are interdisciplinary in nature, designed to provide an in-depth knowledge in various branches of chemistry such as Inorganic, Organic & Medicinal, Polymer, Physical, Environmental, Analytical, Materials, Nanoscience Nanotechnology, Energy studies & Computational Chemistry. The maximum intake in both the courses is limited to 20, in order to ensure quality in instruction and mentoring. The aim of this program is to prepare students for entry into Ph.D. programs, academics and careers in R & D laboratories. Several Institutes, R & D laboratories and pharmaceutical industries from different parts of India are in collaboration with the department to promote the educational and research environment for to perform world-class research. Other than national collaboration, the department is also actively collaborating with institutes in USA, Japan and France.

Laboratory courses are designed to provide a hands-on experience on working with various sophisticated instruments. The facilities available in the department include: Materials synthesis and characterizations, Electrochemical studies, Environmental monitoring and control, Fuel chemistry, Advanced instrumentation facility and Softwares for computational chemistry. The department has developed as a nodal centre for qualitative and quantitative analysis of various environmental pollutants and engineering materials.

The faculty members are actively involved in research in the fields of pure and applied chemistry and have various publications in high-impact international journals. The department has quality research programs supported by UGC, DST, DBT, CSIR and BRNS. The department is actively involved in promoting environmental awareness amongst the tribal and rural population in Jharkhand.

Upgradation in research laboratories, and infrastructures were made to carry out quality research. The research facilities available in the department at present are as follows:

- 400 MHz NMR Spectrophotometer (JEOL)
- AUTOLAB 302N Potentialstat/Galvanostat
- Peccell AM 1.5 Solar Simulator
- CHI 608E Potentiostat
- AUTOLAB 302N Potentialstat/Galvanostat
- Ultrasonicator
- Water circulator bath
- Rotavapower R-100
- Distillation Unit
- Ice machine
- Balance
- Origin Lab Professional
- Chemoffice Professional
- Gaussian Software.

## 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.E. 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:

#### ME Soil Mechanics & Foundation Engineering

#### Programme Educational Objective

- 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.
- To enrich research and practices, by inspiring the leaders of tomorrow to take on the challenge with ease and confidence.
- To train the students on developing practical, efficient & cost effective solutions on problems & challenges on Soil Mechanics & Foundation Engineering.
- Implant sensitivity towards ethics, public policies and their responsibilities towards the society.

## Programme Outcomes

The Students will develop ability

1. To apply knowledge of mathematics, science, and engineering in analyzing and interpreting real life problems for providing the optimal and achievable solutions.
2. To develop skills and techniques to use basic concepts and tools in civil engineering especially in geotechnical engineering problems.
3. To design a system, concept, or process to meet the desired needs in solving practical problems considering its technical, professional, and ethical aspects.
4. To impart knowledge to students for enabling him/ her in understanding the impact of engineering problems and their solutions in global, economic, environmental, and social context.

## M.E. in Structural Engineering

### Programme Educational Objective

1. To Provide the analytical expertise to create, analyse, formulate, and solve complex and challenging problems in the field of structural Engineering; and also recognize and develop the necessary and suitable tools for the same.
2. To enrich research and practices, by inspiring the leaders of tomorrow to take on the challenge with ease and confidence.
3. To Develop attitude of lifelong learning for becoming an expert in the field of structural Engineering.
4. Implant sensitivity towards ethics, public policies and their responsibilities towards the society.

## Programme Outcomes

The Students will develop an ability

1. To be competent in applying systematic rigor to understanding an engineering problem, exploring its background, investigating possible solution methodologies and comparing their merits and demerits.
2. To adept at the use of the appropriate modern tools to rapidly prototype and deploy efficient solutions to real life problems. In doing so he should demonstrate sufficient knowledge of competing tools and their relative merits and demerits
3. To demonstrate the traits of learning and unlearning throughout his professional career, and be willing to learn new techniques, methods and processes.
4. To be sensitive to social, legal and ethical concerns and tune his knowledge to be a responsible engineer adhering to all established practices of his profession. She/he will display special concern for devising environment friendly solutions that shall make a positive impact on society.

## M.Tech. in Environmental Science & Engineering

### Programme Educational Objective

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. To develop environmental scientists and engineers and sensitize them towards environmental issues.
2. To acquire analytical skills in assessing environmental impacts through a multidisciplinary approach.
3. To identify environmental problems and solutions through organized research.
4. To improve the communication and writing skill so as to face the competitive world.



## 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.

The department has academic collaborations with University of New Brunswick, Canada, University of Melbourne, Australia and University of Manitoba, Canada.

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

Programmes Offered	Course Duration	Sanctioned Intake
B.E. in Computer Science & Engineering	4 Years (8 Semesters)	120
B.E. in Information Technology	4 Years (8 Semesters)	60
Master of Computer Applications (MCA)	3 Years (6 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:

1. To impart quality education and equip the students with strong foundation that could make them capable of handling challenges of the new century.
2. 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.

**Facilities:** The department is equipped with seven laboratories with over 445 computers available for conducting laboratory sessions in diverse topics like in (i) programming languages: C, C++, Java, Oracle. (ii) Matlab for Soft Computing and Image Processing (iii) Rational Rose for Software Engineering and (iv) Laboratories for Networking, Multimedia, Simulation, Parallel Computing etc. All the Laboratories are internally networked allowing students to remotely access any particular resource at any point in time. The Department has recently installed a state of the art Fujitsu High Performance Computing System, which provides for massive computational power and the ability to host an independent cloud computing infrastructure. The installation of the system has put the Department in a very select group in the country having such a computational infrastructure.

**Areas of Research:** Bioinformatics, DNA Computing, Parallel Computing, Image Processing, Robotics, Intelligent Systems, Rough Sets, DNA Nanorobotics, Software Engineering, Sensor Networks, Data Mining, Pattern Recognition, Natural Language Processing etc.



## Department of Electronics & Communication Engineering

The Department of Electronics and Communication Engineering was established in the year 1960. This is one of the largest department of the institute, having the highest number of students and the faculty members. Due to its modern infrastructure and exposure given to the students, it is one of the elite departments in India. All the UG & PG Programmes are NBA accredited. The ECE department runs the following programmes:

Programmes Offered		Course Duration	Sanctioned Intake
B.E. in Electronics & Communication Engineering		4 Years (8 Semesters)	120
M.E. 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
Following new specializations proposed to introduce shortly a) Microelectronics & VLSI Design b) Communication Systems c) Signals & Systems		-	-
Ph.D. Programme		-	-

### Vision of the Department:

To become a centre of excellence in teaching and research for creating technical manpower to meet the technological need of the country in the field of Electronics and Communications Engineering.

### Mission of the Department:

- DM1: To facilitate state of the art Education and Research at Undergraduate, Post Graduate and Doctoral levels to enable to perform challenging engineering and managerial jobs in the field of Electronics and Communication Engineering.
- DM2: To build national capabilities in technology, education and research in emerging areas in the field of Electronics and Communication Engineering.
- DM3: To create an environment to provide excellent Research and Development facilities to strengthen Ph.D. programs and research projects.
- DM4: To provide excellent technological services to bridge the gap between academia and industry in order to fulfil the overall academic needs of the society.
- DM5: To provide high quality course structure in order to turn out qualified professionals to meet the engineering needs of the country.
- DM6: To develop effective teaching skills and the research potentials of the faculty members.
- DM7: To ensure all round development of the students, and to create a platform for turning out engineering professionals who can assume leadership position in society.

### Bachelor in Engineering

It offers B.E. in Electronics & Communication Engineering, a 4-years (8-semester) programme with intake of 120 students. The students are exposed to the fundamental and advanced technology in the field of Electronics and Communication Engineering. Some of the courses offered are Modern Instruments and Measurements, Microprocessor and Microcontroller, Digital Communication system, Microwave Engineering, Digital Signal Processing, Intelligent Instrumentation, Computer Networking, Fiber Optics Communication System, Antennas and Propagation for Wireless Communication, Mobile and Cellular Communication etc. The syllabi are time to time updated in order to incorporate recent developments. The Department has several well-equipped and advanced laboratories to help students in gaining practical exposure. Various labs offered in the department are Advanced Communication Lab, Fiber Optics Commn. Lab, Fiber Research Lab, Antenna Lab, Computational Electromagnetics Lab, Wireless comm. Networking Lab, VLSI Design Lab, Microwave Integrated Circuit Lab, Circuit Simulation Lab, Embedded System Lab and Project Lab. Almost 100% students are absorbed by various leading industries and organizations by campus placement.

**Eligibility for Admission:** Through JEE Main ranking.

### **Master in Engineering**

The Master in Engineering Programme in Microwave Engineering has an intake of 12, Instrumentation has an intake of 12 and the Wireless Communication has an intake of 18 students. A team of expert faculty members teach various subjects and provide research guidance in Master of Engineering programmes. The students are exposed to several specialized software tools such as Cadence System Design Tools, Mentor Graphics, Silvako Software (Athena & Atlas), IE3D, HFSS, Microwave Office, Sonnet, Fidelity, ADS, CST, Beampro, SystemView, LABView, MATLAB, NS-2 and QualNet etc. The department is recipient of assistance in the form of Departmental Research Support under the Special Assistance Programme of UGC. The department is running several R & D projects from various agencies like UGC, DST, AICTE, MHRD, MeitY, BARC, ISRO etc.

**Eligibility for Admission:** Through GATE Score/ Written Test & Counselling.

**Note :** *The Programme Educational Objectives (PEOs) and the Programme Outcomes (POs) of BE and ME programmes are available on the institute website.*

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

The Department runs Ph.D. programme within the field of Electronics and Communications Engineering. Currently the research areas undertaken for the Ph.D. programme are: Fibre Optic Sensors & Communication, Optoelectronic Devices, Wireless Communication Printed RF & Microwave Circuits, and Antennas for various Applications, Electromagnetics, EMI/EMC, Computational Electromagnetics, VLSI & Embedded System Design, Microwave Imaging, Millimeter Wave Technologies, RF MEMS, Biomedical Signal Processing, Speech & Audio Signal Processing, Image Processing, and Multimedia & Automation.

**Eligibility for Admission:** Through written test & interview.

## 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 programmes 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.

Programmes Offered		Course Duration	Sanctioned Intake
B.E. in Electrical & Electronics Engineering		4 Years (8 Semesters)	60
M.E. 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. Programme : At present 35 scholars are registered in Ph.D. Programme 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

### Programmes Accredited:

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

### Undergraduate Programme:

The emphasis is given on fundamentals of science, mathematics and their application to the solution of contemporary problems. The programme 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 Programmes:**

#### **M.E. in Control System:**

In M.E. 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. E. in Power System:**

M. E. 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.E. in Power Electronics:**

M.E. 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. Programme:**

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 -  $\phi$  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 Programmes:**

The Department regularly organizes conventions, seminars, conferences short term training programmes/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 programmes in electrical technical skills to youth.

**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.

Programmes Offered	Course Duration	Sanctioned Intake
M.Sc. in Mathematics -	2 Years (4 Semesters)	15
Integrated M.Sc. in Mathematics & Computing	5 Years (10 Semesters)	80
Ph.D. Programme	-	-

### 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.

Currently, department of mathematics consists of 10 regular faculty members with expertise in both pure and applied mathematics. In addition to the regular faculty members, the department has 11 other faculty members who have joined through TEQIP. They are all well qualified, highly motivated towards teaching and always attempt to cooperate students inside and outside the classroom. Faculties are also involved in research activities and have published their articles in highly impact journals. They are also skilled in writing books on Optimization, Mathematical Modeling, Differential Equations, Operations Research, Vedic Mathematics, Discrete Mathematics, Music and Mathematics and Algorithmic Complexity.

The department runs Ph.D programme, 2-year M.Sc. programme in Mathematics and 5-year Integrated M.Sc. programme (Mathematics and Computing). It has also been actively engaged in organizing conferences, workshops, summer and winter schools, invited lecture series. It also has initiated organizing seminars (two seminars in each month) aiming at distribution of knowledge about research areas among graduate and Ph.D students.

The department is equipped with a modern computer laboratory with latest scientific software such as Matlab, Mathematica, Mathcad, Minitab, SPSS, LINGO etc.

Many of the graduate students have gone for higher studies in reputed academic institution within India and abroad. Our students are getting selected for internship and in-campus / off-campus placement at IIT Bombay, infosys, Wipro, Capital Float, Intutent Incl., Pricewaterhouse coopers, Mu Sigma, Deloitte, TCS, Azim Premji foundation, SAP Labs, Blackberry, Tredence, Hangout Store.

## 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.

Programmes Offered		Course Duration	Sanctioned Intake
B.E. in Mechanical Engineering		4 Years (8 Semester)	90
M.E. in Mechanical Engineering in following specializations	Heat Power	2 Years (4 Semesters)	12
	Design of Mechanical Equipment	2 Years (4 Semesters)	12
M.E. 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.E. Programme, 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.*

### 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:

1. To impart quality education to the students and enhancing their knowledge and skills to be globally competitive Mechanical Engineers.
2. 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.
3. To develop linkages and interaction with industry, R & D organisation and educational institution for excellence in consultancy practices, research and teaching.
4. To provide conducive environment for learning, creativity and problem solving skill.

### The department has following well equipped laboratories:

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.



## Department of Pharmaceutical Science & Technology

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

S. No.	Programmes Offered	Sanctioned Intake
1	B. Pharm. - 4-years (8-semester) programme	60
2	M. Pharm. - 2-years (4-semester) 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. Programmes (including 8 under QIP)	Flexible

The above programmes 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. A gamut of very motivated, well qualified and talented faculty is actively engaged in teaching as well as research in areas of theoretical and experimental physics and technology. They have, to their credit, numerous research publications and several R&D projects. Some faculty members have been awarded international fellowships from universities abroad and some have received BOYSCAST fellowship awarded by DST, Government of India. The department has also completed Indo Russian, Indo-German and Indo-Israel projects.

Programmes Offered	Course Duration	Sanctioned Intake
Integrated M.Sc. in Physics	5 Years (10 Semesters)	60
M.Sc. in Physics	2 Years (4 Semesters)	15
Ph.D. Programme	-	-

### *Vision of the Department:*

The vision of the department is to achieve excellence in undergraduate, postgraduate education and research for scholarly inquiry and 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 provide beneficial service to local, state, national and international communities

The prime objectives of the offered programmes are as follows:

- Impart high quality education in a vibrant academic ambience.
- Prepare students to take up challenges as researchers in academic and R & D organizations.
- To train students for participation in multidimensional academic activities.
- To impart scientific knowledge and enhance human values.

The department has well equipped laboratories having several research facilities 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, 10 K cryostat etc.

At present the department has 17 faculty members and 14 research scholars. The department has been pursuing several sponsored projects funded by the UGC, DST, AICTE, BRNS, ISRO, ARDB, DRDO, NRB and CSIR as well as different bilateral projects of international category. The department has twice received "Fund for Improvement in Science & Technology Infrastructure (FIST)" from DST, New Delhi, as well as Special Assistance Programme (SAP) from UGC.

The current broad areas of research in the department include quantum optics, nonlinear optics, condensed matter physics, nanotechnology, plasma physics, etc. Specific sub-areas are plasma processing of materials, surface engineering with plasma coating, surface modification, anodic vacuum arc deposition of thin films, carbon nanotubes, nitriding coating unit, diamond-like carbon (DLC) films, nano and ultrananocrystalline diamond films, carbon nanotubes, solar cells, nanocrystalline superhard coatings, high temperature superconductivity, colossal magnetoresistive materials, dilute magnetic semiconductors, piezoelectric materials, electronic composite materials, magnetic composites, soliton and light propagation, optical communication, photonic crystal fibres, optoelectronics, etc.

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

## Department of Production Engineering

Since its inception in 1964, The Department of Production Engineering has been imparting quality education to under graduate 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.

Programmes Offered	Course Duration	Sanctioned Intake
B.E. in Production Engineering	4 Years (8 Semesters)	60
M.E. in Automated Manufacturing System	2 Years (4 Semesters)	25
Ph.D. Programme - Manufacturing and Industrial Engineering		

The major long- range goal of the Department is to develop itself as a center of excellence in teaching, consultancy and research in various aspects of Production Engineering. An increasing number of institute-industry collaborations are shaping through sandwich training programs, short term courses, workshops, and live projects for UG, PG and Doctor Level. In this respect, the Department has established well-equipped laboratories, upgrades the syllabi on a regular basis and carries out its teaching and academic programs through its qualified and experienced faculty and visiting professors. Both our graduates and post-graduates have been doing well in the industry and other Universities of higher learning in India and abroad.

### 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.

## Department of Remote Sensing

Department of Remote Sensing was established in 1997 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.

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

### Vision of the Department:

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

### Mission of the Department:

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

### THE SIGNIFICANCE OF REMOTE SENSING

The world is being 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. programme 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 Programmes (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 COURSE

M.Sc. Geoinformatics and M.Tech. Remote Sensing courses are 2 year degree programme. 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.

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.

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 programmes. For M.Sc. programme one need to have a simple Bachelors degree but for M.Tech. programme 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 leading to M. E. 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.

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

### Vision of the Department:

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

### Mission of the Department:

- To impart quality education and advanced research training leading to postgraduate and doctoral degree.
- To generate necessary infrastructure and research atmosphere for innovation and creativity to undertake research projects sponsored by premier agencies and provide training to ME and Ph. D. students.
- To nurture spirit of excellence and professional leadership in students and faculty members through exposure to leading academic/ research organisations and external experts.
- To create attractive opportunities for sustained interaction and collaboration with academia and industry.

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

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

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, bomb calorimeters, spectrophotometers, flame propagation and stability unit etc. are also available for training and research.

In the Aerodynamics Laboratory, 4 wind tunnels 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. In-house CFD code developmental activities are also undertaken and is the current research interest of the group.



## Sec 8. 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. More over 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 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 Institue, Avanti Learning, Cognizant, Infosys, Shivalik College of Engineering, OCL India ltd etc.

## Sec 9. Discipline, Rules & Regulations, Hostel and Medical Examination

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

### Discipline

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

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

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

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

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

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

**Each student must read the “UGC Regulations on Curbing the Menace of Ragging in Higher Educational Institutions, 2009” on the UGC website. Each student admitted to any of the Institute’s programmes must submit the two completed affidavits [one from candidate and one from parents] at the time of admission. [for details please see Sec-11 of this Information Brochure].**

### Hostel

Hostel facilities are provided only at Mesra & Patna Centres. 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 Programme. 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 programme spread over more than one academic year, the regulations in force at the time a student joins a programme 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 10. Undertaking for candidates appearing for final examinations in 2018

**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 Programmes of the Institute, and who are appearing for their final examinations in 2018.**

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.E. / M.Tech / M.Pharm / MUP /  
M.Sc. Programme 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 Programme 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 Programme 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 **31<sup>st</sup> October 2018**.
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 programme 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 11. 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](http://www.ANTIRAGGING.in)

or

[www.AMANMOVEMENT.org](http://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.