IIT Mandi
JEE Helpdesk FAQs

21 September 2022

Disclaimer: Please note that getting admission to an IIT would depend on your rank, choice filling and seat allocation. Making enquiries does not guarantee admission. Please note that the final decision of choices is yours.

Important links:
JEE adv information brochure: https://jeeadv.ac.in/

Seat Matrix: https://josaa.nic.in

JOSAA business rules: https://josaa.nic.in

Opening and closing ranks for 2021:
https://josaa.nic.in/document/seat-matrix-2022/

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For Details about Student Activities:

https://wiki.iitmandi.co.in/p/Main_Page

IIT Mandi FAQs

1. **Why should I join IIT Mandi**

   A:Unique curriculum with real-world design-oriented projects every year from 1st year to 4th year. Students work in teams across branches. Even in 1st and 2nd year, students do projects that are normally done only in 3rd and 4th year at other IITs.

   Friendly atmosphere with mingling of faculty and students. In year 2021-22 have a total of 2,100 students including Masters and Ph.D. research scholars along with faculty strength of 155 including Assistant Professors, Associate Professors, Professors, Visiting, Adjunct and Emeritus Professors. Students have easy access to faculty, Deans and the Director. The faculty participate in sports and other activities and eat in the Mess along with students. A close knit community.

   Himachal is the most peaceful State in India. The campus is perfectly safe, especially for girls. Situated in the serene Uhl River Valley far from cities, it is very healthy without the pollution and congestion of the cities. A healthy climate, warm in summer and cool in winter.

   Excellent outdoor and indoor sports facilities: cricket, football, tennis, volleyball, etc ....

   Unique extra-curricular activities include the Hiking & Trekking Club, the Mountain Biking Club, social outreach programs working with local school children.

   Himachal has many scenic spots such as Kullu, Manali, Manikaran hot springs, Dharamsala, ... where you can go for weekend outings with your friends.

2. **Is there any special incentive given to girl students which is not available in most of the other IITs?**

   A: No. There is no special concession for Female students

   Fee structure:

   https://iitmandi.ac.in/academics/files/Fee_%20B.Tech%20for%20AY%202022-23.pdf

3. **What special measures does IIT Mandi have to ensure safety of female students**

   A: IIT Mandi provides a safe and secure environment for female students to work and participate in co curricular activities to achieve their goals. Other than creating awareness and creating a gender sensitive work environment through the Women's Centre, IIT Mandi has a n Internal Complaints Committee (ICC) to address any complaint of Sexual harassment.

4. **Where will the freshers be accommodated?**

   A: The freshers will be accommodated at North Campus, Kamand.

5. **How developed is the IIT Mandi campus at Kamand?**

A: IIT Campus is spread over North and South campuses in Kamand. North and south campuses are contiguous and interconnected with roads and walkways. Construction of both campuses are complete. Faculty and students are living on both south and north campuses. Most of the academic activities of B.Tech students are held in the north campus. Majority of PG students stay in the South campus as their academic and research activities are held in the south campus. Major research facilities are located in the south campus.

6. **Can you give some specific details about the infrastructure available on campus?**
   The South Campus has a fully functional infrastructure of about 40000 sq mt. area. This campus presently provides for 760 students and 50 faculty/staff members. 500-capacity hostel block with a dining hall, ten-2BHK, and forty five 3-BHK apartments were recently added to this campus having an area of 22000 sq mts.

   The North Campus, on the other hand, has buildings of 143000 sq. mt. of the area presently. This part of the campus houses around 1,000 students and 101 faculty/staff members. The Sports Complex and Hospital are now fully functional. The remaining 16000 sq. mt. of construction, which includes one Academic Block , one Hostel Block and one Dining Block were completed last year . Tender for Cycle path connecting the North with the South Campus is being floated and work of construction shall be starting soon.

7. **How is the weather in Kamand like?**
   A: Weather becomes chilly after mid-October, and in winter, there is the occasional snowfall, especially in the mountains above Kamand. But in general, we have long winter vacations from early December till mid-February to keep the cold at bay. The weather is usually pleasant, especially in the evenings and is ideal for evening walks and jogs.
   From September to March you would need winter clothes and blankets. Summer is quite pleasant, except for short spells of very hot weather. Monsoon season sees quite a lot of heavy rainfall.

8. **How easy is the branch change in IIT Mandi? What is the criterion for the same?**
   A: Branch change depends solely on your CGPA (Cumulative Grade Point Average) for the first two semesters. For a more details kindly have a look at the link below:
   https://iitmandi.ac.in/new/branch-change

9. **What is the procedure for getting the MCM scholarships?**

A: Income certificates are submitted at the time of admission as mentioned on the website and applications are collected during the semester. The decision is made by the Senate to award the scholarships, and later in the second semester, students are given the scholarship reimbursing their earlier tuition fees and that of the second semester. Academic office shares information about scholarships from time to time. Other details can be found here:
https://iitmandi.ac.in/new/scholarships
https://cloud.iitmandi.ac.in/f/35f93c961cc245c78e3a/

10. **What will be the courses in 1st sem of B.Tech?**

A: There will be common courses for all of you in the first year. These first year courses include Electrical systems around us, Computing and Data Science, Mathematics, Reverse Engineering, Graphics for Design, English, German, Applied electronics, Engineering Thermodynamics, etc .
List of courses for the first semester would be available on the course page linked below.
More about curriculum and courses:
http://www.iitmandi.ac.in/academics/courses.php
http://iitmandi.ac.in/academics/perspective_btech_curriculum.php

11. **Can freshers bring laptops in the first sem? How is the internet facility on campus?**

A: There is no restriction in bringing a laptop to the Institute when you join. It would be better if you had a laptop for the course on computation with Python-language programming, but then the PC lab is also there. The Internet is pretty good in the Institute and is uncapped, i.e., unlimited hi-speed net at all times.

12. **What are the important documents that we will need to carry with us ?**

A: You need to bring originals of all documents uploaded on JOSAA during the time of admission for physical verification. Physical verification of documents would be done by the academic section and they would share the details.

13. **What facilities are provided to the freshers for the purchase of hostel necessities like mattresses, pillows, buckets etc.? Do we need to bring these things along with us?**

A: Institute arranges for the sale of hostel necessities like mattresses, pillows, pillow covers, bed sheets, locks, buckets, mugs etc. on Orientation day. Local vendors are arranged for the sale of these items inside the Institute.

14. **How many people will stay in a hostel room?**

A: Hostels have rooms of different sizes, single, double and triple occupancy. First

year students usually get a shared room.A shared room in your initial period at IIT Mandi means you have a friend to talk to about campus life!

15. Do the buildings have disable access?

A: Yes, hostels, mess halls and academic buildings have ramps and other facilities to make it accessible for differently abled.

16. What kind of laundry and other facilities are available in Hostels

A: All hostel blocks are equipped with fully automatic washing machines and dryers for laundry. Hostel common rooms also have Microwave, refrigerator and induction hob for student's use. Electric iron and ironing board is available in hostels. Dry-cleaning facility is available in Mandi.

17. Will we be buying books or can we get them from the library?

A: In general, you can get the e-books for the materials that the teacher specifies. Also, you can get them from the library, though the library may have only limited copies. Local bookshops in Mandi or online stores are also of help, so are the seniors. Moodle web pages on our intranet site have all the course materials posted by faculty and students.

18. What is the holiday schedule of IIT Mandi?

A: A generous holiday schedule is followed here. We have a five-day working week, and at times there are other holidays in between too. Semester breaks are from December to Mid February for winters and from mid June to early August in summers.

Since the First semester is starting late a different schedule than the regular would be followed for the first year B.Tech Students. For detailed academic calender https://iitmandi.ac.in/new/calendar

19. What are the co-curricular activities and clubs at IIT Mandi?

A: The student Gymkhana organises all extracurricular activities. All kinds of activities, like Technical, Creative arts, Performing arts, literary arts, Entrepreneurship activities, sports activities are organised by the Gymkhana. Have a look at the gymkhana website for more details.

https://students.iitmandi.ac.in/main/

20. What about sports?

A: Sports activities are coordinated by the Principal Sports Officer and the Faculty Sports Advisor. A team of highly experienced coaches and ground staff work under their direction to help you take part in the games of your choice. Participate in various

tournaments like Inter-IIT, Aagaaz, Rann-Neeti and other in-house tournaments.
At Kamand, we have fields for Cricket, Football and Hockey, Basketball, Tennis, Squash, Badminton, TT and Volleyball courts. TT and Foosball tables are also available in most hostels. There is also Swimming pool, gym and yoga room etc.

21. What are the games played at IIT Mandi?

A: Football, Basketball, Cricket, Volleyball, Badminton, Hockey, Lawn Tennis, Squash, Table Tennis, Aquatics and Athletics.

22. Can students keep cycle/motor bike?

A: Students can bring their own cycles, but use of motorised vehicles by students is not permitted inside the campus.

23. How to reach from Delhi/Chandigarh to Mandi?

A: Mandi is easily accessible from the two places by bus or by cab. From Delhi ISBT(Kashmiri gate) there is a regular bus service: Volvo, Tata AC and ordinary buses go directly to Mandi. Same is the case for Chandigarh; besides, all buses from Delhi pass through Chandigarh. You can also take the train to Chandigarh, and from there from the ISBT at Sector 43 to Mandi by bus. From Mandi ISBT you can take cab or the Institute shuttle service to IIT Mandi campus.here is also the option of taking Air India/ Spice-Jet flights to Dharamsala airport, which is a scenic 4-5 hour drive away from campus. Additionally, Chandigarh airport too is well-connected with the rest of India.
https://iitmandi.ac.in/new/how-reach-us

24. When is the session starting for first year B.Tech students?

A: First semester will start in November. Please check the website for details http://students.iitmandi.ac.in/main/UGOrientation

25. What are the good places to hang out in Mandi town?

A: Mandi has a fairly good market, which can provide you with almost anything. Hotels like Moti Mahal, Raj Mahal, Regent Palms, Treat are good for dinners. Dominos, Raman Bakers, Sai Sweets have their share of fast food fanatics. Indira Market, built around a sunken lake, - the Mandi version of a super mall - is a delightful place for making little discoveries. With a growing campus population, good pizzerias and eateries have come up near the campus as well.

26. Is there Ragging? Does IIT Mandi have policies against it?

A: Zero Tolerance for ragging. We have the following committees to take care of any issues,Student Welfare and Disciplinary Committee (SWDC), Anti-Ragging

Committee (ARC).

27. What if I get lost in Kamand?

A: It is a small place so chances of getting lost are minimal. Keep the security numbers with you.

28. How is the mess food?

A: The mess food is nutritional and offers a huge variety of North Indian and South India cuisine, from mattar paneer to chole bhature to non veg food and not to mention the special dinner at every month's end. Jain food and other dietary restriction food are provided on special request and case by case.

29. Is it safe for female students to roam around in the IIT Mandi campus and nearby places (like Kamand village etc)?

A: IIT Mandi campus and nearby places are very safe to roam alone. The villagers around the campus are very friendly and ready to help anytime. There are many security guard posts across the campus.

30. Is there any place to eat in or around campus apart from the Dining Halls?

A: There are many canteens on campus, some of which remain open till midnight or beyond. There are restaurants, Pizzerias, and Dhabas at Kamand, Salgi and Nandli, hamlets around the campus. Amazon and many other online retailers deliver everything to campus, including gourmet food, without any problem. A lot of fast-food joints and other restaurants have come up in the vicinity of the IIT campus in the last few years

31. Hostel timings:

A: 24 hrs open, need to give attendance between 10pm to 2 am, permission to be sought if going away. No alcohol or smoking.
The hostel rules are updated from time to time and shared with the students.
https://students.iitmandi.ac.in/files/CodeOfConduct.pdf
https://insite.iitmandi.ac.in/circulars/show.php?ID=IITMandi/Students/Hostels/2018-19/259 (Accessible from IIT Mandi network only)

32. Wild animals

A: The campus is safe. No incident involving wild animals has been reported so far.

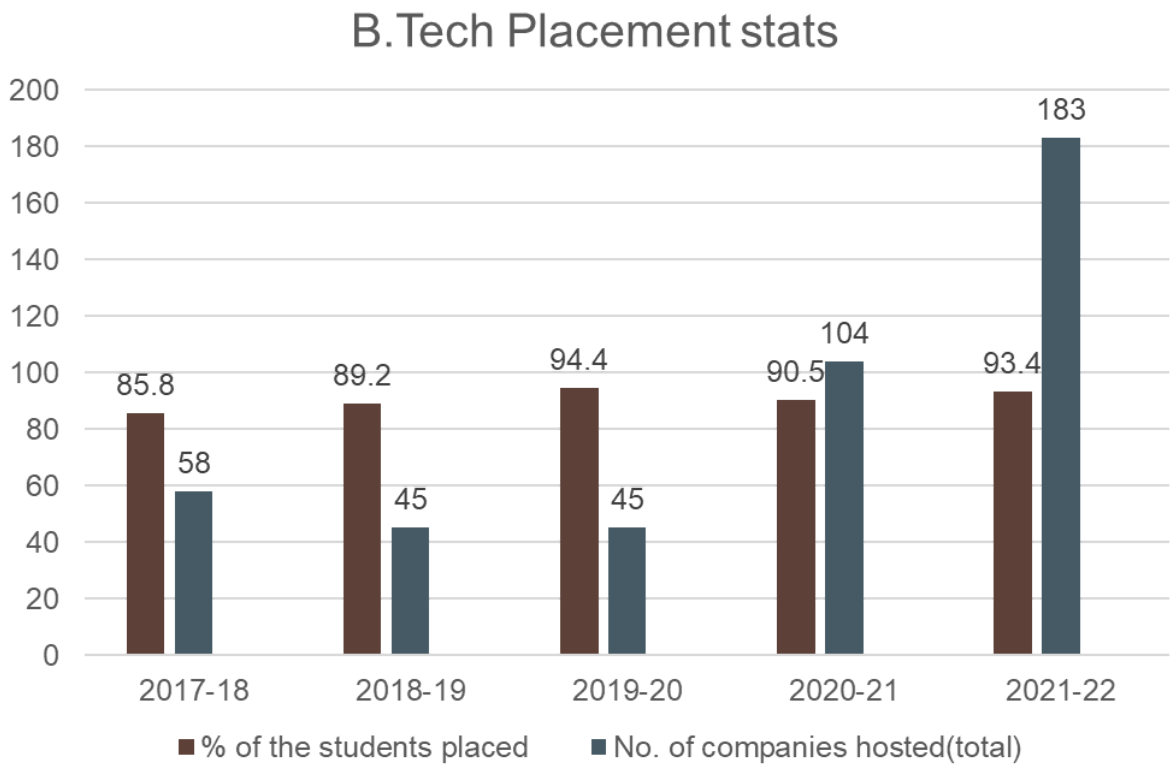
33. Unique activities

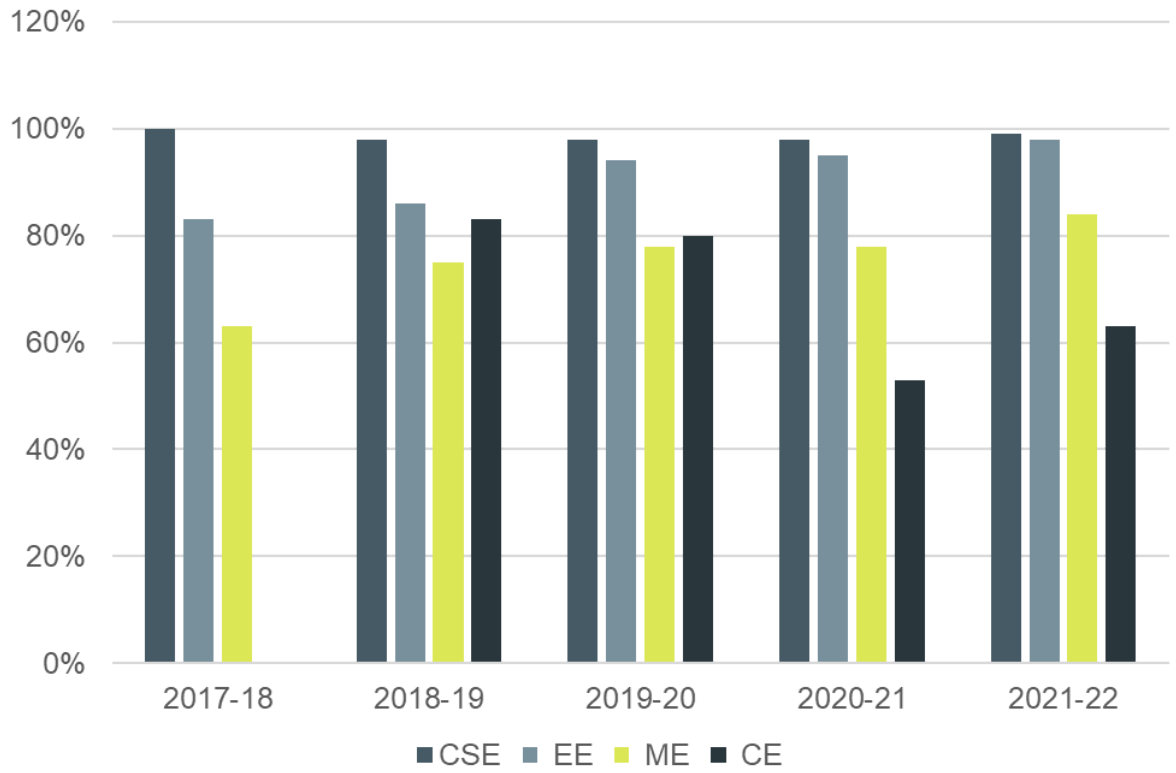
A: Due to its pristine location, students can enjoy hiking and trekking, mountain biking etc. We have active student clubs who coordinate these activities.

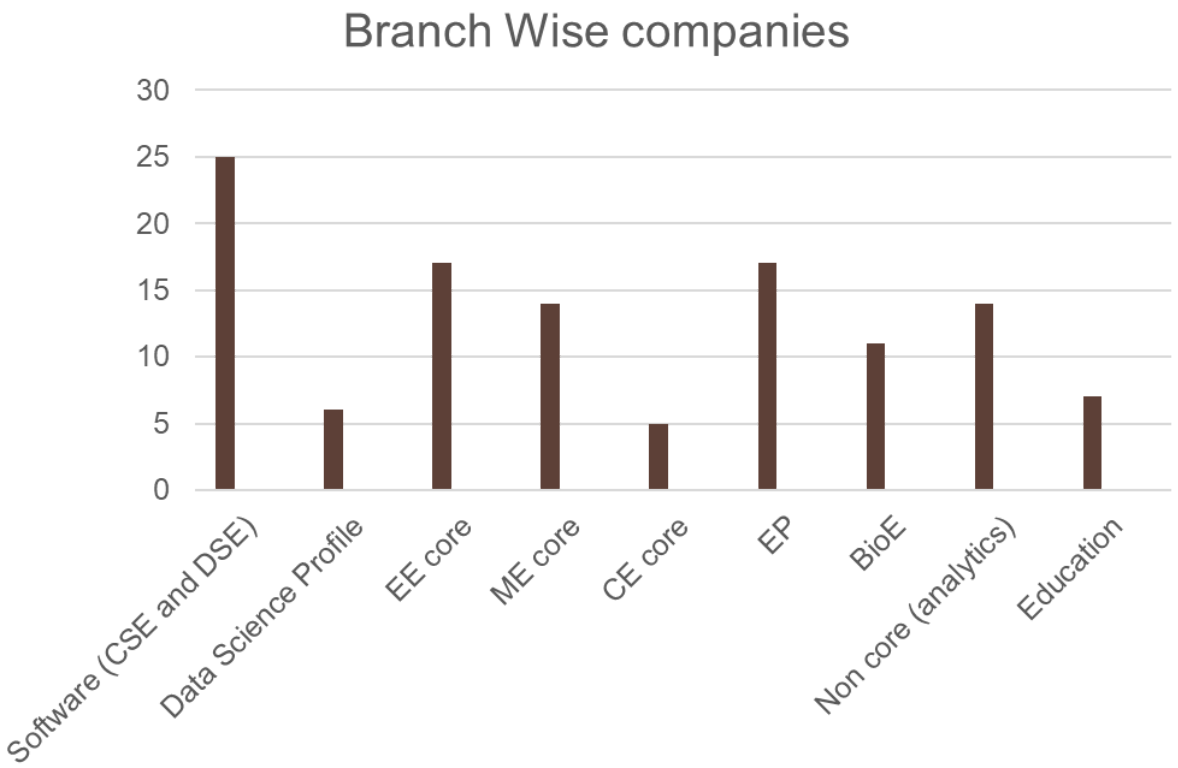
34. Placement statistics

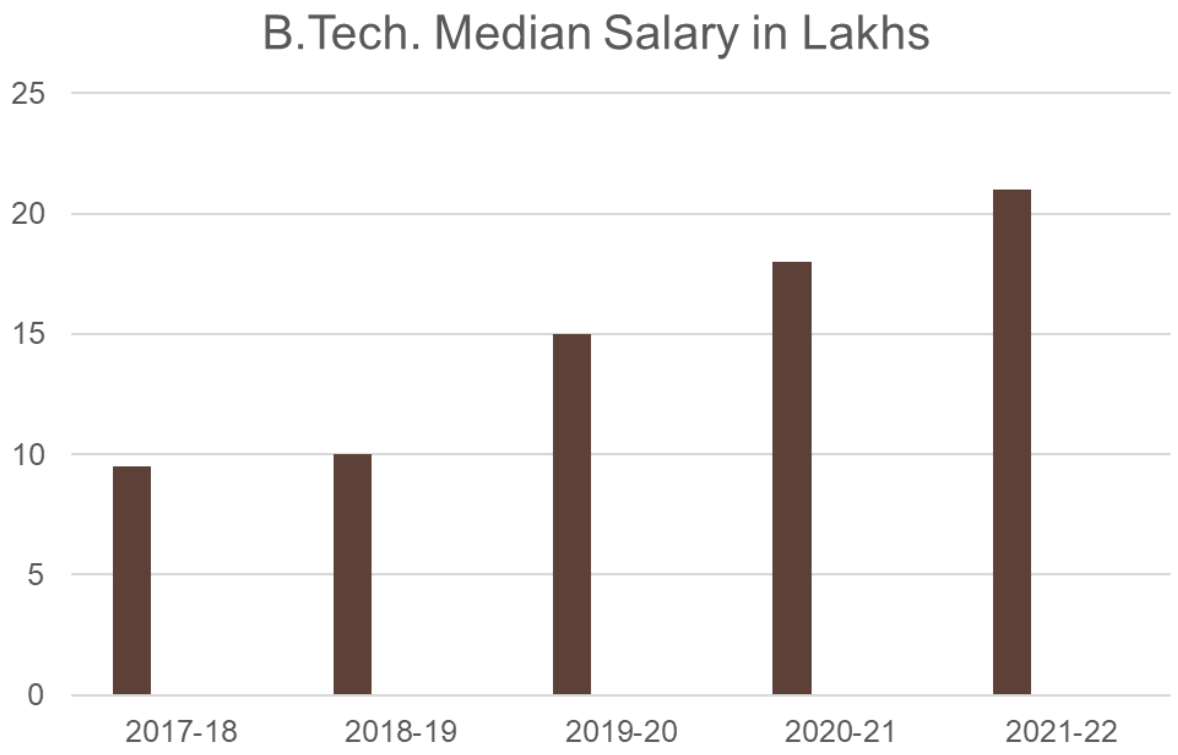
A: 80-90% students who opt for placement get placed. Salary package is comparable to other IITs. Students go for higher studies, entrepreneurship etc

Median Salary 2021-22: 21 LPA


B.Tech Placement stats
200
180
160
140
120
100
80
60
40
20
0
85.8
58
89.2
45
94.4
45
90.5
104
93.4
183
2017-18
2018-19
2019-20
2020-21
2021-22
% of the students placed
No. of companies hosted(total)


120%
100%
80%
60%
40%
20%
0%
2017-18
2018-19
2019-20
2020-21
2021-22
CSE
EE
ME
CE





Some of the companies and organizations who came for recruitment in previous few years include: Amazon, Microsoft, Texas Instruments, Goldman Sachs, Codenation, Intel, Adobe, Salesforce, Irage, Ceremorphic, Qualcomm, Robert BOSCH, Jaguar Land Rover India, Webstaff, Publicis Sapient, Tonichi insatsu, Optum, Yodlee, Samsung, TCS Research, Internet Academy, Samsung, Vehant, L&T, Truring, ACME, MAQ, Eclerx, Tejas Networks, Siemens, DEShaw, ServiceNow, Razorpay,

Oyo Rooms, 1mg, Works Application, Toppr, Mathworks, Marvell Semiconductors, HPCL, Jaguar Landrover India, OLX People, Sprinklr, Haliburton Development centre, Nference lab, Decision Point, Cashfree, Meesho, Slice, Pentair, SRF, Cadence, CDAC, IRAGE, Signaltron, Buddi.AI, Ceremorphic, Wipro, Addverb, Newzera, STMicroelectronics, Qualcomm, LTTS, LTI, IOLCP, II-VI Incorporated (Finisar), LafargeHolcim, Commvault, Siemens Gamesa, Dolcera, NSLHUB, Broadridge financial solutions, ArcelorMittal Nippon Steel India Ltd, Impact Guru Technology Ventures Pvt. Ltd., Swiggy, Signalchip, PharmEasy and Amagi Media Labs Pvt. Ltd..

For more info about placements: http://research.iitmandi.ac.in/main/placements/

35. Labs & research facilities at IIT Mandi

A: IIT Mandi has excellent teaching and research labs. Since the labs are newly developed, they have new and updated equipment.

36. What are the opportunities for semester exchange with other national and international Institutes?

A: MoU with TU9 institutes Germany, WPI Universities in USA, Universities in Sweden, Denmark, Switzerland, Canada as well as other IITs. Students go for exchange programs for 1 or 2 semesters.
More info:
https://students.iitmandi.ac.in/international.php

37. New programs

Details of new B.Tech. programmes started in 2019 are the following:

http://iitmandi.ac.in/academics/courses.php

Data Science and Engineering

Data science has become important due to recent technology disruptions. Most fundamental is Moore's Law which has driven an exponential growth in computing, storage, and communications per rupee over the past 50 years. This rate of growth shows no signs of abating. Consequently, today we have the Internet of Things: a plethora of sensors costing 10s of rupees or less, a global Internet with almost limitless bandwidth, and enormous storage in global clouds. The present era is full of technological advances in almost all spectrums of life and we are flooded with enormous amounts of data. There is an increasing demand of capturing, analyzing, and synthesizing this large amount of data in a number of application domains to better understand various phenomena and to convert the information available in the data into actionable strategies such as new scientific discoveries, business applications, policy making, and healthcare etc.
Data science is the area where applications of various tools and techniques from the disciplines of applied statistics, mathematics and computer science are used to get

greater insight and to make better and informed decisions for various purposes by analysing a large amount of data.
Jim Gray, database pioneer, has called Data Science the 4th paradigm of science. The first 3 are the empirical, the theoretical and the computational paradigms.
In industry there is an escalating demand for trained professionals that can collect, process, and study the large data sets and reveal underlying trends and other insights. Consequently, the study of data science as a discipline has become essential to cater the growing need for professionals and researchers to deal with the future challenges.
Given the mounting importance of the data science paradigm, IIT Mandi has decided to start a new 4 years bachelor program on Data Science and Engineering (DSE).
The curriculum of the DSE program focuses on exposing to the students with the essentials of applied statistics, applied mathematics, and computer science required in the context of data science and its applications with strong emphasis on having hands-on experience with the help of practicum, labs and experience of dealing with real-world problems.

Objectives of the program
After the completion of the degree, students would

1. be prepared with a varied range of expertise in different aspects of data science such as data collection, visualization and processing large data sets.
2. acquire a good understanding of both the theory and application of applied statistics, applied mathematics and computer science based existing data science models to analyse huge data sets originating from diversified application areas.
3. be able to create new models using the knowledge acquired from the program to solve future challenges and real-world problems requiring large scale data analysis.
4. be better trained professionals to cater the growing demand for data scientists and engineers in industry.

Engineering Physics

Engineering Physics (EP) at IIT Mandi is a unique program, which is designed to prepare graduates with rigorous foundation in Physics along with Engineering in order to tackle today's technology challenges. EP will enhance the cross-functionality and bridge the gap between pure science and traditional engineering disciplines which so far have been pursued independently. This is necessary because in today's world major scientific and technological breakthroughs happen in a multi-disciplinary environment where scientists from pure science work along with engineers. It is, therefore, highly important to inculcate both scientific and technological aspects, and the EP programme will serve this purpose.
The curriculum for EP at IIT Mandi introduces students to a wide variety of fields in pure as well as applied Physics. The core courses cover basic areas in Physics, such as Quantum Mechanics, Statistical Mechanics and Condensed Matter Physics; as well as basic courses in Mathematics and Engineering. In addition to the compulsory courses, students will complete a certain number of elective courses in Physics

intended to provide a good exposure in various directions in both theoretical and applied Physics. The vision is to cater to and enhance the curiosity of students with varied interests in the field. Besides, a number of courses in other branches of science and engineering, along with humanities and social sciences, will also be available as electives. This will allow students to explore their areas of interest. If a student is inclined towards electrical engineering, s/he can take the requisite number of courses/credits in that program and get a minor.

Interdisciplinary areas in physical sciences and engineering, like Quantum technology, Photonics, Nano-electronics and Artificial Intelligence, promise to become dominant in the 21st century. EP that teaches science underlying engineering will prepare students to apply Physics to tackle these 21st century engineering challenges and vice-versa. Additionally, EP will also prepare students to pursue an advanced degree in Physics as well as engineering.

B.Tech-M.Tech Integrated Dual Degree programme in Bioengineering

Indian Institute of Technology Mandi is offering a unique B.Tech-M.Tech Integrated Dual Degree programme in Bioengineering that is aimed at providing students with a broad base knowledge of engineering principles and practices to understand the biological world. Ranging from sensing of data from the biological world, to actuation through prosthetics, from computational models to understand the biological world to machine learning techniques for diagnosis, the programme aims to offer a wide plethora of problem solving opportunities derived from the biological world. The programme, unique of its kind looks at Bioengineering from a more generalized perspective without getting limited to only Biomedical Engineering, as is commonly envisioned at many engineering institutions in the country. This widens the horizon of the student at a Bachelor's level who can then choose to specialize in the different areas of Bioengineering like Biomedical Engineering, Agro-Technology, Computational Bioengineering or Environmental Science and Engineering. Such a programme definitely provides an exploratory approach to understanding Bioengineering, postponing the notion of specializing in a particular domain area to a later stage allowing a student to introspect into his/her potential while taking lessons on basic biology and computational, electrical and mechanical engineering principles. Coupled with IIT Mandi's philosophy of providing a broad base engineering education, the programme perfectly synergizes engineering fundamentals with biological domain areas with the intent of generating engineering manpower endowed with a sufficient appreciation towards biology. The biological world is vast and extracting information from the biological world requires in depth understanding of electrical, mechanical and computational engineering principles and practices with significant understanding of the biological world.

The discipline of bioengineering has evolved drastically over the past 50 years, seemingly encompassing all fields that include bioelectric phenomena, bioinformatics, biomaterials, biomechanics, bioinstrumentation, biosensors, biosignal processing, biotechnology, computational biology, medical imaging, etc. The B.Tech and M.Tech dual degree programme on Bioengineering strives to train students in the field of physical, chemical, mathematical and biological sciences together with engineering principles for the development of technology aimed at providing

diagnostic, therapeutic and assistive and analytical support to biological systems. The programme strives to train the students in the field of basic electrical and mechanical engineering disciplines together with principles in physical, chemical, mathematical, computational and biological sciences for inculcating knowledge enabling them in developing and deploying Bioengineering related technologies in various fields.

General JEE FAQs

1. **My rank is below the cut off for CSE in IITs, I am getting CSE in xxx college, What to do?**

A: IITs offer a wholesome academic environment which is far superior to any other engineering institutes in India. An IIT B.Tech programme trains you for the fast-changing world of the future, in which branch is not important.
You may aspire to a particular branch or a particular IIT but are offered some other branch or IIT. IITs have flexible curricula that permit you to take some courses outside your allotted branch. The faculty, syllabus, the teaching and the lab facilities are comparable in all IITs. If you have passion and work hard, you can excel in any branch and in any IIT.

2. **Is there a separate rank list for girls? How do I know which course I will get. Will the opening and closing rank change from last year?**

Separate rank lists for females are not published.

In the seat matrix https://josaa.nic.in for each Branch/IIT there are two rows: gender-neutral and female only(including supernuerary). Female candidates compete for the female seats first and then for the gender-neutral seats. Hence, only the common rank list is used. The female supernumerary seat scheme is introduced for the second time this year. The opening and closing ranks of female supernumerary seats for year 2021 are available on the JoSAA website.

This year also, about 20% of seats at every IIT have been designated as 'female-only' seats (this has been done by creating sufficient supernumerary seats, without any reduction in the number of seats available to gender neutral candidates). So if you are a qualified female candidate, you have quite a good chance of getting an IIT seat, and a better chance than previous years of getting a branch and IIT of your choice! Hence all female candidates are advised to not go just by previous years' closing ranks, but instead fill in as many of their genuine preferences as they can, in order to maximise their chances of getting a high-preference branch and/or campus.

Since many IITs have introduced new courses and total number seats are higher, the opening and closing ranks may change this year. There are two rounds of mock seat

allocations and this would give you an idea about the chances of getting a particular choice according to your rank.

If you are passionate about some branch or some IIT, put those at the head of your choice list. Then, list a large number of other branches and IITs, even if you are not very keen on them. IITs give students many opportunities to pursue their passion regardless of the branch that they join.

3. My rank is xxx, which IIT will i get?

A: Please note that we will not be able to comment on which specific course you will get. Please check the JoSAA website for last year's opening and closing ranks for various IITs and decide. Please note that the closing ranks this year may vary, so you may fill in many branches in IIT of your choice. Also you may fill in choices for other IITs which have even lower closing ranks.
https://josaa.nic.in/

Also refer to the JOSAA business rules for clarity about choice filling.

4. Seat allocation procedure

A: The seat allocation in IITs is carried out in multiple rounds where the seats are allocated based on the preferences she has given. In each round after allotment of the seat, she will be provided the choice to freeze, float, slide or reject the current allotted seat.

- Freeze implies that the candidate accepts the current allotted seat and does not wish to be considered for other rounds.
- Slide implies that the candidate wants to be in the current allotted institute but still wants to be considered for preferable branches within that institute.
- Float means that she wants to be considered for any branch or any institute based on her preference list.
- Reject means that she does not want to continue and be considered for any further rounds of counselling.

For more info please refer to: http://josaa.nic.in/

5. Community/cast certificate, fee payment, other formalities

A: Please refer to the JOSAA website. In case you need further clarity please get in touch with your respective Zonal IIT or organizing institute.

6. My Rank is beyond the closing rank for courses last year what should I do

A: Please note that we will not be able to comment on which specific course you will get. Please check last year's closing ranks for various courses and decie. This year the closing ranks may vary, but not drastically. Though with very low rank getting a seat is difficult,To maximize your chance, you may consider filling in choices for a course which has lower closing rank and also fill in a large number of choices. You will get clarity during the two mock rounds and may decide accordingly.

7. I have got a PREP rank, what does that mean?

A: The Preparatory Course is a provision of PWD, SC and ST candidates only. In case there are vacancies in your category towards the end of seat allocation, you may be provisionally allotted one of these vacant seats. You will then have to attend the Preparatory Course of

one year duration in one of the IITs during 2022-2023. If you pass in all subjects, you will be admitted into the allotted branch/IIT in the 2023-2024 session. For more details on preparatory course, see https://jeeadv.ac.in

To be considered for the Preparatory seat allotment, you must fill in your choice lists before the deadline. The provisional allotment is made based on your choice list. For more information, please visit http://josaa.nic.in

FAQs on Data Science and Engineering Sep 2022

1. What is this branch?

The Data Science and Engineering program combines knowledge in Artificial Intelligence (AI), Big Data, and Statistics & Mathematics to solve challenging real world problems in many areas. This new field will become increasingly important as widespread sensors (IoT) collect vast amounts of data that is available in the Cloud.

Data Science and Engineering is a joint program launched by the **School of Basic Sciences** and **School of Computing and Electrical Engineering**. This four year B. Tech. program is a unique program that emphasizes the integration of theory and practice. Labs and practicums are an integral part of the course to provide the students an all-inclusive learning experience.

2. Why this branch?

This degree will equip students with advanced skills to thrive in a rapidly changing world that is increasingly driven by data. A Bachelor's degree in Data Science and Engineering will open up several career paths to students as ***Data Engineers, Data Architects, Data Analysts and Business Analysts,*** among others. These fields have a **high demand for trained professionals** who can collect process and study large data sets and discern underlying patterns and derive other insights. The study of Data Science and Engineering as a discipline is becoming essential to cater to the growing need for professionals and researchers to deal with the future challenges of the country.

3. What will you study in this branch?

Students would study courses related to Programming, Data Structures, Databases, Distributed Systems, Machine Learning, Optimization, Statistics, Algorithms, Linear Algebra, and Analysis etc.

The **curriculum is flexible** and the students have ample opportunities to choose courses of their interests from **other branches such as Computer Science, Electrical Engineering, and Applied Statistics & Mathematics** etc.

4. What will be real-world applications?

Some of the cutting-edge fields where the graduate of Data Science and Engineering are desired for solving challenging real-world problems are

- Artificial Intelligence
- Robotics
- Business analytics
- Finance
- Health Care & biomedicine
- Bioinformatics
- Agriculture and Precision Farming
- Social media and social network analysis
- Smart cities
- Education and electronic teaching
- Energy, sustainability and climate

5. Where are the placements?

In the current scenario there is a very high demand for engineers trained in Data Science and Engineering. The graduate of this course **can target most of the companies that a typical B. Tech. Computer Science graduate targets**. In addition, the companies that are looking for a trained Data Scientist or Engineer, the DSE graduate would have an **edge** over graduates of all other branches such as CSE, EE etc.

The program would make the students well trained with ample knowledge of various aspects of data science and engineering required to provide technological solutions to face next generation challenges.

6. What will be the skill sets acquired?

The graduate would be acquiring skills in the related areas of ***Computer Science, Applied Statistics and Applied Mathematics***. The curriculum for this course has been carefully designed keeping in mind the requirement of the industry. Programming, Data Structures, Databases, Cloud-based Systems, Machine Learning, Optimization, Statistics, Algorithms, and Linear Algebra etc. would be the skill sets acquired by the candidates after the completion of the program.

7. How are DSE and CSE related?

Computer science students think of computations and learn about different aspects that make computation more effective. Data science students think of processing and modeling data from different sources and each coming at different rates. These are two different sides of a similar coin.

Data Science and Engineering is primarily aimed at producing engineers with sufficient knowledge of ***Computer Science, Applied Statistics and Applied Mathematics*** to give solutions to the problems involving Big Data in various domains.

8. Is this branch suitable for girls?

Yes. The branch is very much suitable for female students.

9. Will the new branch have enough facilities established?

DSE would require the same labs that are used by CSE students. All the required labs and facilities are in place for the Data Science and Engineering Program. IIT Mandi has state of the art infrastructure, classrooms, well established labs, computing facility, central library and other teaching resources to have a world class learning experience for the students.

FAQs on Engineering Physics
Sep 2022

1. What is this branch?

Engineering Physics (EP) at IIT Mandi is a unique program, which is designed to prepare graduates with rigorous foundation in Physics along with Engineering in order to tackle today's technology challenges such as Quantum Technologies.

2. Why this branch?

EP will enhance the cross-functionality and bridge the gap between pure science and traditional engineering disciplines which so far have been pursued independently. This is necessary because in today's world major scientific and technological breakthroughs happen in a multi-disciplinary environment where scientists from pure science work along with engineers. It is, therefore, highly important to inculcate both scientific and technological aspects, and the EP programme will serve this purpose.

3. What will you study in this branch?

EP will provide ample opportunity to a student to pursue both physics as well as engineering. In addition, students will also have an option to pursue in pure as well as applied Physics.

4. What will be real-world applications?

Quantum technology such as Quantum cryptography and Quantum Computing which are a perfect amalgam of Physics and Engineering, Photonics, Nano-electronics and Artificial Intelligence. These are some of the cutting-edge technologies fields where knowledge of both physics and engineering is required to make an advance in these highly demanding fields.

5. Where are the placements (most important)?

Industries associated with the field of photonic such as Canon, Nikon; Quantum Technologies – IBM, LIGO, CERN, Google; Nanotechnology and nano devices- IBM, Intel, Texas Instruments, Samsung etc.

6. What will be the skill sets acquired?

Solid foundation in Physics, Computer programming, Device Fabrication, Mathematical Foundation.

7. Comparisons among EP and MSc Physics:

EP is a way different from traditional M.Sc. physics program. IIT Mandi B.Tech. curriculum is designed in a unique way which itself provides a window to a student to get sufficient common engineering knowledge in addition to the opportunity to get a minor in any field along with a B.Tech. degree in his/her own chosen area. In EP, a student will get ample opportunity to be equipped with current technology in the engineering field to apply for the 21 st century physics problems and vice versa. For example, one of the most burning problem

of 21 st century is the development of a Quantum Computer and a student with solid foundation in Physics along with strong computing skill will be the most suitable to help in advancing such complicated technologies.

8. Is this branch suitable for girls?

Yes, EP is very much suitable for girls students. This branch will provide opportunity to pursue career in sophisticated field such as Quantum Technologies, Photonics, Nanotechnology and these field are well suited for both girls and boys.

9. Is new branch will have enough facilities established?

As EP is combined program launched by three different schools (SBS, SCEE and SE), all the required labs and facility are well placed for EP.

FAQs on Bio Engineering

Sep 2022

1. What is this branch?

This is a 5 year B.Tech M.Tech Integrated Dual Degree programme in Bioengineering. At the end of this programme, students will get two degrees B.Tech and M.Tech in Bioengineering together.

2. Why this branch?

The B.Tech and M.Tech dual degree programme on Bioengineering strives to train the students in the field of physical, chemical, mathematical and biological sciences together with engineering principles for inculcating knowledge enabling them in developing and deploying Bioengineering technologies in various fields.

MTech allows the Bioengineers to specialise in four advanced focused areas:

a) Biomedical Engineering aimed at gaining expertise in the areas of diagnostics, therapeutic and assistive support for healthcare applications.

b) Agricultural Automation Technology aimed at providing automation and assistive support to agricultural practices.

c) Environmental Science and Engineering aimed at training bioengineers to develop environment friendly processing technologies involving bio-organisms.

d) Computational Bioengineering aimed at both developing algorithms and models to understand biological systems and processes.

The curriculum will impart training to budding students that will cater to the requirements of Bio-based industries. At IIT Mandi, a student needs to complete 160 credits for B.Tech in 4 years and 70 credits for M.Tech in two years. The integrated dual degree programme in Bioengineering allows the students to go through a rigorous framework of core courses at Bachelors and Masters level and a comprehensive and detailed project and dissertation

work which allows a student to graduate in 5 years with a B.Tech-M.Tech integrated dual degree earning 206 credits.

3. What will you study in this branch?

The integrated dual degree programme in Bioengineering integrates physical, chemical, mathematical, computational and life sciences with core engineering principles driving the technologies towards advances and applications in health, environment, agriculture, energy etc thereby improving the quality of life. It creates knowledge from the molecular to organ systems levels, develops materials, devices, systems, information approaches, technology management, and methods for assessment and evaluation of technology, for the biological applications. The discipline of bioengineering has evolved drastically over the past 50 years, seemingly encompassing all fields that include bioelectric phenomena, bioinformatics, biomaterials, biomechanics, bioinstrumentation, biosensors, biosignal processing, biotechnology, computational biology, medical imaging, etc.

4. What will be real-world applications?

The real world applications include preventive medical approaches, automation based agricultural practices, environmental friendly bioprocesses and computational techniques for understanding biological systems.

5. Where are the placements?

There is a huge opportunity for placements in biomedical equipment industries, low cost point of care testing devices industries, computational biology based industries, agro technology industries apart from various research and development organizations dedicated towards bioengineering.

6. What will be the skill sets acquired?

The discipline of bioengineering has evolved drastically over the past 50 years, seemingly encompassing all fields that include bioelectric phenomena, bioinformatics, biomaterials, biomechanics, bioinstrumentation, biosensors, biosignal processing, biotechnology, computational biology, medical imaging, etc. Students will be trained in all these areas.

7. How are BioE and CSE related?

The Computational Bioengineering has a close relationship with Computer Science and Engineering as well as Data Science and Engineering. Besides, the specialization of Biomedical Engineering has sufficient computational/image processing aspects which may be of interest to the students as also definitely of the industries. Bioengineering is related to Electrical Engineering and Computer Science, where instrumentation (electrical engineering) , image processing (computer science), bioinformatics (computer science) aspects are covered.

8. Is this branch suitable for girls?

Yes

9. Will the new branch have enough facilities established?

We have a state of the art BioX centre with all the modern research facilities available. The laboratory facilities for different courses are already being set up for some courses and will be set up as the first and pioneering batch progresses.

FAQs on CSE
Sep 2022

1. What is this branch?
This branch is aimed to teach problem solving skills using combinatorial and analytical approaches, using computers. Practicum oriented learning is the core focus of CSE at IIT Mandi.

2. Why this branch?
Computers have become an integral component of any engineering system these days and proficiency in programming is vital in providing an effective solution for the design of such systems.

3. What will you study in this branch?
All the way, from the theoretical foundations of computer science, which include design and analysis of algorithms and data-structures, to hands-on, lab-oriented courses related to systems.

4. What will be real-world applications?
All real world engineering applications these days involve usage of computers.

5. Where are the placements?
The BTech batch in CSE achieves 100% placement, consistently. The biggest companies in software/IT come for placements. (Placement cell may be contacted for details)

6. What will be the skill sets acquired?
Design of algorithms, data-structures, formal languages and automata, discrete structures. Programming in a variety of languages.

7. Is this branch suitable for girls?
CSE does not require use of any skills/faculties exclusive to either gender and is equally suitable for both, boys and girls.

8. What are the facilities available for the CSE students?
Well equipped classroom and labs, complemented by a comfortable stay at hostels.