



Information Brochure Ph.D. -JDP Programme between IIT Mandi and PEC, Chandigarh

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Academic Section

Indian Institute of Technology Mandi
Kamand, Himachal Pradesh -175075



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About IIT Mandi

The Indian Institute of Technology Mandi (IIT Mandi), one of the premier technical institutes in India. IIT Mandi was established in 2009 with the aim of providing world-class education and cutting-edge research in engineering, science, and technology. Since its inception, the institute has strived to achieve excellence in education, research, and innovation.

Located in the scenic town of Mandi in the Himalayan foothills, the institute offers a unique learning experience to its students. With state-of-the-art facilities and world-class faculty members, IIT Mandi provides a conducive environment for research and learning. The institute offers undergraduate, postgraduate, and doctoral programs in various disciplines of engineering, sciences, and humanities.

At IIT Mandi, we believe in fostering an environment of innovation and creativity. Our faculty members are renowned experts in their fields and are committed to providing their students with the best possible education. With our multidisciplinary approach to education, we aim to produce graduates who are well-rounded and equipped to solve real-world problems.

We take pride in our research culture and encourage our students to engage in cutting-edge research in various fields. Our research facilities are equipped with state-of-the-art equipment and resources, providing our students with ample opportunities to explore their interests and pursue their passions.

Institute Webpage: www.iitmandi.ac.in

About PEC Chandigarh

Punjab Engineering College (PEC) having its roots in Lahore as Mugalpura Engineering College since 1921, moved to its present campus in 1953 as PEC affiliated to Panjab University. The institute became Deemed University in 2003 through a MHRD notification.

It is a Grant-in-Aid institution under the administration of the Union Territory of Chandigarh, Government of India. The institute has a 146 acres sprawling and pious campus and is a house of Chandigarh College of Architecture also. The academic and administrative processes are similar to IITs in the country. The institute's governance is through a vibrant Board of Governors. The institute is headed by a Director on 5 years tenure; a position, which is equivalent to Vice Chancellor of Universities.

The institute offers 8 Undergraduate B. Tech. programmes and 14 Postgraduate M. Tech. programmes in various disciplines of engineering and technology. After

becoming Deemed to be University, the institute has also started PhD programme in various disciplines of engineering, science, management, humanities and social sciences. UG and PG programmes are admitted through national-level examinations, namely JEE (Mains) and GATE respectively. There are 11 academic departments and 2 centres of excellence.

The faculty of academic departments and centres are involved in cutting-edge research and development works. The institute collaborates very closely with research organisations, industries, alumni and other academic institutions both in India and abroad, and has signed MoUs to pursue joint research in niche areas. The students graduating from this institute are placed in highly reputed companies with handsome salary packages.

With a history of 100 Years now, the institute has produced a number of alumni who have earned names and fame both for themselves and the institute.

Institute Webpage: <https://pec.ac.in/>

About PhD JDP

The Joint Degree Program (JDP) offers PhD students enrolled in both institutions the chance to collaborate on a multidisciplinary research project with faculty members and research teams from IIT Mandi and PEC Chandigarh, as well as to take advantage of the facilities and professional development opportunities offered by both institutions.

Important Guidelines for PhD Application

1. Please read the instructions given in the brochure carefully before filling up the applications.
2. Online Application form & Information brochure (Including the admission schedule along with the important dates) is available on the institute website at the following link: <https://alliance.iitmandi.ac.in/pecchandigarh/>
3. You are required to submit the application form ONLINE. No Downloadable Forms will be available after filling the form, you are advised to take a print of your application for your records.
4. For each project, candidate should submit a separate application with the application fee.
5. The application fee is as follows:

Category	Amount in ₹
General/EWS/OBC/OBC(NCL)/Transgender/Foreign Nationals	200
Women/SC/ST/PwD	100

Note: One application fee is valid for the single application. The application fee is **NON-REFUNDABLE**.

6. OBC candidates may note that the limit for annual income is Rs. 8 Lakhs for determining the creamy layer among Other Backward Classes (OBCs) candidates. The OBC (NCL) certificate issued for the financial year 2025-26 by the Competent Authority in the prescribed format must be uploaded in the ONLINE application form.
7. Economically Weaker Sections (EWS) candidates may note that the limit for annual income is Rs. 8 Lakhs for determining the eligibility for benefit under Economically Weaker Sections (EWS) reservation. The EWS certificate issued by the Competent Authority in the prescribed format must be uploaded in the ONLINE application form and submitted at the time of admission.
8. Seats are reserved for Economically Weaker Sections (EWS) / Other Backward Class Non-Creamy Layer (OBC-NCL) / Schedules Caste (SC) / Scheduled Tribe (ST) and Person with Benchmark Disability (PwD) categories as per Government of India norms.
9. You should check Institute website for results / important announcements.
10. You should check emails sent to your email address provided in your application for all important communications and announcements if any.
11. Merely fulfilling eligibility criteria does not entitle a candidate to be called for the written test/interview. Decision of Institute authorities will be final. Admission is based on GATE / Written test / Interview performance in addition to general eligibility criterion, the applicants must also satisfy the eligibility criteria specified for the respective Departments / Centres / Schools / Interdisciplinary Groups.
12. Candidates, if called for written test/interview should show/bring with them (i) Photo ID Card, (ii) Printed copy of the application submitted online, (iii) Thesis / dissertation / report / publications (iv) copy of certificates and mark-sheets.

Important Dates for Admission

Starting date for filling Online Application	05 th May, 2025
Last date for filling Online Application	20 th May, 2025 (5:00PM)
Declaration of shortlisted candidates list	Will be Published on IIT Mandi and PEC Chandigarh website
Shortlisted candidates will be informed by email	



Contact Details

In case of any query related to the Ph.D. Programme admission process you may contact respective school / Centre, the contact details are:

IIT Mandi

Name of School/Centre	Email ID	Contact No.
School of Biosciences & Bioengineering	sbboffice@iitmandi.ac.in	01905-267061
School of Chemical Sciences	scsoffice@iitmandi.ac.in	01905-267277
School of Civil & Environmental Engineering	scene_admissions@iitmandi.ac.in	01905-267180
School of Computing and Electrical Engineering	sceoffice@iitmandi.ac.in	01905-267071
School of Humanities & Social Sciences	shssoffice@iitmandi.ac.in	01905-267719
School of Management	somoffice@iitmandi.ac.in	01905-267119
School of Mathematical & Statistical Sciences	smssoffice@iitmandi.ac.in	01905-267929
School of Mechanical and Materials Engineering	smmeadmissions@iitmandi.ac.in	01905-267138
School of Physical Sciences	spssoffice@iitmandi.ac.in	01905-267812
Indian Knowledge System and Mental Health Application (IKSMHA)	iksmha@iitmandi.ac.in	01905-267786
Centre Artificial Intelligence and Robotics (CAIR)	cairoffice@iitmandi.ac.in	----
Centre for Quantum Science and Technologies (CQST)	arvindthapliyal@iitmandi.ac.in	01905-267899
Centre for Human Computer Interaction (CHCI)	chcioffice@iitmandi.ac.in	01905- 267187

PEC Chandigarh

Name of School/Centre /Department	Email ID	Contact No.
Production & Industrial Engineering	headprod@pec.edu.in	0172-2753281
Mechanical Engineering	headmech@pec.edu.in	0172-2753564
Metallurgical & Materials Engineering	headmett@pec.edu.in	0172-2753954
Aerospace Engineering	headaer@pec.edu.in	0172-2753880
Electrical Engineering	headelec@pec.edu.in	0172-2753451
Electronics and Communication Engineering	headec@pec.edu.in	0172-2753761
Computer Science & Engineering	headcse@pec.edu.in	0172-2753851
Civil Engineering	headcivil@pec.edu.in	0172-2753351
Physics	sanjeev@pec.edu.in	0172-2753260
Chemistry	hkaur@pec.edu.in	0172-2753257
Mathematics	ashagoel@pec.edu.in	0172-2753266
Centre of Excellence in Data Science	sanjeevsofat@pec.edu.in	0172-2753851
Centre of Excellence in Industrial and Product Design	parveenkalra@pec.edu.in	0172-2753286
Workshop & Skill Development Center; CoE Siemens	headprod@pec.edu.in	0172-2753281
Centre of Management and Humanities (CMH)	anjusingla@pec.edu.in	—
Cyber Security Research Centre	divya@pec.edu.in	0172-2753853
Computer Centre	sbatish@pec.edu.in	0172- 2753911

Academic Structure

Program management

A Doctoral Advisory Committee (DC) shall be set up for each JDP Scholar to support and monitor progress of the JDP Scholar throughout the candidature until the thesis has been submitted. The DC shall consist of the following members.

Chair/Head of the School/Department of the Home Institute or his/her nominee	Chairperson
Supervisor from the Home institute	Member
Supervisor from the Host institute	Member
Co-supervisor (s), if any with justification	Member (s)
Subject Expert from the Home Institution	Member
Additional members may be appointed to meet the requirements	Members

Coursework Requirements

The JDP Scholar shall satisfy the minimum academic coursework requirements of the Home Institution. Additional courses may be taken when recommended by the DC. If a JDP scholar credits a course in one institution, the credits will be automatically transferred to the other institution and will be counted towards the degree requirement.

Joint Degree Program Structure

- Candidates have a **“Home Institution”** where they begin their studies and spend the majority of time. The expectation is that candidates will spend a minimum of 12 months at the other, **“Host Institution”** the timing and duration of this will depend on the program of research but in general will be in the second or third year of the degree. Travel to and study at the Host Institution will be subject to the usual requirements of the institute.
 - As a condition of enrolment on the PhD JDP, candidates are required to:
 - Spend a minimum of one year* (two semesters) enrolled at each institution.
- *Candidates registered as part-time PhD or under External Registration program need to spend the minimum residential requirement criteria of both the institute as mentioned in their ordinances and regulations.

- Undertake a program of progress monitoring and examination that meets the requirements of both institutions.
 - Comply with the rules, regulations, policies, codes and procedures of both institutions.
 - Write and submit a thesis for defense by oral examination at the home Institution.
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- Candidates for the PhD JDP will be enrolled in a PhD program in parallel at both institutions. The supervisory team will comprise academics from both institutions who will provide guidance and support throughout the doctoral program. Candidates will benefit from the research community, networking, and collaborations of the IIT Mandi – PEC Chandigarh. Through enrolment at both institutions, candidates will have access to services and support provided at IIT Mandi and PEC Chandigarh, including a variety of professional and personal development opportunities for researchers.
 - The primary supervisor shall be from the Home Institution. There must be a Joint supervisor from the Host Institution.
 - The PhD JDP includes a tailored program of progress monitoring to fulfil the requirements of both institutions. On successful completion of the program requirements, candidates will be awarded a PhD degree jointly by both the Institutions.

Admissions are currently open under the following research projects

1	Project Title. Development of Automatic Solar Panel Cleaning Robot for Soiling Mitigation and Reduced Power Derating	
	Home Institute: Indian Institute of Technology Mandi Supervisor: Prof. Dipankar Deb School/Dept.: Center for AI and Robotics	Host Institute: Punjab Engineering College(PEC),Chandigarh Supervisor: Dr. Ajay Kumar School/Dept.: Electrical Engineering Department
2	Project Title. 4D printing of polymer composites for biomedical applications	
	Home Institute: Indian Institute of Technology Mandi Supervisor: Dr. Prateek Saxena School/Dept.: School of Mechanical and Materials Engineering (SMME)	Host Institute: Punjab Engineering College(PEC),Chandigarh Supervisor: Dr. Jasvinder Singh School/Dept.: Production and Industrial Engineering Department

3	Project Title. Machine Learning Assisted Phase-Field Modeling of Fracture Behavior of Particulate Composites	
	Home Institute: Indian Institute of Technology Mandi Supervisor: Dr. Rajkiran School/Dept.: School of Mechanical and Materials Engineering	Host Institute: Punjab Engineering College(PEC),Chandigarh Supervisor: Dr. JD Sharma School/Dept.: Metallurgical and Materials Engineering
4	Project Title. Development of Semiconductor Devices for Flexible Electronics	
	Home Institute: Indian Institute of Technology Mandi Supervisor: Dr. Rahul Vaish School/Dept.: School of Mechanical & Materials Engineering	Host Institute: Punjab Engineering College(PEC),Chandigarh Supervisor: Dr. Arun Kumar Singh School/Dept.: Department of Electronics and Communication Engineering
5	Project Title. Advanced thermal management of power electronics	
	Home Institute: Indian Institute of Technology Mandi Supervisor: Dr. Sarthak Nag School/Dept.: School of Mechanical & Materials Engineering	Host Institute: Punjab Engineering College(PEC),Chandigarh Supervisor: Dr. JD Sharma School/Dept.: Department of Metallurgical & Materials Engineering
6	Project Title. Fabrication, testing and machine ability of Magnesium based MMC for biomedical applications.	
	Home Institute: Indian Institute of Technology Mandi Supervisor: Prof. Mohammad Talha, School/Dept.: School of Mechanical and Materials Engineering	Host Institute: Punjab Engineering College(PEC),Chandigarh Supervisor: Dr. Mohinder Pal Garg School/Dept.: Mechanical Engineering
7	Project Title. Molecular dynamics based investigation of High Entropy Ceramics	
	Home Institute: Indian Institute of Technology Mandi Supervisor: Dr. Raj Kiran School/Dept.: SMME	Host Institute: Punjab Engineering College(PEC),Chandigarh Supervisor: Dr. Gurpreet Singh School/Dept.: Production and industrial Engineering
8	Project Title. Materials for environmental applications	
	Home Institute: Indian Institute of Technology Mandi Supervisor: Dr Satvasheel Ramesh Powar School/Dept.: Mechanical and Material Engineering	Host Institute: Punjab Engineering College(PEC),Chandigarh Supervisor: Dr Sandeep Kumar School/Dept.: Physics department

9	Project Title. Effect of various ceramic materials on the operational features of solar thermal collectors	
	Home Institute: Indian Institute of Technology Mandi Supervisor: Dr Satvasheel Ramesh Powar School/Dept.: School of Mechanical and Materials Engineering	Host Institute: Punjab Engineering College(PEC),Chandigarh Supervisor: Dr. Kaustubh R. Kambale School/Dept.: Metallurgical and Materials Engineering
10	Project Title. Droplet impact and spreading dynamic on a heated surfaces under microgravity	
	Home Institute: Indian Institute of Technology Mandi Supervisor: Dr. Parmod Kumar School/Dept.: School of Mechanical and Materials Engineering (SMME)	Host Institute: Punjab Engineering College(PEC),Chandigarh Supervisor: Dr. Lokesh School/Dept.: Mechanical Engineering Department
11	Project Title. Mechanical and Tribological behavior of Aluminum metal matrix composites reinforced with Industrial Waste	
	Home Institute: Indian Institute of Technology Mandi Supervisor: Dr. Sandeep Sahu School/Dept.: School of Mechanical and Materials Engineering, IIT Mandi	Host Institute: Punjab Engineering College(PEC),Chandigarh Supervisor: Dr. Jimmy Karloopia School/Dept.: Production & Industrial Engineering Department
12	Project Title. Development of Multi-Scale Hybrid Reinforced Metal Matrix Composites via Stir Casting and Friction Stir Additive Manufacturing	
	Home Institute: Indian Institute of Technology Mandi Supervisor: Dr. Prateek Saxena School/Dept.: School of Mechanical and Materials Engineering, IIT Mandi	Host Institute: Punjab Engineering College(PEC),Chandigarh Supervisor: Dr. Jimmy Karloopia School/Dept.: Production & Industrial Engineering Department
13	Project Title. Fabrication and Tribological Performance of Functionally Graded Self-Lubricating Metal Matrix Composites	
	Home Institute: Indian Institute of Technology Mandi Supervisor: Dr. Sunny Zafar School/Dept.: School of Mechanical and Materials Engineering, IIT Mandi	Host Institute: Punjab Engineering College(PEC),Chandigarh Supervisor: Dr. Jimmy Karloopia School/Dept.: Production & Industrial Engineering Department
14	Project Title. Supply Chain Performance aligned with Green Credit System	
	Home Institute: Indian Institute of Technology Mandi Supervisor: Dr Satvasheel Ramesh Powar School/Dept.: School of Mechanical and Materials Engineering	Host Institute: Punjab Engineering College(PEC) Supervisor: Dr Mohit Tyagi School/Dept.: Department of Production and Industrial Engineering

15	Project Title. Energy Harvesting, Design of smart Materials Structure, Simulation and Modelling	
	Home Institute: Indian Institute of Technology Mandi Supervisor: Dr. Rajeev Kumar School/Dept.: School of Mechanical and Material Engineering	Host Institute: Punjab Engineering College(PEC) Supervisor: Dr Rahul O Vaishya School/Dept.: Production and Industrial Engineering
16	Project Title. Semiconductor Devices for neuromorphic Computing	
	Home Institute: Punjab Engineering College(PEC), Chandigarh Supervisor: Dr. Arun Kumar Singh School/Dept.: Department of Electronics and Communication Engineering	Host Institute: Indian Institute of Technology Mandi Supervisor: Dr. Satinder Kumar Sharma School/Dept.: School of Computing & Electrical Engineering
17	Project Title. Design, development and implementation of Hybrid AC-DC microgrid using adaptive control techniques.	
	Home Institute: Punjab Engineering College(PEC), Chandigarh Supervisor: Dr. Ajay Kumar School/Dept.: Electrical Engineering Department	Host Institute: Indian Institute of Technology Mandi Supervisor: Dr. Pratim Kundu School/Dept.: School of Electrical and Computer Engineering
18	Project Title. Memristor for Neuromorphic Computing	
	Home Institute: Punjab Engineering College(PEC), Chandigarh Supervisor: Dr. Arun Kumar Singh School/Dept.: Department of Electronics and Communication Engineering	Host Institute: Indian Institute of Technology Mandi Supervisor: Dr. Satinder Kumar Sharma School/Dept.: School of Computing & Electrical Engineering
19	Project Title. Planning of Electric grid with High penetration of renewable energy sources	
	Home Institute: Punjab Engineering College(PEC), Chandigarh Supervisor: Dr Manohar Singh School/Dept.: Electrical Engineering	Host Institute: Indian Institute of Technology Mandi Supervisor: Dr Pratim Kundu School/Dept.: School of computing science and electrical engineering
20	Project Title. Thin flim Transistors based circuits for sensors interfaces	
	Home Institute: Punjab Engineering College(PEC), Chandigarh Supervisor: Dr. Deepak Kumar Sharma School/Dept.: Department of Electronics and Communication Engineering	Host Institute: Indian Institute of Technology Mandi Supervisor: Dr. Robin Khosla School/Dept.: School of Computing and Electrical Engineering

21	Project Title. Tribology and Surface Engineering	
	Home Institute: Punjab Engineering College(PEC), Chandigarh Supervisor: Ravinderjit Singh Walia School/Dept.: Department of Production and Industrial Engineering	Host Institute: Indian Institute of Technology Mandi Supervisor: Dr. Rajeev Kumar School/Dept.: Mechanical Engineering
22	Project Title. Design and development of yttria based polycrystalline transparent ceramics for laser host applications	
	Home Institute: Punjab Engineering College(PEC), Chandigarh Supervisor: Dr. JD Sharma School/Dept.: Metallurgical & Materials Engineering	Host Institute: Indian Institute of Technology Mandi Supervisor: Dr. Rahul Vaish School/Dept.: School of Mechanical & Materials Engineering

General Qualifications

In the present call, the students for the PhD JDP will be admitted only in the Regular category. An eligible student in this category works full-time and receives assistantship from the Institute.

The candidate should fulfil the minimum eligibility criteria of the Home institution of the respective projects as mentioned in the below link.

IIT Mandi : <https://cloud.iitmandi.ac.in/f/abee554e7294407399ce/>

PEC Chandigarh: https://pec.ac.in/sites/default/files/2023-03/phd_2022-23.pdf

In addition to general eligibility criterion, the applicants must also satisfy the eligibility criteria specified for the respective Projects/Departments / Centres / Schools / Interdisciplinary Groups. Over and above the general eligibility criteria for admission, candidates need to satisfy additional criteria for financial support / fellowship, as specified under specific admission categories.

The final selection process to Ph.D. JDP programme for any project will be through written test and/or interview.

Application and Admissions

The admissions process will be managed by the IIT Mandi - PEC Chandigarh Joint Admissions Sub-committee (JASC) constituted at the School/Department/Centre level and according to each Institution's admissions procedure. Candidates must meet the admissions requirements of both institutions. The eligibility criteria for enrolling in a joint PhD program will be same as that of a regular PhD program/ERP of the individual institute. The details of the same can be found in the PhD ordinance of the individual institute.

- IIT Mandi https://www.iitmandi.ac.in/pdf/ordinances/Ordinances_phd_mtech.pdf
- PEC Chandigarh https://pec.ac.in/sites/default/files/2023-03/phd_2022-23.pdf

All applicants will be expected to apply through an online admissions portal.

Fees, Scholarships and Funding

- The JDP Scholar shall pay tuition fees only to their Home Institution throughout the duration of the JDP including the duration of study at the Partner Institution as per its fee structure.
- Unless otherwise indicated, candidates who wish to be admitted onto the PhD JDP are entitled to receive fellowship meeting the eligibility criteria. The cost of fellowship will be borne by the Home Institute even during the candidate's stay in the Host Institute. No tuition fee will be charged by the host institution. However, the student needs to bear the boarding and lodging charges. Scholarships are awarded based on merit, and the value and conditions of any scholarship awarded will be in accordance with the terms and conditions of the awarding institution.
- Regardless of the scholarship awarded, students on the joint PhD program will be personally responsible for the following expenses unless otherwise advised:
 - Incidental fees and charges at either institution
 - Accommodation and living expenses at either institution
 - All personal expenses and non-compulsory additional fees at the host institution
 - All debts incurred by candidates during their stay at either institution
 - Any other debts incurred by candidates during the Joint PhD Program
 - Further the grants in respect of attending conferences will be provided only by the home institute.

Fees details:

The selected candidate needs to pay the fee only to the Home institution and the details about the fee structure can be found below:

- IIT Mandi <https://www.iitmandi.ac.in/fees.php>
- PEC Chandigarh https://pec.ac.in/sites/default/files/2023-03/phd_2022-23.pdf
