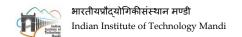# Information Brochure
Ph.D. -JDP Programme between
IIT Mandi and IIT Ropar

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Academic Section

Indian Institute of Technology Mandi
Kamand, Himachal Pradesh -175075

Contents

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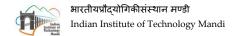
We take pride in our research culture and encourage our students to engage in cutting-edge research in various fields. Our research facilities are equipped with state-of-the-art equipment and resources, providing our students with ample opportunities to explore their interests and pursue their passions.

Institute Webpage: www.iitmandi.ac.in

About IIT Ropar

The Indian Institute of Technology Ropar started functioning from the academic year 2008--2009 from the campus of IIT Delhi, the mentor institute. The foundation stone laying ceremony was held on 24 February 2009. The Indian Institute of Technology Ropar was initially registered under the Societies' Registration Act 1860 on 29 July 2009. Subsequently, the Institute has been established by the Act of Parliament namely, the Institutes of Technology Act (Amendment) Act 2012 (No. 34 of 2012). The Institute has shifted to its permanent campus in 2018 and currently operates from its permanent campus. The permanent campus of IIT Ropar is spread across 501 acres of land located at Birla Seed Farms, Rupnagar in the lap of nature at the banks of river Satluj. The Institute has been awarded the 5 Star GRIHA (Green Rating for Integrated Habitat Assessment) rating, one of the highest national ratings for Green Buildings.

Indian Institute of Technology Ropar, an educational institution created by an Act of Parliament and having its principal address at The Indian Institute of Technology Ropar, Rupnagar, Punjab, 140001, India ("IIT Ropar").IIT Ropar is committed to provide state-of-the-art technical education in a variety of fields. The Institute is facilitating transmission of knowledge in keeping with the latest developments in pedagogy. At present, the Institute

offers the degree of Bachelor of Technology in 11 specializations/ areas under Departments/ School and offers the MSc degree in 3 Departments. It also offers M.Sc. in Data Science and Management under Joint degree programme with IIM Amritsar. It also offers the degree of Master of Technology in 7 Departments. From the January session 2024, the MS in Data Science programme for IIT Madras BS students is started at IIT Ropar. The institute also offers doctoral programmes in Engineering, Science, Humanities and Social Sciences.

Mission: To foster a transformative learning environment and a culture of excellence enabling creation of knowledge and development of socially responsible, enterprising leaders contributing significantly to national progress and humanity.

Institute Webpage: https://www.iitrpr.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 IIT Ropar, 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/iitrpr/
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	Amountin₹
General/EWS/OBC/OBC(NCL)/Transgender/Foreign Nationals	200
Women/SC/ST/PD	100

- 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 2025-2026 by the Competent Authority in the prescribed format must be uploaded in the ONLIINE 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	04th June, 2025
Last date for filling Online Application	16th June, 2025(05:00PM)
Declaration of shortlisted candidates list	Will be Published on IIT Mandi and IIT Ropar 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

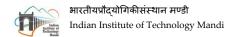| Name of School/Centre	Email ID	Contact No.
School of Biosciences & Bioengineering	sbboffice@iitmandi.ac.in	01905-267061
School of Chemical Sciences	scsoffice@iitmandi.ac.in	01905-267277
School of Civil &Environmental Engineering	scene_admissions@iitmandi.ac.in	01905-267180
School of Computing and Electrical Engineering	sceeoffice@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	spsoffice@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

IIT Ropar

Name of School/Centre /Department	Email ID	Contact No.
Academics Section	phdadmissions@iitrpr.ac.in	01881-231167, 01881-231168, 01881-231169, 01881-231120, 01881-231115 (from 9 am to 5 pm)

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.

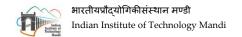|	
Chair/Head of the School/Department of the Home Institute or his/her nominee	Chairperson
Supervisor from the Home institute	Member
Supervisor from the Host institute	Member

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 Défense by oral examination at the home Institution.

- 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 – IIT Ropar. Through enrolment at both institutions, candidates will have
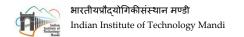
access to services and support provided at IIT Mandi and IIT Ropar, including a variety of professional and personal development opportunities for researchers.

- 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. <u>On successful completion of the program requirements, candidates will be awarded a PhD degree jointly by both the Institutions.</u>
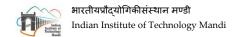
Admissions are currently open under the following research projects

1	**Project Title:** **Design of analog electronics-based active gate driver for GaN-power converters**	
	Home Institute: Indian Institute of Technology Mandi **Supervisor:** Moumita Das **School/Dept.:** School of Computing and Electrical Engineering	**Host Institute:** Indian Institute of Technology Ropar **Supervisor:** Devarshi Mrinal Das **School/Dept.:** Department of Electrical Engineering
2	**Project Title:** **Fracture mechanisms of 3D printed Ti6Al4V bioimplants: Influence of printing process parameters**	
	Home Institute: Indian Institute of Technology Mandi **Supervisor:** Dr. Rajesh Ghosh **School/Dept.:** School of Mechanical and Materials Engineering	**Host Institute:** Indian Institute of Technology Ropar **Supervisor:** Dr. Abhishek Tiwari **School/Dept.:** Department of Metallurgical and Materials Engineering
3	**Project Title:** **Himalayan cryospheric studies using Optical, Microwave and Drone data**	
	Home Institute: Indian Institute of Technology Mandi **Supervisor:** Dr. Dericks P Shukla **School/Dept.:** School of Civil and Environmental Engineering	**Host Institute:** Indian Institute of Technology Ropar Supervisor: Dr Reet Kamal Tiwari **School/Dept.:** Department of Civil
4	**Project Title:** **Integrated Modeling of Surface Water-Groundwater Interactions in the Mountain-Plains Continuum**	
	Home Institute: Indian Institute of Technology Mandi	**Host Institute:** Indian Institute of Technology Ropar

	Supervisor: Vivek Gupta **School/Dept.:** School of Civil and Environmental Engineering	Supervisor: Dr. Sayantan Ganguly **School/Dept.:** Department of Civil Engineering
5	**Project Title:** **Investigation of Thermo-Acoustic Instabilities with Radiative Effects**	
	Home Institute: Indian Institute of Technology Mandi **Supervisor: Dr.** Pradeep Kumar **School/Dept.:** SMME	**Host Institute:** Indian Institute of Technology Ropar Supervisor: Dr Lipika Kabiraj **School/Dept.:** Department of Mechanical Engineering
6	**Project Title:** **A data-driven smart energy management system for secure net-zero energy buildings**	
	Home Institute: Indian Institute of Technology Mandi **Supervisor: Dr.** B. Srinivasu **School/Dept.:** SCEE	**Host Institute:** Indian Institute of Technology Ropar Supervisor: Dr. Ramachandra Sekar **School/Dept.:** Department of Electrical Engg
7	**Project Title:** **Welding of aluminum and copper for effeciency enhanced in battery Application**	
	Home Institute: Indian Institute of Technology Mandi **Supervisor:** Dr. Sanasam Sunderlal Singh **School/Dept.:** School of Mechanical and Materials Engineering	**Host Institute:** Indian Institute of Technology Ropar Supervisor: Dr. Ravi kant **School/Dept.:** Department of Mechanical Engineering
8	**Project Title:** **Modeling Climate-Driven Sediment Transport and Its Hydrological Impact using Geospatial Analysis**	
	Home Institute: Indian Institute of Technology Mandi **Supervisor:** Dr. Aliva Nanda **School/Dept.:** School of Civil and Environmental Engineering	**Host Institute:** Indian Institute of Technology Ropar Supervisor: Dr. Shray Pathak**School/Dept.:** Department of Civil Engineering
9	**Project Title:** **Site-specific non-ergodic risk quantification for Chandigarh**	
	Home Institute: Indian Institute of Technology Mandi **Supervisor:** Dr. Dhanya J **School/Dept.:** School of Civil and Environmental Engineering	**Host Institute:** Indian Institute of Technology Ropar Supervisor: Dr. Resmi Sebastian **School/Dept.:** Department of Civil Engineering
10	**Project Title:** **Angle of arrival predation and tracking for energy depleted UAVs through Intelligent reflecting surface aided integrated sensing and communication networks**	
	Home Institute: Indian Institute of Technology Mandi	**Home Institute:** Indian Institute of Technology Mandi

Supervisor: Dr. Dipankar Deb **School/Dept.:** Centre for Artifical Intelligence and Robotics	**Supervisor:** Dr. Brijesh Kumbhani **School/Dept.:** Department of Electrical Engineering

11	**Project Title:** **Adaptive propulsion control and compensation techniques for multirotor electric aerial vehicles**	
	Home Institute: Indian Institute of Technology Mandi **Supervisor:** Dr. Dipankar Deb **School/Dept.:** Centre for Artifical Intelligence and Robotics	**Home Institute:** Indian Institute of Technology Mandi **Supervisor:** Dr. A.V. Ravi Teja **School/Dept.:** Department of Electrical Engineering
12	**Project Title:** **3D Bioprinting for Hard and Soft Tissue Engineering**	
	Home Institute: Indian Institute of Technology Ropar **Supervisor:** Prof. Navin Kumar **School/Dept.:** Department of Mechanical Engineering	**Host Institute:** Indian Institute of Technology Mandi Supervisor: Dr. Sumit Murab **School/Dept.:** School of Biosciences and Bioengineering
13	**Project Title:** **Dynamic properties of jointed rocks in the Himalayan region considering the site effects**	
	Home Institute: Indian Institute of Technology Ropar Supervisor: Dr. Resmi Sebastian **School/Dept.:** Department of Civil Engineering	**Host Institute:** Indian Institute of Technology Mandi Supervisor: Dr. Dhanya J. **School/Dept.:** School of Computing and Electrical Engineering (SCEE)
14	**Project Title:** **Modelling of Evaporative Cooling for Porous Media**	
	Home Institute: Indian Institute of Technology Ropar Supervisor: Dr. Vishwajeet Mehandia **School/Dept.:** Department of Chemical Engineering	**Host Institute:** Indian Institute of Technology Mandi Supervisor: Prof. Rahul Vaish **School/Dept.:** School of Engineering
15	**Project Title:** **Development of functional materials for sustainable production of solar fuels and fine chemicals**	
	Home Institute: Indian Institute of Technology Ropar Supervisor: Prof. C. M. Nagaraja **School/Dept.:** Department of Chemistry	**Host Institute:** Indian Institute of Technology Mandi Supervisor: Prof. Venkata Krishnan **School/Dept.:** Chemical Sciences
16	**Project Title:** **Advancing Major Depressive Disorder Diagnosis with AI/ML: A Multi-Modal Neuroimaging Approach**	
	Home Institute: Indian Institute of Technology Ropar	**Host Institute:** Indian Institute of Technology Mandi

	Supervisor: Dr. Deepti R. Bathula **School/Dept.:** Department of Computer Science and Engineering	Supervisor: Dr. Sanjeev Nara **School/Dept.:** School of Biosciences and Bioengineering (SBB)
17	**Project Title:** **Design and fabrication of threshold- and memory-switching memristors for Neuromorphic computing system**	
	Home Institute: Indian Institute of Technology Ropar Supervisor: Dr. Brajesh Rawat **School/Dept.:** Department of Electrical Engineering	**Host Institute:** Indian Institute of Technology Mandi Supervisor: Dr. Rahul Shrestha **School/Dept.:** School of Computing and Electrical Engineering (SCEE)
18	**Project Title:** **High-speed interconnect design of 3D packaging and heterogeneous integration**	
	Home Institute: Indian Institute of Technology Ropar Supervisor: Prof. Rohit Sharma **School/Dept.:** Department of Electrical Engineering	**Host Institute:** Indian Institute of Technology Mandi Supervisor: Dr. Hitesh Shrimali **School/Dept.:** School of Computing and Electrical Engineering (SCEE)
19	**Project Title:** **Overcoming NP-Hardness in Graph Optimization Problems: Trade-offs Between Exactness and Efficiency**	
	Home Institute: Indian Institute of Technology Ropar Supervisor: Dr. Arti Pandey **School/Dept.:** Department of Mathematics	**Host Institute:** Indian Institute of Technology Mandi Supervisor: Dr. Vikash Tirpathi **School/Dept.:** Mathematics
20	**Project Title:** **Development of a machine learning-based framework for predicting progressive damage in polymer composite materials**	
	Home Institute: Indian Institute of Technology Ropar Supervisor: Dr. Sachin Kumar **School/Dept.:** Mechanical Engineering	**Host Institute:** Indian Institute of Technology Mandi Supervisor: Dr. Himansu Pathak **School/Dept.:** Mechanical Engineering
21	**Project Title:** **Multiscale modelling of nacre inspired composite materials**	
	Home Institute: Indian Institute of Technology Ropar Supervisor: Dr. Prabhat K Agnihotri **School/Dept.:** Mechanical Engineering	**Host Institute:** Indian Institute of Technology Mandi Supervisor: Dr. Rajkiran **School/Dept.:** School of Mechanical and Materials Engineering
22	**Project Title:** **In-situ deformation Response and Corrosion Behaviour of the Wire Arc and Cold Spray-based Additively Manufactured Austenitic Stainless Steels**	
	Home Institute: Indian Institute of Technology Ropar	**Host Institute:** Indian Institute of Technology Mandi

	Supervisor: Dr. Nitish Bibhanshu **School/Dept.:** Metallurgical and Materials Engineering	Supervisor: Dr. Viswanath Balakrishnan **School/Dept.:** School of Mechanical and Materials Engineering
23	**Project Title:** **Metamaterials for sensing applications**	
	Home Institute: Indian Institute of Technology Ropar Supervisor: Dr. Neha Sardana **School/Dept.:** Metallurgical and Materials Engineering	**Host Institute:** Indian Institute of Technology Mandi Supervisor: Dr. Amit Jaiswal **School/Dept.:** School of Biosciences and Bioengineering (SBB)
24	**Project Title:** **Flat-optics based generation of structured light and its applications in high-resolution imaging, optical trapping and advanced laser micro/nano machining.**	
	Home Institute: Indian Institute of Technology Ropar Supervisor: Dr. Vishwa Pal **School/Dept.:** Physics	**Host Institute:** Indian Institute of Technology Mandi Supervisor: Prof. C.S. Yadav **School/Dept.:** Centre for Quantum Science & Technology
25	**Project Title:** **Investigation of the current induced spin orbit torques in 2D - TMD/Ferromagnetic bilayer**	
	Home Institute: Indian Institute of Technology Ropar Supervisor: Dr. Debangsu Roy **School/Dept.:** Physics	**Host Institute:** Indian Institute of Technology Mandi Supervisor: Dr. Viswanath Balakrishnan **School/Dept.:** School of Mechanical and Materials Engineering
26	**Project Title:** **Integrated Multimodal Image and Video Analysis for Robust Computer Vision Applications**	
	Home Institute: Indian Institute of Technology Ropar Supervisor: Dr. Santosh Kumar Vipparthi **School/Dept.:** School of Artificial Intelligence and Data Engineering	**Host Institute:** Indian Institute of Technology Mandi Supervisor: Dr. Prahul Hambarde **School/Dept**.: Centre for Artificial Intelligence and Robotics

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/ebee554e7294407399ce/

IIT Ropar:

https://drive.google.com/file/d/1GPBLKbRPCiNHmNrGLkIwxObFS2D blRqF/view?usp=drive_link

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 - IIT Ropar 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

- •IIT Ropar

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:

    o Incidental fees and charges at either institution
    o Accommodation and living expenses at either institution
    o All personal expenses and non-compulsory additional fees at the host institution
    o All debts incurred by candidates during their stay at either institution
    o Any other debts incurred by candidates during the Joint PhD Program
    o 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

- **IIT Ropar** : https://www.iitrpr.ac.in/fee-details

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