भारतीय प्रौद्योगिकी संस्थान मण्डी

Indian Institute of Technology Mandi

सरदार वल्लभभाई राष्ट्रीय प्रौद्योगिकी संस्थान,सूरत

Sardar Vallabhbhai National Institute of Technology, Surat

IIT Mandi - SVNIT Surat

PhD Joint Degree Program

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Admissions 2024-2025

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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 SVNIT Surat

Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat is to be a leading technical Institute not only at national level but also at International level for imparting training to manpower as per the needs of technology. It is also envisaged to provide the necessary infrastructure to take up research work and to provide the mechanism to interact with industries effectively.

The Institute has been granted the status of 'Institute of National Importance' w.e.f. Aug. 15, 2007. At present, the Institute is offering Ten UG Programmes, Twenty Two PG Programmes and Four Five Years Integrated Programme including doctoral programme in various disciplines of Engineering, Sciences, English and Management.

Institute Webpage: www.svnit.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 SVNIT Surat, 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 theinstructions 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/svnit/
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

   a. ***Mode of Payment: SBI Collect Portal.***
   b. Applicant should submit fee on SBI collect portal of the IIT Mandi and submit generated transaction number to the admission application portal Link: (https://www.onlinesbi.sbi/sbicollect/icollecthome.htm)
   c. 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 2024-25 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 eligibilitycriterion,the applicantsmustalsosatisfythe eligibilitycriteriaspecified for therespective 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	03rd July, 2024
Last date for filling Online Application	15th July, 2024 (5:00 PM)
Declaration of shortlisted candidates list	Will be Published on IIT Mandi and SVNIT Surat 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

For Technical Problem Kindly contact:

Section	**Contact No.**
Academic Section	01905-267063 ,01905-267754

For School/Centre details Kindly contact:

Name of School/Centre	Email ID	Contact No.
CentreArtificialIntelligenceandRobotics (CAIR)	cairoffice@iitmandi.ac.in,	----------
SchoolofBiosciences&Bioengineering	sbboffice@iitmandi.ac.in	01905-267061
School of Chemical Sciences	scsoffice@iitmandi.ac.in	01905-267277
SchoolofCivil&EnvironmentalEngineering	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
Indian Knowledge System and Mental Health Application (IKSMHA)	iksmha@iitmandi.ac.in	01905-267786
School of Management	somoffice@iitmandi.ac.in	01905-267119
SchoolofMathematical&StatisticalSciences	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
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

SVNIT Surat

For Technical Problem Kindly contact:

Section	Email ID	Contact No.
Academic Section	acad_phd@svnit.ac.in	0261-220-1534

For Department Kindly contact:

Name of Department	Email ID	Contact No.
Department of Artificial Intelligence	hod@aid.svnit.ac.in	0261-220-xxxx
Department of Chemical Engineering	hod@ched.svnit.ac.in	0261-220-1641
Department of Chemistry	hod@chem.svnit.ac.in	0261-220-1971
Department of Civil Engineering	hod@ced.svnit.ac.in	0261-220-1841
Department of Computer Science & Engineering	hod@coed.svnit.ac.in	0261-220-1611
Department of Electrical Engineering	hod@eed.svnit.ac.in	0261-220-1571
Department of Electronics Engineering	hod@eced.svnit.ac.in	0261-220-1681
Department of Humanities and Social Sciences	hod@dohss.svnit.ac.in	0261-220-1989
Department of Management Studies	kpd@med.svnit.ac.in	0261-220-1910
Department of Mathematics	hod@amhd.svnit.ac.in	0261-220-1981
Department of Mechanical Engineering	hod@med.svnit.ac.in	0261-220-1751
Department of Physics	hod@phy.svnit.ac.in	0261-220-1951

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 ofthe 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 defence 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 – SVNIT Surat. Through enrolment at both institutions, candidates will have access to services and support provided at IIT Mandi and SVNIT Surat, 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

<table>
<tr><td colspan="2">Project No :1</td></tr>
<tr><td colspan="2">Design of Approximate Content Addressable Memory

In the realm of memory systems, Content Addressable Memory (CAM) stands out as a pivotal component, offering rapid data retrieval based on content rather than memory addresses. However, the burgeoning demand for enhanced memory efficiency and speed prompts exploration into novel paradigms. This topic investigates Approximate CAM (ACAM), a promising variant that balances precision with efficiency. ACAM diverges from traditional CAM by tolerating a degree of error in the matching process, thus enabling faster searches and reduced energy consumption.</td></tr>
<tr><td>Home Institute: IIT Mandi
Supervisor: Dr. Shubhajit Roy Chowdhury
School/Dept.:Electrical Engineering</td><td>Host Institute: SVNIT Surat
Supervisor: Dr. Sandeep Mishra
School/Dept.: Electronics Engineering</td></tr>
<tr><td colspan="2">Project No :2</td></tr>
<tr><td colspan="2">Modeling and analysis of structural battery using finite element method (FEM)

In most engineering applications, the focus has switched to combining subsystem functions to accomplish the betterment of overall system performance. Integrating structural performance with energy storage makes the energy-storage component lighter and more energy-efficient overall, making it a potential option. Consequently, the idea of a structural battery was put forth for materials that could both store energy and support mechanical stresses at the same time. Thus, detailed analysis is required to design the structural battery for a particular application. The current project is aimed at developing FEM based model for the structural batteries and optimizing their performance.</td></tr>
</table>

Home Institute: IIT Mandi **Supervisor: Dr.** Vishal Singh Chauhan **School/Dept.:**School of Mechanical and Materials Engineering	**Host Institute:** SVNIT Surat **Supervisor:** Dr. Achchhe Lal **School/Dept.:**Department of Mechanical Engineering
Project No :3	
Numerical investigations on tunnelling induced vibrations in hilly region In Himachal Pradesh several infrastructural development projects such as highways, railway lines, hydroelectric and hydel power plants are coming up at a rapid pace. About 19 tunnels would be constructed for National Highways schemes to promote the economic development of the state. Excavation of tunnels in these mountainous regions is very challenging and it requires meticulous planning and execution. So far very little attention has been paid to investigate the effects of tunnelling induced vibration on the infrastructure facilities of the Himalayan region. Therefore, considering the significance of the problem, the major objective of this research proposal is to undertake a systematic and comprehensive numerical investigation to study the impact of drilling and blasting tunnelling method on the surrounding infrastructure facilities in the Himalayan region.	
Home Institute: IIT Mandi **Supervisor:** Dr. Prasanna R **School/Dept.:**School of Civil and Environmetnal Engineering	**Host Institute:** SVNIT Surat **Supervisor:** Dr. Jitesh T. Chavda **School/Dept.:**Department of Civil Engineering
Project No :4	
RIS Aided wireless powered Cell free Massive MIMO system for Sustainable 5G and Beyond Networks This research proposal aims to design and develop a Reconfigurable Intelligent Surface (RIS) aided wireless powered Cell-Free Massive MIMO system to enable sustainable operations in 5G and beyond networks. The focal point of the proposal is to harness the potential of RIS technology to manipulate electromagnetic waves, which could significantly enhance signal quality and propagation without additional power consumption. Additionally, the proposal seeks to embed wireless power transfer mechanisms within the cell-free Massive MIMO infrastructure to create a self-sustaining network environment. Through this integration, the project targets to increase the energy efficiency of the network dramatically, contributing to the reduction of the overall carbon footprint.	
Home Institute: IIT Mandi **Supervisor:** Dr. Adarsh Patel **School/Dept.:**School of Computing and Electrical Engineering	**Host Institute:** SVNIT Surat **Supervisor:** Dr. Shilpi Gupta **School/Dept.:**Department of Electronics Engineering
Project No :5	
Smart structures with battery properties for high energy storage In recent years, cement-based batteries are classified as a new battery class whose performance is dependent on the ionic movement provided by the cement's alkaline pore solution between the anode and cathode during current cycle charge and discharge. Furthermore, large batteries integrated with concrete structures allow for space optimization while providing large amounts of energy, ultimately allowing for the "smartification" of concrete structures. The current project aims to fabricate and test the cement based batteries to achieve better output as well as sufficient strength.	

Home Institute: IIT Mandi **Supervisor:** Dr. Vishal Singh Chauhan **School/Dept.:**School of Mechanical and Materials Engineering	**Host Institute:** SVNIT Surat **Supervisor:** Dr. Amrut Mulay **School/Dept.:**Department of Mechanical Engineering
Project No :6	
ADVANCED MATERIALS FOR ENERGY STORAGE/CONVERSION APPLICATIONS Energy conversion/storage devices have accomplished a foremost. Promising energy conversion devices are solar cells/fuel cell. To overcome the well-known drawbacks of commonly used Pt/C catalyst for, developing novel metal-based catalysts without compromising the catalytic activity is required. Another challenge for fuel cell is the low efficiency due to various energy losses. To overcome, energy conversion devices can be coupled with energy storage devices like supercapacitors. Thus, we will prepare novel multifunctional hybrid materials including metal-organic frameworks etc. for dual applications. Furthermore, catalysts will be also prepared for dual application. These materials will be developed through rational designs for strategic applications.	
Home Institute: SVNIT Surat **Supervisor:** Dr. Jignasa Gohel, **School/Dept.:**Department of Chemical Engineering, SVNIT, Surat	**Host Institute:** IIT Mandi **Supervisor:** Dr. Rik Rani Koner **School/Dept.:**School of Mechanical Engineering
Project No :7	
Biomass to value added Chemicals In the world, biomass is mostly present in the form of grasses, municipal waste, animal waste, agricultural residues, etc. Among these, lignocellulosic biomass is renewable, low cost and abundant in nature, which has the potential to replace the non-renewable fossil fuels. In this regard, our motive is to develop different heterogeneous catalysts that can be used for the synthesis of biodiesels from waste biomass using green technologies.	
Home Institute: SVNIT Surat **Supervisor:** Prof. Jigisha Kamal Parikh **School/Dept.:**Chemical Engineering Department	**Host Institute:** IIT Mandi **Supervisor:** Prof. Venkata Krishnan **School/Dept.:**School of Chemical Sciences
Project No :8	
Cellulose Nanocrystals and Cellulose Nanofibers from Water Hyacinth and Their Applications Water hyacinth is a notorious aquatic weed which is harmful to the environment and its control is a major problem. However, it is a rich source of phytochemicals and lignocellulosic materials. It contains lignin in the range of 2.5-18 %, hemicellulose in the range of 11-49 % and cellulose in the range of 18-46 %. After recovering the phytochemicals, the residues can be used for extracting cellulose nanocrystals (CNCs) and cellulose nanofibers (CNFs). The advanced extraction techniques like sonication, high-speed homogenization techniques, etc. can be explored for the efficient extraction of these compounds. Parametric study and statistical optimization will be employed to attain the best outcome. The CNCs and CNFs will further be utilized for their application in preparing the composites.	
Home Institute: SVNIT Surat **Supervisor:** Dr. Meghal A. Desai **School/Dept.:**Department of Chemical Engineering	**Host Institute:** IIT Mandi **Supervisor:** Dr Himanshu Pathak **School/Dept.:**School of Mechanical and Materials Engineering
Project No :9	
Contactless Incremental Sheet Forming Technology for Polycarbonate Sheet	

Home Institute: SVNIT Surat **Supervisor:** Dr A S Mulay **School/Dept.:**SVNIT Surat	**Host Institute:** IIT Mandi **Supervisor:** Dr. Vishal Singh Chauhan **School/Dept.:** School of Mechanical and Materials Engineering
Project No :10	
Control of the DFIG-based Wind Power Generation System's Rotor Side Converter Wind turbines based on doubly fed induction generators (DFIGs) have grown in popularity recently because of their ability to run at different speeds and minimal power converter rating requirements. Because of the direct connection of the stator and the power rating limitation of the excitation converter, problems with the power grid may give rise to weaknesses in the DFIG system. The goal of this research is to improve rotor side control for DFIG-based wind turbine systems management. A new approach will be developed along with experimental research on voltage-oriented control, direct power control, direct torque control, model predictive control, sensorless control, etc. All experiments will be performed with the latest 32-bit digital controllers.	
Home Institute: SVNIT Surat **Supervisor:** Mahmadasraf A. Mulla **School/Dept.:**Department of Electrical Engineering	**Host Institute:** IIT Mandi **Supervisor:** Dr**.** Moumita Das **School/Dept.:**School of Computing and Electrical Engineering
Project No :11	
Design and Analysis of Physically Unclonable Function based Authentication and Key Agreement Protocols for IoT based Applications. The objective is to identify potential vulnerabilities and weaknesses in an IoT based applications and provide technical solution for securing Cyber Physical Systems (CPS). We need to evaluate and assess the potential impact of security attacks on various IoT enabled applications by considering factors such as data integrity, confidentiality, availability, and system reliability. Further, need to design and develop a comprehensive security framework for IoT applications, integrating encryption, authentication, and access control mechanisms. Moreover, introduce a Physical Unclonable Function (PUF) based multifactor authentication mechanism to protect the IoT devices from physical capture attacks and to resist the machine learning modelling attack on PUF based authentication schemes.	
Home Institute: SVNIT Surat **Supervisor:** Dr. Balu L. Parne **School/Dept.:**Department of Computer Science and Engineering	**Host Institute:** IIT Mandi **Supervisor:** Dr. Srinivasu Bodapati **School/Dept.:**School of Computing and Electrical Engineering
Project No :12	
Design and Development of Flexible, Cost-Effective Biomass based Composite Thin Films as Electromagnetic Shields for Wearable Devices. One new entrant to the family of pollution is EM pollution which disturbs the human health. It is popularly known as Electro Magnetic Interference (EMI). This forms the motivation behind this proposal which aims to prepare conducting polymer composites (CPC) shields to make a device electromagnetic compatible (EMC). Conventional shielding materials like metal foams, ferrite materials are very good choice for shielding but they are heavy, not flexible and are suitable for low frequency applications. This project deals with developing CPC based films using the agricultural biomass like sugarcane bagasse, rice husk, bamboo husk etc. and analyze its properties for effective shielding properties.	

Home Institute: SVNIT Surat **Supervisor:** Dr. Kirti Inamdar **School/Dept.:**Department of Electronics Engineering	**Host Institute:** IIT Mandi **Supervisor:** Dr. Gopi Shrikanth Reddy **School/Dept.:** Computing and Electrical Engineering
Project No :13	
Development of Smart Hybrid Nanomaterials for Biomedical Applications Nanoscale materials possess tunable physicochemical properties by which various nanomaterials can be manipulated to suit numerous applications, which are not possible at macroscales. Even though there has been a significant progress in biomedical research (drug delivery, dentistry, tissue engineering, biosensor, etc.), integrating organic, inorganic, and biological materials in to a hybrid system will be advantageous and effective. However, the arrangement of inorganic and organic materials in various configurations to impart functionality for a specific biomedical application is challenging. This research work deals with the development and design of hybrid nanomaterials with multiplexed functionalities that can prove to be a breakthrough in the biomedical research.	
Home Institute: SVNIT Surat **Supervisor:** Dr. Sundar S.K. **School/Dept.:**Department of Chemical Engineering	**Host Institute:** IIT Mandi **Supervisor:** Dr. Jaspreet Kaur Randhawa **School/Dept.:**School of Mechanical and Materials Engineering
Project No :14	
Health-aware Microgrids utilising renewable energy sources: distributed fault diagnosis and fault-tolerant control of power conditioning units Utilising renewable energy sources to generate electricity is challenging because of their unpredictable nature, significant dependence on weather, and intermittent nature. By optimising energy-generating performance objectives while minimising faults in local subsystems, the distributed fault-tolerant energy management system for renewable microgrids works to overcome the challenge of controlling and coordinating energy plants with numerous renewable sources. This research aims to ensure the health-aware availability of energy-generation processes in healthy and faulty operation conditions. Even in the event of malfunctions or outright failures in the power conditioner, the distributed control and monitoring units shall be calibrated to suitably synchronise the microgrid's operations, with the goals of maximising its proportion of renewable output, maximising its efficiency, and ensuring maximum profit. Real-time experiments will be set up in the lab to integrate renewable sources in grid-connected, stand-alone operation and its seamless transition.	
Home Institute: SVNIT Surat **Supervisor: Dr.** Mahmadasraf A. Mulla **School/Dept.:**Department of Electrical Engineering	**Host Institute:** IIT Mandi **Supervisor:** Dr. Tushar Jain **School/Dept.:**School of Computing and Electrical Engineering (SCEE)
Project No :15	
Investigating Machine Learning Approaches in Cyber Security including Adversarial Machine Learning. The data-driven approach that the machine learning techniques are based on has now been found its sound use cases in Cyber Security as well. By analyzing data to find patterns, the use cases like better detection of malware in encrypted traffic, finding insider threats, predicting where “bad neighbourhoods” are online when browsing, or protecting data in the cloud by uncovering suspicious user behavior - all have become possible. With the advent of deep learning techniques the field is advancing further with an aim to exploit deep learning/machine learning techniques to	

an advantage while at the same time managing the overheads within reasonable bounds. The research in this project is aimed to explore the existing state-of-the-art with an aim to improve the existing scenario with better approaches in the fields of any of Intrusion Detection, Malware Analysis & Detection, Email Spam Detection, Network Traffic Analysis or User Behaviour Analysis. At the same time, the scope of the research also extends to investigate the attacks on the existing machine learning solutions (Adversarial Machine Learning) in Cyber Security & other areas and devise methods for detection and mitigation.	
Home Institute: SVNIT Surat **Supervisor:** Prof Devesh C Jinwala **School/Dept.:**Department of Computer Science & Engineering	**Host Institute:** IIT Mandi **Supervisor:** Dr Dinesh Singh **School/Dept.:** School of Computing and Electrical Engineering (SCEE)
Project No :16	
Role of Traditional Bharatiya Gyan in Mental Health through Holistic Education This highly ambitious project is expected to have a path breaking contribution to yield the possibility of better quality global level responsible citizens through mentoring the sharp youth in the right direction. It is well known fact that, SA VIDYA YA VIMUKTAYE, the knowledge is the one that liberates. On the other hand, current society is severely facing the issues of mental health like anxiety and and depression. Hence, this project is expected to suggest and sensitize modern technical education with the capsule of wisdom encompassed in the Indian Philosophy based on modern age refined interpretation.	
Home Institute: SVNIT Surat **Supervisor:** Dr. Prashant K Shah **School/Dept.:**CoE, Indian Knowledge Systems and Holistic Education	**Host Institute:** IIT Mandi **Supervisor:** Prof. Laxmidhar Behera **School/Dept.:**Center for Indian Knowledge Systems and Mental Health Applications
Project No :17	
Special Functions and Fractional Calculus: Interrelationships and Applications The proposed research work aims to investigate the intricate relationship between Special functions and fractional calculus, delving into their combined impact in various mathematical and applied contexts. This work outlines a systematic exploration of the properties, applications, and novel insights that arise from the convergence of these two mathematical domains.	
Home Institute: SVNIT Surat **Supervisor:** Dr. Ranjan Kumar Jana **School/Dept.:** Department of Mathematics	**Host Institute:** IIT Mandi **Supervisor:** Dr. Muslim Malik **School/Dept.:** School of Mathematical & Statistical Sciences
Project No :18	
Swelling and shrinking characterization of expansive soils treated with additives Expansive soils are considered as problematic soil as they expand and shrink with addition and removal of water. Structures built on such soil are subjected to uneven static uplift forces resulting in differential settlements, development of stress and cracks in the structural members, and further distress with cycle of swelling and shrinking. Therefore, the evaluation of swelling and shrinking characterization of expansive soils treated with additives is proposed to mitigate the problems associated with expansive soils.	
Home Institute: SVNIT Surat **Supervisor:** Dr. Jitesh T. Chavda **School/Dept.:**Department of Civil Engineering	**Host Institute:** IIT Mandi **Supervisor:** Dr. Prasanna, R **School/Dept.:**School of Civil and Environmetnal Engineering
Project No :19	

Experminental investigations on Electrolysis for Biofuels production	
Home Institute: SVNIT Surat **Supervisor:** Dr. Kamalesh A. Sorate **School/Dept.:**Department of Mechanical Engineering	**Host Institute:** IIT Mandi **Supervisor:** Dr. Atul Dhar **School/Dept.:** Department of Mechanical 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/ebee554e7294407399ce/
- SVNITSurat: https://www.svnit.ac.in/Data/Notice/2023/October/Academic%20Regulation-2023-24.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. JDPprogramme for any project will be through written test and/or interview.

Application and Admissions

The admissions process will be managed by the IIT Mandi - SVNIT Surat Joint Admissions Sub-committee (JASC) constituted at the School/Department/Centrelevel and according to each Institution's admissions procedure. Candidates mustmeet the admissions requirements of both institutions. The eligibility criteria forenrolling in a joint PhD program will be same as that of a regular PhD program/ERPof the individual institute. The details of the same can be found in the PhD ordinanceof the individual institute.

- IITMandi : https://www.iitmandi.ac.in/pdf/ordinances/Ordinances_phd_mtech.pdf
- SVNIT Surat

https://www.svnit.ac.in/Data/Notice/2023/October/Academic%20Regulation-2023-24.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 throughoutthe duration of the JDP including the duration of study at the Partner Institution asper its fee structure.
- Unless otherwise indicated, candidates who wish to be admitted onto the PhDJDP are entitled to receive fellowship meeting the eligibility criteria. The cost offellowship will be borne by the Home Institute even during the candidate's stay in theHost Institute. No tuition fee will be charged by the host institution. However, thestudent needs to bear the boarding and lodging charges. Scholarships are awardedbased on merit, and the value and conditions of any scholarship awarded will be inaccordance with the terms and conditions of the awarding institution.
- Regardless of the scholarship awarded, students on the joint PhD program willbe 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 hostinstitution
    - 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 bythe 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://cloud.iitmandi.ac.in/f/248b95f143c8484c9a83/

SVNITSurat

https://www.svnit.ac.in/Data/fee%20structure/Ph.D.%20admitted%20in%20AY%202024-25.pdf