



Indian Institute of Technology Mandi

*9th Annual Convocation
23rd October, 2021*





CHIEF GUEST

Padma Vibhushan

Prof. Anil Kakodkar

Former Chairman, Atomic Energy Commission of India

CHAIRPERSON, BOARD OF GOVERNORS, IIT Mandi

Prof. Prem Vrat

Founding Director, Indian Institute of Technology Roorkee

DIRECTOR

Prof. Ajit Kumar Chaturvedi

Director, Indian Institute of Technology Mandi



Indian Institute of Technology Mandi



Indian Institute of Technology Mandi (IIT Mandi) welcomes you to its 9th Convocation Ceremony on 23rd October, 2021. In this Convocation, 146 B.Tech., 137 M.Tech., 99 M.Sc., 11 M.A, 14 M.S. (by Research) and 45 Doctor of Philosophy (PhD) scholars including an Integrated Doctor of Philosophy (I-PhD) candidate are being conferred graduating degrees.

IIT Mandi is nestled in the Shivalik Range of the Himalayas, away from the bustle of the metropolis. It is situated about 18 km away from the historic town of Mandi, in Kamand and Salgi near the bank of the river Uhl. Since its inception in 2009, IIT Mandi has reached commendable heights in terms of teaching, research, industrial collaboration, and outreach. In this very short span of time, it now has a fully residential campus with world-class academic and research facilities. The Institute has made a debut in the Atal Ranking of Institutions on Innovation Achievements, Ministry of Education, Government of India, and has been ranked #7 in the centrally funded institutions category of ARIIA 2020. IIT Mandi is the only institute from the second generation of IITs to be featured in ARIIA 2020.



CONVOCATION PROGRAM

23rd October, 2021 (3:00 PM - 5:30 PM)

National Anthem

Chairperson, Board of Governors declares the convocation “Open”

Welcome speech and report by the Director, IIT Mandi

Address by the Chairperson, Board of Governors, IIT Mandi

Convocation address by the Chief Guest

Award of Degrees and Medals

Graduates ‘Pledge’

Address by Valedictorians

Chairperson, Board of Governors, declares the convocation “Closed”

National Anthem



VISION & MISSION OF IIT MANDI

VISION

To be a leader in science and technology education, knowledge creation and innovation, in an India marching towards a just, inclusive and sustainable society.

MISSION

- To create knowledge through team effort and individually for the benefit of society
- To impart education to produce professionals capable of leading efforts towards innovative products and processes for the development of the Himalayan region in particular and our country and humanity in general.
- To inculcate a spirit of entrepreneurship and to impart the ability to devise globally recognized solutions for the problems of society and industry, particularly in the fragile eco-system of the Himalayas.
- To train teachers capable of inspiring the next generation of engineers, scientists, and researchers.
- To work intensely with industry in pursuit of the above goals of education and research, leading to the development of cutting edge and commercially viable technologies.
- To operate in an ambience marked by overriding respect for ability and merit.



ADDRESS BY THE HONORABLE CHIEF GUEST



**PADMA VIBHUSHAN
PROF. ANIL KAKODKAR**

Former Chairman, Atomic Energy Commission of India



Prof. Prem Vrat, Chairperson, Board of Governors, IIT Mandi, Prof. Ajit Kumar Chaturvedi, Director, Members of Board of Governors, Members of faculty, staff, invitees, students specially the ones graduating today, ladies and gentlemen. Let me at the outset express my gratitude to the Director, IIT Mandi for the invitation to today's convocation. I am indeed very happy to be with you, though virtually.

IIT Mandi is one of the newer institutions among the chain of IITs, a system of higher technology education and research institutions in the country that has done India proud. I remember, I had visited IIT Mandi during its early years of formation. I also had interacted with Prof. Timothy Gonsalves, your founder Director during our working together to implement the recommendations of Kakodkar Committee on IIT reforms. I have thus, some nostalgic feelings as I participate in this convocation.

My congratulations to all those graduating today. The world today has unprecedented challenges as well as opportunities before it. I am sure, graduating from IIT Mandi would turn out to be a great asset for you, as you move forward in your career. May all your dreams be fully realised.

Research Entrepreneurship Synergy

I wish to use today's occasion to talk about research entrepreneurship synergy. I believe that this should be an urgent focus for us where IITs and more particularly the newer IITs can lead from the front. We need to enhance our research excellence and also bridge the research entrepreneurship gaps on one side while we shape our young people with right capability and mindset on the other. Our institutions have to be both knowledge creators as well as value creators. Between the years 2008 and 2018, India's publications of science and engineering articles increased from 48,998 to 1,35,788, an average annual growth rate of 10.73 per cent. The country now accounts for 5.31 per cent of the total world publications in science and engineering and stands at the third position behind China and USA. While we have a lot of further ground yet to be covered both in terms of numbers as well as quality, we are well on our way to become world class knowledge creators. However, in the context of value creation, India ranks 40th on International Intellectual Property Index and stands at 20th spot among the top 100 countries that have been ranked in the Global Start up Ecosystem Index 2021 by the Start-up Blink. We have done relatively better in a short time in the start-up space. However not all start-ups can be categorised as high-tech start-ups. While innovation does spur economic growth, we need innovations in high-tech space to become globally competitive. This is where IITs have to lead and make a difference to the country. Something that has started happening.

An extreme example for us to emulate is Stanford University whose alumni and faculty have created nearly 40,000 companies that generate around USD \$2.7 trillion in annual revenues. The Industry and Research University ecosystem, like Stanford University – Silicon Valley are great success stories. Our IIT Madras Research Park is a good beginning in this direction. More such examples are in the making. We need many more such initiatives.



We are now in an era dominated by high end technologies like Semiconductors, Artificial Intelligence, Computing and Telecom, Clean Energy, Advanced Aerospace and Pharmaceuticals. Soon new frontier technologies exploiting Genetics, Quantum Physics, Cognitive and Brain Sciences etc. would start dominating. We need to close in our gaps in these technologies which currently seem to be expanding. Not being able to do so would not only put us at disadvantage but could in fact make us vulnerable through emergence of new technology denial regimes even in commercial sectors, holding hostage entire segments of our nation's economy. We thus must quickly become a massive producer of high end and frontier technologies. A well-knit research entrepreneurship ecosystem involving close partnerships between academia, industry and government is a critical necessity for this purpose. This is a necessity for our national security, our economic prosperity, and our societal well-being.

Rural Development

As we prepare ourselves to be in the forefront of emerging high-technology and be a front runner in the global competition, we need to be also aware of bridging the urban – rural gaps which seem to be growing. Rural development in India in fact needs a special focus. Two third of India lives in villages with less than half per capita income as compared to urban areas. Bridging the urban rural divide at least in terms of livelihood opportunities is thus a matter of urgent necessity in our country. The emerging era of knowledge driven economy that facilitates democratisation and decentralisation of economic activities is thus a great opportunity for transformation of rural horizon. This however would involve capacity building of local people in dealing with emerging technologies and also ability to internalise technologies and build on them including solving problems during their implementation, locally. Eventually we should create a locally relevant innovation ecosystem that can leverage the opportunities of knowledge era. In principle, I believe, one could have greater opportunities in villages rather in cities reversing the industrial era paradigms. CILLAGE – a knowledge integrated sustainable village development model aims to leverage new and appropriate knowledge-based technologies, including some created locally, to create additional and higher-level livelihood opportunities in villages that also include manufacturing and service sector activities in addition to agriculture and allied activities.

In the CILLAGE concept, a local Higher Technical Education Institution (HTEI) serving as a Knowledge Partner (KP) hosts a Rural Human and Resources Development Facility (RHRDF) and linked with local community institutions and NGOs, works for deployment of appropriate technologies for enhanced livelihood and related educational and knowledge support in the neighbourhood. To facilitate sustained and comprehensive engagement between RHRDF and the neighbourhood, a number of AKRUTI (Advanced Knowledge based Rural Technology Initiative) sub-centres need to be established in proximity with existing schools. RHRDF and AKRUTIs would



be the bridge between HTEI and the neighbourhood to spread technology enabled livelihood, ICT enabled school education etc. on one side and solving problems in implementation of new technologies and search for new R&D problems on the other. The eco-system so created could also participate in deployment of other Govt. Schemes.

Spread of technology adoption and continuous access to new technologies could create better livelihood opportunities in rural domain that eventually compare well with opportunities in urban domain thus leading to convergence of best of **city** (i.e., opportunities for self-progress, modern infrastructure for education etc.) with best of a **village** (i.e., clean, calm and eco/human-friendly environment). Thus, the selected cluster of villages (**Cillage**) around a vibrant knowledge institution can be expected to become preferred working destination for young innovative and creative generation for leveraging local human and raw material resources on one side and new knowledge technologies on the other. Cillages could thus become places, better than both cities and villages and may become the preferred habitats for the new age society in most of emerging India. This approach is being tried out on an experimental basis at a few places in Maharashtra. Advanced knowledge and technology institutions like IIT Mandi could be the fountain heads for creating Cillages, spearhead development and minimise disparities.

Technology with Human Heart

IITs and IIT graduates have a special role in this context. Technology and technology products that offer differentiating capability to their users, significantly add to their competitiveness and hence to their power both in the market place as well as strategically. This has several ramifications for our national progress as well as our relative position in the competitive world that exists around us. Both these dimensions are of immense importance. While the technology empowers humans, the education that we provide to our young people should also make them responsible and ensure that technology remains non-exploitative and is used to empower everyone around through knowledge and minimise the disparity gaps that are becoming alarming by the day. This requires bridging the gaps globally to eliminate security deficit and usher in peace as also bridging the disparity gaps within the country to eliminate rich-poor, urban-rural and such other divides even as the technology uplifts the society as a whole. While this is a complex matter having multiple dimensions, I do believe that knowledge and more particularly knowledge technologies can be most effective in addressing this challenge. That is where graduates from IITs, which are India's foremost knowledge and technology institutions come in. I do wish all of you to be successful in your professional career and make an important difference to our country in the above context.



Closing Remarks

I wish that all of you would give some serious thought to what I have said above and decide your respective course of action. It should be our collective endeavor to progressively move towards making the world a better place to live. Through a lifelong learning process and maintaining knowledge institutions, industry and society interconnected with each other, each one of us, regardless of career we decide to pursue, can meaningfully contribute to this objective. After all we are all in this world to play our respective roles. Our happiness and joy of life depends on how well we play our roles.

To dear students, I once again wish all of you well in your respective further pursuits. I am certain, you would rise progressively in your respective careers. I do hope that as you rise, you will retain in you a spirit of trusteeship and contribute substantially to your roots, the society around, the institutions that brought you up and the nation at large. It is this spirit of trusteeship and the desire to support others who were not as fortunate or as successful as us that makes this world a better place. We must remember that our happiness depends on the happiness all around us.

Once again, my best wishes to you all.

Thank you.

Prof. Anil Kakodkar





**ADDRESS BY THE CHAIRPERSON,
BOARD OF GOVERNORS,
INDIAN INSTITUTE OF TECHNOLOGY MANDI**



PROF. PREM VRAT

CHAIRPERSON, BOARD OF GOVERNORS, IIT MANDI



Honourable Chief Guest Prof. Anil Kakodkar, Esteemed Director Prof Ajit Chaturvedi members of the Board of Governors, the Senate, esteemed faculty, graduating batch of 2021, dear students, staff, distinguished invitees, ladies, and gentlemen!

I am delighted to welcome our very distinguished Chief Guest Prof. Anil Kakodkar and express our gratitude to him for having accepted our invitation to grace the occasion as the Chief Guest and deliver the convocation address. I am sure that his presence, though virtual, will be a great source of inspiration to not only the graduating batch but the entire IIT Mandi family.

It gives me immense pleasure to congratulate the graduating students of IIT Mandi on the occasion of its 9th Convocation ceremony. My hearty congratulations also to the faculty and staff of IIT Mandi, who have made this journey possible in the face of the unprecedented crisis humanity has been confronted with in recent times. It is the beginning of a new journey for the graduating students, and I am sure a challenging, yet successful career path lies ahead of you. I sincerely hope that the knowledge and skill the graduating students have acquired and the ethos they have imbibed during their stay at IIT Mandi will stand them in good stead through the coming years of new challenges and opportunities. Also, these students would make significant contributions to development of the country and humanity at large.

I feel quite happy to note the impressive progress the Institute has made since its foundation in 2009. Twelve years down the line, the residential campus in the Himalayas currently houses nearly seventeen hundred students, more than a hundred and twenty faculty and staff members, offers six B.Tech. programs, along with a B.Tech.–M.Tech. integrated dual degree program, and multiple postgraduate programs including M.Tech., M.Sc., M.A., MS (by Research), and Ph.D. The innovative feature of our B.Tech. program has been the incorporation of hands-on project-based courses. Similarly, the five-week induction program, introduced in 2016, for the new B.Tech. students is also unique in its objectives and execution. IIT Mandi is the first IIT to launch an induction program of this scale and scope for the fresh batch of B. Tech. students. This induction program is aimed at initiating and integrating the incoming B. Tech. students into the thriving academic milieu on the campus through interactive modules. These modules are entirely mentored by faculty, and are designed to impart a diverse set of academic, social, and physical skills and ethos. I congratulate the faculty and staff of the Institute on this remarkable accomplishment.

The Institute has also made its mark in research, collaboration, and international linkages established over the past decade. It is an outstanding achievement to have research projects worth more than a hundred crores so far. I am delighted that a Technology Innovation Hub (TIH) is being set up in the area of human-computer interaction under the “National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS)” alongside the existing business incubation program of IIT Mandi Catalyst



In this context, it gives me also great joy and satisfaction in acknowledging the achievements of the IIT Mandi Catalyst. Initiated in 2016 as the first Technology Business Incubator (TBI) in Himachal Pradesh, it has established itself over the past four years. Catalyst has a strong and reliable mentoring presence in the innovative entrepreneurial/start-up landscape of Himachal Pradesh. It has to be mentioned to its credit that IIT Mandi Catalyst has so far received more than 1200 applications and supported well above 163 start-ups. It has to date disbursed about INR 6.13 crores for prototyping and commercialization of diverse start-ups in clean energy, environment, health care, agriculture, enterprise management, biotech, education, manufacturing, and consumer internet. The fact that one-fifth of the total start-ups have been founded by the IIT Mandi faculty, staff, and students underline the innovative and entrepreneurial spirit of IIT Mandi once again.

It is noteworthy to report that alongside the academic and entrepreneurial milestones of the Institute in its short history, the Institute has also been its sensitive social face in the comprehensive and successful outreach of Enabling Women of Kamand (EWOK). The idea of and plan for EWOK grew out of a project study conducted by a few B.Tech. students on the glaring gender imbalance in education and employment among the population in the Kamand valley. Aimed at addressing gender skewness in the local community, EWOK, established by the Women Cell at IIT Mandi in June 2016, has been promoting and fostering various enterprises run by women in the Kamand valley and surrounding areas. It brings excellent contentment to our social conscience as an Institute to see that EWOK has contributed significantly towards the empowerment of local women through its growing regional network of social entrepreneurship.

Partnerships with other institutes and universities of excellence across the globe have been central to the expanding international academic outreach of IIT Mandi. Since 2013, over 50 of our students have spent a semester at RWTH Aachen University, the Technical University of Munich, IT University of Copenhagen, Blekinge Institute of Technology, Hepia, Switzerland, and McMaster University, Canada as part of the semester exchange program. It is a matter of pride that IIT Mandi has been made the national coordinating institution for Germany under the SPARC (Scheme for Promotion of Academic and Research Collaboration). In the past ten years, the Institute has signed MoUs with as many as 11 international universities. We have been leading among the eight-second generation IITs in attracting students from SAARC nations.

It fills me again with immense pride and joy on this occasion to list here a couple of notable academic achievements of our faculty members and students. Dr Varun Dutt and Dr K.V. Uday along with the Mandi district administration received the 2020 Gold Skoch Award in the "Safety and Security" category for the landslide monitoring and warning system implemented in Mandi district. Dr Sandip Kumar Saha listed as 2020 Outstanding Reviewers" for the "Practice Periodical on Structural Design and Construction" published by ASCE. A team of IIT Mandi Wikipedians put Himachal on Wikipedia map. More than 200 images used in 220 articles in Wikipedias in 21 languages: Tamil, Punjabi, Hindi, Bengali, Swahili, Hebrew, French, German, Indonesian etc.



Ms. Arya Priyadarshni, Ph.D. Scholar in SHSS received Newton Bhabha - PhD Placement -2020-2021 under the ICSSR (India)-British Council (UK) Newton-Bhabha Programme. Mr. Sahil Gaikwad, MA student of the graduating Batch (2019-21), has been selected for the prestigious Mahatma Gandhi National Fellowship program administered by the IIMs.

Above all, looking back and reflecting upon the last academic year, it is immensely gratifying to note that even in the face of immense challenges posed by the COVID-19 pandemic, the Institute has been able to keep on track most of its academic and research programs by switching to digital and hybrid modes.

Dear graduating batch: you were privileged to get admission in one of the most reputed IIT brand and your teachers have nurtured you to the best of academic standards. Use your knowledge and wisdom for the good of society and contribute to the process of nation-building. As alumni of IIT Mandi, your relationship with your alma mater is a lifelong one. A good engineer has to be a good human being first and I am sure that you will contribute with full enthusiasm, a positive attitude, and good human values and professional ethics to bring glory to your alma mater and the nation.

I am sure that IIT Mandi, with its newly enriched sense of pride, added confidence and commitment, strengthened resolve, drive, and focus would keep scaling the heights of excellence in times to come. I would conclude by offering my heartfelt congratulations to the graduating class of 2021, their parents, the faculty, and the Institute's staff on reaching yet another milestone in these trying times and wish them all the very best in their future endeavors. May God bless you all.

Thank you, JAIHIND.

Prof. Prem Vrat





BOARD OF GOVERNORS

Chairperson

Prof. Prem Vrat

Chairperson, Board of Governors, IIT Mandi

Director (Ex-officio)

Prof. Ajit K Chaturvedi

Director, IIT Mandi

Nominees of the State Government

Chief Secretary / Secretary (by designation)

Technical Education, Government of Himachal Pradesh, Shimla - 171002

Nominees of the IIT Council

Additional Secretary (TE)/ Joint Secretary (Ex-Officio)

MHRD, Government of India, Shastri Bhawan, New Delhi-110001

Shri Hemant Sood

Managing Director & Promoter (Financial Services group)

Findoc Financial Services Group, 5th Floor, Kartar Bhawan, Near PAU, Gate No.1

Ferozpur Road, Ludhiana-141001 (Punjab)

Shri Kishan Chandra Sharma

Site Head & Sr. Vice President

Manufacturing, LUPIN Pharma Limited, 198 - 202, New Industrial Area No. 2

Mandideep - 642046, Distt, Raisen (M.P)

Dr. Pradeep Kumar Agrawal

Scientist Directorate of Special Projects, D.R.D.O. Hyderabad

H.No. 16-142, Green Rich Avenue, Badangpet Nagar Panchayat, Hyderabad-500058

Nominees of the Senate

Prof. S.C. Jain

Emeritus Professor, School of Engineering, IIT Mandi

Kamand Campus, VPO Kamand, District Mandi - 175075, Himachal Pradesh

Prof. Prem Felix Siril

Professor, School of Basic Sciences, IIT Mandi

Kamand Campus, VPO Kamand, District Mandi - 175075, Himachal Pradesh

Secretary

Shri K.K. Bajre

Registrar (Ex-Officio), IIT Mandi

Kamand Campus, VPO Kamand, District Mandi - 175075, Himachal Pradesh



DIRECTOR'S REPORT



PROF. AJIT KUMAR CHATURVEDI

Director, Indian Institute of Technology Mandi

Prof Anil Kakodkar, the Chief Guest, Professor Prem Vrat, Chairperson of the Board of Governors; Members of the Board of Governors, Members of the Senate, Faculty and Staff Members of the Institute, graduating students and their family members, distinguished guests: I welcome you all on the occasion of the 9th Convocation of the Indian Institute of Technology Mandi.

Today, we are delighted to have with us Padma Vibhushan Prof Anil Kakodkar as the Chief Guest of the 9th Convocation of IIT Mandi. On behalf of IIT Mandi and my personal behalf, I thank him for accepting our invitation. It is a privilege to be in his company and hear him. I am sure his convocation address will not only inspire the graduating students but all of us as well.

I'm delighted to announce that on the occasion of 9th Convocation, 146 B.Tech. 137 M.Tech. 99 M.Sc., 11 M.A, 14 M.S. (by Research) and 45 Doctor of Philosophy (PhD) scholars including an Integrated-PhD (I-PhD) candidate are being conferred graduating degrees.

Thankyou, JAIHIND

Prof. Ajit Chaturvedi



1. GRADUATING STUDENTS

146 B.Tech (60 in Computer Science and Engineering, 44 in Electrical Engineering, 24 in Mechanical Engineering and 18 in Civil Engineering), including several scholars with Honours/Minor in Management/Intelligent systems and/or Applied physics, 137 M.Tech. (19 in Mechanical Engineering with specialization in Energy Systems; 17 in Energy Engineering with specialization in Materials; 25 in Structural Engineering; 29 in VLSI; 15 in Power Electronics and Drives and 16 in Communications and Signal Processing; 16 in Biotechnology), 99 M.Sc. (35 in Chemistry, 36 in Applied Mathematics and 28 Physics), 11 M.A. (Development Studies), 14 M.S. (by Research) and 45 Doctor of Philosophy (PhD) scholars including an Integrated-PhD (I-PhD) will be graduating today. The details of the graduating scholars as well as the summary of the research being recognized today for the award of the degrees is presented in this Brochure

2. ACADEMIC ACTIVITIES

Current Academic Programs, Students and faculty

Currently, at IIT Mandi, 4-year B.Tech. programs are offered in six branches, viz., Civil Engineering (CE), Computer Science and Engineering (CSE), Electrical Engineering (EE), Mechanical Engineering (ME), Data Science and Engineering (DSE), and Engineering Physics (EP) along with B. Tech.–M.Tech. integrated dual degree in Bioengineering (5–year program). There are three M.Sc. programs in Physics, Chemistry, and Mathematics; Nine M.Tech. programmes - in Mechanical Engineering with Specialization in Energy Systems, Materials and Energy Engineering, Structural Engineering, Fluid and Thermal Engineering, Power Electronics and Drives, Communications and Signal Processing, VLSI, Computer Science and Engineering and Biotechnology. There is one MA program in Development Studies. Programs leading to MS (by Research), Ph.D. and Integrated-PhD (I-PhD) are also offered. In the coming academic year, we are starting MTech in Electric transportation

Four schools are hosting the academic programs: Schools of Basis Sciences (SBS), School of Computing and Electrical Engineering (SCEE), School of Engineering (SE), and School of Humanities and Social Sciences (SHSS). In 2021, BTech admissions are ongoing and yet to be finalized. A total of 150 M. Tech. students, 131 M.Sc. students, and 19 M.A. students secured admission at IIT Mandi. We now have a total of 1,769 students including 367 Ph.D., 73 M.S., and 22 I-Ph.D. research scholars along with faculty strength of 136 including Assistant Professors, Associate Professors, Professors, Visiting, Adjunct and Emeritus Professors.

The institute encourages multi- and inter-disciplinary research for the balanced growth of its students and scholars. Hence, the labs and other resources of the schools are mixed and shared. Subject specialist faculties are proactively dedicated to improving the schools continuously. IIT Mandi has national and international linkages and practices collaborations with leading and developing institutes and industries.



Life after IIT

Despite several disruptions created by the pandemic, the Career and Placement Cell (CnPC) at IIT Mandi worked actively throughout the year and hosted 101 companies for the placement and 47 companies for the internship. During the 2020-21 placement season, 81% of the registered undergraduate students received job offers from reputed companies. Branch-wise placement percentage for B.Tech students was 98% in CS, 61% in ME, 84% in EE, and 33% in Civil. Among the registered postgraduate students, 35% of M.Tech, 54% MSc. 82% MS received job offers from good companies, including core companies. The major companies and organizations that visited the campus for placement and internship includes Microsoft, Amazon, Codenation, DEShaw, Adobe, Salesforce, Irage, Yodlee, Ceremorphic, Qualcomm, Intel, CDAC, Jaguar Land Rover India, L&T, ACME, Marvell, Indeed, TCS, Samsung, Pentair, Meesho, IOLCP, Publicis Sapient etc.

Some of the students decided to go for higher education in institutes like IIT Madras, IIT Bombay, IIT Roorkee, IIT Kanpur, and other sister IITs, National Brain Research Centre, IISER Pune, JKU University Austria, Max Planck Institute for Dynamics of Complex Technical Systems Germany, Dublin City University, University of Missouri etc.

Besides placement, the Career and Placement Cell took significant initiatives to conduct several career sessions throughout the year to make students aware of various options open to them. These included, sessions by inspiring academicians, motivation towards startups by successful entrepreneurs, information about various competitive exams by coaching institutes, webinars on UPSC exam preparation, interactive sessions with Alumni, and corporate pre-placement talks.

Major institute-level achievements during the past year

- Owing to the thriving academic environment of the Institute along with the presence of an effective business incubation, i.e., IIT Mandi Catalyst, IIT Mandi has made a debut in the Atal Ranking of Institutions on Innovation Achievements, Ministry of Education, Government of India. The rankings were announced on 18 th August 2020, by the Hon'ble Vice President Shri. M. Venkaiah Naidu. The Institute has been ranked #7 in the centrally funded institutions category in India of ARIIA 2020. IIT Mandi is the only institute from the second generation of IITs to be featured in ARIIA 2020.
- IIT Mandi as per NIRF 2021 ranking is among the Top 50 in the Engineering category and overall is among the Top 100 Indian institutes.
- A Technology Innovation Hub in human-computer interaction (IIT Mandi iHub) has been successfully setup at the Indian Institute of Technology (IIT) Mandi under India's National Mission on Interdisciplinary Cyber-Physical Systems. The iHub is planned to make India a leader in human-computer interaction (HCI) research in the world. The iHub is a section-8 company that has been created with a funding of INR 110 crores supported by DST, Govt. of India. The iHub in its entirety is dedicated to contribute in the domains of environment, healthcare, Information technology, and defense & security.
- IIT Mandi successfully collaborated with Enabling Women of Kamand (EWOK) Society and NABARD on setting up Farmer producer organisations in the Mandi district of Himachal Pradesh.



Selected achievements by faculty and students

Faculty:

In the last 1 year, despite COVID challenges our faculty and students achieved success in academics, research and service. Few selected mentions are

- Researchers from IIT Mandi (Dr Varun Dutt and Dr K.V. Uday) and Mandi district administration received the 2020 Gold Skoch Award in the “Safety and Security” category for the landslide monitoring and warning system implemented in Mandi district.
- Dr Sandip Kumar Saha listed as 2020 Outstanding Reviewers" for the "Practice Periodical on Structural Design and Construction" published by ASCE He has been appointed as Associate Editor for the "Practice Periodical on Structural Design and Construction" published by ASCE
- Dr Varun Dutt and team’s work on “Risk perception, fear, social distancing, mask, and treatment preference regarding COVID-19 in India and the United States of America,” got accepted for a presentation at the Colloquium proposed by the French Presidency of the UNESCO Intergovernmental Committee Bureau - Management of Social Transformations (MOST)
- The cultural wing of the Mexican Embassy in the U.S. at Washington D.C. interviewed Dr. Rajeshwari Dutt about a historical moment (the Caste War of Yucatan) in Mexican history. This interview was a part of the commemorations for the bicentennial of Mexican independence.
- Dr Kala Venkata Uday, along with his team of B.Tech. students successfully developed a smart road monitoring system to prevent accidents, enhance traffic management by employing the Micro-Electro-Mechanical Systems (MEMS) and Internet of Things (IoT) technologies.
- Dr Baskar Bakthavachalu received SERB-STAR Award in this year. Also, he received India Alliance DBT Wellcome Intermediate Fellowship for 2020-25 along with research funding support of ~INR 3.6 crores
- Dr. Amit Jaiswal got selected as an Associate at The Indian Academy of Sciences, Bangalore, 2020
- Dr Amit Jaiswal also received highly prestigious INSA Young Scientist Award 2021 for excellence in Research
- Dr Ajay Soni joined editorial team of Energy and Environment Journal in young leaders committee.
- A team of IIT Mandi Wikipedians put Himachal on Wikipedia map. More than 200 images used in 220 articles in Wikipedias in 21 languages: Tamil, Punjabi, Hindi, Bengali, Swahili, Hebrew, French, German, Indonesian etc.

Students

- Ms. Arya Priyadarshni, Ph.D. Scholar in SHSS received Newton Bhabha - PhD Placement - 2020-2021 under the ICSSR (India)-British Council (UK) Newton-Bhabha Programme.
- Mr. Jaideep Gaikwad and Ms. Akanksha Singh, current MA students received SBI Youth Fellowship Programme for India enabling them to work on rural development projects
- Mr. Sahil Gaikwad, MA student of the graduating Batch (2019-21), has been selected for the prestigious Mahatma Gandhi National Fellowship program administered by the IIMs. This 2-year fellowship program has been designed at the initiative of the Ministry of Skill Development and Entrepreneurship (MSDE), Government of India (GoI), and implemented in collaboration with State Skill Development Missions (SSDMs).
- Mr Rishi Kant Thakur, student under the guidance of Dr Rajeev Kumar and Prof, S C Jain, won second place and a 400 USD prize from the sponsored agency “IEEE Industry Application Society USA” for project titled “Auto tuned Ventilator A contactless treatment machine especially for COVID 19 patients”
- Kumar Udit Saumya, PhD Scholar, SBS received Overseas Doctoral Fellowship Program(OVDF), 2021.
- Ms.Purba Mukherjee, MTech Biotechnology scholar received Khorana fellowship 2021.
- Ankur Kumar, PhD Scholar, working with Dr. Rajnish Giri, received Fulbright Nehru PhD Fellowship.
- Shaunak Roy, PhD Scholar, working with Dr. Amit Jaiswal, received Fulbright Nehru PhD Fellowship.
- Vipin Kumar, PhD Scholar, working with Dr. Muslim Malik, received Indo-French Raman-Charpak Fellowship.
- Giredhar Muthiah, M. Tech. Biotechnology student received DAAD fellowship.

Notable Alumni achievements

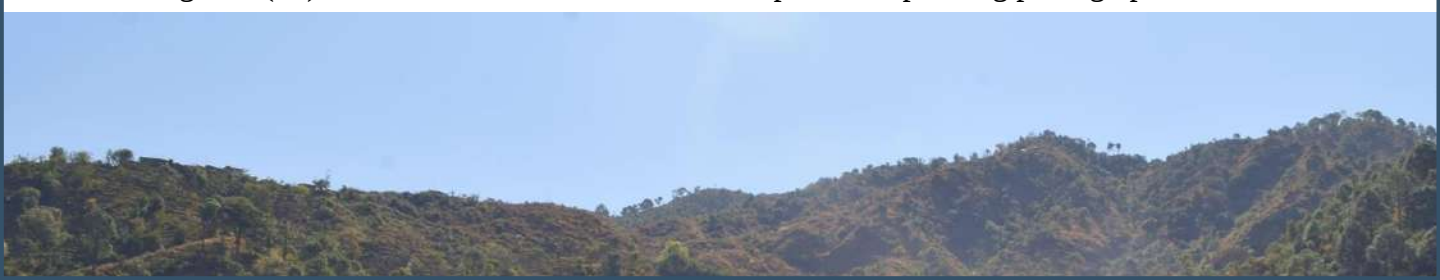
- Dr. Palvi Aggarwal, a 2018 Ph.D. graduate, guided by Dr. Varun Dutt, Associate Professor, has received an offer to a fulltime tenure track Assistant Professor position in the Department of Computer Science at the University of Texas at El Paso, USA. Dr. Aggarwal is planning to join the faculty position at the University of Texas in September 2021.
- Dr. Hari Vansh Rai Mittal, a 2016 Ph.D. graduate, guided by Dr. Rajendra K. Ray, Associate Professor, has received an offer to a regular Assistant Professor (Gr.-I) position in the Department of Mathematics at the Indian Institute of Technology (IIT) Palakkad. Dr. Mittal is planning to join the faculty position at the Indian Institute of Technology (IIT) Palakkad in January 2022.
- Mr Shashank Shekhar and Mr Piyush Kumar, Alumnus of MA in Development Studies ranked #162 and #400 respectively, in the GATE 2021 in Humanities and Social Science discipline, conducted for first time in India.
- Ms. Neha Grewal secured 2nd Rank in the prestigious Combined Defense Services Examination (CDSE) declared this year. Ms. Grewal, completed her B.Tech in Electrical Engineering from IIT Mandi in the year 2018.

- Mr. Mohit Rawat and Mr. Lalitesh K. Meena, have secured 462nd Rank and 655th Rank respectively in the final results of the prestigious Civil Services Examination (CSE) declared this year. Mr. Mohit Rawat, completed his B.Tech in Computer Science and Engineering from IIT Mandi in 2015. Mr. Lalitesh K. Meena, a resident of Rajasthan, completed his B.Tech in Electrical Engineering from IIT Mandi in 2015

Significant research and technology development:

- Dr. Ajay Soni and Niraj Singh with their collaborators have studied the benchmark research on Cd doped AgSbTe₂ and achieved a highest thermoelectric figure of merit $ZT \sim 2.4$. *Science*, 371, 722-727(2021)
- Dr. Girish Sharma and Azaz Ahmed investigated magnetotransport in Weyl fermions and identified a new and independent source that drives the system to switch the sign of magnetoconductance. *PRB* 103, 115146 (2021)
- Dr. Abbas and his group has studies the existence of a unique pseudo compact almost automorphic solution that is exponentially attractive is shown for a generalized differential equation with feedback and time-varying delays. A new criteria for the existence and convergence dynamics of pseudo compact almost automorphic solutions for some models that involves sum of nonlinear terms that satisfy a general condition has been obtained. *J. of Mathematical Analysis and Applications*, 495 (1) 124722 (2021).
- Dr. Sarita and her group has observed and projected changes in extreme drought and food-prone regions over India under CMIP5 RCP8.5 using a new vulnerability index, *Climate Dynamics* (2021).
- Prof. Chayan Nandi and team have recently uncovered a new avenue on the fundamental aspects of the photoluminescence mechanism in red emissive carbon nanodots (CNDs). Their work has solved the long-standing mystery of the origin of photoluminescence in red emissive CNDs. *Chem. Sci.*, 2021, 12, 3615
- Dr. Amit B. Pawar and team have recently reported an efficient synthesis of indoloindolones via [4+1] C–H amination/annulation cascade of sulfoxonium ylides with anthranils using inexpensive and air stable [Cp*Co(CO)I₂] catalyst. *Chem. Comm.*, 2021 doi.org/10.1039/D1CC02817K
- Dr. Amit Jaiswal and his team of researchers have developed a virus-filtering, self-cleaning and antibacterial material that can be used to make face masks and other PPE equipment. This path breaking development comes at a time in which it has become imperative to develop techniques to stop the second wave of the COVID-19 pandemic in the country. *ACS Appl. Mater. Interfaces*, 13 (11), 12912 (2021)
- Dr. Rajanish Giri and his team elucidated the part of structure of a key protein (NSP1) in the COVID-19 virus, which helps in understanding its mode of action, its role in the spread and severity of the disease and development of antiviral therapeutics.

- Dr Prosenjit Mondal and his team has uncovered a previously unknown mechanism in regulating the biological response to high-carb diet which is useful in developing treatments for non-alcoholic fatty liver disease. *J Biol Chem* 2021, 296, 100714
- Dr Deepak Swami and his team developed new software for precisely predicting the movement of contaminants through complex soil structures. Researchers at the Indian Institutes of Technology (IITs) and the University of California collaborated on this work.
- Dr Subhajit Roy Chowdhury and his team invented a new technique to detect abnormal brain characteristics associated with ischemic stroke. IIT team collaborated with researchers from Institute of Neurosciences, Kolkata, and Department of Biomedical Engineering, University at Buffalo, USA.
- Dr. Sumit Sinha Ray and his team developed facemask membrane containing nanofiber membrane which are efficient in capturing PM_{0.1-2} with efficacy at 94-99% at a pressure drop much lower than the prescribed one for N95. These membranes are derived from waste plastic bottle as raw material and using electrospinning technique the raw material, while dissolved in specific solvents, is extruded in the scale of 400-1500 nm.
- Dr. Rajeev Kumar and his team developed the concept of low-cost mechanical ventilator and research efforts are ongoing with collaborators from Vardhman Mahavir Medical College (VMMC) & Safdarjung Hospital (SJH) New Delhi.
- Dr. Arpan Gupta and his team developed a prototype for mechanical ventilator in association with medical doctors from Mandi. The developed ventilator is low cost, can be directly operated with an AC supply or from batteries.
- Dr. Himanshu Pathak, Dr. Sunny Zafar, Dr. Hitesh Shrimali, Dr. Prosenjit Mondal and Dr. Amit Prasad have developed the Disinfection Tunnel for Courier Packages Against SARS-CoV-2 (COVID-19) virus.
- Dr. Hitesh Shrimali and Dr. Prateek Saxena have developed the Model and Design of Oxygen Generator (Concentrator).
- Dr. Atul Dhar, Dr. Parmod Kumar & Dr. Hitesh Shrimali have developed the ICU Ventilator
- Dr. Tushar Jain and his team at IIT Mandi along with Robert Bosch Engineering and Business Solutions Private Limited, Bangalore, have developed algorithms to predict the functioning of vehicular Internal Combustion (IC) engines
- Dr Sumit Sinha Ray and his team has developed a fibrous membrane filter using a biopolymer-based material to remove heavy metals from water
- Dr Srikant Srinivasan, Dr Shyam K Masakapalli and their FarmerZone team including Central Potato Research Institute, Shimla have developed a computational model based on Artificial Intelligence (AI) for automated disease detection in potato crops using photographs of its leaves.





3. INTERNATIONAL LINKAGES

IIT Mandi has remained an attractive destination for international students and faculty and fostered its linkages with the wider academic world through student and faculty mobility, as well as joint research projects and MoUs. Presently IIT Mandi has 10 active MoUs with international partners. IIT Mandi has been made the national coordinating Institution for Germany under the Scheme for Promotion of Academic and Research Collaboration (SPARC) of the Government of India. Additionally, it has also assumed leadership among the eight-second generation IITs for attracting students from SAARC nations.

Since 2013, over 57 of our students have had the chance to go for semester exchange to RWTH Aachen University, Technical University of Munich, Blekinge Institute of Technology, Hepia, Switzerland, IT University of Copenhagen and University of Stuttgart. Over 120 international students have experienced the project-based learning and other academic offerings of IIT Mandi since 2015, the majority from Worcester Polytechnic Institute (WPI), USA.

International Students at IIT Mandi

At present there are 14 International students are enrolled for Masters and Ph.D programmes at IIT Mandi. Of these, 5 students are from Bangladesh and 7 students are from Nepal. Two students joined IIT Mandi in person from Ethiopia in April 2021 for the Ph. D program.

IIT Mandi Students Visiting Institutions Abroad

Several IIT Mandi students visited several EU institutions under academic exchange in 2020. The undergraduate visits included 3 students to RWTH Aachen (Germany). 4 students of IIT Mandi's M.Tech. Program visited Germany under DAAD (KOSPIE) program. In October 2021, despite the pandemic situation, 13 IIT Mandi students (11 B.Tech. and 2 M.Tech.) will be visiting Germany at our partner institutions on semester exchange programs.

International Visitors at IIT Mandi

Dr. Erwin Fuhrer from Germany joined IIT Mandi as Visiting Assistant Professor for one year.

MoUs

IIT Mandi signed an MoU with Technical University Dresden in August 2020 and with Kyushu University in Japan in December 2020.

Events with International Participation

There were a number of workshops/Talks conducted online at IIT Mandi involving visitors from universities abroad including:

- Indian Institute of Technology Mandi virtually hosted the 2nd Winter School on Cognitive Modeling (WSCM) from 15th to 17th December 2020. This initiative was hosted by IIT Mandi in collaboration with Himachal Pradesh Technical University (HPTU), University of Groningen, University of Waterloo, and Indian Institute of Technology Roorkee. The event included key sessions from various national and international researchers and professionals to train students on the best practices in the area of cognitive modelling.
- SCRI (Society for Collaborative Research and Innovation) IIT Mandi organized a virtual talk on “Using Maths to Clean up our Ocean” by Dr. Tom Crawford on 15th January 2021. Tom is an Early Career Teaching and Outreach Fellow in Mathematics at St Edmund Hall and is also responsible for the teaching of Visiting Students. Tom specializes in Applied Mathematics and completed his PhD in Fluid Dynamics at the University of Cambridge under the supervision of Prof. Paul Linden. His award-winning website tomrocksmaths.com hosts videos, podcasts, puzzles and articles that aim to make mathematics entertaining and understandable to all. Tom works with several partners including the BBC and the Numberphile YouTube channel – the largest mathematics education channel on the platform with over 3.5-million subscribers.
- An International workshop on Design and Manufacturing of Composites for Engineering Applications was successfully organized by School of Engineering, IIT Mandi from 1st to 5th February 2021 in online mode, given the pandemic situation. Over 120 participants attended the workshop, among which participants were faculty and students from engineering colleges and technical institutes (IITs, NITs, State Government Engineering Colleges) from all over the country. A few participants were from universities abroad (Sapienza University of Rome). Industry personnel from ISRO, TATA Steel, LM Wind Power etc. also participated from in the workshop. Speakers included subject experts from IIT Kanpur, IIT Roorkee, University of Salerno, PSI Switzerland, IIT Bombay, KMUTNB, Thailand, Institute of Research Hydro Québec, Canada and also IIT Mandi.
- Indo-UK symposium on “Fluxomics of Microbe and Plant Systems (FluxMAPS 2021)” was successfully held on 24th-25th March 2021 jointly by Indian Institute of Technology Mandi, India and University of Oxford, UK. The themes covered were Flux Balance Analysis in Plant Systems and 13C Metabolic Flux Analysis in Plant and Microbial Systems. Scientists, faculty and scholars working in relevant areas greatly benefited from the symposium supported by MHRD-SPARC and UKIERI.



- An International virtual workshop on “Recent advances & applications of conducting polymer nanostructures & nanocomposites (RA2CPNC)” held on 23rd to 24th June 2021 by Indian Institute of Technology Mandi under SPARC. This workshop provided a common platform to scientific experts working in the field of conducting polymers to share their knowledge and experiences with attendees from across the world. The scientific program of the workshop consists of carefully selected lectures from distinguished speakers to cover the variety of technologies and processes involved in the synthesis of polymeric nanostructures and their nanocomposites. Various international speakers participated in the workshop, a few of them were: Prof. Samy Remita University Paris-Saclay, Orsay & CNAM, Paris, France, Dr. Najla Fourati National Conservatory of Arts and Crafts (CNAM) Paris, France, Dr. Chouki Zerrouki National Conservatory of Arts and Crafts (CNAM) Paris, France.
- A 4-days weekend workshop titled “Foundations of Machine Learning and Applications” was successfully organized by the IIT Mandi iHub and HCI Foundation and the Indian Institute of Technology Mandi. The workshop targeted motivated executives and working professionals willing to work in the area of Machine Learning. International expert speakers were Dr. Shih-Chun Lin from NTU, Taiwan, and Dr. Stefano Rini from NYCU, Taiwan.





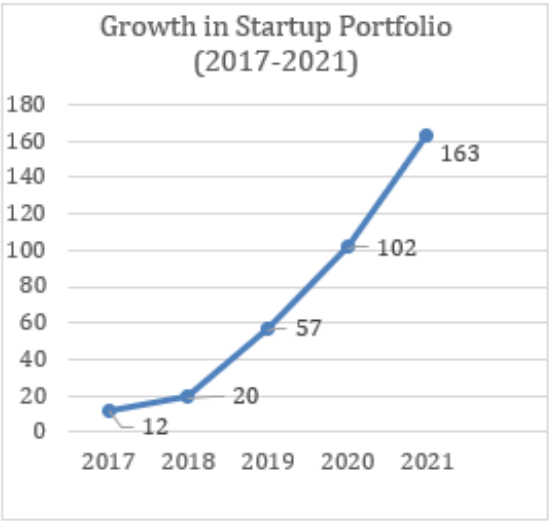
4. SPONSORED RESEARCH AND INDUSTRY INTERACTIONS

This year marked a significant increase in the number of sponsored research projects and total funding. In 2021, the number of projects sanctioned to date is 32 with a total sanctioned amount of Rs. 11.62 Crores. Out of which, 23 are government-sponsored projects amounting to Rs. 11.29 Crores and 9 are industry-sponsored projects amounting to Rs. 0.33 Crores. The total number of projects sanctioned to date is 361 and the total sanctioned amount is Rs. 129.30 Crores.

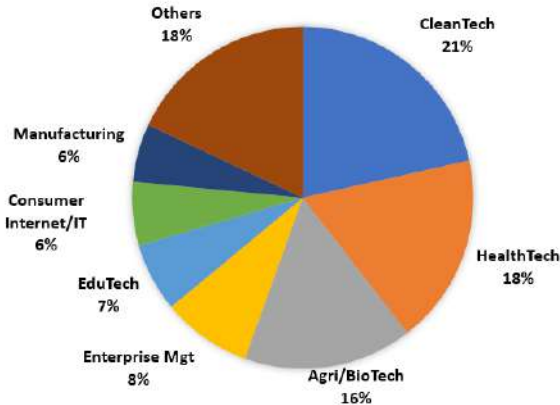
5. BUSINESS INCUBATION

IIT Mandi Catalyst was launched in 2016 by IIT Mandi as the first Technology Business Incubator (TBI) in the state of Himachal Pradesh. Away from pollution, long commute, noise, and other big-city problems, it offers a low-cost, peaceful, and high-tech destination to early-stage startups.

In only five years of its existence, Catalyst has emerged as one of the leading incubators in the region and is among the more active incubators in the country. In its short journey, Catalyst has received more than 1200 applications and supported over 163 startups, in a range of sectors including clean energy, healthcare, enterprise management, agriculture, manufacturing, biotech, education, and consumer internet. In Catalyst's portfolio, about one third startups are either from the Himalayan region or working towards building solutions for the Himalayan region. One-fifth of the total startups have been initiated by IIT Mandi faculty, staff, and students. The incubation program of Catalyst plugs the skill gaps of the startup founders through various training/ mentoring programs. Catalyst has hosted over 100 such programs. Further, the funding needs of startups in the early stages are also met through the program. Catalyst, to date, has committed INR 6.13 Cr to the startups for prototyping and commercialization purposes.



SECTORAL DISTRIBUTION OF STARTUPS (2017-21)



Catalyst aspires to be known as a high-touch incubator that provides personalized handholding support that the early-stage startup ideas need. The effectiveness of the incubation program of Catalyst is indicated by over 30 awards/recognitions that the startups have won at national and international levels. Also, the startups incubated with catalysts have generated employment for over 500 individuals which indicates the social impact of the incubation program.

By regularly organizing entrepreneurship-related activities on campus, Catalyst has created a vibrant startup ecosystem in the state. Its annual flagship event, Himalayan Startup Trek has brought tens of prominent startup ecosystem experts to the IIT Mandi campus. Also, as many as 40 faculty members of IIT Mandi have participated in Catalyst related events over the years. In many ways, Catalyst has been building bridges between academia and industry. Such activities have raised the profile of IIT Mandi as well as of the state of Himachal Pradesh on the national entrepreneurship map. In the year 2020, IIT Mandi was ranked 7th in ‘Atal Rankings of Institutions on Innovation Achievements’ that reflected the start-up and innovation activity on campus to which Catalyst was a significant contributor.

Despite Covid-19 restrictions in 2021, Catalyst exhibited its commitment to the cause of entrepreneurship by continuing its incubation program with induction of 61 start-ups in two batches in Jan 2021 and July 2021. As ‘digital’ became the new normal, Catalyst overcame the challenge and ensured that the start-up ideas saw the light of the day.

Through the strong support of Central and State Governments, Catalyst has raised total funding over INR 56 Cr as of September 2021. Over the next few years, Catalyst aims to incubate at least 50 start-ups every year and disburse over 35 Cr to the start-ups. This includes the latest funding schemes under Human Computer Interaction (HCI) area under which INR 15 Cr will be disbursed to the start-ups/Innovators working in HCI areas. To further strengthen the innovation ecosystem on campus, Catalyst is setting up a dedicated hardware fabrication laboratory that is funded by the Nidhi-Prayas scheme of DST. With the strong support of the IIT Mandi community, Catalyst is bound to scale greater heights in the time to come.





6. CAMPUS DEVELOPMENT

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 are being added to this campus having an area of 22000 sq mts. 25-3BHK, 10-2BHK ,one hostel block of 350 seater capacity dining hall , 25-3BHK and 10-2BHK shall likely be ready for use by Oct 2021 and remaining likely by end of year 2021.

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 are likely to be completed by end of the year 2021/ March 2022 . During the current year despite reduced activities due to COVID -19 we were able to add 12- 3BHK, 4 Academic buildings having an area of 37000 sq mts to this campus. The Hockey field, Tennis, Basketball, and Volleyball courts shall also be completed by Oct 2021. Tender for Cycle path connecting the North with the South Campus is being floated and work of construction shall be starting by end of year 2021.

7. EXTRACURRICULAR ACTIVITIES

IIT Mandi has developed a vibrant culture of learning as well as imbibing life-lessons through participation in competitive as well as non-competitive activities. Owing to the pandemic and disruption of regular activities, all student activities were conducted online. It is delightful to note that the Student Gymkhana conducted 293 events in the academic year 2020-21.

I am happy to report the following achievements of our graduating students.

- Students from the graduating batch have brought laurels to IIT Mandi in various inter-IIT competitions. To name a few achievements from the past few years: IIT Mandi won the Bronze Medal in Cricket at the Inter-IIT Sports meet at IIT Kharagpur in December 2019. IIT Mandi students secured 2nd position in 51-hour movie making, and 3rd position in street play at Inter-IIT cultural meet, 2019 at IIT Bombay. The IIT Mandi team also won the gold medal in the coding hackathon, and bronze medals in a case study and route optimization algorithm at the Inter-IIT Tech-meet held at IIT Roorkee in December 2019.
- IIT Mandi also hosted two inter-college fests this year. Civil Engineering fest, SRIJAN 21, was organized in April 2021 and AstraX 21 was organized by Space Technology and astronomy Cell in May 2021. Both events saw enthusiastic participation from college students from all over the country.

- 12 students were chosen for the Google Summer of codes (GSoC) and 3 were selected as mentors at various organizations. This is by far the highest number of students selected in GSoC from IIT Mandi in a single year.
- Space Technology and Astronomy Cell (STAC) conducted a new series of events the Pleiades in November 2020. This event had a series of 7 astrothons names after each star in the constellation Pleiades.
- E-Cell in collaboration with IIT Mandi Catalyst conducted Start-up Now, where teams had to pitch their idea to win a chance to pitch at Himalayan Startup Trek 2020.
- Utkarsh'21 the intra collegiate technical festival had events like Construction Photography, Scavenger Hunt, Civic and saw enthusiastic participation from the student community.
- The cultural society organised a week long Gandhi Jayanti festival with events including Sketching, Photography and writing competitions.
- Different clubs in the Cultural Society organised online and special events to keep the students motivated and connected with their peers. This include Breakout by Dance club, Andaaz Apna Apna by Drama club, The Band Matrix by Music club, Doodle and Rangoli competitions by Fine arts club, and Christmas Digital arts competition by Design club to name a few.
- Different clubs organised multiple workshops and invited talk by experts including Dr. Bala Iyer on Gravitational Waves, Dr. Somak Raychaudhury on Hunting for Black Holes, Mr. Abhinav Das on Hard Tech startup, Mr. Raghav Gupta on Wildlife photography and UPSC preparation, Mr. Jassi Oberai on advanced photography, Radio Drama workshop, Mr Anil Swarup on Governance in India, Mr. Sampathkumar Veeraraghavan on Social innovations through Humanitarian engineering, and Prof. Ravindra Arora on Career Mould to name a few.

8. CONCLUDING REMARKS

Each Convocation is a time for celebration as our Institute sends forth its best and brightest into the real world, where they must – and will – prove their mettle against competition from all over the globe. It is also a time for commending the entire campus community as their collective efforts make the annual renewal of the Institute – in terms of students, ideas, products – possible. The graduating batch this year deserves a special mention. Due to the prevailing pandemic, this year we are having a virtual convocation. I understand this is not how you had imagined bidding farewell to the campus or your friends. It has been a challenging year for all of us; however, I encourage you all to remember 2021 as the year you stepped up to play bigger roles by growing through these uncertain times



SCHOOLS

Currently, IIT Mandi has four schools with faculty strength of 136 including Assistant Professors, Associate Professors, Professors, Visiting, Adjunct and Emeritus Professors. The institute encourages multi- and inter-disciplinary research for the balanced growth of its students and scholars. Hence, the labs and other resources of the schools are mixed and shared. Subject specialist faculties are proactively dedicated to improving the schools continuously. IIT Mandi has national and international linkages and practices collaborations with leading and developing institutes and industries.

School of Computing and Electrical Engineering

This School brings together faculty involved in the key technologies of the information age. These include computer science, AI/ML, cognitive science, communication, signal processing, VLSI, microelectronics, and electrical energy. The underlying fundamental principles are information theory, theory of computation, communication theory, cognitive theory, quantum mechanics, and the laws of electromagnetism.

Faculty members and their specialization:

1. **Dr. Samar** (Chairperson: Associate Professor; Information Theory, Wireless Communications)
2. **Dr. Adarsh Patel** (Assistant Professor: Statistical Signal Processing, Wireless Communications)
3. **Dr. Aditya Nigam** (Assistant Professor; Biometrics, Computer Vision, Image Processing)
4. **Dr. Amit Kumar Singha** (Assistant professor: Control System, DC-DC Converter)
5. **Dr. Anil Kumar Sao** (Associate Professor on Lien IIT Bhilai; Image processing)
6. **Dr. Ankush Bag** (Assistant Professor; Semiconductor Devices, Epitaxy and Compound Semiconductors)
7. **Dr. Arnav Vinayak Bhavsar** (Associate Professor; Image analysis, Computer vision)
8. **Dr. Arti Kashyap** (Associate Professor (Joint Appointment); Magnetism and magnetic materials)
9. **Prof. Bharat Singh Rajpurohit** (Professor; Power Electronics Application to Power Systems)
10. **Dr. Dileep A. D.** (Associate Professor; Pattern Recognition, Kernel Methods for Pattern Analysis, Machine Learning, Speech Technology, Computer Vision)
11. **Prof. Deepak Khemani** (Mentor Professor; Artificial Intelligence)
12. **Prof. Enakshi Bhattacharya** (Mentor Professor: MEMS processing and sensors)

13. **Dr. Gopi Srikanth Reddy** (Assistant Professor; Communications, Antennas and Wave Propagation, RF and Microwave Passive component Design)
14. **Dr. Himanshu Misra** (Assistant Professor; Electrical Drives, DFIG systems, Electric Vehicle, Renewable Energy, Power Converters)
15. **Dr. Hiteshbhai Kantilal Shrimali** (Associate Professor; Analog and Mixed-signal VLSI design, analog-to-digital converters and design of radiation hard circuits (space application))
16. **Dr. Jinesh Machchar** (Assistant Professor: Geometric modeling, Simulation, Design)
17. **Dr. Kunal Ghosh** (Associate Professor; Solar Photovoltaics)
18. **Dr. Manas Thakur** (Assistant Professor: Program analysis, compilers, programming languages).
19. **Dr. Moumita Das** (Assistant Professor: Power Electronics)
20. **Dr. Narsa Reddy Tummuru** (Assistant Professor; Hybrid Energy Storage Applications in Future Microgrids, Efficient Power Electronic Interfaces in Renewable Energy Applications and Smartgrid Communication Networks)
21. **Dr. Padmanabhan Rajan** (Associate Professor; Speech processing, speaker recognition)
22. **Dr. Pratim Kundu** (Assistant Professor: Power Systems)
23. **Dr. Rahul Shrestha** (Asst. Professor; VLSI Design and Circuits & Systems for Signal Processing and Wireless Communication)
24. **Dr. Rameshwar Pratap Yadav** (Assistant Professor: Algorithms in Data Science and Machine Learning, Theoretical Computer Science)
25. **Dr. Renu M. Rameshan** (Assistant Professor; Image Processing)
26. **Prof. Rajan Kapur** (Adjunct Professor, Renewable Energy, Industrial Electronics, Head Mounted Displays)
27. **Prof. Ramesh Oruganti** (Adjunct Professor; Power Electronics, Solar photovoltaic energy systems)
28. **Prof. Ravindra Arora** (Visitor Professor (Retired from IIT Kanpur): High Voltage)

29. **Prof. Satinder Kumar Sharma** (Professor; Nano-electronics, Sensors, Photovoltaic & self-assembly)
30. **Dr. Satyajitsinh Ajitsinh Thakor** (Associate Professor; Communication Theory, Information Theory, Network Coding)
31. **Dr. Shubhajit Roy Chowdhury** (Associate Professor; Biomedical Embedded Systems, Non-invasive diagnostic systems, Near-Infrared Spectroscopy, VLSI Architectures)
32. **Dr. Siddhartha Sharma** (Assistant Professor; Resource allocation in Wireless Networks, Wireless Energy Harvesting, and Crowd sensing)
33. **Dr. Sreelakshmi Manjunath** (Assistant Professor, Communication Networks, Vehicular Networks, Control Systems, Non-linear Dynamics, Time-delayed Systems, Non-linear Controller Design)
34. **Dr. Srikant Srinivasan** (Associate Professor; Big-Data acquisition and analysis, Nanoelectronics, Spintronics)
35. **Dr. Srikanth Sugavanam** (Assistant Professor: Photonics)
36. **Dr. Srinivasu Bodapati** (Assistant Professor: VLSI Design, Nanoelectronics, Hardware security, Cryptography and FPGA based system design)
37. **Dr. Sriram Kailasam** (Assistant Professor; Distributed Systems, Cloud Computing)
38. **Prof. Timothy A. Gonsalves** (Emeritus Professor (Honorary); Computer networks and distributed software systems)
39. **Dr. Tushar Jain** (Associate Professor; Control theory, fault-tolerant control, industrial process control)
40. **Dr. Varun Dutt** (Associate Professor; SCEE, SHSS; Artificial intelligence, Human-Computer Interaction, Cognitive Science)
41. **Dr. Varunkumar Jayapaul** (Assistant Professor: Algorithms and Data Structures)
42. **Prof. Yvonne Dittrich** (Adjunct Professor; Software Development, and Software Engineering)
43. **Dr. Erwin Fuhrer**, Visiting Assistant Professor: MRI, RF hardware, Biomedical Engineering



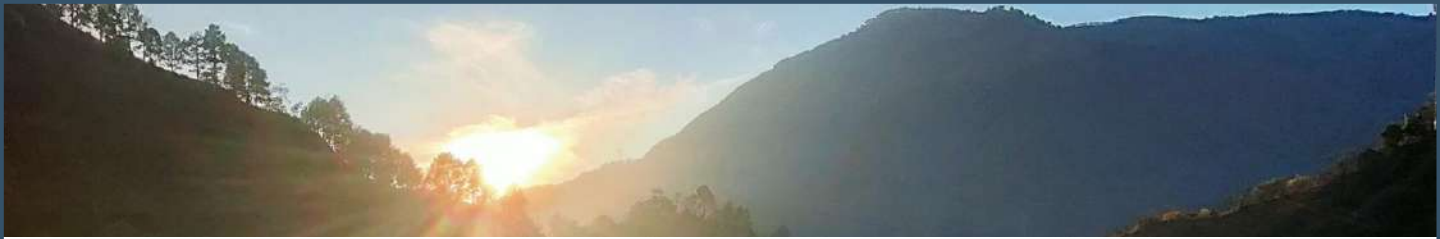
School of Basic Sciences

This School includes Mathematics, Physics, Chemistry, and Life-Sciences. While some faculty work in pure research, others work on applied research in collaboration with colleagues of the Engineering Schools.

Faculty members and their specialization

1. **Prof. Suman Kalyan Pal** (Chairperson: Professor; Fast and Ultrafast Laser Spectroscopy)
2. **Dr. Syed Abbas** (Associate Professor; Difference equations, stochastic control, differential equations, and Ecological modelling)
3. **Dr. Aditi Halder** (Associate Professor; Design and development of new functional nanomaterials for the application of renewable energy)
4. **Dr. Ajay Soni** (Associate Professor; Nanomaterials and Experimental Condensed Matter Physics)
5. **Dr. Amit B Pawar** (Assistant Professor; Organic Chemistry)
6. **Dr. Amit Jaiswal** (Associate Professor; Nano-Biotechnology)
7. **Dr. Amit Prasad** (Associate Professor; Immunology/Microbiology)
8. **Dr. Aniruddha Chakraborty** (Associate Professor; Theoretical Chemistry)
9. **Dr. Arti Kashyap** (Associate Professor; Computational magnetism and material informatics)
10. **Dr. Bhaskar Mondal** (Assistant Professor; Computational Chemistry and Catalysis)
11. **Dr. Bindu Radhamany** (Associate Professor; X-ray spectroscopy)
12. **Dr. C. S. Yadav** (Associate Professor; Strongly Correlated Electron Physics, Superconductivity, Magnetism, Topological states)
13. **Prof. Chayan K. Nandi** (Professor; Physical Chemistry)
14. **Dr. Garima Agrawal** (Assistant Professor; Polymer Science and Technology, Materials Chemistry, Nanotechnology)
15. **Dr. Girish Sharma** (Assistant Professor; Theoretical condensed matter physics)
16. **Dr. Hari Varma** (Associate Professor; Atomic and Molecular Physics)
17. **Dr. Kalpesh Haria** (Assistant Professor; Operator Theory)
18. **Dr. Kaustav Mukherjee** (Associate Professor; Experimental Condensed Matter Physics)

19. **Dr. Manoj Thakur** (Associate Professor; Optimization, Soft Computing, Machine Learning)
20. **Dr. Muslim Malik** (Associate Professor; Differential Equations)
21. **Dr. Nitu Kumari** (Associate Professor; Differential Equations, Dynamical Systems, Nonlinear Dynamics)
22. **Dr. Pradeep Kumar** (Associate Professor; Raman and Infrared Spectroscopy)
23. **Prof. Pradeep Parameswaran** (Professor; Inorganic, Materials, Nano-Chemistry)
24. **Dr. Pradyumna Kumar Pathak** (Associate Professor; Quantum Optics, Quantum Information, and Nanophotonics)
25. **Dr. Prasad Kasturi** (Assistant Professor; Proteostasis, Aging, Stress Response and C.elegans)
26. **Dr. Prasanth P. Jose** (Associate Professor; Soft condensed matter physics)
27. **Prof. Prem Felix Siril** (Professor; Chemistry of Nanomaterials)
28. **Dr. Prosenjit Mondal** (Associate Professor; Molecular Endocrinology and Metabolism)
29. **Dr. Qaiser Jahan** (Assistant Professor; Harmonic and Wavelet Analysis)
30. **Dr. Rajanish Giri** (Associate Professor; Biophysics and Protein Folding, Intrinsically Disordered Proteins, Chimeric Antigen Receptor based Cancer Immunotherapy, Protein Engineering)
31. **Dr. Rajendra K. Ray** (Associate Professor; Numerical Methods for PDEs, Computational Fluid Dynamics, Mathematical Image Processing)
32. **Dr. Sarita Azad** (Associate Professor; Statistical Time Series Analysis)
33. **Dr. Shyam Kumar Masakapalli** (Associate Professor; Metabolic Systems Biology – Fluxomics and Metabolomics, Plant and Microbial Metabolism, NMR and GC- MS)
34. **Prof. Subrata Ghosh** (Professor; Organic Chemistry)
35. **Dr. Trayambak Basak** (Assistant Professor; Metabolic diseases, extracellular matrix, Proteomics)
36. **Dr. Tulika Prakash Srivastava** (Associate Professor; Systems Biology, Metagenomics, NGS Applications, Bioinformatics)
37. **Dr. Venkata Krishnan** (Associate Professor; Materials Chemistry, X-ray Science)
38. **Dr. Baskar Bakthavachalu** (Assistant Professor; Genetics and Molecular Neuroscience)
39. **Dr. Eike Schwier** (Adjunct Assistant Professor; photoemission spectroscopy, density function theory and condensed matter experiment).



School of Engineering

This School covers tangible physical structures and artifacts such as transport vehicles, transport systems, machines, materials, manufacturing, designs, etc. The underlying principles are classical mechanics, atomic physics, and thermodynamics. Many faculties from the traditional departments of Mechanical, Civil, Aerospace, and Metallurgy Engineering are a part of this School.

Faculty members and their specialization

1. **Dr. Viswanath Balakrishnan** (Chairperson; Associate Professor; Growth of Functional Materials/Thin Films, Electron Microscopy & in-situ Exploration of structure-property Relationships)
2. **Dr. Arpan Gupta** (Associate Professor; Acoustics, Vibration, Biomechanics, Computational methods-FEM, CFD, Lattice Boltzmann Method)
3. **Dr. Atul Dhar** (Associate Professor; Alternative Fuels & Emission Control)
4. **Dr. Dericks Praise Shukla** (Associate Professor; Remote Sensing & GIS, Hydro-geo-chemistry, Water contamination mostly and other Heavy metals, Natural Hazards Assessment, and Mapping)
5. **Dr. Mohammad Talha** (Associate Professor; Solid Mechanics, Composite Structures, Functionally Graded Materials, Structural Mechanics)
6. **Prof. Rahul Vaish** (Professor; Glasses for Electrical Applications, Solid State Refrigeration, Pyroelectric Energy Harvesting Materials and Methods, Piezoelectric Energy Harvesting Materials and Methods)
7. **Prof. Rajeev Kumar** (Professor; Solid Mechanics, Vibration, FEM, Optimization)
8. **Dr. Rik Rani Koner** (Associate Professor; Hybrid Material)
9. **Dr. Vishal Singh Chauhan** (Associate Professor; Design Engineering, Electromagnetic Radiation during Deformation of metals and alloys, Solid Mechanics, FEM)
10. **Dr. Amit Shukla** (Assistant Professor; Robotics Control Systems, Mechatronics, Artificial Intelligence, Electric Vehicle)
11. **Dr. Ashutosh Kumar** (Assistant Professor; Soil-Structure interaction, Engineering behavior of unsaturated soils, Geotechnical Earthquake Engineering, Seismic performance of heritage structures)

12. **Dr. Deepak Swami** (Associate Professor; Groundwater Flow and Transport Modelling, Water Resources Development and Management, Disaster Mitigation especially related to Floods and Flash flood)
13. **Dr. Gaurav Bhutani** (Assistant Professor; Multiphase flows, Polydispersed flows, Computational Fluid Dynamics, Finite Element Methods for fluid flows, Population balance modelling, Application of the above techniques to process flows, biomedical flows and snow avalanches, Microfluidics with applications to lab-on-a-chip devices)
14. **Dr. Himanshu Pathak** (Assistant Professor; Extended Finite Element Method, Meshfree Methods, Fracture Mechanics and Functionally Graded Materials)
15. **Dr. Jaspreet Kaur Randhawa** (Associate Professor; Nanodrugs delivery systems, Biosensors, Microporous membranes)
16. **Dr. Kaustav Sarkar** (Assistant Professor; Durability Design of Concrete, Sustainable Concrete Production, Finite-Element Analysis, Soft-computing)
17. **Dr. Maheshreddy Gade** (Assistant Professor; Earthquake Engineering and Engineering Seismology)
18. **Dr. Mousumi Mukherjee** (Assistant Professor; Geomechanics, Constitutive modeling of frictional material, Material instability analysis, Modeling of debris flow, Numerical modeling, Non-destructive testing of soil)
19. **Dr. P. Anil Kishan** (Assistant Professor; Computational Fluid Dynamics)
20. **Dr. Parmod Kumar** (Assistant Professor; Interface Capturing, Entrainment Dynamics, Mesoscale Simulations, Probes and Instrumentation for Two-Phase Flows)
21. **Dr. Pradeep Kumar** (Assistant Professor; Fluid Mechanics, Thermal Science, Thermal Radiation, Solar Radiation, Optics, Collimated Beam Radiation, Non-gray Radiation Properties Calculations, Interfacial Phenomena of Radiation, Computational Tools)
22. **Dr. Rajesh Ghosh** (Associate Professor; Solid Mechanics, Biomechanics, Finite Element Analysis)
23. **Dr. Sandip Kumar Saha** (Assistant Professor; Performance-Based Earthquake Engineering, Resiliency of Civil Infrastructure, Seismic Vibration Control, Uncertainty Quantification)
24. **Dr. Satvasheel Ramesh Powar** (Assistant Professor; Perovskite Solar Cells, Solar Thermal utilization, Energy Storage, Process development)
25. **Dr. Sayantan Sarkar** (Assistant Professor; Atmospheric Chemistry, Aerosols, Climate Change)

26. **Dr. Subhamoy Sen** (Assistant Professor; Stochastic System Identification (SSI), Structural Health Monitoring (SHM), Digital Signal Processing (DSP), Inverse problems, Kalman filtering, Bayesian Updating)
27. **Dr. Sudhir Kumar Pandey** (Assistant Professor; Condensed Matter Physics & Material Science)
28. **Dr. Sumit Sinha Ray** (Assistant Professor; Filtration and Separation, Heat Transfer, Energy Storage)
29. **Dr. Sunny Zafar** (Assistant Professor; Microwave Material Processing, Surface Engineering, Experimental Tribology, and Advanced Welding and Manufacturing Processes)
30. **Dr. Swati Sharma** (Assistant Professor; Carbon-based Micro/ Nano Devices, Microstructure, and Crystallinity of sp² Carbons, Waste-Derived Carbon)
31. **Dr. Venkata Uday Kala** (Assistant Professor; Geotechnical Engineering, Slope stability, Landslide (Early warning, Preparedness, and Mitigation), Retaining Structures, Geosynthetics, Environmental Geotechnics)
32. **Dr. Prateek Saxena** (Visiting Assistant Professor; Sustainable manufacturing, Additive manufacturing, Paper-packaging, Product design, and Tribology)
33. **Prof. Ajit P. Annachhatre** (Visiting Professor; Anaerobic Treatment, Heavy Metal, Biological Wastewater Treatment, Environmental Engineering)
34. **Dr. Balthasar Novák** (Adjunct Professor; Design of bridges, Development of bridge management systems, Reinforcing structural elements using carbon fiber, Earthquake earthquake design of concrete structures, Safety and security of bridges and tunnels under natural and manmade disasters, Effect of predicted climate change on pressurised concrete structures).
35. **Prof. Satish Chandra Jain** (Emeritus Professor; Vibration, Noise, Tribology, and Computer-Aided Design)
36. **Prof. Subrata Ray** (Visiting Distinguished Professor; Physical metallurgy, Composites, and Tribology)
37. **Dr. Sumant Nigam** (Visiting Distinguished Professor; Climate Dynamics, Hydroclimate Variability and Change, Absorbing Aerosols and Asian Monsoon Onset)
38. **Prof. Sunil R. Kale** (Mentor Professor; Heat Transfer, Fluid Mechanics)
39. **Prof. Tarun Kant** (Visiting Distinguished Professor; Solid & Structural Mechanics - FEM, Composite Mechanics, Plates & Shells)

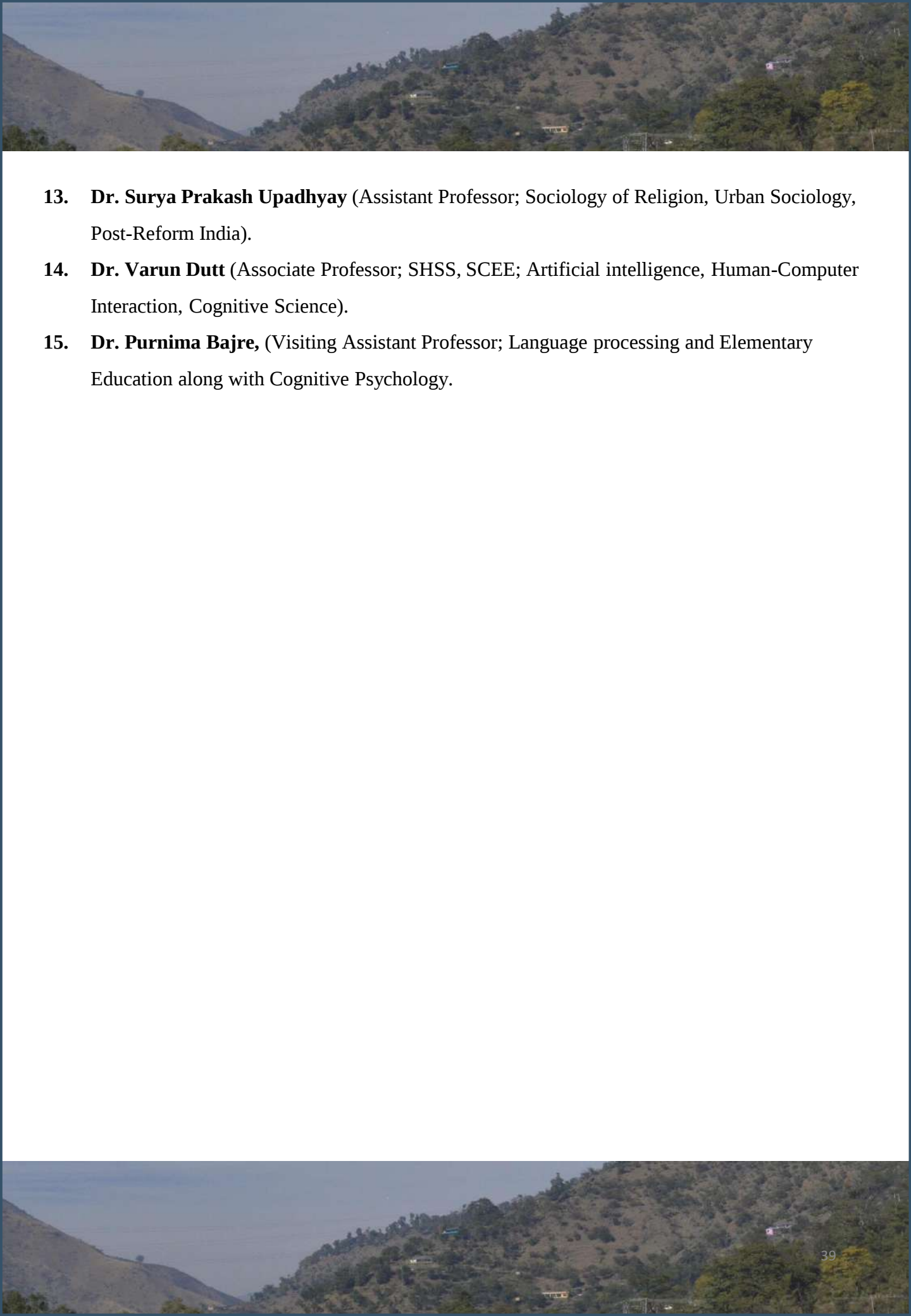


School of Humanities and Social Sciences

Modern engineers work in teams to create, improve, and apply technology for the good of society. A good understanding of language, culture, sociology, economics, management, ecology, etc. is essential for the well-rounded engineer and development of technologies, products, and processes that will see widespread use. This School is thus an important part of IIT Mandi.

Faculty members and their specialization

1. **Dr. Shyamasree Dasgupta** (Chairperson; Assistant Professor; Energy and Environmental Economics)
2. **Dr. Suman** (Assistant Professor; Colonialism, Post colonialism, Imperialism and Romance Literature)
3. **Dr. Aruna Bommareddi** (Assistant Professor; Comparative Literature, Indian Literature in English)
4. **Dr. Devika Sethi** (Assistant Professor; Modern Indian History, Colonialism and Decolonization, Free Speech and Censorship)
5. **Dr. Ingrid Shockey** (Adjunct Associate Professor; Environmental Sociology)
6. **Dr. Manu V. Devadevan** (Assistant Professor; Literary practices in South Asia, Political and economic processes in pre-modern South Asia & South Asian Epigraphy)
7. **Dr. Neha Kaushik** (Assistant Professor; Translation Studies, Women's Writing, Comparative Linguistics & German Studies)
8. **Dr. Nilamber Chhetri** (Assistant Professor; Sociology)
9. **Dr. Puran Singh** (Associate Professor; Corporate Finance, Financial Inclusion, Entrepreneurship)
10. **Dr. Rajeshwari Dutt** (Associate Professor; Latin America, Social & Cultural History, Indigenous Studies)
11. **Dr. Ramna Thakur** (Associate Professor; Development Economics)
12. **Dr. Saumya Dixit** (Assistant Professor; Post Consumption Consumer Behaviour, E-Waste Management, E-Wom Management)

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13. **Dr. Surya Prakash Upadhyay** (Assistant Professor; Sociology of Religion, Urban Sociology, Post-Reform India).
 14. **Dr. Varun Dutt** (Associate Professor; SHSS, SCEE; Artificial intelligence, Human-Computer Interaction, Cognitive Science).
 15. **Dr. Purnima Bajre**, (Visiting Assistant Professor; Language processing and Elementary Education along with Cognitive Psychology).



MEDALS AND PRIZES

PRESIDENT OF INDIA GOLD MEDAL



Mr. Rishi Sharma (B17138)

Computer Science and Engineering

Rishi Sharma achieved highest CGPA (9.38) in his batch. He was involved in research project since 1st year of his B. Tech and published a conference paper. He received twice the academic excellence awards on Foundation Day.

DIRECTOR'S GOLD MEDAL



Mr. Arnav Prasad (B17036)

Computer Science and Engineering

Arnav Prasad has shown his leadership quality as active 'Academic Secretary (Student Gymkhana)' for 2020-21. He played a vital role to resolve the academic related issues arose during lockdown period amidst COVID19. He contributed in curriculum review by leading the online feedback collection from various stakeholders. In parallel to the co-curricular activities, he was equally serious in studies that is reflected from his CGPA of 9.17.



INSTITUTE SILVER MEDALS



Mr. Rishi Sharma
B17138

Computer Science and Engineering

Highest CGPA (9.38) in CSE.



Mr. Divanshu Gupta
B17011

Electrical Engineering

Highest CGPA (8.63) in EE.



Ms. Shreya Prakash Lanjewar
B17142

Mechanical Engineering

Highest CGPA (8.58) in ME.



Mr. Sanjeev Singh Yadav
B17022

Civil Engineering

Highest CGPA (8.35) in CE.

INSTITUTE SILVER MEDALS



Ms. Khushboo Varshney

V19006

M.Sc. Chemistry

Highest CGPA (8.95)



Mr. Vinit

V19050

M.Sc. Physics

Highest CGPA (8.82)



Ms. Priya

V19097

M.Sc. Applied Mathematics

Highest CGPA (9.43)



Mr. Shubham Dutt Attri

T19038

**M.Tech. Mechanical Engineering with
Specialization in Energy Systems**

Highest CGPA (9.48)

RANI GONSALVES MEMORIAL MEDAL



Ms. Manvi Gupta
B17092
Computer Science and Engineering

Manvi Gupta has actively participated in many co-curricular activities. She also participated in Inter-IIT cultural Meet at IIT Kanpur where IIT Mandi stood 4th among all IITs. She was Founder Coordinator and Chairperson of ACM-W Chapter IIT Mandi. She attained impressive CGPA (9.24)



OUTSTANDING ACADEMIC ACHIEVEMENT AWARDS



Mr. Giredhar Muthiah
T19202
M.Tech. Biotechnology

Highest CGPA (9.08)



Ms. Tirthashree
T19165
M.Tech. Communication and Signal Processing

Highest CGPA (8.20)



Mr. Anupam Nigam
T19054
M.Tech Energy Engineering with Specialization in Materials

Highest CGPA (8.86)



Ms. Kumari Suravi
T19142
M.Tech. VLSI

Highest CGPA (8.89)



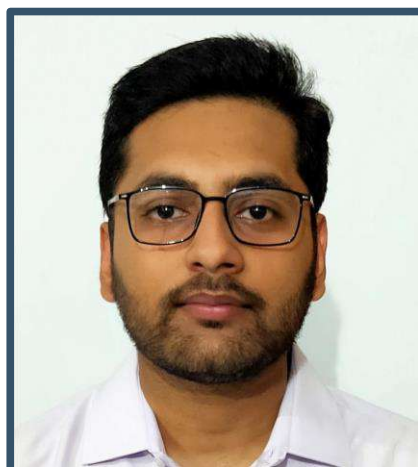
OUTSTANDING ACADEMIC ACHIEVEMENT AWARDS



Mr. Ajay Kumar
T19027

M.Tech Structural Engineering

Highest CGPA (9.21)



Mr. Pranav Kumar Jha
T19133

M.Tech Power Electronics and Drives

Highest CGPA (9.43)



Mr. Yash Agarwal
A19011
M.A. Development Studies

Highest CGPA (9.38)



DETAILS OF GRADUATING STUDENTS

B. Tech. in Computer Science and Engineering

The following 60 students have completed all the requirements for the award of Bachelor of Technology in Computer Science and Engineering. Their Names and Roll Numbers are:

Sl. No.	Roll No.	Student Name	Minor
1	B17001	Aditya Mantri	With Minor in Management
2	B17007	Ananya Shukla	With Minor in Management
3	B17009	Arpit Singh Bhadauria	With Minor in Management
4	B17028	Tanmay Rustagi	With Minor in Management
5	B17029	Utkarsh Jain	
6	B17031	Aashima	With Minor in Management
7	B17032	Akash Dakoor	
8	B17033	Akhil Rajput	With Minor in Management
9	B17034	Aman Saxena	With Minor in Management
10	B17035	Ankit Jiganwal	With Minor in Management
11	B17036	Arnav Prasad	
12	B17037	Atyant Yadav	With Minor in Management
13	B17038	Balam Nivedit Reddy	With Minor in Management
14	B17039	Deepak Kumar	With Minor in Management
15	B17040	Devesh Soni	
16	B17041	Dheeraj	With Minor in Management
17	B17042	Dinbandhu Kumar Singh	
18	B17043	Dipesh Kumar Gupta	
19	B17044	Hitesh Kanodia	With Minor in Management
20	B17045	Jaideep Bhargava	
21	B17046	Jhalak Choudhary	With Minor in Management
22	B17047	Kanika Gupta	With Minor in Management
23	B17048	Khushi Gupta	With Minor in Management
24	B17049	Navya Varakantham	With Minor in Management
25	B17050	Neeraj Kumar Sharma	With Minor in Management

Sl. No.	Roll No.	Student Name	Minor
26	B17051	Prajwal Jha	With Minor in Management
27	B17052	Priya Singh	
28	B17053	Purushottam Sinha	With Minor in Management
29	B17054	Roshan Sharma	With Minor in Management
30	B17055	Sachit Yadav	With Minor in Management
31	B17056	Sambhav Dusad	With Minor in Management
32	B17057	Saransh Sharma	With Minor in Management
33	B17058	Satyam Shukla	With Minor in Management
34	B17059	Saurabh Bansal	With Minor in Management
35	B17060	Saurbh	
36	B17061	Sharad Shukla	With Minor in Management
37	B17062	Shreyansh Kulshreshtha	
38	B17063	Siddharth Gupta	With Minor in Management
39	B17064	Suraj Kumar	With Minor in Management
40	B17066	Vaibhav Saini	With Minor in Management
41	B17068	Vinay Kumar	
42	B17069	Vipul Sharma	With Minor in Management
43	B17070	Yash Khanna	
44	B17071	Aaditya Arora	
45	B17072	Abhishek Bhardwaj	
46	B17076	Aniket Sahu	With Minor in Management
47	B17078	Anvay Vipul Shah	
48	B17087	Kriti Mehta	With Minor in Management
49	B17092	Manvi Gupta	
50	B17096	Namrata Malkani	With Minor in Management
51	B17100	Rohit Agarwal	With Minor in Management
52	B17101	Sachin S Ranjalkar	
53	B17104	Swapnil Rustagi	
54	B17106	Tushar Tyagi	With Minor in Management
55	B17110	Varun Singh	With Minor in Management
56	B17120	Deepshikha Rana	With Minor in Management
57	B17134	Prajeet Darda	
58	B17138	Rishi Sharma	
59	B15119	Nisha Kumari	
60	B16013	Anubhav Chaudhary	

B.Tech. in Electrical Engineering

The following 44 students have completed all the requirements for the award of Bachelor of Technology in Electrical Engineering. Their Names and Roll Numbers are below:

Sl. No.	Roll No.	Student Name	Minor
1	B17003	Akshat Malviya	
2	B17004	Akshita Jain	With Minor in Management
3	B17011	Divanshu Gupta	With Minor in Management
4	B17012	Himanshu Baghel	With Minor in Management
5	B17019	Nikita Yadav	With Minor in Management
6	B17020	Piyush Vastupal Bafna	With Minor in Management
7	B17025	Shishir Kumar Singh	
8	B17073	Aishwarya Bhargav	With Minor in Management
9	B17074	Akash Deep Batham	
10	B17075	Amol Agrawal	With Minor in Management
11	B17077	Anurag	With Minor in Management
12	B17079	Arun Kumar Bairwa	With Minor in Management
13	B17080	Desharaj Meena	
14	B17081	Dheeraj Ram	
15	B17082	Dhruv	With Minor in Management
16	B17083	Divya Gupta	With Minor in Management
17	B17084	Divyanshu Kumawat	With Minor in Management
18	B17085	Gaurav Nirmal	With Minor in Management
19	B17086	Hardik Aggarwal	With Minor in Management
20	B17088	Lakshmi Naga Khyathi Chittineni	With Minor in Management
21	B17089	Mahale Komal Baburao	With Minor in Management

Sl. No.	Roll No.	Student Name	Minor
22	B17090	Mahima Choudhary	With Minor in Management
23	B17091	Manpreet Singh	With Minor in Management
24	B17093	Mayank Mittal	
25	B17094	Muhammed Roshan P K	With Minor in Management
26	B17097	Parth Kankarwal	
27	B17098	Pawan	With Minor in Management
28	B17099	Rishabh Dharmani	With Minor in Management
29	B17102	Shaurya Pratap Singh Tomar	With Minor in Management
30	B17103	Sohan Sahariya	
31	B17105	Thabsheer Muhammed M K	
32	B17107	Ujjawal Shivhare	
33	B17108	Vaibhav Sharma	With Minor in Management
34	B17114	Aman Verma	With Minor in Management
35	B17116	Anwesh Das	With Minor in Management
36	B17118	Arush Saxena	With Minor in Management
37	B17125	Manas Deep Vishwakarma	With Minor in Management
38	B17126	Manish Kumar Sharma	With Minor in Management
39	B17131	Naveen Kumar	With Minor in Management
40	B17139	Rohit Kumar Bhamu	With Minor in Management
41	B17141	Shashi Kumar Fagna	With Minor in Management
42	B17145	Swarna Bisane	With Minor in Management
43	B17148	Vaishali	With Minor in Management
44	B15221	Lokesh Gehlot	

B.Tech. in Mechanical Engineering

The following 24 students have completed all the requirements for the award of Bachelor of Technology in Mechanical Engineering. Their Names and Roll Numbers are below:

Sl. No.	Roll No.	Student Name	Minor
1	B17111	Aditya Nautiyal	
2	B17112	Ajay	
3	B17113	Aman Raj	
4	B17115	Ankit Sejwar	With Minor in Management
5	B17117	Arjun Sahdev	
6	B17119	Ashu Chandelia	
7	B17121	Gautam Asopa	With Minor in Management and With Minor in Intelligent Systems
8	B17122	Hritik Dev	With Minor in Intelligent Systems
9	B17127	Man Mohan Meena	
10	B17128	Mayank Agrwal	
11	B17129	Mohit Kumar	
12	B17130	Nabeel Khan	
13	B17132	Nitin Mittal	With Minor in Management
14	B17133	Pradeep Kumar Nag	With Minor in Intelligent Systems
15	B17135	Purushottam Goel	
16	B17136	Rajan Kumar	
17	B17137	Rajesh	
18	B17140	Sachin	
19	B17142	Shreya Prakash Lanjewar	
20	B17143	Shubham Meena	
21	B17144	Shubham Shah	With Minor in Management
22	B17147	Toshendra Rustagi	With Minor in Management
23	B17149	Yash Paliwal	With Minor in Management
24	B17150	Yuvraj Dholia	

B.Tech. in Civil Engineering

The following 18 students have completed all the requirements for the award of Bachelor of Technology in Civil Engineering. Their Names and Roll Numbers are below:

Sl. No.	Roll No.	Student Name	Minor
1	B17002	Akash Garva	With Minor in Management
2	B17005	Aman Kumar	
3	B17006	Amit Chauhan	With Minor in Management
4	B17008	Anuradha Meena	With Minor in Management
5	B17010	Aryan Singh	With Minor in Management
6	B17013	Jatin Garg	With Minor in Management
7	B17014	Jatin Nimawat	With Minor in Management
8	B17015	Madipelly Anurag	
9	B17016	Mandadi Pavan Kumar	
10	B17017	Mohit Prajapati	
11	B17018	Munesh Kumar Meena	
12	B17021	Raj Kumar	With Minor in Management
13	B17022	Sanjeev Singh Yadav	With Minor in Management and With Minor in Applied Physics
14	B17023	Saurabh Singh	
15	B17024	Shikhar Kumar	With Minor in Management
16	B17026	Shivam Kumar Bairwa	
17	B17027	Sunil Kumar Dangi	With Minor in Management
18	B17030	Vikas Verma	





Master of Science (M.Sc.) in Chemistry

The following 35 students have completed all the requirements for the award of the degree of Master of Science (M.Sc. Chemistry). Their names and Roll Nos. are as given below:

Sl. No.	Roll No.	Student Name	Sl. No.	Roll No.	Student Name
1	V19001	Deepanshi	19	V19020	Ankit
2	V19002	Akshansh Kaushik	20	V19021	Rohit Yadav
3	V19003	Gaurav Kumar	21	V19022	Varsha Verma
4	V19004	Swati Jain	22	V19023	Akhilesh Sharma
5	V19005	Tanisha Singhal	23	V19024	Hardev Kumar
6	V19006	Khushboo Varshney	24	V19025	Sumit Yadav
7	V19007	Shivangi Singh Chauhan	25	V19026	Aditya Jaiswal
8	V19008	Nikita Kunwar	26	V19027	Anurag Yadav
9	V19009	Sapna	27	V19028	Ritu
10	V19010	Vyom Prakash Tyagi	28	V19029	Kirti
11	V19011	Tiwari Shivani Nagendra	29	V19030	Richa
12	V19012	Priyanka Jain	30	V19031	Jagmohan
13	V19013	Pawar Rupali Bharatsingh	31	V19032	G Chanchal Kumar Nayak
14	V19014	Prachi Dwivedi	32	V19033	Honourius Mebansharai Dohling
15	V19016	Hari Prakash Shukla	33	V19034	Martha Perme
16	V19017	Aakashdeep	34	V19094	Narender Kumar
17	V19018	Yash Singla	35	V19095	Harsh Kumar
18	V19019	Palak Majithia			



Master of Science (M.Sc.) in Applied Mathematics

The following 36 students have completed all the requirements for the award of the degree of Master of Science (M.Sc. Applied Mathematics). Their names and Roll Nos. are as given below:

Sl. No.	Roll No.	Student Name	Sl. No.	Roll No.	Student Name
1	V19055	Ajay Kumar Marodiya	19	V19076	Rakshit Kumar Tyagi
2	V19056	Aniruddh Ghosle	20	V19077	Rovit Kumar
3	V19057	Anju	21	V19078	Sagar
4	V19058	Anshika Dubey	22	V19079	Sakshi Jain
5	V19059	Aryan Bhambu	23	V19080	Satya Pal Jakhar
6	V19060	Ashu Kumar	24	V19081	Saurabh Mishra
7	V19061	Ashutosh	25	V19082	Shivendu Prasad
8	V19062	Bhukya Ram Kumar	26	V19083	Subhash Kumar Sonkariya
9	V19064	Himalaya Prakash	27	V19084	Tanay Kumar Gupta
10	V19065	Jahanvi Rajput	28	V19085	Tushar Gupta
11	V19066	Jaiprakash	29	V19086	Vidisha Singh
12	V19068	Manisha	30	V19087	Vikas Mehriya
13	V19069	Meenu Rani	31	V19088	Vikash Bharia
14	V19070	Murari Lal	32	V19089	Vivek Kumar
15	V19071	Nidhi	33	V19096	Kumuda Sharma
16	V19073	Palak Aggarwal	34	V19097	Priya
17	V19074	Parteek Kumar	35	V19098	Jagseer Singh
18	V19075	Pranchal Jain	36	V19099	Indrajit Nath



Master of Science (M.Sc) in Physics

The following 28 students have completed all the requirements for the award of the degree of Master of Science (M.Sc. Physics). Their names and Roll Nos. are as given below:

Sl. No.	Roll No.	Student Name	Sl. No.	Roll No.	Student Name
1	V19035	Kundan Verma	15	V19051	Gulshan Sharma
2	V19036	Apoorav Singh Deo	16	V19052	Monika Singh
3	V19037	Sushank Mishra	17	V19053	Avinesh Kumar
4	V19038	Kashik Chauhan	18	V19054	Shyam Sundar Meena
5	V19039	Shagun Kumar	19	V19090	Karun Gadge
6	V19040	Sonali Kumawat	20	V19091	Akansha Verma
7	V19041	Rakesh Somarwal	21	V19092	Prithivraj G
8	V19042	Jayant Kumar Gupta	22	V19093	Brijesh Gupta
9	V19045	Mahaveer	23	V19100	Apoorv Dashora
10	V19046	Rajendra Kumar Raigar	24	V19101	Rupal Gupta
11	V19047	Sumit Kumar	25	V19102	Abhishek Pandey
12	V19048	Vinod Kumar Solet	26	V19103	Kanika Rani
13	V19049	Alka Kumari	27	V19104	Vikas Yadav
14	V19050	Vinit	28	V19105	Pratibha Yadav



Master of Arts (MA) in Development Studies

The following 11 students have completed all the requirements for the award of the degree of Master of Arts in Development Studies. Their names and Roll Nos. are as given below:

Sl. No.	Roll No.	Student Name
1	A19001	Akshay Thakur
2	A19003	Akanksha Singh
3	A19005	Bijoya Sarkar
4	A19006	Sahil B Gaikwad
5	A19007	Thirukkovela Srichandra
6	A19008	Princi Gupta
7	A19010	Muhammed Rashid
8	A19011	Yash Agarwal
9	A19012	Kalasamudram Sai Thejaswini
10	A19014	Yashpal Luniwal
11	A19015	Gaikwad Jaideep Dhanaji



Master of Technology (M.Tech.) in Mechanical Engineering with specialization in Energy Systems (MES)

The following 19 students have completed all the requirements for the award of the degree of Master of Technology in MES. Their names and Roll Nos. are as given below:

Sl. No.	Roll No.	Student Name
1	T19032	Siddharth Singh Lalotra
2	T19034	Ankita Pundeer
3	T19035	Alankrit Srivastava
4	T19038	Shubham Dutt Attri
5	T19039	Utkarsh Deep Tiwari
6	T19040	Yash Shekvani
7	T19042	Karan Chilwal
8	T19043	Arpit Pathak
9	T19044	Shyam Kishor Sharma
10	T19045	Mohit Kumar Sahu
11	T19046	Shivendra Chaudhary
12	T19047	Saket Sahu
13	T19048	Rohit Rana
14	T19049	Jaydeep Singh
15	T19050	Abhishek Singh
16	T19052	Shubham Desai
17	T19053	Ravi Pippal
18	T19073	Pushpendra Kumar
19	T19074	Ketan Arora



Master of Technology (M.Tech.) in Energy Engineering with specialization in Materials (EEM)

The following 17 students have completed all the requirements for the award of the degree of Master of Technology in EEM. Their names and Roll Nos. are as given below:

Sl. No.	Roll No.	Student Name
1	T19054	Anupam Nigam
2	T19055	Vaibhav Chaudhary
3	T19057	Debanshu Shrivastava
4	T19058	Vishal Sharma
5	T19059	Jyoti Sharma
6	T19061	Lokesh
7	T19062	Kamal Chauhan
8	T19063	Jagat Pal
9	T19064	Mukesh Maurya
10	T19065	Swapnil Pandurang Karale
11	T19066	Shivendra Singh Yadav
12	T19067	Ankit Jaiswal
13	T19068	Navodita Charan
14	T19070	Narendra Kumar Verma
15	T19071	Anuj
16	T19072	Aabiroo Amin Bhat
17	T19076	Aniket Pati



Master of Technology (M.Tech.) in Structural Engineering (SE)

The following 25 students have completed all the requirements for the award of the degree of Master of Technology in Structural Engineering. Their names and Roll Nos. are as given below:

Sl. No.	Roll No.	Student Name
1	T19001	Harshit Agarwal
2	T19002	Shivam Parashar
3	T19003	Aman Thakur
4	T19004	Nivedita
5	T19005	Suneet Kumar
6	T19006	Rohit Rawat
7	T19007	Vemireddy Gandhi Reddy
8	T19010	Puneeta Dutta
9	T19011	Sahil Walia
10	T19012	Arjun Pratap Chauhan
11	T19013	Ashwani Kumar Sharma
12	T19014	Ayush Kumar Tiwari
13	T19015	Huzaifa Saifuddin Electricwala
14	T19016	Parvez Barkat Khan
15	T19017	Divya Yadav
16	T19018	Akhil Verma
17	T19019	Gagan Patel
18	T19020	Jai Chhagan Dorle
19	T19021	Baddipalli Shivalinga
20	T19023	Dharani Raj S V
21	T19024	Bhavana Arya
22	T19025	Arun Kumar
23	T19027	Ajay Kumar
24	T19028	Navneet
25	T19029	Sneha



Master of Technology (M.Tech.) in VLSI

The following 29 students have completed all the requirements for the award of the degree of Master of Technology in VLSI. Their names and Roll Nos. are as given below:

Sl. No.	Roll No.	Student Name	Sl. No.	Roll No.	Student Name
1	T19121	Amit	16	T19145	Tejas Kumar Hoizal
2	T19122	Osho Gera	17	T19149	Dibyendu Maji
3	T19123	Pawan Bhakuni	18	T19150	Sarang P C
4	T19125	Rishabh Soni	19	T19151	Shubham Saxena
5	T19126	Shivam	20	T19152	Vineet Gupta
6	T19127	Jashan	21	T19157	Vipin Kumar
7	T19128	Saurabh Trivedi	22	T19158	Ajay Chauhan
8	T19129	Rajat Kumar	23	T19169	Sachin Tamta
9	T19134	Vikas Thakur	24	T19171	Sumit Kumar Mishra
10	T19135	Vikas Chowdhary	25	T19172	Divyanshu
11	T19136	Prakash Kumar Saw	26	T19173	Gowtham P K
12	T19140	Girija Shankar Dhawal	27	T19175	Pilli Hem Chaitanya Reddy
13	T19142	Kumari Suravi	28	T19176	Devrishi Malik
14	T19143	Shubham Srivastava	29	T18008	Adrash
15	T19144	Shashank Mourya			



Master of Technology (M.Tech.) in Power Electronics and Drives (PED)

The following 15 students have completed all the requirements for the award of the degree of Master of Technology in PED. Their names and Roll Nos. are as given below:

Sl. No.	Roll No.	Student Name
1	T19102	Vijay Kumar
2	T19116	Abhishek Singhal
3	T19117	Ashutosh Rai
4	T19118	Akriti Garg
5	T19119	Nitin Chauhan
6	T19120	Ekansh Kapoor
7	T19132	Jasvant Singh
8	T19133	Pranav Kumar Jha
9	T19147	Kumar Vaibhav Tejan
10	T19155	Md Khalid Raza Khan
11	T19161	Amit Kumar
12	T19163	Arvind Godara
13	T19164	Pravin Pilonia
14	T19166	Ranjini Sinha
15	T19177	Atul Pandey



Master of Technology (M.Tech.) in Communications and Signal Processing (CSP)

The following 16 students have completed all the requirements for the award of the degree of Master of Technology in CSP. Their names and Roll Nos. are as given below:

Sl. No.	Roll No.	Student Name	Specialization
1	T19101	Ravi Kumar	with Specialization in Machine Learning
2	T19103	Shantanu Srivastava	with Specialization in Communication
3	T19105	Deepak Kumar Yadav	with Specialization in Communication
4	T19107	Omna Jain	with Specialization in Communication
5	T19115	Anurag Mohan Pathak	with Specialization in Communication
6	T19130	Anil Kumar Keshri	with Specialization in Communication
7	T19137	Ankit Katiyar	with Specialization in Machine Learning
8	T19138	Manvendra Singh Hada	with Specialization in Machine Learning
9	T19153	Tanya Tiwari	with Specialization in Machine Learning
10	T19154	Manoj Sharma	with Specialization in Communication
11	T19156	Divya Sharma	with Specialization in Machine Learning
12	T19159	Medapalli Surya Vamsi	
13	T19162	Chandresh Kumar	with Specialization in Machine Learning
14	T19165	Tirthashree	with Specialization in Machine Learning
15	T19168	Vaibhav Tripathi	with Specialization in Machine Learning
16	T19170	Naveen Lather	with Specialization in Communication



Master of Technology (M.Tech.) in Biotechnology

The following 16 students have completed all the requirements for the award of the degree of Master of Technology in Biotechnology. Their names and Roll Nos. are as given below:

Sl. No.	Roll No.	Student Name	Specialization
1	T19201	Neha Agyal	
2	T19202	M Giredhar	with Specialization in Medical and Nano-Biotechnology
3	T19203	Anik Biswas	
4	T19204	Konari Jeevita	
5	T19205	Kashmira Dey	with Specialization in Medical and Nano-Biotechnology
6	T19206	Shriya Srivastava	
7	T19207	Sumit Kumar Show	with Specialization in Medical and Nano-Biotechnology
8	T19208	Rakshita Saxena	with Specialization in Medical and Nano-Biotechnology
9	T19210	Saheli Sarkar	with Specialization in Medical and Nano-Biotechnology
10	T19211	Purba Mukherjee	with Specialization in Medical and Nano-Biotechnology
11	T19212	Patil Nitin Keshav	
12	T19213	Aastha	with Specialization in Medical and Nano-Biotechnology
13	T19214	Ashutosh Sahoo	
14	T19215	Mira Koul	
15	T19216	Neha Singh	
16	T19217	Aparna Goswami	



Master of Science (by Research)

School of Computing & Electrical Engineering

- 1**

MS(R) Supervisor Siddhant Kumar

Thesis Title Prof. Bharat Singh Rajpurohit
Short-Circuit Protection for DC Microgrids and Power Converters

This thesis presents new short-circuit fault protection and fault-tolerant approaches based on the output voltage characteristics of a power converter and/or dc bus. The short-circuit fault protection scheme helps the converter to protect its components in short-circuit conditions. Whereas the fault-tolerant approach ensures power continuity even boost switching action fails during operation.
- 2**

MS(R) Supervisor Ankush

Thesis Title Dr. Varun Dutt
Low-Cost Sub-Surface Landslide Monitoring and Associated Predictive Analytics

This thesis details the development of a low-cost sub-surface, IoT-based landslide monitoring system and associated predictive analytics. The system consists of weather and soil sensors, and it is deployed at real world landslide sites. Machine learning algorithms developed on system's data help to generate soil movement alerts in advance.
- 3**

MS(R) Supervisor Merlin Sundar

Thesis Title Prof. Timothy A. Gonsalves and Dr. Sriram Kailasam
Benchmarking Distributed Stream Processing Frameworks for Classical Machine Learning Applications

Different distributed stream-processing frameworks are evaluated w.r.t. performance and usability for implementing classical machine learning algorithms on high-speed event streams from Network Management Systems. These results were used to design a planner for Network administrators to recommend optimal server configurations for a given network size.
- 4**

MS(R) Supervisor Rahul Dogra

Thesis Title Prof. Bharat Singh Rajpurohit and Dr. Narsa Reddy Tummuru
Design, Control and Protection of VSC Based DC Microgrid

This thesis presents design, control and protection aspects of a Voltage Source Converter(VSC) based DC microgrid (DCMG). It includes development of control algorithms for VSC, protection and islanding detection schemes for DCMG, enhancing the overall process, control and protection of DCMG during different faulty conditions during operations.
- 5**

MS(R) Supervisor Soma Ghosh

Thesis Title Dr. Dileep A.D and Dr. Renu M Rameshan
Disease Classification from Potato Leaf Images: An Empirical Study on Images Captured in Unconstrained Environments

The thesis addresses the issues in classifying early or late blight diseases from images of potato leaves, captured in the field. This thesis came up with a set of clear directions to create an image dataset, which can lead to a reliable leaf image based plant disease classifier.

- 6** Naman Agarwal
MS(R) Supervisor Dr. Gaurav Bhutani
Thesis Title LES Modeling of Multiphase Turbulent Flows Using an Adaptive-Mesh Finite Element Method

Turbulence in bubble columns is numerically modeled using the large eddy simulation (LES) model which uses spatial filtering to filter out small scales of motion. A detailed analysis of turbulent single and multiphase flows is presented using a finite element framework and flow dynamics in bubble columns was predicted.
- 7** Deepak Mori
MS(R) Supervisor Dr. Venkata Uday Kala
Thesis Title Investigating the Bio-Geo-Chemical Parameters Affecting Biocementation for Soil Improvement

The thesis aims to investigate the sustainable bio-geo-chemical method of microbial-induced calcite precipitation for improving the engineering properties of the soil. The study elucidates the influence of chemical concentration and its application methodology for maximizing the soil strength and calcite precipitation efficiency by experimental analysis employing Taguchi method for planning.
- 8** Anirudh Singh
MS(R) Supervisor Dr. Atul Dhar and Dr. Satvasheel Ramesh Powar
Thesis Title Computational Modelling and Parametric Study of Solar Assisted Gasification

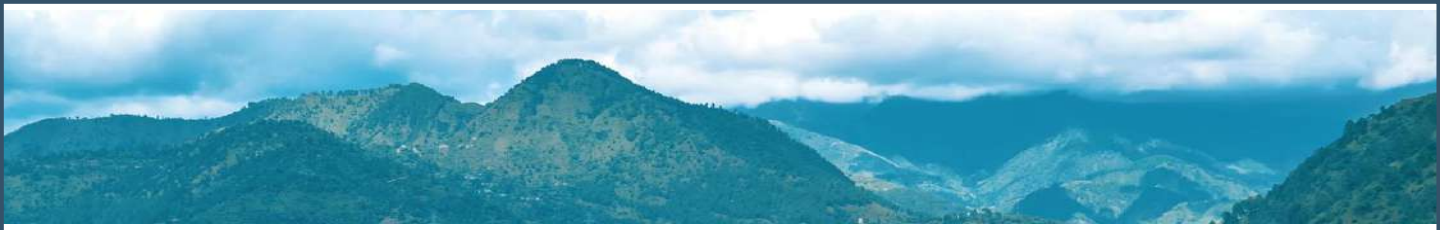
In this thesis computational model was developed to analyse the heat generation capacity and concentration of pollutant gases in the output gas of gasifier. Effect of partial supply of process heat from solar radiation on gasifier performance is also investigated.
- 9** Anurag
MS(R) Supervisor Dr. Deepak Swami
Thesis Title Analysis of Temperature Extremes over India

The study focuses on the extreme temperature events on the pan India. It present the comparison of gridded data and reanalysis data results. The trend analysis of extreme temperature over pan India showed that the gridded data and reanalysis data have varied trends and concludes that gridded data presents more reliable results.
- 10** Neeraj Kumar Singh
MS(R) Supervisor Dr. Gaurav Bhutani
Thesis Title Continuum Modelling of Snow Avalanches using an Adaptive-Mesh Open-Source Finite Element Framework

The study of snow avalanches is crucial to design preventive measures. A numerical framework that models non-Newtonian fluids has been proposed in this work. This numerical framework has been verified, benchmarked and validated with experimental data. Finally, snow avalanches were modelled for actual mountain topography and the results were analyzed.

11	Dikshita Nath
MS(R) Supervisor	Prof. Rahul Vaish and Prof. Rajeev Kumar
Thesis Title	Eggshell Derived Antibacterial Cement-Based Composites
	This thesis explored possible utilization of egg shell waste in construction materials. Treated egg shell product was found to be antibacterial which is finally used in concrete/mortar. These composites were also found to be exhibit antibacterial properties.
12	Deepak Kumar Singh
MS(R) Supervisor	Dr. Gaurav Bhutani
Thesis Title	Numerical Solution of Bivariate Population Balance Equation Using an Open-Source Finite Element CFD Framework
	Polydisperse multiphase systems arise in the nature and in several industrial processes. A demand for the bivariate population balance equation (PBE) has been observed to explain the evolution of these systems in several industrial problems. The thesis presents a implementation of an efficient numerical technique for solving the bivariate PBE.
13	Kamal Sadhuram Khemani
MS(R) Supervisor	Dr. Pradeep Kumar
Thesis Title	A Computational Framework for Radiative Transfer with Compressible Flows-Application to Thermal Load Estimation by Rocket Plumes
	A computational framework has been developed by coupling compressible flow and non-gray radiation in the OpenFOAM - an opensource software. The radiative properties of gases are calculated and stored in the form of a look-up table. This model is then used to estimate the thermal load on the rocket base plate from different hot plumes.
14	Hitesh Kumar
MS(R) Supervisor	Dr. Sandip Kumar Saha
Thesis Title	Seismic Performance of Fixed Base and Base Isolated Liquid Storage Tanks Considering Soil-Structure Interaction
	This study developed a numerical framework for modeling soil-liquid-structure interaction, and thoroughly investigated the seismic performance of fixed base as well as base isolated liquid storage tanks. The effect of soil-structure interaction is investigated on the peak seismic responses and seismic fragility of liquid storage tanks having various structural configurations.





Doctor of Philosophy

PhD degrees from School of Computing & Electrical Engineering

1	Krati Gupta
PhD Supervisor	Dr. Anil K Sao and Dr. Arnav Vinayak Bhavsar
Thesis Title	Classification of Staining Patterns on HEp-2 Specimen Images In this thesis, an image-processing based AI construct is proposed to assist laboratory protocols in detecting severe auto-immune disorders. The framework effectively identifies different & rare characteristic markers/patterns in microscopic human epithelium-2 cell images of patients having auto-immune disorders.
2	Shruti Kaushik
PhD Supervisor	Dr. Varun Dutt
Thesis Title	Machine Learning Methods for Clinical and Healthcare Applications using Electronic Health Records This thesis addressed the potential that ML offers to help aspects of care and certain barriers to the rapid implementation of ML in healthcare. The primary objectives were to develop feature-selection techniques in high-dimensional EHR datasets and to develop multi-headed neural network architectures and generative frameworks for predicting healthcare variables.
3	Ravada Bhaskara Rao
PhD Supervisor	Dr. Narsa Reddy Tummuru
Thesis Title	Design of Converter Configurations and Control Structures for Hybrid Energy Storage Interfaced Renewable Microgrid The hybridization of energy storage devices and renewable power sources is gaining immense attention thereby necessitate research on developing novel interfacing techniques. Therefore, research is being carried on the electrical design of an efficient converter configurations and an effective control structure for the synergy of PV, wind, battery, and supercapacitor.
4	Abhinav Choudhury
PhD Supervisor	Dr. Varun Dutt
Thesis Title	Understanding Network Structure, Diffusion Process, Opinion Leaders, and Sentiments in Social Networks: A Case Study in Healthcare Identifying critical physicians is important to diffuse relevant medical information to these physicians. The main contribution of the thesis is to understand how the network structure and the underlying network dynamics affect the diffusion of innovation, and to develop novel strategies for identifying critical physicians to accelerate the diffusion process.
5	Zahid Maqbool
PhD Supervisor	Dr. Varun Dutt
Thesis Title	An Experimental and Cognitive Approach to Cybersecurity for Building a Secure Cyberspace This thesis investigates the impact of the monetary motivations, technology constraints, and environmental factors on the decisions of people performing as adversaries (hackers) and defenders (attackers) in cyber-security games using both lab-based experiments. A cognitive Instance-based model is developed to understand the cognitive processes involved in hacker's and analyst's decisions.

6	Yashika Arora
PhD Supervisor	Dr. Shubhajit Roy Chowdhury
Thesis Title	Neurovascular Coupling and Cerebrovascular Reactivity Analysis through Near-Infrared Spectroscopy The study focuses on the application of NIRS to analyze the correlation between cerebrovascular reactivity (CVR) and neurovascular coupling (NVC) under the effect of tDCS based on experimental NIRS signal. This leads to the notion of neurovascular unit (NVU) consisting of the vascular smooth muscle, perivascular space, synaptic space and, astrocyte glial cell. Several neural disorders are associated with impaired NVC. The study presents a computational model to evaluate vessel volume response under anodal transcranial direct current stimulation considering a basic system of neurovascular units. The proposed model based on neurovascular dynamics tracked vascular response elicited through neuronal activity via various signaling pathways during anodal tDCS.
7	Mohammad Sultan Alam
PhD Supervisor	Dr. Satyajit Thakor
Thesis Title	On Regions in the Entropy Space and Network Code Construction This work presents the notion and properties of an alphabet-constrained entropic set and an algorithm to find an entropic vector and associated distribution. As applications of these results, we obtain significantly improved inner bounds for the almost entropic region involving four random variables and a construction method for network codes.
8	Jyoti Nigam
PhD Supervisor	Dr. Renu M Rameshan
Thesis Title	Analyzing Social Group Dynamics in Egocentric Videos The problem of predicting group formation in egocentric videos was solved in this work. An LSTM based tracker with reidentification capabilities was designed and graph theoretic concepts were used for dynamic prediction of groups.
9	Avantika Singh
PhD Supervisor	Dr. Aditya Nigam
Thesis Title	Application of Deep Learning in Biometrics: Classification, Cancellation and Indexing In this work deep learning based solutions are devised for biometrics based Classification, Cancellation and Indexing problems.
10	Monika Sharma
PhD Supervisor	Dr. Samar and Prof. Bharat Singh Rajpurohit
Thesis Title	Modelling and Control of Voltage Source Converter Based Shunt Active Power Filter for Power Quality Improvement in Emerging Electric Power Systems This thesis investigates the application of fractional order controllers for power quality improvement in power distribution systems using a shunt active power filter. Further, mathematical fractional-order modelling of VSC is done to model and describe a real object more accurately than the integer-order-based model. In the end, a data-driven algorithm based on a sparse decomposition approach is proposed with in-depth mathematical analysis to detect and mitigate harmonics in emerging electric power systems.

11	Archana Sharma
PhD Supervisor	Prof. Bharat Singh Rajpurohit and Dr. Samar
Thesis Title	Investigation of Power Quality in Power Distribution System This thesis proposes two enhanced control algorithms able to work under noisy condition in smart grid scenario for power quality mitigation are proposed, named: Affine Projection Sign Algorithm and Maximum Versoria Criteria based algorithms. A technique for selective interharmonics compensation with stability analysis is proposed for light flicker mitigation.
12	Mona Subramaniam A
PhD Supervisor	Dr. Tushar Jain and Prof. Joseph J. Yame
Thesis Title	Fault Diagnosis and Fault Tolerant Control for Energy Efficiency in a Multi-Zone Building This thesis presents model-based active fault tolerant control schemes to effectively handle actuator faults in heating ventilation and air conditioning system of a multi-zone building. Observer-based Fault diagnosis and economic model predictive control based reconfigurable control are developed considering the highly coupled nonlinear dynamics of the system.
13	Gaurav Sharma
PhD Supervisor	Dr. Shubhajit Roy Chowdhury
Thesis Title	Anodal High Definition Transcranial Direct Current Stimulation for Neurorehabilitation of Chronic Stress and Depression The research is focussed on non-invasive brain stimulation (NIBS) techniques through transcranial direct current stimulation (tDCS) as a promising and effective tool for neurorehabilitation, as confirmed by the evidence related to the recovery of the surviving patients from neurological disorders.
14	Vijender Kumar Sharma
PhD Supervisor	Dr. Hitesh Shrimali
Thesis Title	Systematic Analyses and Design of Power Delivery Networks under the Influence of Supply Noise The work focuses the design, analysis, and modelling of the nonlinear behaviour of the PDN under the influence of noise. The work can be categorised under the on-chip signal/power integrity issues at very high frequency digital and mixed signal VLSI design.
15	Anshul Kumar Mishra
PhD Supervisor	Prof. Bharat Singh Rajpurohit and Prof. Rajeev Kumar
Thesis Title	Torque Profile Improvement in Electrical Machines for Vehicular Applications This thesis focuses on the torque profile enhancement in electrical machines for vehicular applications. The prime motors used in vehicular applications are induction and permanent magnet machine. The torque ripple in electrical machines may cause the mechanical instability. It may also contribute to power losses in the system. The torque ripple in induction and PM machines have been reduced by optimizing the mathematical model of induction machine and validated through FEM model. The large reduction in torque ripple has been reported in the response of optimized machines.
16	Ashish Kumar
PhD Supervisor	Dr. Ankush Bag
Thesis Title	Engineering of Ga ₂ O ₃ based High-Performance Deep Ultraviolet Photodetectors using Facile Growth The dissertation reports a facile electrospinning fabrication technique to develop β -Ga ₂ O ₃ -nanostructures based deep UV photodetectors (DUPDs) with four major contributions such as 2D-nanoflakes-based DUPDs, In alloyed Ga- ₂ O ₃ based DUPDs to improve responsivity and photocurrent, a novel quasi heterojunction technique to decrease the dark current, and incorporation of Ga-In nanoparticles with the potential plasmonic effect..

PhD degrees from School of Engineering

17	Manoj Kumar Singh
PhD Supervisor	Dr. Sunny Zafar
Thesis Title	Manufacturing and Characterizations of Natural Fiber-Reinforced Polymer Composites Through Microwave-Assisted Compression Molding The thesis work presents a novel process to manufacture natural fibre reinforced polymer composites. The process utilises the principle of microwave heating applied through microwave assisted compression moulding. The process can minimise the fabrication time while producing composites with improved mechanical properties.
18	Tarun Kumar
PhD Supervisor	Prof. Rajeev Kumar and Prof. S.C Jain
Thesis Title	Torsional Vibrations Control of Turbo-Generator Rotor Using Smart Materials Under Various Electrical Faults This thesis presents torsional vibration control of turbo-generator shaft using piezoelectric actuators and MR fluid dampers. Source of vibration is variation in the electromagnetic torque of synchronous generator during electrical faults. Electromagnetic torque is predicted under various electrical faults using dq0 model. Finite element method is used for numerical simulation. Numerical result shows that fuzzy controller is the best among all controller to damp the vibration of turbo-generator shaft fast.
19	Gaurav Tripathi
PhD Supervisor	Dr. Atul Dhar
Thesis Title	Performance, Emissions and Combustion Characterisation of Methane Diesel Dual Fuel Compression Ignition Engine The thesis focuses on the experimental evaluation of methane supplemented diesel engines at different engine loads and different methane energy shares. Experimental analysis of the combustion, noise and vibration, performance, regulated and unregulated exhaust emission characteristics of the methane-diesel dual-fuel engines has been presented.
20	Saurav Sharma
PhD Supervisor	Prof. Rajeev Kumar and Dr. Mohammad Talha
Thesis Title	Isogeometric Analysis of Flexoelectricity in Functionally Graded Structures This thesis presents the concept of flexoelectricity in functionally graded structure to make flexoelectricity ‘truly universal’ by eliminating the requirement of non-uniform geometries. Concept is demonstrated by poling piezoelectric material and refrigeration
21	Gurpreet Singh
PhD Supervisor	Prof. Rahul Vaish
Thesis Title	Photocatalysis and Piezocatalysis Induced Water-Cleaning using Ferroelectric Lithium Niobate-based Ceramics/Glass-Ceramics This work deals with harvesting mechanical energy for water cleaning applications. Piezoelectric materials were explored for anti bacterial as well dye cleaning applications.

22	Gaurav Arora
PhD Supervisor	Dr. Himanshu Pathak
Thesis Title	Thermo-mechanical Properties of Polymer CNT Composites: Experimental and Multi-scale Modelling Approach This thesis presents the multi-scale modelling approach to predict thermo-mechanical behavior of polymer-CNT composites. Multi-scale modelling approach has been implemented to predict the effective anisotropic material properties of the composites at diverse constituent conditions. Both experimental and computational studies have been presented for fracture behavior of polymer composites. The presented work will ease the mechanical design process of aircraft structures made from the polymer-CNT composite materials.
23	Priyanka Kajal
PhD Supervisor	Dr. Satvasheel Powar and Prof. Nripan Mathews (NTU, Singapore)
Thesis Title	Scale up engineering with the techno-economic study of screen printed carbon counter electrode-based perovskite solar cells This thesis focuses on carbon counter electrode-based perovskite solar cell manufacturing engineering. Understanding and developing oxide screen printing pastes for the electron transport layer, hole transport layer, and scaffold layer, as well as carbon pastes for use as electrodes in perovskite solar cells. A techno-economic analysis is done to better understand the market acceptability of this technology from lab to commercial scale.
24	Pankaj Shitole
PhD Supervisor	Dr. Rajesh Ghosh
Thesis Title	Effects of Diabetes and Anti-diabetic Compounds on Fracture Toughness, Nano-mechanical Properties, and Physicochemical Properties of Mouse Bone. In this thesis work, he investigated the effects of diabetes and anti-diabetic compound on bone properties in different hierarchical levels of mouse bone. In conclusion, it has been observed that LDN and PK2 controls the T2DM and T1DM affected bone properties at the multiple hierarchical levels.
25	Ankita Mathur
PhD Supervisor	Dr. Aditi Halder
Thesis Title	Investigations of Transition Metal Oxide-Based Materials for Energy Conversion and Storage Applications The objective of the thesis is to engineer a single material capable of performing ORR and OER efficiently in an aqueous Zn-air battery setup. The designed materials have also been explored for influence of photoactivity on energy storage ability.
26	Saurabh Yadav
PhD Supervisor	Dr. Arpan Gupta
Thesis Title	Numerical and experimental study of the standing wave, near field and low frequency acoustic levitation system The study explores the concept of levitating objects using sound waves. Different types of acoustic levitation systems - such as standing wave and near field system have been analyzed and designed experimentally and computationally. Further, transverse motion of particles was accomplished using a phased array of transducers.
27	Manju Bisht
PhD Supervisor	Dr. Pradeep Kumar and Dr Dhiraj Patil
Thesis Title	Assessment of lattice Boltzmann approach for non-Newtonian fluid flow simulation The thesis presents implementation of a number of non-Newtonian models and multiple-time relaxation time scheme within the lattice Boltzmann framework; and parallelization of the code. The code is then used to study physical problems. A detailed parametric analysis is also undertaken and results under different fluid/flow conditions are compared and commented upon.

- 28** Vishvendra Pratap Singh
 PhD Supervisor Prof. Rahul Vaish
 Thesis Title A Study on Candle Soot for Water Remediations
 This study describes novel use of candle soot for water cleaning applications. Candle soot is low cost and hydrophobic. Candle soot coated foam, fabric etc are able to separate out oil from water as well as absorption of organic pollutants.
- 29** Venkateswaran C
 PhD Supervisor Prof. Rahul Vaish and Dr Vishal Singh Chauhan
 Thesis Title Processing Low Thermal Expansion Glass-Ceramic from Lithium Aluminosilicate (LAS) Glass
 This work reports low thermal expansion glass-ceramics for space applications. Also the thesis investigated various glass compositions for high temperature applications.

PhD degrees from School of Basic Sciences

- 30** Sudeb Majee
 PhD Supervisor Dr. Rajendra Kr. Ray
 Thesis Title Development and Analysis of a Class of Telegraph-Diffusion Models: Application to Image Restoration
 This study deals with the development, analysis and application of a class of telegraph-diffusion based mathematical models for image restoration. These new models are applied to remove the noises from real images like Synthetic Aperture Radar (SAR) images, ultrasound images, satellite images, etc. Present models confirm better performance than the existing models.
- 31** Aamir Mushtaq
 PhD Supervisor Prof. Suman Kalyan Pal
 Thesis Title Third Order Optical Nonlinearity and Ultrafast Carrier Dynamics in Two Dimensional Materials and their Heterostructures in Femtosecond Regime
 In this thesis, nonlinear optical (NLO) and ultrafast processes in 2D layered materials (LMs) and their heterostructures have been explored using femtosecond Z-scan and pump-probe techniques. This thesis provides deep understanding of underlying photophysics in 2DLMs that one must take into account while designing photonic and optoelectronic devices using 2D materials.
- 32** Ajay Kumar
 PhD Supervisor Dr. Venkata Krishnan
 Thesis Title Rational Design and Development of Plasmonic Photocatalysts for Environmental Remediation and Organic Transformation Reactions
 In this thesis work, we have rationally designed, developed and utilized a range of materials (TiO₂, GCN, RGO, UCNP, CdS and ZnO) as active supports to prepare nanocomposites for plasmonic photocatalysis. Subsequently, we have utilized the prepared nanocomposites as efficient catalysts for environmental remediation (pollutants degradation) and organic transformation reactions. We believe that this work will pave the way for the use of plasmonic photocatalysts for several real-life applications.

- 33** Vipin Kumar
PhD Supervisor Dr. Muslim Malik
Thesis Title Study of Dynamic Equations on Time Scales with Applications in Control Theory
- This work provides insight into the different types of existence, uniqueness, stability, controllability and observability problems for dynamic equations with impulsive conditions on time scales with applications in control problems and switched systems.
- 34** Shubhanjali Pathak
PhD Supervisor Dr. Prasanth P Jose
Thesis Title Competition between Vitrification and Crystallization in Lennard-Jones Binary Mixture: A Molecular Dynamic Simulation Study
- The characterization of competition between crystallization and vitrification is a classical problem that remains elusive. This thesis studies Kob-Andersen model binary mixture by varying the composition, which gives new insight into glass formation nonassociated liquids from analysis of higher-order correlations. The study links the growth of dynamic heterogeneity to the violation of Stokes-Einstein relation to changes in the local structure of the liquid.
- 35** Duni Chand
PhD Supervisor Dr. Prasanth P Jose
Thesis Title Role of Attractive Interactions in the Dynamics of a Supercooled Binary Mixture: A Molecular Dynamics Simulation Study
- The Weeks-Chandler-Andersen (WCA) perturbation theory of Lennard-Jones liquid shows that repulsive interactions govern the structure and dynamics of dense nonassociated liquids. Recent studies show violations of WCA theory in the Kob-Anderson (KA) binary mixture. The microscopic analysis of cages in this study on KA mixture with and without attractive interactions deduces the non-perturbative effect of attractive interaction in the dense KA system; therefore, reconfirms the validity of the WCA theory.
- 36** Birender Singh
PhD Supervisor Dr. Pradeep Kumar
Thesis Title Phonons, Quasiparticle Excitations and Their Coupling in Iridium Based Double Perovskites
- This thesis work presents the Raman scattering studies of quantum materials with a central focus on understanding and exploring these systems exotic ground state properties with strong-spin orbit coupling, where the intriguing role of phonons and their coupling to the fractionalized quasiparticle excitations is probed.
- 37** Fauzul mobeen
PhD Supervisor Dr. Tulika Srivastava
Thesis Title Comparative Human Gut Microbiome Analysis of Healthy Individuals Stratified Based on the Traditional Medicinal Systems
- The thesis focuses on the gut microbiome analysis of healthy individuals who have been classified based on the three Prakriti types defined in the Ayurveda at the taxonomic and functional levels. Further, the thesis compares the Indian Traditional Medicinal Systems on India (Ayurveda) and Korea (Sassang) to bring out important features of similarity and differences. For the analysis of Enterotypes identified in the gut microbiome, the thesis presents the development of a novel algorithm based on Self Organizing Maps and compares its performance with the other methods available.

38	Abhinav Choubey
PhD Supervisor	Dr. Prosenjit Mondal
Thesis Title	Excess Insulin as a Driver for Insulin Resistance, NAFLD and Type 2 Diabetes: Pathophysiological Mechanisms and Therapeutic Opportunities
	Hyperinsulinemia is a central hallmark of peripheral insulin resistance. However, how hyperinsulinemia leads to systemic insulin resistance is less clear. This thesis provide evidence that hyperinsulinemia promotes the release of soluble pro-inflammatory mediators that lead to systemic insulin resistance. Findings indicate that Low Dose Naltrexone rescues hyperinsulinemia-induced insulin resistance by attenuating NF- κ B activity and blocking the release of pro-inflammatory mediators.
39	Mr. Prem Singh
PhD Supervisor	Dr. Amit Jaiswal
Thesis Title	Engineering Plasmonic Nanorattles for Catalytic and Photothermal Therapy Applications
	Plasmonic nanostructures with porous and core-shell morphology have evoked great interest for their applications in catalysis and photothermal therapy. This thesis describes the synthesis of and properties of plasmonic metal nanorattles which serve as efficient catalysts against the degradation of pollutants and show higher plasmonic photothermal efficiency opening up the near-infrared window for cancer therapy.
40	Vikas Kumar
PhD Supervisor	Dr. Nitu Kumari
Thesis Title	Study of Chaos and Pattern Formation Analysis in Ecological Systems
	The work presented in this thesis provides a new insight to ecological modeling. In order to understand the interaction between the temporal and spatial processes, and distribution of the species, deterministic mathematical models are studied in this thesis to understand the impact of various ecological factors on the system dynamics and pattern formation. The nonlinear systems exhibited chaotic dynamics which were successfully controlled using ecological factors.
41	Ashish Kumar
PhD Supervisor	Dr. Venkata Krishnan
Thesis Title	Perovskite Oxide Based Photocatalysts for Energy and Environment Oriented Applications
	In this work, we have designed and fabricated perovskite oxide based ternary, binary and unary materials for energy and environment-oriented photocatalytic applications. Specifically, we have utilized CaTiO ₃ and SrTiO ₃ as main perovskite oxides and used other two dimensional (2D) materials, such as reduced graphene oxide (RGO), MoS ₂ and g-C ₃ N ₄ nanosheets to modulate the photocatalytic properties. These materials have demonstrated appreciable photocatalytic performance in organic pollutants degradation, H ₂ evolution and N ₂ fixation with high stability and recyclability. We believe this work will provide a paradigm shift in the development of sustainable photocatalysts.

42	P Vineeth Daniel
PhD Supervisor	Dr. Prosenjit Mondal
Thesis Title	Novel Insights of Pb2+ Exposure, and Dietary Carbohydrate Stress in the Causation of Pathologies Allied with Type 2 Diabetes Mellitus This study presented heavy metals (Pb2+) to induce hepato-toxicity, by escalating ChREBP dependent hepatic dyslipidemia, which could negatively influence pancreatic beta-cells fostering type 2 Diabetes (T2DM). Interestingly, this investigation also unveiled a new modulator of ChREBP, which if targeted can indirectly encourage reduction in hepatic pathologies linked to T2DM aggravation.
43	Ashutosh Singh
PhD Supervisor	Dr. Neha Garg
Thesis Title	Identification of novel inhibitor molecules for cancer therapeutics: The c-Myc inhibition story In this thesis work, the challenges associated with c-Myc mediated cancer therapeutics were considered and various strategies were employed to discover novel c-Myc inhibitor molecules. A defect in the regulatory checks leads to aberrant expression of c-Myc, leading to oncogenic phenotype. The data presented in this work describes four novel c-Myc inhibitors with substantial in vitro potency.
44	Soniya
PhD Supervisor	Dr. Syed Abbas
Thesis Title	Almost Automorphic Solutions of Deterministic and Stochastic Dynamic Equations on Time Scales This thesis deals with the study of the existence, uniqueness and stability of the almost automorphic solution and its generalization for deterministic and stochastic dynamic equations on time scales. The concept of equipotentially square-mean almost automorphic sequence, square-mean piecewise almost automorphic functions on time scales, time scale version of the Stepanov like square mean almost automorphic functions have been introduced. New results on composition theorems on time scales for the space of square-mean weighted Stepanov-like pseudo almost automorphic functions have been obtained with application to various fields.

I-PhD degrees from School of Basic Sciences

45	Saravanan R
IPhD Supervisor	Dr. Aniruddha Chakaborty
Thesis Title	Analytical Solutions of Quantum & Statistical Multi-State Models in the Time-Domain The thesis present an excellent piece of theoretical research work on time domain analytical solution of few quantum and statistical model systems, with several cases which were earlier thought to be analytically intractable.





CONVOCATION DRESS

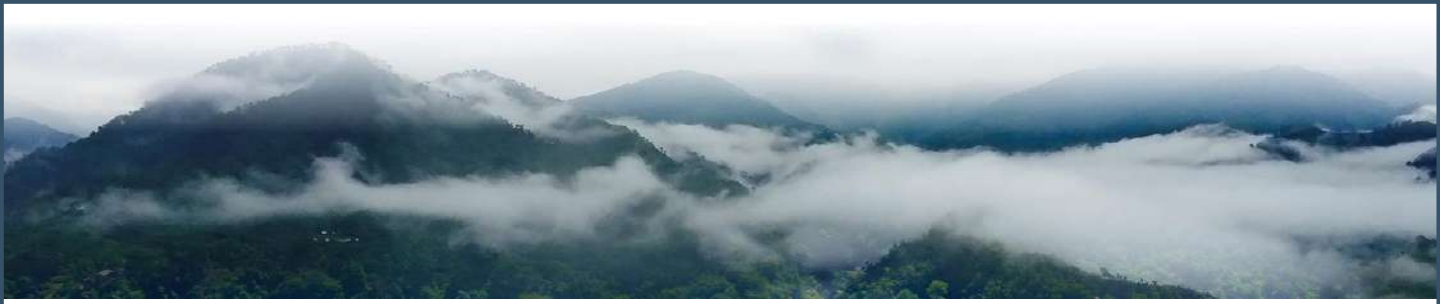


The festive character of convocation is emphasized by the convocation dress.

IIT Mandi's convocation attire references its location in the Himalayan region. It consists of a cape and a Himachali cap. On both cape and cap, a *patti* (woven border) is applied specially designed for IIT Mandi. The *patti* refers to the colors of the IIT Mandi logo: orange, blue, and green. The green parts of the *patti* symbolize vegetation and mountains, the blue parts rivers and limitless sky, and with orange colour paths and energy. The zig-zag pattern is typical for the region.

The base colors of the gowns represent the following categories: Gold: dignitaries; Blue: faculty; Orange: Ph.D. students; Green: M.Sc., MS, and M.Tech. students; Black: B.Tech. students. With this color code, the tradition set by the earlier convocation dress is maintained.

The gown has been designed by the Convocation Gown Committee of IIT Mandi and has been produced with the help of local tailors, weavers, and vendors.

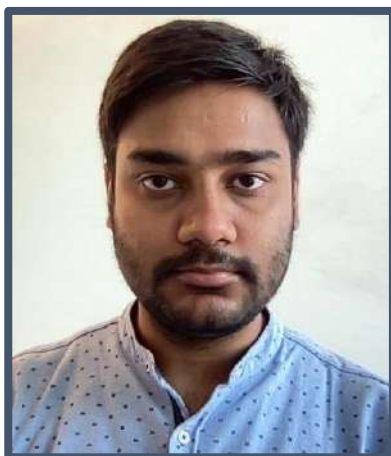


IIT MANDI GRADUATES' PLEDGE

We, the graduates and post-graduates of the Indian Institute of Technology Mandi, hereby pledge That we will be scrupulously honest in all our activities and act with integrity at all times to uphold the honour and dignity of our profession and of our Institute; That we will actively protect and promote the well-being of our environment; That we will uphold and promote the unity and secular ideals of our country; That we will utilize our knowledge in the service of our country in its march towards a just, inclusive, and sustainable society.

ADDRESS BY VALEDICTORIANS

Rishi Sharma



On behalf of the Batch of 2021, I extend a hearty welcome to the Respected Chief Guest Dr. Anil Kakodkar, Chairperson of the Board of Governors IIT Mandi Prof. Prem Vrat, Director IIT Mandi Prof. Ajit Kumar Chaturvedi, the members of the Board of Governors and the members of Senate, faculty, staff, distinguished guests, family members of the graduating students and my dear friends.

It all began on a cloudy day in August 2017. It was the first time for many of us and our parents in the winding roads of the mountains. There were two different emotions travelling with us. For our young souls, the moment we crossed Katindhi, we could see our home for the next four years. With a big smile on our faces, we were excited, we were amazed! What a place to spend the best years of your life. On the other seats, was fear. Our parents were scared of the twisty roads and the valley making way for the river. Parents, I know you have been scared ever since every time you heard the news of a landslide somewhere in Himachal. But, you have kept strong all these years and continued to support us, hiding the fear from us. You are our heroes. Thank you for the constant support! I hope that we can be as strong as you.

IIT Mandi was a wonderful place to be at. But, it wasn't our home because of the landscape. The home was because of the amazing family we were part of comprising of faculty, seniors, batch mates as well as juniors. We haven't always been on the same page as our professors over courses and decisions. Professors, you have always pushed us forward in life. I refrain from taking names because I might miss someone, but some of you have really taught us not only the subject but life. We will be forever grateful for this. If today I am willing to go that one step ahead to help someone, it is because some of you have treated your students with heart-warming compassion during the pandemic. We might not remember the topics you have taught us. We will surely remember how you affected our lives.

Seniors have been an integral part of the cheerful family. Seniors, we have looked up to you. You were doing things that we thought we couldn't do and inspired us to do better. You treated us like family. I don't know if I should thank you for making us so comfortable here that it became painful to leave this place. My batchmates! This is going to be more personal than general. It wasn't easy to settle into a completely new place and start calling it home. 146 strange young adults made it happen. I never felt alone because I always found 145 others struggling the same as me. And finally, you made me believe in wonders. Is it not a wonder how the Design Practicum projects that are in a tragically non-working state at 2 in the night are working convincingly well by the time of open house just 6 hours later? Wow! Juniors, I must tell you that when you joined, the first impression of many of us was that we were much better than you when we started out. I am also sure that you must have had the same feeling for your junior batches. You proved us wrong and we are happy about it. Personally, there were many things where you were better than us, and with pride, I have always been ready to learn from you.

I am sure that the memories you made during the last four years are flashing through your mind during

this ceremony. Let us go over some beautiful and some sad ones together. We began our journey with the five-week induction program and we absolutely despised it while it was going on, because of the tight schedule and early morning exercise sessions. We never expected that we would start missing it as soon as the semester starts. Do you remember your first ever walk to Peepul Point? Think about the ever-existing beauty of Prashar Lake round the year. Don't you want to go back to Griffon Peak and refresh the bird's eye view of both the campuses? Did you go for a walk around the South Campus every night only to hear the soothing sound of the river on that silent dark road? Even for those of us who had seen snowfall before, seeing our own campus completely white with snowfall was delightful. We always prefer South Campus over North Campus and the shift to the North Campus made us realize that. We went back home at the start of the pandemic thinking it would be just a few weeks or a month until we are back on campus. We got lucky to get a chance to be back on campus only to be suddenly sent back. We knew we would not be seeing each other anytime soon. The goodbyes were painful.

Even though the circumstances that brought us to IIT Mandi varied vastly among us, we all contributed to taking IIT Mandi to newer heights with great MTPs, decent performances in Inter-IIT events, publications, great industrial placements and higher studies at top places. Even after the convocation, as we head to a new phase of our lives, I know we will keep making our institute proud.

Dear graduating students, I have been very fortunate to have this opportunity to share these years of my life with you all. I wish you all the best for all your future endeavours. I hope we can meet in-person soon and get the chance to cherish these memories together once again.

Thank you!
Rishi Sharma
B.Tech. CSE, 2021



Mr. Arnav Prasad



Greetings respected Chief Guest Dr. Anil Kakodkar, Director sir Prof. Ajit Kumar Chaturvedi, Chair of the BoG Prof. Prem Vrat, Members of the BoG, Members of the Senate, Faculty and Staff members of the Institute, graduating students & their family members , distinguished guests, and my dear friends.

I am delighted to extend to you, a hearty welcome to this Convocation, on behalf of my fellow batchmates. Alas, we the batch of 2021, so longed to see the proud and happy faces of our family members, our well wishing faculty members and our cheerful fellow peers as we received our degrees on this auspicious day. I still have hopes of meeting you all together in the campus - in the reunion which the institute would plan for us as and when this pandemic situation further improves.

How I wish our journey would have ended, the way it had started. Today 1st August of 2017 comes alive to my mind, and I remember the orientation camp setup, against the lush, green, hilly backdrop of Kamand town.

What a coincidence to conclude our four blissful years, in the same way I commenced - that is, through my speech.

Each of us came as an enthusiastic, nervous fresher. Now, having learnt the secrets of engineering, we step out of college as mature professionals ready to make a difference to society.

Ours was the last batch to study C as our first language, the last batch which could entirely fit in the A1-NKN classroom, the last batch to complete 80 credits worth of IC courses, and I hope - we will be the last batch ever to graduate online. “When the going gets tough, the tough get going” and one thing we all have learned during this pandemic is how to excel even during the toughest of the times.

It is nearly impossible to recapitulate all the moments of our 4 years in this one speech. Cheers to our videography club “Perception” for beautifully summarizing our euphoric life at IIT Mandi - the lovely trips we went to, the fests we celebrated and the memories we made together in the video “Alvida”, thanks to you - Tushar, Rishabh, Satyam and Khubi.

The day I filled in my nomination for the Academic Affairs Secretary of IIT Mandi, was one of the most anxious moments as I had never undertaken such a huge responsibility till date. But the day I won the Gymkhana election by a huge margin, my motivation was boundless - finally I had something better to do than playing video games. For all that I have been able to achieve in this one last year including, provision of 6-month internships, I have all those students to thank, who campaigned strongly for me, and kept their faith in me. I learnt that situations teach us to be persistent and persevering - that’s how we find out who we are. And this ultimately leads us to our goals no matter how impossible they seem.

It is not what we take from our institute, it is what we give it back. Many from our batch have received offers from some of the reputed organizations and start-ups, some have published research papers and gone abroad for higher education in various esteemed institutes while several are working hard to ace competitive examinations - enhancing IIT Mandi’s brand image.

My most favorite bit about IIT Mandi’s curriculum is the philosophy of “learning by doing”. In the process of having many lab courses, we learned values such as team work, cooperation and management, and bonded over every single day of lecture we had. Design Practicum taught us how to understand various aspects of a problem, our Bachelor’s project taught us how to solve these problems, while ISTP taught us that the best solutions are the ones that impact society. And as engineers, we pledge to solve society’s problems in the best way possible.

Our Science and Engineering curriculum is complemented with humanities and social sciences. It helps us understand the society we live in, which also keeps changing - in part because of science and technology!

Another major perk of being at IIT Mandi was that with such a small and closely knit community, we all knew each other very well. Nowhere else will you get to meet your Deans and Associate Deans on such a regular basis, and interact with your faculty members on such a personal level.

All of us have gold hidden within, waiting to be dug out. The USP of IIT Mandi is that it offers a plethora of opportunities to realize your potential.

In school, my parents used to say “JEE kar lo life set ho jayegi”. While taking admission to IIT , they said “CSE le lo life set ho jayegi”. After getting a pre placement offer from Microsoft they said “accept kar lo life set ho jayegi”. Now after graduation, I am being persuaded to do an MBA saying - IIM kar lo life set ho jayegi. Yesterday I asked my father impatiently, “When will my life be set?” And he said smilingly - “Never. The day your life gets set, it will stagnate.” We can go slow. Allow our dreams and goals to change, but we must live a purposeful life.

Four years ago in my orientation speech, I had expressed my shock and disappointment of getting an unsatisfactory rank, feeling that I deserved better than that - to which most of you could relate. Now looking back and connecting all the dots, I think it was the best thing that could have happened to me. I have been really fortunate to travel the span of 4 years with our kind faculty and staff members, supportive peers, seniors, and juniors.

Be present and open to the moment that is unfolding before you. Because, ultimately, your life is made up of moments. So don't miss them by being lost in the past or anticipating the future.

In the end, I would urge my classmates to never underestimate what we're capable of, never underestimate the power we have to be successful. So let us go out there in the world and show that IIT Mandi graduates are capable of transforming society. This end - is where we begin. I wish you all the very best for your future endeavors, dear friends, and a big thank you to my alma mater, IIT Mandi.

Arnav Prasad
B.Tech. CSE, 2021



A banner image at the top of the page showing a sky with soft, white and grey clouds against a pale blue background.

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IIT Mandi 9th Convocation 2021

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