

2015-16

ANNUAL REPORT



SCALING THE HEIGHTS



ANNUAL REPORT

2015-16

INDIAN INSTITUTE OF TECHNOLOGY MANDI
Kamand - 175005, Himachal Pradesh, India

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

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From the Director's Desk



During 2015-16, IIT Mandi celebrated its 7th Annual Foundation Day. The 7-year old IIT has a well-developed residential South Campus. With the pace of construction accelerating after a lull during the previous year, the IIT Mandi-Takshila Campus School started the year 2016-17 in the first new building of the North Campus. This growing School already caters to 88 students from Nursery to Standard V.

In August 2015, we admitted the first batch of I-PhD (Physics) students. Bright young B.Sc graduates with a strong motivation for research are admitted directly into the Ph.D program. With the first batches of M.Sc and M.Tech students set to graduate in 2016, faculty are gearing up to start M.Tech in Biotech, VLSI and Energy Engineering (Mechanical) from 2016-17.

During 2015-16, our faculty and students have won laurels. Athar Aamir Khan, B.Tech 2014, stood 2nd in the prestigious UPSC Civil Services Exam. In the *Nature Index* which covers over 60 of the top international journals in sciences, IIT Mandi was ranked 6th among all IITs based on total publications, and was ranked 3rd on a per-faculty basis. Most of the papers that earned us this ranking are in experimental research. This is a result of our large investment in sophisticated experimental facilities in the AMRC and extraordinary efforts by our young faculty. Besides a number of visiting Bachelors and Masters students from abroad, the year saw two Ph.D students, one from Nigeria and the other from Kenya visiting for 6-12 months of research.

Having established our credentials in teaching and research IIT Mandi plans to ramp up industry-oriented R&D and entrepreneurship. In the first round of funding for industry-oriented research under the UAY scheme of MHRD, IIT Mandi won two grants worth about 3.8 crores. We have launched the IIT Mandi Catalyst, a technology-business incubator, that promises to turn Mandi into a hub of hitech industry.

As new buildings become available, we expect rapid increase in student strength and starting of new programmes at the Masters level. Our young faculty, students and staff have worked hard in difficult circumstances to lay the seeds of a world-class technological institute in the remote Kamand Valley. In the years ahead, these efforts will fructify as IIT Mandi becomes world leader in some area of academic endeavour!

Prof. Timothy A Gonsalves
Director

ACADEMIC STRUCTURE

Academic activities including teaching, learning and research are carried out in three orthogonal but complementary structures. These are Academic Schools, Student Degree Programmes and Research Groups. Each of these is designed to serve a distinct purpose. The three interact in flexible ways to best achieve the academic goals of the Institute. The structure encourages inter-disciplinary learning and research that evolves in step with the march of technological innovation.

Schools

Faculty members belong to broadly and loosely defined Academic Schools. Each School provides a home base for faculty whose interests share some fundamental academic principles. Some faculty members also have joint appointments in other Schools. By broadly grouping faculty members into Schools, IIT Mandi has avoided traditional departments and divisions within the institute. This has been done with a view to actively foster an interdisciplinary culture and collaborative research and projects across disciplines within the institute. Currently, the Schools in the Institute are:

1. School of Computing and Electrical Engineering (SCEE)

Faculty members in the broad areas of Computer Science, Computer Engineering, Electrical Engineering including Electronics and Semiconductors, Signal processing, Automation and Control and Electrical Energy Systems are part of this School.

2. School of Engineering (SE)

Faculty members from other areas of Engineering including Mechanical Engineering and Civil Engineering, Material Science are part of this School.

3. School of Basic Sciences (SBS)

Faculty members from all areas of basic sciences, including Physics, Mathematics, Chemistry and Biology are part of this School.

4. School of Humanities and Social Sciences (SH&SS)

Faculty members from English, German studies, Economics, Sociology, Psychology, Management, History and other areas of Humanities and Social Sciences are part of this School.

During the year 2015-16, 17 Visiting Faculty from established Institutes like IIT Madras, IIT Bombay, etc. participated in different teaching programs. More detailed information on the list of faculty members in each Schools may be found on our website in the section 'Academic Schools' (<http://www.iitmandi.ac.in/academics/schools.html>).

Thrust Area Research Centres

The structure at IIT Mandi allows for the creation of a Research Centre to act as a focus for R&D towards a major regional or national goal. The Centre draws on faculty from different Schools and students from different Degree Programmes. The Centre may have technical and support staff on short-term contracts. Once the goal is achieved, the Centre may be disbanded.

Currently Established Centres

1. Advanced Materials Research Centre (AMRC) with a focus on materials for electrical and electronic applications.

2. Centre for Design & Fabrication of Electronic Devices (C4DFED) with a focus on materials and devices for microelectronic.

Proposed Centres Include

1. BioX was established as a thrust area by the BoG in November, 2012. The focus is on systems biology and synthetic biology with applications to human health, agriculture and the environment.
2. Renewable and clean energy is a research interest of many faculty and the focus of an M.Tech programme.

Degree Programmes

At the start of the Academic Year 2015-16, the following two new programmes were introduced at the Institute:

- Bachelor of Technology (B. Tech) in Civil Engineering (CE)
- Integrated-Ph.D. (I-Ph.D) in Physics

With the introduction of the above programmes, the following is the list of all the degree programmes being conducted at the institute:

1. Bachelor of Technology (B. Tech) in the following engineering disciplines
 - a) Civil Engineering (CE)
 - b) Computer Science & Engineering (CSE)
 - c) Electrical Engineering (EE) and
 - d) Mechanical Engineering (ME)
2. M. S. (by Research) in the following engineering disciplines
 - a) Civil Engineering, Geo-informatics, etc.
 - b) Computer Science and Engineering
 - c) Mechanical Engineering and
 - d) Electrical Engineering
3. M.Sc. in Chemistry
4. M.Tech. in Energy Engineering with Specialisation in Materials
5. Ph. D in Engineering, Basic Sciences and Humanities & Social Sciences
6. Integrated-Ph.D in Physics

The Degree Programmes are designed according to the job and career needs of students, national needs and the strength of IIT. A student in a given Degree Programme is taught and guided by faculty members from several Schools. The Degree Programmes may also be started and wound up based solely on job and student aspirations.

Currently, the annual intake in the B.Tech. programme are the following; CE:25, CSE, EE & ME:40 students in each branch totaling to 145 per year.

A B.Tech. student at IIT Mandi studies foundation courses in basic sciences, engineering sciences and practice, humanities and social sciences, and the core in his/her chosen discipline. Electives in the discipline enable the student to develop significant knowledge in a specialized area with exposure to research trends and developments. The category of free/open electives outside the chosen discipline enables the student to obtain significant inter-disciplinary knowledge. In addition, the curriculum allows

specialization in a 'Minor' area, by taking a set of 3-4 courses in another discipline.

The Institute has plans to introduce more PG programmes like M.Sc. (Applied Mathematics) and M.Tech. (Bio-Technology) from the Academic Year 2016-17 with an initial strength of 12 students in each programme.

Design Practicum Approach

The goal of the B.Tech curriculum at IIT Mandi is to train students to become design engineers capable of conceiving, designing and deploying innovative and cost-effective products and processes for wide spread use in the society.

To this end, the curriculum aims at the integration of innovation and design into the learning process. This is achieved through a 'Design Practicum' Model of learning, which is built into the curriculum.

In the first year of the B.Tech programme, the students carry out a 'reverse engineering' project, where student teams dismantle a common gadget/equipment, understand how it works and then put it back together in working order.

At the second year level, student teams propose product ideas and then build working prototypes of these products. Many of these product ideas are useful to the society. The products which were successfully built and demonstrated last year include an Autonomous Garbage Collection Machine for Parks and Beaches and Automated Road Repair System.

At the third year level, the students have the option of working on an 'Interdisciplinary Socio-Technical Project' (ISTP). In this project, interdisciplinary student teams explore some of the issues/problems of society and propose technology-based solutions for them and also evaluate them from various angles. Some of the ISTP student teams have students from IIT Mandi and from WPI, Boston, working together.

Finally, during the fourth year, the students have the option of doing a Final Year Project either individually or in a group.

Overall, the curriculum at IIT Mandi is designed to encourage and enable the student to become well-qualified and well-rounded Engineers in all respects.

Academic Linkages

The Institute has developed promising research and teaching collaborations with several reputed Institutions around the world. These collaborations have led to exchange visits by a number of Institute's students and faculty members. The existing collaborations include: Blekinge Institute of Technology, Sweden, the IT University, Denmark, Technical University (TU) of Stuttgart and the other eight TU Institutions of Germany, Dublin City University, Ireland, Worcester Polytechnic Institute (WPI), USA and HEPIA - University of Applied Sciences, Switzerland; and, the India-UK Advanced Technology Centre for research on next generation networks. The Institute has also signed agreements with a few Indian Institutions. As mentioned earlier, the collaboration with WPI has led to a semester-long undergraduate research project (Interdisciplinary Socio-Technical Project), in which US-IIT Mandi students work together in teams to address socio-economic issues of the local community.

Statistical Data on Existing Students at IIT Mandi as on 31st March, 2016

Year	B.Tech. (CE, CSE, EE, ME)					M.Sc. (Chemistry)					M.Tech. (Energy Engineering)						
	Gen	OBC	Sc	St	Total	Gen	OBC	SC	ST	Total	Gen	OBC	SC	ST	Total		
2010	--	--	1	1	2	--	--	--	--	--	--	--	--	--	--		
2011	--	--	2	1	3	--	--	--	--	--	--	--	--	--	--		
2012	58	32	16	9	115	--	--	--	--	--	--	--	--	--	--		
2013	57	32	18	9	116	--	--	--	--	--	--	--	--	--	--		
2014	56	34	14	9	113	6	3	1	--	10	2	1	-	-	3		
2015	63	36	22	10	131	10	3	3	2	18	1	1	2	1	5		
GRAND TOTAL					480						28						8

Year	M.S.					Ph.D.					I-Ph.D. (Physics)						
	Gen	OBC	Sc	St	Total	Gen	OBC	SC	ST	Total	Gen	OBC	SC	ST	Total		
2010	--	--	--	--	--	6	2	2	--	10	--	--	--	--	--		
2011	1	--	--	--	1	9	4	2	--	15	--	--	--	--	--		
2012	--	1	--	--	1	21	6	--	--	27	--	--	--	--	--		
2013	7	--	--	--	7	19	2	--	--	21	--	--	--	--	--		
2014	5	2	--	--	7	31	8	1	--	40	--	--	--	--	--		
2015	13	--	--	--	13	45	16	3	1	65	5	1	--	--	6		
GRAND TOTAL					29						178						6

Existing Students by Programme, Batch and Gender as on 31st March, 2016

Course/ Programme	2015-16	
	Male	Female
B.Tech	444	36
M.S.	24	5
Ph.D.	133	45
M.Sc.(Chem)	15	13
M.Tech	8	0
I-Ph.D.(Physics)	2	4

Existing Faculty at IIT Mandi as on 31st March, 2016

	2015-16		
By Gender	Male	Female	Total Faculty
No. of Faculty	76	19	95

Total Sponsored R & D received in Financial Year 2015-16 (Sponsoring Agency and by Academic School)

S.No.	Project No.	Project Title	Sponsoring Agency	Principal Investigator & Co-ordinator(s)	Department /School	Amount Sanctioned in ₹	Duration of Project	Financial Year
EXTERNAL								
1	IITM-SERB/SKP/81	Engineering Chemical Structure to Improve Device Efficiency: Novel Organic Polymers/Macromolecules & their Nanocomposites for Photovoltaic Application	SERB	Dr. Suman Kalyan Pal Co-PIs: Dr. Subrata Ghosh Dr. C.K. Nandi Dr. Suresh Chand (NPL) Dr. Rajiv Kr. Singh (NPL)	School of Basic of Sciences	43,64,000	3 Years	2015-16
2	IITM/UGC-DAE/BR/83	Effect of dimensionality on the electronic structure of some novel transition metal oxides	UGC-DAE	Dr. Bindu Radhamany	School of Basic of Sciences	2,29,800	1 Year	2015-16
3	IITM/BRNS/AS/84	Development of High Temperature Thermoelectric Transport Measurements System to Study Chalcogenide Based Thermoelectric Nano-Composites	BRNS	Dr. Ajay Soni	School of Basic Sciences	25,00,000	3 Years	2015-16
4	IITM/SERB/AS/85	Layered Chalcogenide Nanocomposites for Thermoelectric Applications	SERB	Dr. Ajay Soni	School of Basic Sciences	26,00,000	3 Years	2015-16
5	IITM/DBT/AP/88	Immuno-modulating effect of Taenia solium cyst antigens on immune reactive cells and their role in pathogenesis	DBT	Dr. Amit Prasad	School of Basic Sciences	32,50,000	5 Years	2015-16

6	IITM/DS T/DB/ 89	Decisions from experience: AN ERP investigation of decision based on valuation of outcomes and probabilities	DST	PI: Ms. Debarati Bandhyopadhyay Mentor: Dr. Varun Dutt	School of Computing & Electrical Engineering	18,56,000	2 Years	2015-16
7	IITM/AS PL/ASO /90	Detection of Cervical Cancer from pap smear images	Aindra Systems Pvt. Ltd.	Dr. Anil K. Sao (PI) Dr. Arnav Bhavsar (Co-PI)	School of Computing & Electrical Engineering	6,50,000	2 Year	2015-16
8	IITM/DS T/AKP/ 91	Setting up centre for innovative technologies for Himalayan Region under CSTR Scheme	DST	Dr. Arti Kashyap	School of Computing & Electrical Engineering	31,40,000	2 Years	2015-16
9	IITM/DS T/VK/ 92	Bioinspired Advanced Materials for Enhanced Solar Energy Conversion in Organic Photovoltaics	DST-SERB	Dr. Venkata Krishnan	School of Basic Sciences	20,87,000	3 Years	2015-16
10	IITM/De itY- MLA/AS O/93	Visvesvaraya PhD Scheme for Electronics & IT in 2015-16	DeitY- MLA	Dr. Anil K. Sao	School of Computing & Electrical Engineering	2,17,13,000	5 Years	2015-16
11	IITM/DS T/AK/ 94	Ab-initio search of new Magnetolectric Multiferrole Materials	DST	Dr. Arti Kashyap	School of Computing & Electrical Engineering	57,36,538	3 Years	2015-16
12	IITM/DS T/NG/ 96	Identification of the Hedgehog pathway modulators in non-small cell lung cancer stem cells	DST- INSPIRE	Dr. Neha Garg	School of Basic Sciences	35,00,000	5 Years	2015-16
13	IITM/DS T/AH/ 97	Generating Renewable Energy Sources Using Anthropogenic CO2 for Sustainable Future	DST-SERB	Dr. Aditi Halder	School of Basic Sciences	30,40,000	3 Years	2015-16

14	IITM/ISRO/SG/98	Development of Indigenous DUV photoresists for 180 nm process technology at Semi-conductor Lab (SCL) Mandi: Make in India	SCL Mohali	Dr. Subrata Ghosh	School of Basic Sciences	81,00,000	3 Years	2015-16
15	IITM/SERB/AJ/99	Stimuli Responsive Smart Nanocarriers for Theranostics Application	SERB	Dr. Amit Jaiswal	School of Basic Sciences	22,56,000	3 Year	2015-16
16	IITM/SERB/RG/100	Intrinsically Disordered Proteins: Folding and Binding Mechanisms of Transactivation Domain of Adenoviral Oncoprotein E1A with its partner TAZ2	SERB	Dr. Rajanish Giri	School of Basic Sciences	27,36,000	3 Years	2015-16
17	IITM/DST-GITA/SG/101	Novel Non Chemically Amplified Molecular Photoresists for Nanoelectronics at the 20nm Node or Beyond	DST-GITA	Dr. Subrata Ghosh	School of Basic Sciences	29,29,500	3 Years	2015-16
18	IITM/DST-SERB/RV/102	Photocatalytic Transparent Glass Nano/micro crystal composites for waste water treatment	DST-SERB	Dr. Rahul vaish	School of Engineering	28,05,200	3 Years	2015-16
19	IITM/MoC/RT/103	Training in Pahari Painting: A step towards the presentation of Himalayan Culture	Ministry of Culture	Dr. Ramma Thakur	School of Humanities & Social Sciences	7,00,000	1 Years	2015-16
20	IITM/DST/VB/104	Site specific growth and nanomanufacturing of aligned carbon nanotube(CNT) for device	DST	Dr. Viswanath Balakrishnan	School of Engineering	28,56,000	3 Years	2015-16
TOTAL						7,70,49,038		

S.No.	Project No.	Project Title	Sponsoring Agency	Principal Investigator & Co-ordinator(s)	Department /School	Amount Sanctioned in ₹	Duration of Project	Financial Year
INTERNAL								
1	IITM/INT/SKS/01	Centre for Design & Fabrication of Electronic Device [C4DFED], IIT Mandi	IIT Mandi	Dr. Satinder Kumar Sharma	School of Computing & Electrical Engineering	9,00,000	2 Years	2015-16
2	IITM/INT/SKS/02	NKN Facility	IIT Mandi	Dr. Satinder Kumar Sharma	School of Computing & Electrical Engineering	12,00,000	1 Year	2015-16
3	IITM/INT/TAG/03	Cloud Computing For Rural India	IIT Mandi	Prof. Timothy A. Gonsalves	School of Computing & Electrical Engineering	10,00,000	3 Years	2015-16
4	IIT/INT/SKM/04	Botanical and Medicinal Plant Garden Project	IIT Mandi	Dr. Shyam Kumar Masakapalli	School of Basic Sciences	5,84,000	1 Years	2015-16
5	IITM/INT/BP/05	IIT Mandi Entrepreneurship Cell (IEC)	IIT Mandi	Dr. Bhavender Paul	School of Humanities & Social Sciences	2,00,000	2 Years	2015-16
TOTAL						38,84,000		

S.No.	Project No.	Project Title	Sponsoring Agency	Principal Investigator & Co-ordinator(s)	Department /School	Amount Sanctioned in ₹	Duration of Project	Financial Year
SEED GRANT								
1	IITM/SG/MM/35	Controllabilty of Some Differential Equations	IIT Mandi	Dr. Muslim Malik	School of Basic Sciences	4,64,000	3 Years	2015-16
2	IITM/SG/RD/36	Mayans in 19th Century Mexico & Belize	IIT Mandi	Dr. Rajeshwari Dutt	School of Humanities and Social Sciences	6,20,000	3 Year	2015-16

3	IITM/SG /PM- AJ/37	Targeted delivery of therapeutics to pancreatic beta cells by nanocarriers to augment glucose-dependent insulin secretion	IIT Mandi	Dr. Prosenjit Mondal Dr. Amit Jaiswal	School of Basic Sciences	20,00,000	3 Years	2015-16
4	IITM/SG /AP/38	Understanding the role of inflammaosomes in pathogenesis of Taenia solium cyst infection	IIT Mandi	Dr. Amit Prasad	School of Basic Sciences	7,00,000	2 Year	2015-16
5	IITM/SG /PR/39	Multimodal Identification of Birds from Visual and Acoustic Data	IIT Mandi	Dr. Padmanabhan Rajan	School of Computing and Electrical Engineering	30,00,000	3 Years	2015-16
6	IITM/SG /SRC/ 40	Development of point of care screening and monitoring device for ischemic stroke risk assessment	IIT Mandi	Dr. Shubhajit Roy Chowdhury	School of Computing and Electrical Engineering	5,00,000	3 Years	2015-16
7	IITM/SG /BJ/41	Power Management and Control of DC Microgrids	IIT Mandi	Dr. Bhakti Joshi	School of Computing and Electrical Engineering	10,40,000	3 Years	2015-16
8	IITM/SG /JKR/ 42	Development of Solid Lipid Nanoparticles as Nanocarriers for Drug Delivery	IIT Mandi	Dr. Jaspreet Kaur Randhawa	School of Engineering	6,50,000	3 Years	2015-16
9	IITM/SG /RMR/ 43	Application Specific Sparse Representation for Images	IIT Mandi	Dr. Renu M. Rameshan	School of Computing and Electrical Engineering	5,39,600	3 Years	2015-16
10	IITM/SG /DVP/ 44	Pool Boiling Heat Transport on Micro / Nano Engineered Surfaces	IIT Mandi	Dr. Dheeraj V Patil	School of Computing and Electrical Engineering	6,00,000	3 Years	2015-16
TOTAL						1,05,33,600		

S.No.	Project No.	Project Title	Sponsoring Agency	Principal Investigator & Co-ordinator(s)	Department /School	Amount Sanctioned in ₹	Duration of Project	Financial Year
CONSULTANCY								
1	IITM/C ONS/PP LP/VD/ 05	Visualization of Big Data in Pharmaceutical Industry	Purdue Pharma L.P., USA	Dr. Varun Dutt	School of Computing and Electrical Engineering	USD\$8,999	9 Months	2015-16
2	IITM/C ONS/BH EL/RK/ 06	Development of analytical method to determine transient torques developed under various faults and its grid interaction effects on turbine generator shaft system	BHEL, Ranipur, Haridwar Uttara-khand	Dr. Rajeev Kumar Co-PI: Dr. B.S. Rajpurohit	School of Engineering And School of Computing and Electrical Engineering	17,87,556	15 Months	2015-16

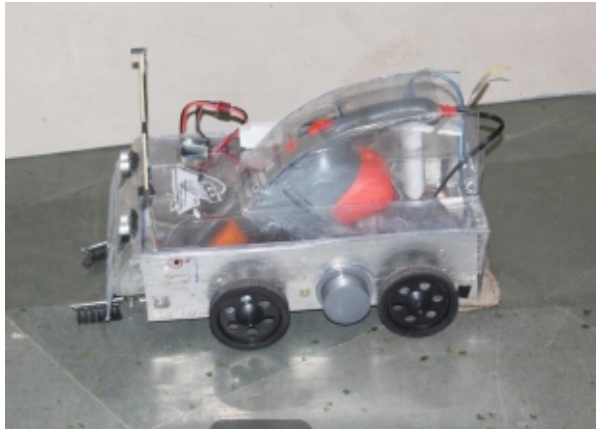
DESIGN PRACTICUM

Design Practicum is a unique course of IIT Mandi offered to second year B. Tech. students. Students learn product design, development, manufacturing and even marketing skills through this practicum course. Interdisciplinary teams of six students, randomly selected from different branches propose product ideas and then build working prototypes. Many of these product ideas are derived from the needs of the society. This year students made nineteen projects which are listed below;

Team No.	Title of Project	Description
1	Robomop	An automatic sweeping and mopping robot
2	Bank Assistant	A substitute to the traditional and tiring form-filling processes for the blind and the illiterate
3	Automatic Ration Vending Machine	Our product automatically dispenses ration to the card holders along with the immediate bill generation
4	Self Arranging Chairs	A module to automatically move and arrange chair
5	AASRA - Smart Wheel Chair	A smart wheel chair with facility to increase height to reach for objects when sitting and to use wash-room
6	Autonomous Lawn Mower	A reprogrammable smart machine to mow the grass in any pattern provided by the user
7	Hand Gesture System	Replication of hand gesture through robotic arm in order to reduce the hazards in chemical industries
8	Ignis Bellator (Fire-Warrior)	A robot to detect fire, alert you and extinguish it
9	Automatic Rice Planting Machine	This is an automatic Rice (sapling) planting machine which plants sapling in wet and loose soil
10	Epileptic Seizure Detector	Our product aims to make the life of both epileptic patients and their caretakers easier by continuously monitoring the patient
11	Communication Device for Physically Challenged	A device that communicates for speech impaired people by blinking eyes
12	Mess Bot	The smart waiter
13	Intelligent Shopping Cart	An intelligent shopping cart which saves time while shopping and works as a search engine for products
14	3-D Holographic Projector	A 2D projector converted to 3D
15	LPG Safety and Automatic Booking Device	A portable wireless LPG stand which automatically books a gas two days before and notifies it, detects the leakage of gas from the cylinder and alarms the user
16	An Essential Tremor Support (ETS)	Help reduce the tremors in people suffering from neurological disorder
17	Smart Power Room	A device that can help an individual generate electricity on his own for his daily household use
18	Wall Painting Robot	An intelligent robot that will give walls an even layer of paint
19	Share A Screen	Multiple viewers can view and hear different content on the same TV screen using our product

All the above projects (working prototypes) were displayed to external judges and visitors for evaluation in IIT Mandi Open House. Some of the leading Design Practicum projects were identified and are given below.

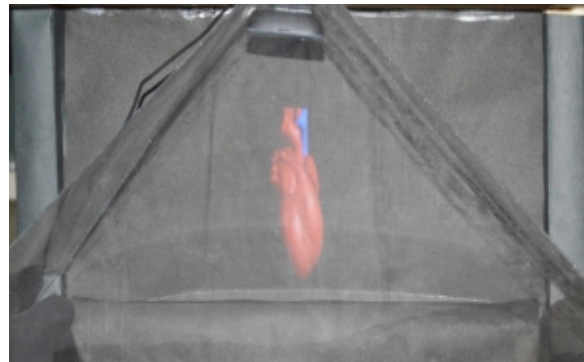
Robomop - This product was developed by a team led by Maeghel Puri mentored by Prof. S. Ray and Dr. Hitesh Srimali. This device automatically sweeps and mops the floor.



Automatic Ration Vending Machine - This product automatically dispenses ration to the card holders along with the immediate bill generation. This team was led by Akshay Mathew and mentored by Dr. Kaustav and Dr. Shyam Kumar Masakpalli.



3-D Holographic Projector - The team converted a simple 2D projector to 3D projection and visualization system. The team was led by Shradhan Kumar and mentored by Dr. Viswanath Balakrishnan and Dr. Astrid Kiehn.



ACADEMIC SCHOOLS

School of Computing and Electrical Engineering (SCEE)

The school of computing and electrical engineering (SCEE) has made significant progress in maintaining excellence in teaching and research. State of the art facilities have been developed for teaching and research in technologies related to Computing, Communication, Electronics and Electrical Engineering. Currently, there are 25 faculty doing research in areas covering a broad spectrum of theoretical and application-based topics. In the year 2016, school has initiated a new program, M.Tech in Electrical Engineering with VLSI specialization. The curriculum of this program has been planned emphasizing hands-on learning approach with equal collaboration with industry. Three batches of B.Tech. students have passed out from the institute demonstrating their capability to the world. One of the notable highlight is Mr. Athar Aamir Khan of 2010-2014 EE batch who has secured 2nd Rank in Indian Administrative Service (IAS) exam in 2016. In addition, our faculty are involved in various projects of worth Rs: 17 crores from government and private funding agencies, which would contribute to the society immensely.

Faculty

Dr. A. K. Sao

Chairperson

Associate Professor

Specialisation: Image processing

PhD from IIT Madras

Home Town : Bhilai, Chattisgarh

Phone: 01905-267066

Email: anil

Dr. Aditya Nigam

Assistant Professor

Specialisation: Biometrics, Computer Vision,
Image Processing

Ph.D. from IIT Kanpur

Home Town: Kanpur, Uttar Pradesh

Phone: 01905-267152

Email: aditya

Dr. Arnav Bhavsar

Assistant Professor

Specialisation: Image Analysis, Computer Vision

Ph.D. from IIT Madras

Home Town: Surat, Gujarat

Phone: 01905-267049

Email: arnav

Dr. Arti Kashyap

Associate Professor (Joint Appointment)

Specialisation: Magnetism and Magnetic Materials

PhD from IIT Roorkee

Home Town: Mandi, Himachal Pradesh

Phone: 01905-267042

Email: arti

Dr. Astrid Kiehn

Visiting Associate Professor

Specialisation: Distributed Algorithms,
Verification, Theoretical Computer Science

PhD from TU-Munich University, Germany

Home Town: Hamburg, Germany

Phone: 01905-267122

Email: astrid

Prof. B. D. Chaudhary

Dean (Academics)

Emeritus Professor

Specialisation: Software Technology

PhD from I.I.T. Kanpur

Home Town: Darbhanga, Bihar

Phone: 01905-267068

Email: bdchaudhary

Dr. Bharat Singh Rajpurohit
Dean (Faculty)
Associate Professor
Specialisation: Power Electronics Application to Power Systems
PhD from IIT Kanpur
Home Town : Jodhpur, Rajasthan
Phone: 01905-267046
Email: bsr

Dr. Dileep A. D.
Assistant Professor
Specialisation: Pattern Recognition, Kernel Methods for Pattern Analysis, Machine Learning, Speech Technology, Computer Vision
Ph.D. From IIT Madras
Home Town: Udupi, Karnataka
Phone: 01905-267046
Email: addileep

Dr. Kunal Ghosh
Assistant Professor
Specialisation: Solar Photovoltaics
PhD from Arizona State University, USA
Home Town: Kolkata, West Bengal
Phone: 01905-267145
Email: kunal

Dr. Padmanabhan Rajan
Assistant Professor
Specialisation: Speech processing, speaker recognition
PhD from IIT Madras
Home Town : Cochin, Kerala
Phone: 01905-267049
Email: padman

Dr. Renu M. Rameshan
Assistant Professor
Specialisation: Image Processing
PhD from IIT Bombay
Home Town: Trivandrum, Kerala
Phone: 01905-267051
Email: renumr

Dr. Bhakti Madhav Joshi
Assistant Professor
Specialisation: AC Drives and Control
PhD from IIT Bombay
Home Town: Pune, Maharashtra
Phone: 01905-267051
Email: bhakti

Dr. Hitesh Shrimali
Assistant Professor
Specialisation: Analog and Mixed Signal VLSI Design, Analog-to-Digital Converters, Design and Modeling of Radiation Hard Circuits
Ph.D. from: IIT Delhi
Home town: Ahmedabad, Gujarat
Phone: 01905-267113
Email: hitesh

Dr. Maben Rabi
Assistant Professor
Specialisation: Control systems
PhD from University of Maryland, USA
Home Town : Chennai, Tamilnadu
Phone: 01905-267053
Email: maben

Dr. Ramesh Oruganti
Emeritus Professor
Specialisation: Power Electronics, Solar Photovoltaic Energy Systems
PhD from Virginia Tech, USA
Phone: 01905-267123
Email: ramesho

Dr. Samar Agnihotri
Assistant Professor
Specialisation: Information Theory, Communication Complexity, Wireless Communications
Ph.D. from IISc, Bangalore
Home town: Delhi
Phone: 01905-267907
Email: samar

Dr. Satinder Kumar Sharma

Associate Professor
Specialisation: Nanoelectronics, Sensors,
Photovoltaic & Self Assembly
PhD from Kurukshetra University
Home Town : Mandi, Himachal Pradesh
Phone: 01905-267134
Email: satinder

Dr. Sriram Kailasam

Assistant Professor
Specialisation: Distributed Systems (Cloud
Computing)
PhD from IIT Madras
Home Town: Mumbai, Maharashtra
Phone: 01905-267120
Email: sriramk

Dr. Shubhajit Roy Chowdhury

Assistant Professor
Specialisation: Biomedical Embedded Systems,
Non invasive diagnostic systems, Near Infrared
Spectroscopy, VLSI Architectures
PhD from Jadavpur University, Kolkata
Home Town: Kolkata, West Bengal
Phone: 01905-267110
Email: src

Dr. Tushar Jain

Assistant Professor
Specialisation: Control theory, fault tolerant
control, industrial process control
PhD from Université de Lorraine, France
Home Town: Meerut, Uttar Pradesh
Phone: 01905-267117
Email: tushar

Dr. Varun Dutt

Assistant Professor (Joint Appointment)
Specialisation: Artificial Intelligence, Human-
Computer Interaction, Judgment and Decision
Making, Environmental Decision Making
Ph.D. From Carnegie Mellon University (USA)
Home Town: Lucknow, Uttar Pradesh
Phone: 01905-267041
Email: varun

Dr. Satyajit Thakor

Assistant professor
Specialisation: Communication Theory,
Information Theory, Network Coding
PhD from Institute for Telecommunications
Research, University of South Australia
Home Town: Anand, Gujarat
Phone: 01905-267150
Email: satyajit

Dr. Subashish Datta

Assistant Professor
Specialisation: Control Theory
Ph.D. from IIT Bombay
Home Town: Baripada, Odisha
Phone: 01905-267137
Email: sd

Dr. Timothy A Gonsalves

Director
Professor
Specialisation: Computer Networks and Distributed
Software Systems
PhD from Stanford University, USA
Home Town: Ooty, Tamil Nadu
Phone: 01905-267001
Email: tag

Dr. Varsha Jain

Teaching Fellow
Specialisation: Computer Networks and Distributed
Systems, Energy Efficient Networks, Embedded
Systems.
PhD from University of Ulster, UK
Home Town: Jaipur, Rajasthan
Phone: 01905-267116
Email: varshajain

Dr. Yvonne Dittrich

Adjunct Professor
Specialisation:
PhD from University of Hamburg, Germany
Home Town: Copenhagen, Denmark
Email: ydi

Mentor Professors

Prof. Deepak Khemani
 Professor
 Department of Computer Science and Engineering, IIT Madras
 Specialisation: Artificial Intelligence
 PhD from IIT Bombay.
 Phone: +91 44 2257 4365
 Email: khemani

Prof. Hema A Murthy
 Professor
 Department of Computer Science and Engineering, IIT Madras
 Specialisation: Speech, Signal Processing, Computer Networks
 Ph.D. from IIT Madras
 Email: hema

Dr. Sanjeev Manhas
 Associate Professor
 Department of Electronics and Communication Engineering, IIT Roorkee
 PhD from De Montfort University, Leicester, UK
 Phone: +91-1332-285174
 Email: samanfec

Research Projects

Externally Sponsored Research Projects

S.No.	Project Title	Sponsoring Agency	Investigator	Amount Sanctioned in ₹	Duration of Project
1	Special Man-power development program Date of sanction: 29.12.15 Date of completion: 28.12.21	DeitY	Dr. Hitesh Shrimali	60,38,000	5 Years
2	Descisions from experience: AN ERP investigation of descision based on valuation of outcomes and probablities Date of sanction: 10.8.15 Date of completion: 09.08.17	DST	PI: Ms. Debarati Bandhyopadhyay, Mentor: Dr. Varun Dutt	18,56,000	2 Year
3	Detection of Cervical Cancer from pap smear images Date of sanction: 01.08.15 Date of completion: 31.07.17	Aindra Systems Pvt. Ltd.	PI: Dr. Anil Sao, Co-PI: Dr. Arnav Bhavsar	65,00,000	2 Years
4	Setting up centre for innovative technologies for Himalayan Region under CSTR Scheme Date of sanction: 17.07.15 Date of completion: 16.07.17	DST	Dr. Arti Kashyap	31,40,000	2 Years
5	Visvesvaraya PhD Scheme for Electronics & IT in 2015-16 Date of sanction: 28.08.15 Date of completion: 27.08.20	DeitY-MLA	Dr. Anil K. Sao	2,17,13,000	5 Years
6	Ab-initio search of new Magnetoelectric Multiferrole Materials Date of sanction: 04.08.15 Date of completion: 03.08.18	DST	Dr. Arti Kashyap	57,36,538	3 Years

Seed Grant Projects

S.No.	Project Title	File No.	Investigator	Amount Sanctioned in ₹	Duration of Project
1	Multimodal Identification of Birds from Visual and Acoustic Data Date of Sanction: 03.11.15 Date of Completion: 02.11.18	IITM/SG/PR/39	Dr. Padmanabhan Rajan	30,00,000	3 Years
2	Development of point of care screening and monitoring device for ischemic stroke risk assessment Date of Sanction: 9.12.15 Date of Completion: 8.12.18	IITM/SG/SRC/40	Dr. Shubhajit Roy Chowdhury	5,00,000	3 Year
3	Power Management and Control of DC Microgrids Date of Sanction: 22.12.15 Date of Completion: 21.12.18	IITM/SG/BJ/41	Dr. Bhakti Joshi	10,40,000	3 Years
4	Application Specific Sparse Representation for Images Date of Sanction: 29.02.16 Date of Completion: 28.02.19	IITM/SG/RM/R/43	Dr. Renu M. Rameshan	5,39,600	3 Years

Consultancy Projects

S.No.	Project Title	Faculty Name	Agreement signed with	Amount in USD/INR	Period
1	Visualization of Big Data in Pharmaceutical Industry s Signing Date- 10/09/2015 Completion Date- 16/06/2016	Dr. Varun Dutt	Purdue Pharma L.P., USA	USD\$8,999	9 Months
2	Development of analytical method to determine transient torques developed under various faults and its grid interaction effects on turbine generator shaft system Signing Date- 23/11/2015	Dr. Rajeev Kumar Co-PI: Dr. B.S. Rajpurohit	BHEL, Ranipur, Haridwar, Uttarakhand	17,87,556	15 Months

Progress of the Research Projects

PI: Dr. Varun Dutt

Why do people exhibit a lack of Understanding about Earth's Climate? Influence of Repeated feedback

In this seed-grant project from IIT Mandi, the main objective is to test the effectiveness of feedback via computer simulations in improving people's understanding about climate change. There were four different experiments proposed in this project involving heterogeneity, homogeneity, and feedback complexity. Three experiments have yielded good results and the last experiment is under progress currently.

PI: Dr. Varun Dutt

Building a Secure and Trustworthy Cyberspace: A Behavioral Game-Theoretic Approach

In this project from DST, the main objective is to use behavioral game theory to understand the dynamics between hackers and analysts over simulated computer networks. There were six different experiments proposed as part of this project investigating factors such motivation, information availability, and technology constraints on decisions of hackers and analysts. Several of these factors have already been investigated yielding good results. Computational modeling of the collected data is currently underway.

PI: Dr. Debarati Bandyopadhyay

Decisions from experience: AN ERP investigation of decision based on valuation of outcomes and probabilities

In this project from DST, the main objective is to do an ERP investigation of decision based on valuation of outcomes and probabilities. Thus, we are interested in understanding the neural processes that determine our perception of probabilities and outcomes in the real world. This project has led to one recent Ph.D. graduate to pursue her post-doc work at IIT Mandi in this important area. Several experiments on the project are currently underway with good outcomes.

PI: Dr. Varun Dutt

Machine Learning and Data Mining for Sales and Analytics in Pharma

The main objectives of this industry funded international project are : A.) To study the social network of doctors and to pin-point critical physicians in the U.S. market that are most effective for treating patients. B.) To track patients through their illness journeys and suggest patterns between patients, medications, and illnesses.

The social network and patient journey analyses have been done statistically. Next, we are trying to do predictive analyses involving machine learning algorithms.

PI: Dr. Varun Dutt

Visualization of Big Data in Pharmaceutical Industry

The main objective of this industry funded project from Purdue Pharma L.P., USA was to develop computer visualizations, which enable us to observe patterns in Big-Data. As part of this project, computer visualizations involving parallel coordinates were made. Later, these visualizations were used to investigate patterns in Big Data in pharma industry concerning patients, their demographics, and medicine consumption. This project ended earlier this year and received a commendation from Purdue Pharma, L.P., the company who gave this project.

PI: Dr. Varun Dutt

Cyber Security: Understanding the role of deception as a strategy in cyber-attack detection

The main objective of this DeitY-funded project in collaboration with researchers from Carnegie Mellon University, USA is to investigate deception as a strategy in countering cyber-attacks on computer networks. A deception framework has been made and used for experiments involving timing and amount of deception strategies. Also, modeling of collected data using computer algorithms is underway. We are getting very good results on the project and several publications are underway.

PI: Dr. Subashsish Datta

Controller Optimizations for Differential-Algebraic Systems

This is a SERB sponsored project. The objective of this project is to develop control design algorithms for differential-algebraic systems by optimizing the following objectives: i) amplitude of control signal and

ii) order of the controller. In addition to the theoretical developments, it is planned to implement the results in the real world problems arise in power networks and micro-grids within multi-agent framework.

The theoretical developments for reducing the amplitude of control signal are in progress. A partial work in this direction is presented at the Indian control conference, Hyderabad, January 2016.

PI: Dr. Shubhajit Roy Chowdhury, Co PI: Dr. Aditya Nigam, Dr. Arnav Bhavsar, Dr. Anil K Sao, Dr. Renu M. Rameshan, Dr. Deepti Bathulla

Development of a low cost low magnetic field MRI for Point of Care Testing, and associated CAD system

Development of low cost and portable MRI device that can be used effectively in rural areas. Since it is a low magnetic field device, we are also developing its associated CAD system.

Presently it is an IIT Mandi and IIT Ropar Consortium funded project. Soon we are about to submit it to external funding agency. The objective of this project is to develop a portable and low cost MRI device that can be used in any remote/rural area and can effectively perform a fast screening of fatal injuries of limbs and brain. Initial mathematical device modeling, image quality enhancement and development of knee MRI segmentation software is under progress.

PI: Dr. A. D. Dileep, Co PI: T.A. Gonsalves, Sriram Kailasam, Varun Dutt, Dr. Aditya Nigam Samar Agnihotri

Design of Advanced Big-Data Analytics in the CygNet Network Management System for Large Telecom Networks

Development of a scalable cloud-based architecture for real-time pattern mining on event streams in Telecom networks that can enable root cause as well as predictive fault analysis.

It is a project funded under UAY scheme with 75% funding from MHRD and 25% from NMS Works. Till now a scalable architecture for real-time pattern matching, that can integrate complex event processing engine Esper with Storm has been discussed and its overhead evaluation is in progress under different queries. Also, syslog files are parsed and loaded into a database for applying various pattern mining tools.

PI: Dr. Anil K. Sao

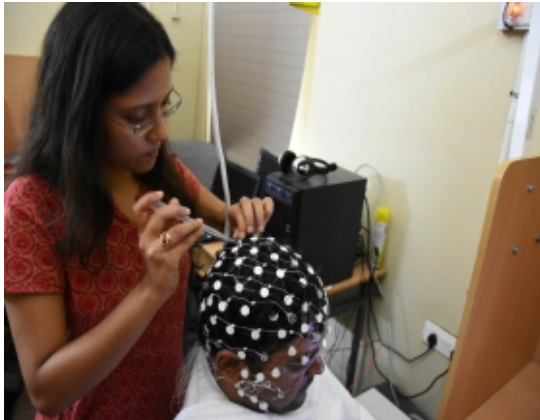
Development of Text to Speech systems in Indian Language

Text to speech (TTS) system as its name suggest converts text into spoken voice output. In general, a TTS system can synthesize speech corresponding to any string of text characters, and can be used as an aid to the visually challenged by offering a computer generated speech. This is a project focused on (a) developing TTS systems for Indian languages, (b) improving quality of the synthesized speech, and (c) integrating small foot print TTS systems with disability aids and various other applications. This is a consortium based project involving 13 institutions (IIT Mandi being one of them), headed by Computer Science and Engineering, IIT Madras, and funded by the Department of Electronics and Information Technology (Deity), Ministry of Communication and Information Technology (MCIT), Government of India. It has be noted that the systems are designed using the same framework, open source system, for all the thirteen languages.

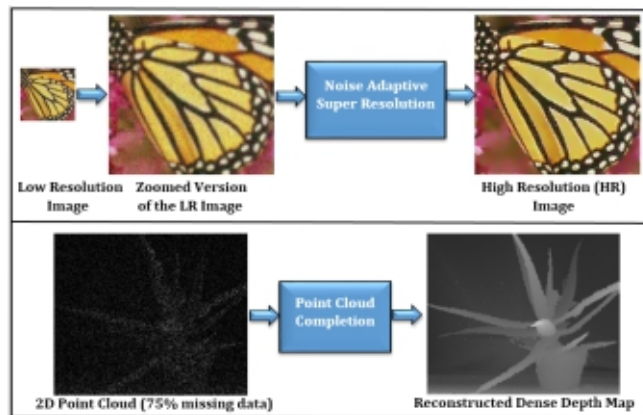
IIT Mandi is responsible for building USS and HTS systems for Rajasthani language using both male and female voices. USS systems are built using syllable as a unit, with a few utterances labeled at phoneme level are used for implementing fallback. The HTS systems are built using phoneme as a unit. Both monolingual (Rajasthani) and bilingual (Rajasthani + Rajasthani accented English) USS and HTS systems are built at IIT Mandi. A robabilistic approach is proposed for selecting units for speech synthesis based on acoustic similarity. Differences in fundamental frequency (f_0), energy and duration of consecutive pairs

of units were observed. The differences were converted to probability density functions. The units were then chosen based on the values of duration difference, average energy difference and/or average f 0 difference that best fit the distribution. In addition, we also explored the use of compressed sensing and sparse representation based signal processing for reducing the footprint of speech corpus in USS systems.

Important Photographs/Albums



32-Channel EEG/ERP device being used on DST-funded project at ACS Lab, IIT Mandi



Paper Published In National & International Journals

- S. Sarma, S. Agnihotri, J. Kuri. Secure communication in amplify-and-forward networks with multiple eaves droppers: decoding with SNR thresholds. Springer Wireless Personal Communications, vol. 85, no. 4, Dec. 2015.
- A. Bhardwaj and S. Agnihotri. A resource allocation scheme for device-to-device multicast in cellular networks. International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC) 2015, Hong Kong, Aug. 2015.
- Reena Singh and Timothy A. Gonsalves, "A Pragmatic Approach Towards Secure Sharing of Digital Objects," Security and Communication Networks, vol. 8, no. 18, pp. 3914 - 3926, Dec. 2015.
- R-Apriori: An Efficient Apriori based Algorithm on Spark Sanjay Rathee, Manohar Kaul and Arti Kashyap PIKM '15 Proceedings of the 8th Workshop on Ph.D. Workshop in Information and Knowledge Management, p27-34, ACM, New york, 2015
- Biswas, P., Dutt, V., & Langdon, P. (2016). Comparing Ocular Parameters for Cognitive Load Measurement in Eye-Gaze-Controlled Interfaces for Automotive and Desktop Computing Environments. International Journal of Human-Computer Interaction, 32(1), 23-38.
- Biswas, P., & Dutt, V. (2015). Effect of Road Conditions on Gaze-control Interface in an Automotive Environment. In Universal Access in Human-Computer Interaction. Access to the Human Environment and Culture (pp. 108-116). Springer International Publishing.
- Dutt, V., & Gonzalez, C. (2015). Accounting for outcome and process measures in dynamic decision-making tasks through model calibration. Journal of Dynamic Decision Making, 1(1).
- Gonzalez, C., Ben-Asher, N., Martin, J. M., & Dutt, V. (2015). A cognitive model of dynamic cooperation with varied interdependency information. Cognitive Science, 39(3), 457-495.
- Medha Kumar and Varun Dutt, Understanding Cooperative Behavior against Climate Change through a Public Goods Game, Climate Change, 2015, 1 (2), 68-71.
- Satyajit Thakor, Alex Grant and Terence Chan, "Cut-Set Bounds on Network Information Flow," in IEEE Transactions on Information Theory, vol. 62, no. 4, pp. 1850-1865, April 2016.

doi: 10.1109/TIT.2016.2529643

- Subashish Datta, Debraj Chakraborty and Madhu N. Belur, "Reduced Order Controller Synthesis with Regional Pole Constraint", *International Journal of Control*, Vol: 89(2), pp: 221-234, 2016.
- S.Ramasahayam, S.Roy Chowdhury, "Non Invasive Estimation of Blood Urea Concentration using Near Infrared Spectroscopy", *International Journal of Smart Sensing and Intelligent Systems*, Vol. 09, No. 02, pp. 449-467, 2016.
- S.Roy Chowdhury, "High resolution detection of sustained ventricular and supra ventricular tachycardia through FPGA based fuzzy processing of ECG signal", *Medical and Biological Engineering and Computing*, Vol. 53 No. 10, pp. 1037-1047, 2015.

Book/Book Chapters Published

- Biswas, P., & Dutt, V. (2015). Effect of Road Conditions on Gaze-control Interface in an Automotive Environment. In *Universal Access in Human-Computer Interaction. Access to the Human Environment and Culture* (pp. 108-116). Springer International Publishing.

Conferences Attended And Papers Presented

- Satyajit Thakor, Alex Grant and Terence Chan, "Cut-Set Bounds on Network Information Flow," in *IEEE Transactions on Information Theory*, vol. 62, no. 4, pp. 1850-1865, April 2016. doi: 10.1109/TIT.2016.2529643
- Aggarwal, P., Maqbool, Z., Grover, A., Singh, S., Pammi, V. S. C., & Dutt, V. (2015, June). Cyber Security: A game theoretic analysis of defender and attacker strategies in defacing-website games. In *International IEEE Conference on Cyber Situational Awareness, Data Analytics and Assessment (CyberSA2015)*, London, UK (pp. 1-8).
- Chaturvedi, P., & Dutt, V. (2015, September). Evaluating the Public Perceptions of Landslide Risks in the Himalayan Mandi Town. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 59, No. 1, pp. 1491-1495). SAGE Publications.
- Debnath, S., Sharma, N., & Dutt, V. Experience-Description Gap in a Stock Market Investment Game, In 2nd Annual Conference on Cognitive Science, Kanpur, India.
- Kumar, M., Chouhan, R., & Dutt V. Role of Information Asymmetry in a Public Goods Game for Climate Change. 24th Conference on Behavior Representation in Modeling and Simulation (BRIMS 2015), Washington DC, USA.
- Free Riders in a Public Goods Game for Climate Change. Poster presentation at 2015 ACCS, IIT Kanpur, India.
- Sharma, N., & Dutt, V. (2015), Experience - Description Gap in a Stock Market Investment Game. 2nd Annual Conference on Cognitive Science (ACCS 2015). IIT Kanpur, India.
- Sharma, N., Dutt V. (2015), Modelling Choices at the Individual Level in Decisions from Experience, In Paper presented at the International Conference on Cognitive Modeling (ICCM), Groningen, the Netherlands.
- Chaturvedi, P., Dutt, V., & Arora, A, "Development of Interactive Simulation Tool to improve Landslide Risk perceptions", 25th Convention of National Academy of Psychology- University of Allahabad, India, Feb 2-5 2016, pp. 64.
- Bandyopadhyay, D., Dutt, V. (2016, February). Decisions from Experience: Reasons for

Stopping Search and Probability Perception. Paper presented at the 25th Silver Jubilee Convention National Academy of Psychology, Allahabad, India.

- Subashish Datta, "Optimization Based State Feedback Control Design for Impulse Elimination in Descriptor Systems", 2nd Indian Control Conference, 2016, January 4-6, Hyderabad, India.
- Mohit Yadav, Anil Sao, Dileep AD, Padmanabhan R, Group delay functions for speaker diarization, In Proc. National Conference on Communications 2016.
- Aditya Nigam, Balender and Phalguni Gupta, "Automated Soft Contact Lens Detection Using Gradient based Information", International Conference on Computer Vision Theory and Applications (VISAPP), 27-29 Feb 2016, Rome Italy.
- Balender, Aditya Nigam and Phalguni Gupta, "Fully Automated Soft Contact Lens Detection from NIR Iris Images", Sixth International Conference on Pattern Recognition Applications and Methods (ICPRAM), 24-26 Feb 2016, Rome Italy.
- Aditya Nigam, Balender and Phalguni Gupta, "Automated Soft Contact Lens Detection Using Gradient based Information", International Conference on Computer Vision Theory and Applications (VISAPP), 27-29 Feb 2016, Rome Italy.
- Aditya Nigam and Phalguni Gupta, "Finger-Knuckle-Print ROI Extraction Using Curvature Gabor Filter for Human Authentication", International Conference on Computer Vision Theory and Applications (VISAPP), 27-29 Feb 2016, Rome Italy.
- Aditya Nigam, Parvez Khan, Phalguni Gupta, "Fusion of Palmprint and Finger-Knuckle-Print for Human Personal Recognition", IEEE Symposium Series on Computational Intelligence - IEEE Symposium on Computational Intelligence in Biometrics and Identity Management (CIBIM), Cape Town, South Africa, 8-10 December 2015
- Gitesh, Aditya Nigam, Phalguni Gupta, "Pose Invariant Face Recognition using Binocular Stereo 3D Reconstruction", Fifth National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics (NCVPRIPG), 16-19 December, IIT Patna.
- Aditya Nigam, Phalguni Gupta, "Tri-Modal Biometric Fusion for Human Authentication by Tracking Differential Code Pattern", Fifth National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics (NCVPRIPG), 16-19 December, IIT Patna.
- Aditya Nigam, Balender Kumar, Jyoti Triyar and Phalguni Gupta, "Iris Recognition Using Discrete Cosine Transform and Relational Measures" in 16th International Conference on Computer Analysis of Images and Patterns (CAIP), Valetta, Malta, Sep 2-4, 2015
- Lovish, Aditya Nigam, Balender Kumar and Phalguni Gupta, "Robust Contact Lens Detection using Local Phase Quantization and Binary Gabor Pattern" in 16th International Conference on Computer Analysis of Images and Patterns (CAIP), Valetta, Malta, Sep 2-4, 2015
- S. Dagar, S. Roy Chowdhury, A. Dutta, D. Roy, S. Bapi Raju, "How the Excitation-Inhibition (E/I balance) mechanism can be used for optimizing DCS protocol: A computational investigation", 3rd International Conference on Cognition, Brain and Computation, IIT Gandhinagar, India, December 5-7, 2015.
- S. Roy Chowdhury, "Development of a point of care screening device for cerebrovascular reactivity", Intel India Academic Forum 2015, New Delhi, October 8-9, 2015.
- A. Madhubabu, L. Prasada Raju, S. Roy Chowdhury, "Detection of Cardio Auscultation using MEMS microphone", 9th IEEE International Conference on Sensing Technology, Auckland, New Zealand, December 8-10, 2015.

- S. Ramasahayam, L. Arora, S. Roy Chowdhury, "FPGA based system for Blood Glucose Sensing using Photoplethysmography and online motion artifact correction using Adaline", 9th IEEE International Conference on Sensing Technology, Auckland, New Zealand, December 8-10, 2015.
- N. Govil, S. Roy Chowdhury, "A high speed metaheuristic algorithmic approach to Hardware Software Partitioning for Low Cost SoCs", IEEE International Symposium on Rapid System Prototyping, Amsterdam, Netherlands, October 8-9, 2015.
- G. Malik, K. Gupta, M. Krishna, S. Roy Chowdhury, "FPGA based Combinatorial Architecture for Parallelizing RRT", European Conference on Mobile Robots, Lincoln, U.K., September 2-4, 2015.
- U. Jindal, M. Sood, S. Roy Chowdhury, D. Kondziella, A. Dutta, "Corticospinal excitability changes to anodal tDCS elucidated with NIRS-EEG joint-imaging-an ischemic stroke study", 37th IEEE Annual International Conference on Engineering in Medicine and Biology Society, Milano, Italy, August 25-29, 2015.
- M. Sood, U. Jindal, S. Roy Chowdhury, A. Das, D. Kondziella, A. Dutta, "Anterior temporal artery tap to identify systemic interference using short-separation NIRS measurements - a NIRS/EEG-tDCS study", 37th IEEE Annual International Conference on Engineering in Medicine and Biology Society, Milano, Italy, August 25-29, 2015.
- N. Paradkar, S. Roy Chowdhury, "Primary Study For Detection of Arterial Blood Pressure Wave form Components", 37th IEEE Annual International Conference on Engineering in Medicine and Biology Society, Milano, Italy, August 25-29, 2015.
- G. Malik, K. Gupta, M. Krishna, S. Roy Chowdhury, "FPGA based hierarchical architecture for parallelizing RRT", International Conference on Advances in Robotics, Goa, July 2-4, 2015.
- S. Sarma, S. Agnihotri, J. Kuri. Secure transmission in amplify-and-forward diamond networks with a single eaves dropper. National Conference on Communications (NCC) 2016, Guwahati, India, Mar. 2016.
- J. J Yamé, T. Jain, and D. Sauter. An online controller redesign based fault-tolerant strategy for thermal comfort in a multi-zone building. In 2015 IEEE Conference on Control Applications (CCA), pages 1901-1906, Sydney, NSW, 2015.

Products/Technologies Developed

- Self Arranging Chairs and Bank Assistant. This project got the honor of least cost project.
- Hand gesture replication via robotic arm.

Patents Filed/ Awarded:

- S. Roy Chowdhury, A. Dutta, A. Das, Low-cost point of care testing and dosing of non-invasive brain stimulation (NIBS) and pharmacology to modulate brain state based on simultaneous recording of electroencephalography (EEG) and near-infrared spectroscopy (NIRS) with a NIRS+EEG/NIBS unit in a single sensor-effector", Indian Copyright no. L-61554/2015 (Granted).
- S. Roy Chowdhury, A novel system for prognosticating the future pathophysiological state of a patient based on current and past pathophysiological data", Indian Copyright no. L 60893/2014(Granted)

- S. Roy Chowdhury, A. Dutta, A. Das, Apparatus for determining neurovascular reactivity through brain stimulation by recordal of neural and hemodynamic responses” Indian Patent Application No. 49/KOL/2015.

Special Achievements

Professional Achievements, Honours and Awards:

Awards:

1. Dr. Shubhajit Roy Chowdhury, received DST-DAAD Fellowship for Indo German Exchange in the year 2016.
2. Dr. Shubhajit Roy Chowdhury, received the Best Paper Award at 9th IEEE International Conference on Sensing Technology (ICST) at Auckland, New Zealand in the year 2015.
3. Dr. Varun Dutt, won the best paper award at the IEEE International Conference on Cyber Situational Awareness, Data Analytics and Assessment (CyberSA 2015), June 2015, London, UK, 2015.
4. Dr. Subashsish Datta, received the "Early Career Research Award" from SERB.
5. Dr. A. D. Dileep received the best paper award in the International Conference on Soft Computing and Machine Intelligence (ISCM2015).

Honours:

1. Dr. Shubhajit Roy Chowdhury, was invited for a Plenary Talk at IEEE CMI 2016 at Kolkata.
2. Dr. Shubhajit Roy Chowdhury, was nominated as Coordinator of Wearable Devices, Embedded Systems, and Computer Aided Diagnosis theme under Health Care Sector of pan-IIT-IISc project IMPRINT, Ministry of Human Resource Development in the year 2015.
3. Dr. Varun Dutt was appointed as the Review Editor, Frontiers in Cognitive Science and Decision Neuroscience journal in 2015.
4. Dr. Tushar Jain, was nominated as a member of Technical Program Committee for the 6th IEEE International Advance Computing Conference (IACC-2016), India held during February, 2016.

Memorandum of Understanding Signed With

- Indian Red Cross Society (IRCS)

Visit to Academic Institutes/Industrial Organisations and Lectures Delivered

- Dr. Shubhajit Roy Chowdhury, delivered a lecture on "System on chip solutions for point of care testing" at Advanced Computing and Micro electronics Unit, Indian Statistical Institute, Kolkata during December 2015 - January 2016, .
- Dr. Varun Dutt, delivered a talk on research related to landslides at DTRL, DRDO, New Delhi in December, 2015.
- Dr. Subashsish Datta, Visited IIT Kharagpur and IIT Bombay to deliver a lectures.
- Dr. Kunal Ghosh, Visited IIT Kanpur, 6th May 2015, IIT Bombay, 7th June, 2015 to deliver a lectures.

Outreach Activities

- Dr. Shubhajit Roy Chowdhury, delivered an invited lecture on "Biomedical Systems for the Society: From Non invasive diagnosis to Point of Care Testing", Plenary talk delivered at IEEE International Conference on Control, Measurement and Instrumentation, Kolkata, India on January 09, 2016.
- Dr. Shubhajit Roy Chowdhury, delivered an invited lecture on "Perspectives on Medical Diagnosis", Invited Talk delivered at IC Design and Fabrication Centre, Department of Electronics and Telecommunication Engineering, Jadavpur University on January 07, 2016.
- Dr. Varun Dutt, delivered a keynote talk at 25th Convention of National Academy of Psychology 2015-16 (February 2-5, 2016), CBCS Allahabad.
- Dr. Satyajit Thakor, presented a Seminar on "Upper bounds on the capacity of 2-Layer N-relay symmetric Gaussian network" at Institute for Telecommunications Research, University of South Australia on July 9, 2015.
- Dr. Satyajit Thakor, presented a Seminar on "Characterizing probability distributions via entropies" at IIT Mandi during internal workshop on interdeceplinary research on April 30, 2016.
- Dr. Subashsish Datta, delivered an online lectures on control system in February 2016 for students and faculties of Tier-2 and -3 engineering colleges under Quality Enhancement in Engineering Education (QEEE) program of Department of Higher Education, MHRD, Government of India.

Industry/Field Visit

- Dr. Shubhajit Roy Chowdhury, visited HISP Shimla during November 05-06, 2016.

Other Achievements

Membership of Professional Societies

- Dr. Shubhajit Roy Chowdhury, received the membership of several professional societies, such as; Association for the Advancement of Biodiversity Sciences (FABSc), the Society of Applied Biotechnology (FSAB), Institution of Electrical and Electronic Engineers (MIEEE), Association for Computer Machinery, the VLSI Society of India, World Stroke Organization, Institution of Electronics and Telecommunication Engineers, Indian Statistical Institute, Indian Microelectronics Society, Telemedicine Society of India.
- Dr. Varun Dutt, received the membership of IEEE, National Academy of Psychology (NAOP), American Psychological Association, Society for Judgement and Decision Making.
- Dr. Satyajit Thakor, received the membership of IEEE.
- Dr. Tushar Jain, received the membership of IEEE.
- Dr. Subashsish Datta received the membership of IEEE and Control System Society.
- Dr. Satyajit Thakor, received the membership of Technical Program Committee member in National Communications Conference (NCC) 2015, 2016 and International Symposium on Network Coding (NetCod) 2015.

School of Engineering (SE)

School of Engineering is working towards vision of the institute. School is committed for high standard of engineering education through outstanding teaching, innovative curricula, and excellent research environment. School offers a number of common courses for B. Tech like Design practicum, Reverse engineering, Graphics for design, Materials science, Product realization technology, Mechanics of rigid bodies, Continuum mechanics and Engineering thermodynamics along with the core courses of Mechanical and Civil stream. Presently, School of Engineering has 24 faculty members including 19 Assistant Professors, 1 Distinguished Visiting Professor and 2 Adjunct Professor and 2 mentor professor. There are currently 31 Ph.D and 20 MS and 8 M.Tech students in the school. M. Tech. in Mechanical engineering with specialisation in Energy systems has been introduced this year. The main areas of research are broadly classified as Materials and Design, Thermo-fluids Engineering, Energy Efficient Buildings and Infrared Signatures. In Materials and Design area, the focus is towards the development of materials for sensor, actuator & energy harvesting applications and analysis of smart structures and systems. In thermo-fluids engineering, faculty members are investigating Radiative heat transfer, Nano-scale heat transfer and Flow analysis & Heat transfer analysis of IC engines. Additionally, molten metals/alloys are also being explored in the school. Energy efficient systems cover climate change studies, applications of phase change materials towards energy efficient buildings and the use of non-conventional energy sources at IIT Mandi to enhance energy efficiency. The school has successfully installed a number of equipment in Solid Mechanics and Materials laboratories. buildings and the use of non-conventional energy sources at IIT Mandi to enhance energy efficiency. The school has successfully installed a number of equipment in Solid Mechanics and Materials laboratories.

Faculty

Dr. Rajeev Kumar

Chairperson

Associate Professor

Specialization : Solid Mechanics, Vibration, FEM, Optimization

PhD from IIT Roorkee

Home Town: Jaspur, Uttarakhand

Phone: 01905-267148

Email: rajeev

Dr. Arpan Gupta

Assistant Professor

Specialisation: Acoustics, Vibration, Bio-mechanics, Computational methods - FEM, CFD, Lattice Boltzmann Method

PhD from National University of Singapore

Home Town: Indore, Madhya Pradesh

Phone: 01905-267135

Email: agupta

Dr. Atul Dhar

Assistant Professor

Specialisation: IC Engines, Alternative Fuels, Emission Control

PhD from IIT Kanpur

Home Town: Sultanpur, Uttar Pradesh

Phone: 01905-267143

Email: atul

Dr. Deepak Swami

Assistant Professor

Specialisation: Groundwater Flow and Transport Modelling, Water Resources Development and Management, Disaster Mitigation Specially Related to Floods and Flash Flood.

PhD from IIT Roorkee

Phone: 01905-267159

Email- Deepak

Dr. Dericks Praise Shukla

Assistant Professor

Specialisation: Remote Sensing & GIS, Hydro-Geo-Chemistry, Water Contamination Mostly as and other Heavy Metals, Natural Hazards Assessment and Mapping

PhD from University of Delhi

Phone: 01905-267147

Email-derricks

Dr. Jaspreet Kaur Randhawa

Assistant Professor

Specialisation: Nanomaterials.

PhD from Gorakhpur University, UP

Home Town: Mohali, Chandigarh

Phone: 01905-267056

Email- jaspreet

Dr. Mohammad Talha

Assistant Professor

Specialisation: Solid Mechanics, Composite Structures, Functionally Graded Materials, Structural Mechanics, Uncertainty Quantification and Imperfection Sensitivity in Composites.

PhD from IIT Kharagpur

Home Town: Patna, Bihar

Phone: 01905-267152

Email- talha

Dr. P. Anil Kishan

Assistant Professor

Specialization: Computational Fluid Dynamics

PhD from IIT Kharagpur

Home Town: Tirupati, Andhra Pradesh

Phone: 01905-267141

Email: kishan

Dr. Pradeep Kumar

Assistant Professor

Specialization: Fluid and Thermal Science

PhD from IIT Kanpur

Home Town: Jaunpur, Uttar Pradesh

Phone: 01905-267137

Email: pradeepkumar

Dr. Dhiraj V. Patil

Assistant Professor

Specialisation: Lattice-Boltzmann method, Multi-physics, Multiphase flows and Complex Fluids Rheology

PhD from IISc, Bangalore

Home Town: Kolhapur, Maharashtra

Phone: 01905-267050

Email-dhiraj

Dr. Kaustav Sarkar

Assistant Professor

Specialisation: Durability Design of Concrete, Sustainable Concrete Production, Finite Element Analysis, Soft Computing

PhD from IIT Delhi

Phone: 01905-267145

Hometown: Kolkata, West Bengal

Email-srkr

Dr. Om Prakash Singh

Assistant Professor

Specialization: Heat and Mass Transfer, Double Diffusive Convection, IC Engine

PhD from IISc Bangalore

Home Town: Arrah, Bihar

Phone: 01905-237992

Email: om

Dr. Prasun Jana

Teaching Fellow

Specialisation: Solid Mechanics, Vibration Damping, Composites, Finite Element Analysis, Plate buckling

PhD from IIT Kharagpur

Home Town: Dantan, West Bengal

Phone: +91-9805432812

Email: pjana

Dr. Rahul Vaish

Associate Professor

Specialization: Glasses & Glass-Ceramics PhD (Engg.), IISc Bangalore

Home Town: Badaun, Uttar Pradesh

Phone: 01905-267139

Email-rahul

Dr. Rajesh Ghosh

Assistant Professor

Specialisation: Solid Mechanics, Biomechanics,
Finite Element Analysis

PhD from IIT Kharagpur

Phone: 01905-237930

Email: rajesh

Dr. Satish Chandra Jain

Adjunct Professor

Specialisation: Mechanical Engineering, Machine
Design, Tribology, Vibration and Noise, Computer
Aided Design

PhD from University of Roorkee

Home Town: New Delhi

Phone: 01905-237976

Email-satish

Prof. Shripad P. Mahulikar

Adjunct Professor

Specialisation: Heat Transfer, Thermodynamics,
Aerospace

Ph.D from NTU-Singapore

Mercator Fellow (DFG-Germany), AvH Fellow
(Humboldt-Germany)

Phone: 01905-237127

Email- shripad

Dr. Sudhir Kumar Pandey

Visiting Assistant Professor

Specialization: Condensed Matter Physics and
Material Sciences.

Ph.D from UGC-DAE Consortium for Scientific
Research, Indore

Home Town: Garhwa, Jharkhand

Phone: 01905-267066

Email: sudhir

Dr. Vishal Singh Chauhan

Associate Dean (F&A)

Assistant Professor

Specialization: Design Engineering,
Electromagnetic Radiation During Deformation of
Metals and Alloys, Solid Mechanics, FEM

Ph.D from BIT Mesra, Ranchi

Home Town: Sanawad, Madhya Pradesh

Phone: 01905-267044

Email: vsc

Dr. Rajnish Sharma

Assistant Professor

Specialisation: Image Based Finite Element
Methods, Cohesive Zone Modeling, Insitu
Characterization of Fracture Process,
Homogenization and Multiscale Modeling, Analysis
and Design of the Composites Under Extreme
Loading Environments

PhD from IIT Delhi

Home Town: Hamirpur, Himachal Pradesh

Phone: 01905-267144

Email-rajnishsharma

Dr. Satvasheel Powar

Assistant Professor

Specialisation: Dye-Sensitized Solar Cells,
Perovskite Solar Cells

PhD from Monash University, Australia

Home Town: Kolhapur, Maharashtra

Phone: 01905-267136

Email- satvasheel

Dr. Subrata Ray

Distinguished Visiting Professor

Specialisation: Physical Metallurgy, Composites
and Tribology

Ph.D from IIT Kanpur

Phone: 01905-267069

Email- sray

Dr. Venkata Uday Kala

Assistant Professor

Specialization: Geotechnical Engineering,

Ph.D from IIT Bombay

Home Town: Hyderabad

Phone: 01905-267149

Email: uday

Dr. Viswanath Balakrishnan

Assistant Professor

Specialisation: Growth of Functional
Materials/Thin Films, Electron Microscopy & in Situ
Exploration of Structure-Property Relationships

Ph.D from IISc, Bangalore

Home Town: Chidambaram, Tamil Nadu

Phone: 01905-267142

Email: viswa

Mentor Professors

Prof. B. K. Mishra

Professor

Department of Mechanical and Industrial Engineering, IIT Roorkee

Specialization: Composite Materials, Fracture Mechanics, Wave Propagation

Ph. D from IT-BHU, Varanasi

Phone: +91-1332-285679

Email: bkmishra

Dr. Sunil R. Kale

Professor

Department of Mechanical Engineering, IIT Delhi

Specialization: Heat Transfer, Fluid Mechanics, Particle-laden Flows, Combustion and Energy Conversion

Home Town: Pune, Maharashtra

Phone: +91-11-2659 1127, 1709

Email: srk

Research Projects

Externally Sponsored Research Projects

S.No.	Project Title	Sponsoring Agency	Investigator	Amount Sanctioned in ₹	Duration of Project
1	Design & Development of High Performance Synchronours Machine (PMSM) based Drives for Motion Control Date of sanction:10.02.2015 Date of Completion: 09.02.2018	Naval Research Board	Dr. Bharat Singh Rajpurohit & Dr. Rajeev Kumar	25, 00, 000	3 Years
2	Analysis of T-G Shaft due to Disturbances of Elecrtic Grid Date of sanction:16.10.2015 Date of Completion:05.05.2017	BHEL Haridwar	Dr. Rajeev Kumar & Dr. Bharat Singh Rajpurohit	20, 00, 000	1.7 Years
3	Glass and glass -ceramics for electrical energy storage devices Date of sanction:01.04.2012 Date of Completion: 31.03.2017	DST	Dr. Rahul Vaish	35, 00, 000	5 Years
4	Investigation of Photocatalytic Activity in Ferroelectric Ceramics & their Composites Date of sancton :17.10.2014 Date of Completion:16.10.2017	INSA	Dr. Rahul Vaish	15, 00, 000	3 Years
5	Photocatalytic transparent glass nano/micro crystal composites for waste water treatment	DST-SERB	Dr. Rahul Vaish	28,05,200	3 Years
6	Arsenic and Heavy Metal Mapping in Water, Coal & Fly-Ash samples from Urjanchal (Singrauli) Area of Central Date of sancton : 11.03.2015 Date of Completion:20.06.2017	DST-SERB	Dr. Dericks Praise Shukla	22,08, 000	2.3 Years

7	Design of quieter hard disk and optical drive using Sonic Crystal Date of sanction : 11-03-2016 Date of Completion: 11-03-2019	DST	Dr. Arpan Gupta	31,66,000	3 Years
8	Raison Hydroelectric Project (18 MW)	MNRE	Dr. D. Swami, Dr. K.V. Uday	2,00,00,000	3 Years
9	Study of solute transport parameters through porous medium	MOES	Dr. D. Swami, Dr. D.P. Shukla	7,235,520	3 Years
10	Development of Adaptive Unstructured Angular Discretisation Grid for the Finite Volume Method of Radiative Transfer Equation for Collimated Beam Radiation	Science and Engineering Research Board	Dr. Pradeep Kumar	25, 00, 000	3 Years
11	Study of Synergistic Use of Hydrogen and other Alternative Fuels in a Dual Fuel Engine for Emissions Reduction Date of sanction : Date of Completion:	DST	Dr Atul Dhar	32, 00, 000	3 Years
12	Stimuli responsive drug delivery systems	DBT	Dr. Jaspreet Kaur Randhawa	76, 00, 000	
13	Site specific growth and nanomanufacturing of aligned carbon nanotube (CNT) for device applications Date of Sanction:-Jan 22, 2016 Date of completion :- Jan 22, 2019	DST-SERB	Dr. Viswanath Balakrishnan	28, 56,000	3 Years
14	Nonlinear thermo-electro elasticity analysis of geometrically imperfect functionally graded curved panels with material uncertainties, Date of Sanction :- March, 2016 Date of Completion :- March, 2019	SERB-DST Startup research grant	Dr. Mohammad Talha	14,85,000	3 Years
15	Determination of Mechanical and Biological Properties of Osteoporotic Bone for Indian Patients. Date of Sanction:- 18 May, 2016 Date of Completion :-18 May, 2017	IIT Mandi - IIT Roapr- PGI Chandigarh Consortium	Dr. Mohammad Talha Dr. Rajesh Ghosh Dr. Arpan Gupat Dr. Pronsensit Mondal	80,00,00	1 Year

Seed Grant Projects

S.No.	Project Title	File No.	Investigator	Amount Sanctioned in ₹	Duration of Project
1	Controlled growth of aligned CNTs for electronic and sensor device application Date of Sanction:22.08.2014 Date of Completion:21.08.2017	IITM IITM/SG/ VBK/33	Dr. Viswanath Balakrishnan	6,20,000	3 Years
2	Towards Zero Waste Campus: Sustainable Solid Waste and Waste Water Management		Dr. Satvasheel Powar, Atul Dhar, Pradeep Kumar		
3	Development of Solid Lipid Nanoparticles as Nanocarrier for Drug Delivery		Dr. Jaspreet Kour Randhawa	6,50,000	
4	Pool Boiling Heat Transfer on Micro/Nano Engineered Surfaces Date of Sanction : 1-03-2016 Date of Completion : 1-03-2019	IITM/SG/ DVP/44	Dr. Dhiraj V. Patil	6, 00, 000	3 Years
5	Ferroelectric ceramics for Electrical Energy Storage Devices	IIT Mandi	Dr. Rahul Vaish	15, 00, 000	5 Years

Progress of the Research Projects

PI: Dr. Rajeev Kumar

Design & Development of High Performance Synchronours Machine (PMSM) based Drives for Motion Control

It is a Naval research board sponsored project, mathematical modeling of the project is on progress.

PI: Dr. Rajeev Kumar

Analysis of T-G Shaft due to Disturbances of Elecrtic Grid

Development of Analytical Model to Determine Transient Torques Developed under various operating conditions and its Grid interaction effect on Turbine-Generator shaft system.

It is BHEL sponsored project. The objective of this project is analysis of turbo-generate shaft under various operating conditions. Mathematical modeling of the project has been completed. A computer code based on the modeling is on progress.

PI: Dr. Dericks P. Shukla

Arsenic and Heavy Metal Mapping in Water, Coal & Fly-Ash Samples from

The field work of Singrauli Industrial regions was carried out in July as well as December 2015 and more than 80 water samples were collected (figure 2). Coal, fly ash and soil samples were also collected from the respective mines, thermal power plants (TPP), ash dump sites etc. Ph, Eh, Ec TDS etc were measured in the field and duplicate samples were preserved by adding 2ml of Concentrated Nitric acid for further analysis. Then, the samples were further analyzed by PORTABLE METALYSER HM 1000 as well as selected samples were sent to SAIF facility at IIT Madras for ICPOES analysis. The concentration of trace metals in water samples were observed near the coal mining and industrial regions. Even the reservoir water present in the vicinity of these mines and TPP is contaminated with Arsenic concentration. Though the Arsenic concentration in the reservoir water samples is not very high (avg 18 ppb), but higher concentration is observed near coal mining and industrial regions. Also high concentration of Mercury, Cadmium and Lead were observed in the water samples.

PI: Dr. Viswanath Balakrishnan

Controlled growth of aligned CNTs: Dr. Viswanath Balakrishnan

We have achieved the vertically aligned growth of carbon nanotube (CNT) forest via chemical vapor deposition. CNT forests on Si/SiO₂ substrate with height of 400 micron is achieved using sputter deposited Fe catalyst particles. We are optimizing the conditions for producing patterned growth of aligned CNTs for gas sensing and other device applications.

PI: Dr. Rahul Vaish

Glass and Glass -Ceramics for Electrical Energy Storage Devices

Developed efficient ferroelectric catalysts for pharmaceutical waste water treatment.

PI: Dr. Rahul Vaish

Investigation of Photocatalytic Activity in Ferroelectric Ceramics & their Composites

Fabrication and characterization of visible light active glass ceramic photocatalyst.

PI: Dr. Rahul Vaish

Photocatalytic transparent glass nano/micro crystal composites for waste water treatment

Investigation of electro catalytic activity of ferroelectric catalysts for alkaline fuel cell.

A Few Major Instruments Installed in Renewable Fuel and IC Engine Laboratory



Variable compression ratio CI and SI engine Test Rig



High speed camera for thermo-fluid visual ion investigations



Engine Exhaust Particle Sizer



High Speed Data Acquisition System for Combustion and NVH studies



Hysitron TI-950 Triboindenter/Nanoindenter



Chemical Vapour Deposition (CVD)



Photoconductivity Measurement System

Papers Published In International Journals

1. Anshul Sharma, Rajeev Kumar. Experimental and numerical investigation of active vibration control over wide range of operating temperature. *Journal of Intelligent Material Systems and Structures*. Manuscript ID JIM-15-135.R1, 2015.
2. Tarun Verma, Rajeev Kumar. Finite Element Analysis of Varying Width Bistable Piezoelectric Energy Harvester. *Energy Technology*. Vol 3 (12), 1243-1249, 2015.
3. Anshul Sharma, Rajeev Kumar. Active vibration control of space antenna reflector over wide temperature range. *Composite Structures* .Vol 128 (15), 2015.
4. Anshul Sharma, A. Kumar, Rajeev Kumar, Finite element analysis on active vibration control using PZT-Pt based functionally graded piezoelectric material. *Int. J. Intel. Mater Sys Struct*, DOI: 10.1177/1045389X15572012, 2015.
5. Anshul Sharma, Rajeev Kumar Performance hierarchy of piezoelectric materials for active vibration control application. *Ferroelectrics*, (Accepted, 2015).
6. Anuruddh Kumar, A. Sharma, Rajeev Kumar, Piezoelectric materials selection for sensor applications using finite element and multiple attribute decision making approaches. *J. Adv Dielectrics*, Vol. 5, No. 1, 1550003(1-8), 2015.
7. Anmol Kothari, A. Kumar, Rajeev Kumar, Rahul Vaish and Vishal S. Chauhan . A study on epoxy-based 1-3 piezoelectric composites using finite element method. *Journal of Polymer Composites*, Vol 37 (6), 1895-1905, 2015.
8. B. Mallesham, B. Viswanath, R. Ranjith, Effect of crystal structure and cationic order on phonon modes across ferroelectric phase transformation in Pb (Fe_{0.5-x}Sc_xNb_{0.5})O₃ bulk ceramics, *AIP Advances*, 6(1), 015116 (2016).
9. Mostafa Bedewy, B. Viswanath, Eric R. Meshot, Dmitri N. Zakharov, Eric A. Stach and A. John Hart, Measurement of the Dewetting, Nucleation, and Deactivation Kinetics of Carbon Nanotube Population Growth by Environmental Transmission Electron Microscopy, *Chemistry of Materials*, 28, 3804 (2016)
10. Anmol Kothari, Vishal S Chauhan, Ashok Misra, Syed Abbas and Rajeev Kumar, "Effect of strain hardening on the electromagnetic radiation during plastic deformation of metals and alloys beyond yield point", *Nonlinear Dynamics*. (Accepted)
11. Sumeet Kr. Sharma, Vishal S. Chauhan and Amit Kumar. Detection of electromagnetic radiation in ferroelectric ceramics for non-contact sensing applications, *Journal of Alloys and Compounds* Vol. 662, 534-540, 2016.
12. Anmol Kothari, Vishal S. Chauhan, Amit Kumar, Rajeev Kumar, Rahul Vaish, Syed Abbas, "Effect of Peierls stress and strain-hardening parameters on EMR emission in metals and alloys during progressive plastic deformation", *International Journal of Materials Research* (Published online) .
13. Sumeet Kr. Sharma, Vishal S. Chauhan and Amit Kumar. Detection of electromagnetic radiation in ferroelectric ceramics for non-contact sensing applications, *Journal of Alloys and Compounds* Vol. 662, 534-540, 2016.
14. Design of radial sonic crystal for sound attenuation from divergent sound source, Arpan Gupta, Lim Kian-Meng, and Chew Chye Heng, *Wave Motion*, 55 (2015): 1-9.

15. Computer Aided Modeling and Finite Element Analysis of Human Elbow, Arpan Gupta, Om Prakash Singh, International Journal of Biomedical and Clinical Engineering, 5.1 (2016): 31-38.
16. Sharma, P. K., Shukla, S. K., Choudhary, R., Swami, D, ISH Journal of Hydraulic Engineering, Taylor & Francis, Modeling for solute transport in mobile-immobile soil column experiment, published 2016, 22(2), 204-211.
17. Deepak Swami, Abhimanyu Sharma, Pramod K Sharma, Dericks P Shukla, Journal of Rock Mechanics and Geotechnical Engineering, Elsevier, Predicting Suitability of different scale dependent dispersivity for reactive solute transport through stratified porous medium, 2016.
18. Deepak Swami, Pramod Kumar Sharma, Chandra shekhar Prasad Ojha, Journal of Environmental Engineering, ASCE, Behavioral study of mass transfer coefficient of a nonreactive solute with velocity, distance and dispersion coefficient, 2016.
19. Sharma, P. K., Shukla, S. K., Choudhary, R., Swami, D, ISH Journal of Hydraulic Engineering, Taylor & Francis, Modeling for solute transport in mobile-immobile soil column experiment, 2016, 22(2), 204-211.
20. Sharma P.K., Ojha CSP, Abegaze TA, Swami D and Yadav A, Journal of Hydrogeology & Hydrologic Engineering, Sci-Tech, Simulation of Fluoride Transport through Fine Sand Column Experiments, 2015, 4: 2; 8, 2.
21. Sharma, P. K., Ojha, C. S. P., Swami, D., Joshi, N., & Shukla, S. K. , Water Resources Management. Springer, Semi-analytical Solutions of Multiprocessing Non-equilibrium Transport Equations with Linear and Exponential Distance-Dependent Dispersivity, 2015, 29(14), 5255-5273.
22. Thoithoi, L., Dubey, C.S., Ningthoujam, P.S., Shukla, D.P., Singh, R.P., Naorem, S.S., 2016, Liquefaction susceptibility mapping of Delhi region based on SPT value, Journal of Geological Society of India, (Accepted).
23. Shukla, D.P., Gupta, S., Dubey, C.S., Thakur, M., 2016, Geo-spatial Technology for Landslide Hazard Zonation and Prediction. Chapter 10 in Environmental Applications of Remote Sensing, ISBN 978-953-51-2443-6, Intech <http://dx.doi.org/10.5772/62667>, Pp 281-308.
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26. Atul Dhar, Xavier Tauzia, Alain Maiboom. Phenomenological models for prediction of spray penetration and mixture properties for different injection profiles. Fuel, Volume 171, 1 May 2016, Pages 136-142.
27. Priybrat Sharma, Atul Dhar. Development of chemical kinetics based hydrogen HCCI combustion model for parametric investigation. International Journal of Hydrogen Energy, Volume 41, Issue 14, 20 April 2016, Pages 6148-6154.
28. Punit Kumar, P. Anil Kishan, Atul Dhar. Numerical investigation of pressure and temperature influence on flame speed in CH₄ single bond H₂ premixed combustion. International Journal of Hydrogen Energy, In Press, Corrected Proof, Available online 27 April 2016.
29. S. Sharma and S. K. Pandey, Effect of on-site Coulomb interaction U on the electronic and magnetic

- properties of Fe₂MnSi, Fe₂MnAl, and Co₂MnGe, *J. Magn. Magn. Mater.* 403, 1 (2016)
30. N. Singh, M. Maniraj, J. Nayak, S. K. Pandey, and R. Bindu Inverse photoemission spectroscopic studies on phase separated La_{0.2}Sr_{0.8}MnO₃, *Solid State Commun.* 217, 70 (2015)
 31. S. Sharma and S. K. Pandey , Applicability of two current model in understanding the electronic transport behavior of inverse Heusler alloy: Fe₂CoSi ,*Phys. Lett. A* 379, 2357 (2015) .
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 33. S. Sundar, L. S. Sharath Chandra, M. K. Chattopadhyay, S. K. Pandey, D. Venkateshwaralu, R. Rawat, V. Ganesan, and S. B. Roy , Strong electron-Phonon coupling and multiband effects in the superconducting B-phase Mo_{1-x}Re_x alloys, *New J. Phys.* 17, 053003 (2015)
 34. Sacheen Kumar Jaspreet K. Randhawa and Neha Garg. Release Kinetics of Paliperidone therapeutic efficacy and toxicity in SLNs *RSC Advances* communicated 2016.
 35. Virender Sharma Mohit Chawla and Jaspreet Kaur Randhawa Enhanced sensitivity of nanostructured copper oxide for non-enzymatic glucose biosensing *Journal Electrochemical Society*. Communicated 2016(under revision)
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54. Satyanarayan Patel, Parikshit Sharma and Rahul Vaish, “Enhanced electro-caloric effect in Ba_{0.85}Ca_{0.15}Zr_{0.1}Ti_{0.9-x}Sn_xO₃ ferroelectric ceramics” *Phase Transitions* (Accepted, 2016)
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School of Basic Sciences (SBS)

The school of Basic Sciences at IIT Mandi is a cluster of disciplines of Mathematics, Physics, Chemistry and Life Sciences. The core of the school consists of 35 faculties having expertise in contemporary fields of research. The school started its Ph. D. program in 2010 and presently 66 research students have enrolled to pursue research in various disciplines. The school aims to create an ambience for the smooth pursuit of scholarly activities in research and education to make an international impact. The school has also initiated Post-Doctoral research program and currently five Post- Doctoral fellows are working in this school. The school of Basic Sciences have started M.Sc. program in Chemistry with specialization in various areas such as Organic Chemistry, Inorganic Chemistry, Physical Chemistry & Nano sciences from August, 2014. The faculty members of the school are closely working with the engineering colleagues on different research projects.

Faculty

Dr. Prasanth P. Jose

Chairperson

Assistant Professor

Specialization: Soft condensed matter physics

PhD from IISc, Bangalore

Home Town: Palakkad, Kerala

Phone: 01905-267064

Email: prasanth

Chairperson Email: chairsbs

Dr. Abhimanew Dhir

DST INSPIRE Faculty Fellow

Specialisation: Supramolecular Chemistry

PhD from Guru Nanak Dev University

Home Town: Jalandhar, Punjab

Phone: 01905-267144

Email: abhimanew

Dr. Ajay Soni

Assistant Professor

Specialisation: Nanomaterials and Experimental Condense Matter Physics

PhD from UGC-DAE Consortium for Scientific Research, Indore

Phone: 01905- 267135

Email: ajay

Dr. Aniruddha Chakraborty

Associate Professor

Specialisation: Theoretical Chemistry

PhD from IISc, Bangalore

Home Town: Kolkata, West Bengal

Phone: 01905-267145

Email: achakraborty

Dr. Aditi Halder

Assistant Professor

Specialization: Design and development of new functional nanomaterials for the application of renewable energy, nano-electronics and sensor

PhD from Indian Institute of Science (2009)

Home Town: Kolkata, West Bengal

Phone: 1905-267140

Email: aditi

Dr. Amit Jaiswal

Assistant Professor

Specialization: Nanobiotechnology

PhD from IIT Guwahati

Home Town: Kolkata, West Bengal

Phone: 01905- 267137

Email: j.amit

Dr. Arti Kashyap

Associate Professor (Joint Appointment)

Specialisation: Magnetism and Magnetic Materials

PhD from IIT Roorkee

Home Town: Mandi, Himachal Pradesh

Phone: 01905-267042

Email: arti

Dr. Amit Prasad
Assistant Professor
Specialisation: Immunology/Microbiology
PhD from SGPGI, Lucknow
Home Town: Ranchi, Jharkhand
Phone: 01905-267136
Email: amitprasad

Dr. Bindu Radhamany
Assistant Professor
Specialization: X-ray Spectroscopy
PhD from UGC-DAE, Consortium for Scientific Research, Indore
Home Town: Kollam, Kerala
Phone: 01905-267060
Email: bindu

Dr. C. S. Yadav
Assistant Professor
Specialisation: Low Temperature Physics
PhD from JNU, Delhi
Home Town: Aligarh, Uttar Pradesh
Phone: 01905-267135
Email: shekhar

Dr. Kaustav Mukherjee
Assistant Professor
Specialisation: Experimental Condensed Matter Physics
PhD from UGC-DAE Consortium for Scientific Research
Home Town: Kolkata, West Bengal
Phone: 01905-267043
Email: kaustav

Prof. Lalit Malhotra
Visiting Professor
Specialisation: Thin Film Physics and Technology
PhD from IIT Delhi
Home Town: Mandi, Himachal Pradesh
Phone: 01905-237916
Email: lalitmlhtr

Dr. Chayan K. Nandi
Associate Professor
Specialisation: Physical Chemistry
PhD from IIT Kanpur
Home Town: Sarangapur, West Bengal
Phone: 01905-267047
Email: chayan

Dr. Hari Varma
Assistant Professor
Specialisation: Atomic and Molecular physics
PhD from IIT Madras
Home Town: Kochi, Kerala
Phone: 01905-267064
Email: hari

Prof. Kenneth Gonsalves
Visiting Distinguished Professor
Specialisation: Materials Synthesis
PhD from University of Massachusetts, Amherst
Home Town: Charlotte, NC, USA
Phone: 01905-237976
Email: kenneth

Dr. Manoj Thakur
Assistant Professor
Specialisation: Optimization, Soft Computing, Machine Learning & its Application to Computational Finance
PhD from IIT Roorkee
Home Town: Roorkee, Uttarakhand
Phone: 01905-267154
Email: manoj

Dr. Neha Garg
DST INSPIRE Faculty Fellow
Specialisation: Cancer Biology, Stem Cells.
PhD from Sapienza University of Rome, Italy
Home Town: Delhi
Phone: 01905-267155
Email: neha

Prof. P. C. Deshmukh
Adjunct Professor
Specialisation: Atomic and Molecular Physics
Email: pcdeshmukh

Dr. Muslim Malik
Assistant Professor
Specialisation: Differential Equations
PhD from IIT Kanpur
Home Town: Balrampur, Uttar Pradesh
Phone: 01905-267119
Email: muslim

Dr. Nitu Kumari
Assistant Professor
Specialisation: Differential Equations, Dynamical Systems, Nonlinear Dynamics
PhD from ISM Dhanbad
Home Town: Dhanbad, Jharkhand
Phone: 01905-267057
Email: nitu

Dr. Pradeep Kumar
Visiting Assistant Professor (Under DST)
Specialisation: Raman and Infrared Spectroscopy
PhD from IISc, Bangalore
Home Town: Rohtak, Haryana
Phone: 01905-267152
Email: pkumar

Dr. Pratibha Garg
Assistant Professor
Specialisation: Topology, Functions Spaces, Measure Theory.
PhD from IIT Delhi
Home Town: Shamli, Uttar Pradesh
Phone: 01905-267051
Email: pratibha

Dr. Prosenjit Mondal
Assistant Professor
Specialisation: Molecular Endocrinology and Metabolism
PhD from Institute of Life Sciences Bhubaneswar
Home Town: Babunpur, West Bengal
Phone: 01905-267135
Email: prosenjit

Dr. Pradyumna Kumar Pathak
Assistant Professor
Specialisation: Quantum Optics, Quantum Information and Nanophotonics
PhD from Physical Research Laboratory, Ahmedabad
Home Town: Mathura, Uttar Pradesh
Phone: 01905- 267046
Email: ppathak

Dr. Pradeep Parameswaran
Associate Dean (Courses)
Associate Professor
Specialisation: Inorganic/Materials/Nano-Chemistry
PhD from University of Hyderabad
Home Town: Varavoor, Kerala
Phone: 01905-267045
Email: pradeep

Dr. Prem Felix Siril
Dean (SRIC)
Associate Professor
Specialisation: Chemistry of Nanomaterials
PhD from DDU Gorakhpur University
Home Town: Thiruvananthapuram, Kerala
Phone: 01905-267040
Email: prem

Dr. Rajanish Giri
Assistant Professor
Specialisation: Biophysics and Protein Folding, Intrinsically Disordered Proteins, T Cell Engineering, Protein Engineering
PhD from Sapienza University of Rome, Italy
Home Town: Allahabad, Uttar Pradesh
Phone: 01905- 267154
Email: rajanishgiri

Dr. Sarita Azad
Assistant Professor
Specialization: Statistical Time Series Analysis
PhD from Delhi University & IISc, Bangalore
Home Town: New Delhi
Phone: 01905-267141
Email: sarita

Dr. R. C. Sawhney
Adjunct Professor
Specialization: Endocrinology & Metabolism,
HighAltitude Physiology, Herbal Medicines
Ph.D from PGIMER, Chandigarh
HomeTown: Shimla
Phone: 01905-237943
Email: sawhneyrc

Dr. Rajendra K. Ray
Assistant Professor
Specialisation: Computational Fluid Dynamics,
Numerical Methods for PDEs
PhD from IIT Guwahati
Home Town: Sainthia, West Bengal
Phone: 01905- 267041
Email: rajendra

Dr. Shyam Kumar Masakapalli
Assistant Professor
Specialisation: Metabolic Systems Biology
(Fluxomics and metabolomics), Plant and
Microbial Metabolism, NMR and GC-MS.
PhD from University of Oxford, UK
Home Town: Rayagada, Odisha
Phone: 01905-267147
Email: shyam

Dr. Subrata Ghosh
Associate Professor
Specialisation: Organic Chemistry
PhD from IIT Guwahati
Home Town: Bolpur, West Bengal
Phone: 01905-267065
Email: subrata

Dr. Tulika Prakash Srivastava
Assistant Professor
(Ramalingaswamy Fellow, DBT)
Specialisation: Bioinformatics, Systems Biology,
Metagenomics, Comparative Genomics, Protein
Function and Structural analysis
PhD from IGIB, CSIR, Delhi
Home Town: Delhi
Phone: 01905-237922
Email: tulika

Dr. Suman Kalyan Pal
Associate Professor
Specialisation: Fast and Ultrafast Laser
Spectroscopy
PhD from Indian Association for the Cultivation of
Science, Jadavpur
Home Town: Katwa, West Bengal
Phone: 01905-267040
Email: suman

Dr. Syed Abbas
Assistant Professor
Specialisation: Differential Equations and
Ecological Modelling
PhD from IIT Kanpur
Home Town: Gonda, Uttar Pradesh
Phone: 01905- 267148
Email: abbas

Dr. Venkata Krishnan
Assistant Professor
Specialisation: Materials Chemistry, X-ray Science
PhD from University of Stuttgart, Germany
Home Town: Coimbatore, Tamil Nadu
Phone: 01905-267065
Email: vkn

Post-Doctoral Fellow

Dr. Rik Rani Koner
Post Doctoral Fellow (PDF)
in School of Basic Sciences
Specialisation: Bioinorganic Chemistry
PhD from IIT Guwahati
Home Town: Bolpur
Phone: 01905237994
Email: rik

Externally Sponsored Research Projects

S. No.	IIT Mandi Reference No./ Project No.	Project Title	Sponsoring Agency	"Principal Investigator & Co-ordinator(s)"	Department/ School	Amount Sanctioned in ₹	Duration of Project
1	IITM-CPAM/HPD/08	Collision Processes in Atomic and Molecular Physics	DST	"PI: Dr. Hari R. Varma Co-PI: Dr. P.C. Deshmukh (IIT Madras)	School of Basic Sciences	10,62,000	3 Years
2	IITM-NBM/SUG/10	Towards Novel Barbiturates as Matrix Metalloprotenase (MMP) Inhibitors: Design, Synthesis, Characterization and Biological Evaluation	DST	"Dr. Subrata Ghosh	School of Basic Sciences	22,85,000	3 Years
3	IITM-DNA/CKN/13	DNA aptamer conjugated gold nanoparticle for targeting cancer cells	DST	Dr. Chayan Kanti Nandi	School of Basic Sciences	22,80,000	3 Years
4	IITM-FDE/SYA/14	Study of Fractional order Differential Equations with Applications	DST	Dr. Syed Abbas	School of Basic Sciences	6,41,000	3 Years
5	IITM-DST/PKP/17	Nanophotonic Systems for quantum information processing & coherent central	DST	Dr. P. K. Pathak	School of Basic Sciences	13,44,000	3 Years
6	IITM-DBT/CKN/19	Molecular Chaperone's mediated protein folding using time resolved single molecule Forster resonance energy transfer	DBT	PI: Dr. Chayan Kanti Nandi"	School of Basic Sciences	69,58,200	3 Years
7	IITM-DRDO/SBG/20	Supramolecular High Energy Compounds: synthesis, Characterization and theoretical Studies	DRDO	"PI: Dr. Subrata Ghosh Co-PI: Dr. Prem Felix Siril Dr. Aniruddha Chakraborty"	School of Basic Sciences	43,12,500	4 Years
8	IITM-NRN/PFS/21	"Novel Routes for Crystallization Of Energetic Compounds	ARMRE B, DRDO	"PI: Dr. Prem Felix Siril Co-PI: Dr. Jaspreet Kaur Randhawa Dr. Prasanth P. Jose"	School of Basic Sciences	68,48,006	4 Years
9	IITM/DST/PCP/24	"Development of Polyoxometalates organic Hybrids having through- bond Electronic interactions between cluster and organic units for materials And catalytic applications	DST	Dr. Pradeep C. Parameswaran	School of Basic Sciences	26,90,000	3 Years

10	*IITM/INTEL/KNG/26	Resists Concepts for EUVL at the 16 nm Node and Beyond	INTEL	“PI: Prof. Kenneth Gonsalves Co-PI: Prof. Pradeep Parmeshwaran Prof. Subrata Ghosh Satinder Kumar Sharma	School of Basic Sciences	217,62,000	3 Years
11	IITM/DST/VKS/29	“Controlled Fabrication of Realistic Nano-circuits using Robust Artificial Peptides”	DST	“Dr. Venkata Krishnan	School of Basic Sciences	35,00,000	5 Years
12	IITM/DST/AMD/30	Engineering Molecular Organic Frameworks Crystal Structure and Photo Physical properties	DST	Dr. Abhimanew Dhir	School of Basic Sciences	35,00,000	5 Years
13	IITM/HSAA/PCR/32	A Short Formal Asymmetric Synthetic Approach to Huperzine - A	DST	Dr. P. C. Ravikumar	School of Basic Sciences	27,00,000	3 Years
14	IITM/HOCFD/DST/33	Development of a class of higher order compact (HOC) Finite difference Scheme and its application to linear shear flows	DST”	Dr. Rajendra Kumar Ray	School of Basic Sciences	13,32,000	3 Years
15	IITM/DBT/TPS/36	Exploring the Human Microbiome: A Hunt for the candidates for Pre- and Pro-biotics	Ramalingaswami Re-entry Fellowship DBT”	Dr. Tulika P. Srivastava	School of Basic Sciences	82,00,000	5 Years
16	IITM/NBHM/SYA/45	Periodicity & a Almost Periodicity in Ecological Modeling	NHBM, DAE	Dr. Syed Abbas	School of Basic Sciences	8,57,500	3 Years
17	IITM/DST/PAD/46	Design and Synthesis of New Organic-Inorganic Hybrids: Bip-Evaluation as Cancer, Microbial and Inflammatory Therapeutic Agents	DST	“Dr. Pooja Co-PI: Dr. Pradeep C. Parameswaran	School of Basic Sciences	27,72,000	3 Years
18	IITM/NBHM/RRY/47	Development of Higher Order Accurate Numerical Schemes for Elliptic Equation with Various Discontinuities & its Application to Immersed Interface Problems	NBHM (DAE)	“Dr. Rajendra Kumar Ray	School of Basic Sciences	2,99,500	3 Years

19	IITM/BRNS/RKR/51	Modeling of Contaminated Sediments in Lakes/Rivers	BRNS (DAE)	"PI: Dr.Rajendra Kumar Ray Co-PI: Dr. O.P.Singh	School of Basic Sciences	21,07,100	3 Years
20	IITM/CSIR/SKP/70	Carrier Multiplication in Electronically Coupled Nanocrystals and Harvesting	CSIR	"Dr. Suman K. Pal	School of Basic Sciences	12,58,000	3 Years
21	IITM-DST-VR/SKP/76	Quantum Dots for Novel Solar Solutions	DST-VR	"Dr. Suman K. Pal Prof. Tonu Pullerits (Lund Univ., Sweden)	School of Basic Sciences	40,27,000	3 Years
22	IITM/DRDO-SASE/MT/79	Snow Avalanche Forecasting Using Machine Learning and Data Mining	DRDO-SASE	"Dr. Manoj Thakur	School of Basic Sciences	5,04,000	6 Months
23	IITM-SERB/SKP/81	Engineering Chemical Structure to Improve Device Efficiency: Novel Organic Polymers/Macromolecules & their Nanocomposites for Photovoltaic Application	SERB	"Dr. Suman Kalyan Pal Co-PIs: Dr. Subrata Ghosh Dr. C.K. Nandi Dr. Suresh Chand (NPL) Dr. Rajiv Kr. Singh (NPL)	School of Basic Sciences	43,64,000	3 Years
24	IITM/UGC-DAE/BR/83	Effect of dimensionality on the electronic structure of some novel transition metal oxides	UGC-DAE	"Dr. Bindu Radhamany	School of Basic Sciences	6,39,000	3 Years
25	IITM/BRNS/AS/84	Development of High Temperature Thermoelectric Transport Measurements System to Study Chalcogenide Based Thermo-electric Nano-Composites	BRNS	Dr. Ajay Soni	School of Basic Sciences	25,00,000	3 Years
26	IITM/SERB/AS/85	Layered Chalcogenide Nanocomposites for Thermoelectric Applications	SERB	Dr. Ajay Soni	School of Basic Sciences	26,00,000	3 Years
27	IITM/DBT/AP/88	Immuno-modulating effect of Taenia solium cyst antigens on immune reactive cells and their role in pathogenesis	DBT	Dr. Amit Prasad	School of Basic Sciences	32,50,000	5 Years
28	IITM/DST/VK/92	Bioinspired Advanced Materials for Enhanced Solar Energy Conversion in Organic Photovoltaics	DST-SERB	Dr. Venkata Krishnan	School of Basic Sciences	20,87,000	3 Years
29	IITM/DST-INSPIRE/PK/95	Physics of Electromagnos Dynamics Probed by Raman Scattering	DST-INSPIRE	Dr. Pradeep Kumar	School of Basic Sciences	35,00,000	5 Years

30	IITM/DST/NG/96	Identification of the Hedgehog pathway modulators in non-small cell lung cancer stem cells	DST-INSPIRE	Dr. Neha Garg	School of Basic Sciences	35,00,000	5 Years
31	IITM/DST/AH/97	Generating Renewable Energy Sources Using Anthropogenic CO2 for Sustainable Future	DST-SERB	Dr. Aditi Halder	School of Basic Sciences	30,40,000	3 Years
32	IITM/ISRO/SG/98	Development of Indigenous DUV photoresists for 180 nm process technology at Semiconductor Lab (SCL) Mandi: Make in India	ISRO	Dr. Subrata Ghosh	School of Basic Sciences	81,00,000	3 Years
33	IITM/SERB/AJ/99	Stimuli Responsive Smart Nanocarriers for Theranostics Application	SERB	Dr. Amit Jaiswal	School of Basic Sciences	22,56,000	3 Years
34	IITM/SERB/RG/100	Intrinsically Disordered Proteins: Folding and Binding Mechanisms of Transactivation Domain of Adenoviral Oncoprotein E1A with its partner TAZ2	SERB	Dr. Rajanish Giri	School of Basic Sciences	27,36,000	3 Years
35	IITM/DST-GITA/SG/101	Novel Non Chemically Amplified Molecular Photoresists for Nanoelectronics at the 20nm Node or Beyond	DST-GITA	Dr. Subrata Ghosh	School of Basic Sciences	29,29,500	3 Years

Seed Grant Projects

S. No.	File no.	Proposal Title	Faculty Name	Department/School	Amt.	Period	Approval Date	Completion Date
1	IITM/SG/MM/35	Controllability of Some Differential Equations	Dr. Muslim Malik	School of Basic Sciences	4,64,000	3 years	18.05.15	17.05.18
2	IITM/SG/PM-AJ/37	Targeted delivery of therapeutics to pancreatic beta cells by nanocarriers to augment glucose-dependent insulin secretion	Dr. Prosenjit Mondal Dr. Amit Jaiswal	School of Basic Sciences	20,00,000	3 years	01.07.15	30.06.18
3	IITM/SG/AP/38	Understanding the role of inflammaosomes in pathogenesis of Taenia solium cyst infection	Dr. Amit Prasad	School of Basic Sciences	7,00,000	2 years	11.09.15	10.09.17

Progress of the Research Projects

Research

Our research focus in the last six years has been the development of new materials for diverse applications that include materials for electronics to bio-imaging. As we are keen in transformational research to see the real applications of some of our products, we go beyond materials development and fabrication of devices to investigate the potential of these materials.

PI: Dr. Prasanth P. Jose

Simulation of Phase separation dynamics model simple liquids and glass former

We have done long time molecular dynamic simulation study on the formation of glassy domains at the unstable region of the 80:20 binary mixture which is widely used in the studies of glass transition at high densities. The full and partial radial distribution functions computed have shown the existence of multiple local structures at low temperatures, which indicate many structures in the system. In contrast to studies of same system at high densities the second peak of the radial distribution functions split into multiple peaks that indicate existence of different structures at these low densities. The nature of these dense domains are studied using method of coarse grained density. We found that uniform phase at high temperature splits into gas and liquid phases at intermediate temperature. On further low temperatures the system show coexistence of dense domains and gas. Multiple structures that appear in these dense domains are characterized by the bond order parameters. We find the existence of mixture of bcc, hcp structures in this system. The cage relaxation properties of these dense systems are studied using mean square displacement of particles of the system. The mean squared displacement shows clearly the growth of the sub-diffusive regime which indicate the formation and caging that is found in the computational studies of models of glassy and supercooled liquids.

PI: Dr. Rajanish Giri

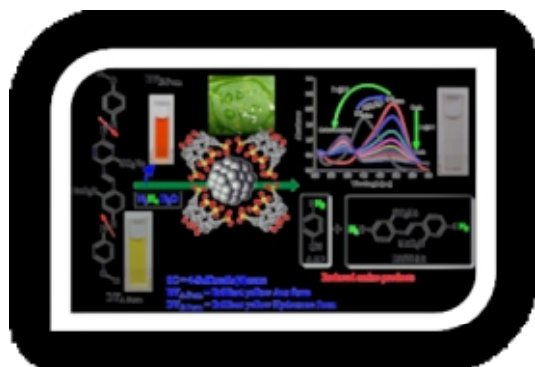
Intrinsically Disordered Proteins: Folding and Binding Mechanisms of Transactivation Domain of Adenoviral Oncoprotein E1A with its Partner TAZ2

One of critical component of central dogma of molecular biology states about Structure-Function-Paradigm. The recent discovery of proteins which are unstructured in physiological buffer conditions but still functional in native cell environment, posed a challenge to classical understanding of protein structure and function. These proteins are called Intrinsically Disordered Proteins (IDPs) (Dyson and Wright, 2005). This is an emerging field where till March 2015, more than 95% of IDP field publications on PubMed came only from last ten years. The emerging concept of Disorder-Function-Paradigm is one of the most debated topics in modern protein sciences with surprises. Biophysical research on IDPs research gained momentum with a title published in Nature as 'Breaking the Protein Rules: if dogma dictates that protein need a structure to function, then why do so many of them live in a state of disorder' (Tanguy Chouard., 2011). There are reports that nearly 40% of human proteome is disordered in full or part and nearly 75% regulatory proteins in mammals are disordered in part (Uversky and Dunker, 2010; Dunker et. al., 2008). Based on key cellular processes such as growth, differentiation, metabolism and apoptosis, IDPs are implicated in various human diseases. Examples include disordered regions of Oncoprotein p53, Myc and E1A oncoprotein. These IDPs are involved in regulating large numbers of genes important in key cellular processes such as growth, differentiation, metabolism and apoptosis. During last decade, some progress has been made in structural determination of disordered proteins complex. In particular this proposed work is focused towards folding and binding mechanisms of a disordered protein having no structure in physiological buffer condition but gaining structure after binding the partner. Our focus of

this project is to decipher molecular determinants of interaction between a disordered oncoprotein E1A and its ordered partner TAZ2. Whilst the structural features of the interaction between TAZ2 and different IDPs have been investigated but the mechanism of recognition is still a puzzle.

PI: Dr. Abhimanew Dhira

During the textile process, inefficiency in the coloring generates large amounts of dyes residues which are directly released into water bodies consequently contaminating the environment. Among the various



residues of dyes that pollute environment important ones are azo dyes. The azo dyes are highly toxic, carcinogenic and genotoxic because of their high Chemical Oxygen Demand (COD) values. Therefore, recognition of these dye molecules is highly significant. Thus, we designed and synthesized fluorescent co-ordination polymer which is utilized as template for recognition of industrially relevant azo dyes i.e. BY (Brilliant yellow), AYGG (Alizarin yellow GG), MO1 (Mordant

orange 1), TONa (Tropaeolin O sodium salt), MO (Methyl orange), PAP (4-

Design and Synthesis of New Organic Hybrid Materials for Environmental Applications

Phenylazophenol), SII (Sudan II), OG (Orange G) and AB (Azobenzene).

In continuation of the above research program, we have synthesized new self-assembled material (named Ru@SC) using 4-Sulfocalix [4]arene (SC) and Ruthenium Nano-particles. Ru@SC is used as catalyst for reduction of toxic 'brilliant yellow' (BY) azo dye in water. Ru@SC efficiently reduces azo dye 'brilliant yellow' (BY) in the presences of hydrazine hydrate into respected amines. The products of degradation have been well characterized by NMR and single crystal XRD techniques.

PI: Dr. Aditi Halder

Generating Renewable Energy Sources Using Anthropogenic CO₂ for Sustainable Future-DST SERB

This project is based upon the generation of the renewable non-fossil fuel by selective electrochemical reduction of anthropogenic carbon dioxide. In our country India, coal is a major source of energy for the production of electricity due to its large abundancy (in 2011 68% of our energy came from coal). This large amount of usage of fossil fuel is also associated with huge production of anthropogenic carbon dioxide. Thus it is important to come up with a technological solution to reduce the percentage of carbon dioxide in the atmosphere and have a control over "Carbon Cycle". This project proposal comes up with a suggested solution of converting this CO₂ to useful non-fossil fuel. Electrochemical reduction of carbon dioxide into useful renewable fuel is one of method to cycle this CO₂ back to the "Carbon Cycle". Electrochemical reduction of carbon dioxide is a challenging area of research due to multiple products generation with very high overpotential. To generate industrially profitable product selective electrocatalysis is very important. However, electrochemical reduction of CO₂ gives multiple products, so it is important to design a catalyst which can selectively reduce carbon dioxide in to particular product. Here we choose electrochemical reduction of CO₂ to CO. CO is an important component of syngas which can be converted to liquid fuel by well known industrial process Fischer-Tropsch synthesis. Fischer-Tropsch synthesis converts mixture of carbon monoxide and hydrogen to liquid fuel. In this proposal we will design and develop the electrocatalysts which will selectively reduce CO₂ to CO at low overpotential and with high Faradaic Efficiency.

PI: Dr. Bindu Radhamany

Local structural effects in Sr₃NiRhO₆ across magnetic transitions

We investigated the temperature dependence of the structural parameters of quasi-one-dimensional Sr₃NiRhO₆ across the region of magnetic phase transitions using NiK-edge and SrK-edge x-ray absorption spectroscopy (XAS). The features in the x-ray absorption near-edge region were identified using multiple scattering calculations. The temperature-dependent extended x-ray absorption fine structure (EXAFS) studies showed the onset of the intra-chain super exchange interaction starts at ~200K, which is well above the first transition temperature (45K) revealed by magnetic susceptibility studies. The onset of the inter-chain super-super exchange interaction appears to be at ~125K. Interestingly, the role played by direct exchange interaction between the Ni3d and Rh 4d states in stabilising the magnetic interaction is less significant. The present results shed light on the generic features exhibited by isostructural compounds and may help in identifying the magnetic exchange pathways useful for understanding the unusual properties exhibited by such compounds.

PI: Dr. Prem Felix Siril

Novel routes for nanocrystallization of energetic compounds

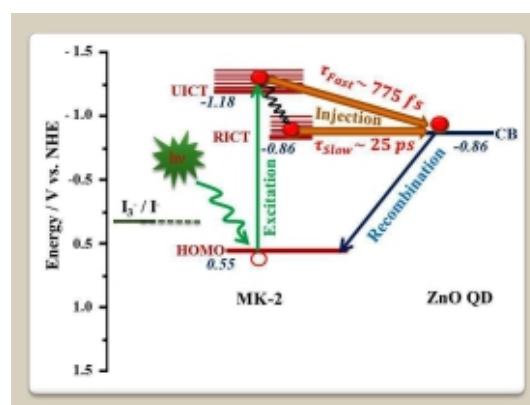
This research was mainly undertaken with the funding from DRDO and led to the development of a novel evaporation assisted solvent - anti solvent interaction methods (EASAI). This is a general method that can be applied to the preparation of very fine nanoparticles of organic compounds. A patent has been filed on this invention. Nanoparticles of high energetic compounds such as RDX and HMX has been synthesized and submitted to TBRL, Chandigarh for further characterization in terms of change in their energetic performance and sensitivity to hazardous stimuli. We have found that we can not only control the size of the particles, but also the shape of organic nanocrystals using the EASAI method. The method can also be used for making very small nanoparticles that are coated (stabilized) with polymers/surfactants. Thus, nanoparticles of a number of drugs such as Carbamazepine, Griseofulvin, Fenofibrate and many non-steroidal anti-inflammatory drugs (NSAIDs) have been prepared using the method. The nanoformulation resulted in multi-fold enhancement in water solubility of these drugs and increased drug release indicating enhancement in their bio availability after oral administration. Interestingly, the anticancer activity of NSAIDs also could be enhanced using the nano formulation approach. Infact, we obtained much better anti-leukemia activity for polymer stabilized nanoparticles of naproxen than the commercial drug, doxorubicin.

PI: Dr. Suman K. Pal

Energy and electron transfer in organic molecule/quantum dot hybrid systems

Electron transfer from two different dye molecules to ZnO QDs has been investigated using femtosecond transient absorption measuring system. One dye shows the capability of absorbing more light by forming charge transfer complex with QD. Excitation of these complex leads to the formation of charges via electron transfer on ultrafast time scale (<115 fs). In case of second dye, electron injection occurs from dye to QD via intramolecular charge transfer state (figure 1).

Figure 1. Schematic representation of energy levels (unrelaxed and relaxed ICT states) of MK-2 dye with respect to QD and I₂/I⁻ redox couple. UICT and RICT stand for unrelaxed and relaxed ICT states, respectively.



PI: Dr. Kaustav Mukherjee

Our Lab focuses on the investigation of magnetic, transport and thermodynamic properties of oxides and rare-earth intermetallics, both in bulk and nanoform. Systems being investigated include low dimensional and frustrated magnetic compounds and functional materials like magnetic refrigerant materials, multiferroics, materials exhibiting colossal magnetoresistance, Heusler alloys.

Exchange bias in a mixed metal oxide based magnetocaloric compound $\text{YFe}_{0.5}\text{Cr}_{0.5}\text{O}_3$

We have reported a detailed investigation of magnetization, magnetocaloric effect and exchange bias studies on a mixed metal oxide $\text{YFe}_{0.5}\text{Cr}_{0.5}\text{O}_3$ belonging to perovskite family. Our results revealed that the compound is in canted magnetic state (CMS) where ferromagnetic correlations are present in an antiferromagnetic state. Magnetic entropy change of this compound follows a power law ($\Delta S_M \sim H^m$) dependence of magnetic field. In this compound, inverse magnetocaloric effect (IMCE) is observed below 260 K while conventional magnetocaloric effect (CMCE) above it. The exponent 'm' is found to be independent of temperature and field only in the IMCE region. Investigation of temperature and magnetic field dependence studies of exchange bias, reveal a competition between effective Zeeman energy of the ferromagnetic regions and anisotropic exchange energy at the interface between ferromagnetic and antiferromagnetic regions. Variation of exchange bias due to temperature and field cycling is also investigated. (Mohit K. Sharma et al., J Mag. Mag. Mater. 414, 116-121 (2016))

PI: Dr. Chayan K. Nandi**Carbon dots: A mysterious Nano Emitter**

Since its first introduction in 2004, carbon dots, a new class of carbogenic nanomaterials, have extensively been used in recent years for various states of art applications. However, the origin of excitation-dependent fluorescence of carbon dots is not clear till date and remains a topic of debate. They have also been proven as an extremely bright, highly photostable and non-blinking multicolor fluorescent nanomaterials. We unveiled the origin of multicolor fluorescence using time resolved fluorescence experiments. The data showed that the excitation-dependent multicolor emission is typically governed by the relative population of the ensemble of emitting states. Further the on-off blinking phenomena and reversible photoswitching were also observed in carbon dots, which are governed by the electron transfer processes. The recent findings may make the carbon dots as an alternative probe in super resolution microscopy.

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99. Subrata Ghosh and Pankaj Gaur, Ajay Kumar, Gourab Dey, Rajendra Kumar, Shalmoli Bhattacharyya; selenium Incorporated Cationic Organochalcogen: Live Cell Compatible and Highly Photostable Molecular Stain for Imaging and Localization of Intracellular DNA *ACS Applied Materials and Interfaces* 2016, 8, 10690-10699.
100. Satinder K. Sharma, Kenneth E. Gonsalves, Subrata Ghosh, V. S. V. Satyanarayana, Bulti Pramanick, Chullikkattil P. Pradeep, Israel Morales-Reyes, Nikola Batina; patterning highly ordered arrays of complex nanostructures through EUV directed polarity switching of nonchemically amplified

photoresist. *Scientific Reports* 2016, 6, 22664.

101. Rajanish Giri, Subrata Ghosh, Gourab Dey, Pankaj Gaur; optical signaling in biofluids: a non-denaturing photostable molecular probe for serum albumins. *Chemical Communications* 2016, 52, 1887-1890.
102. Subrata Ghosh, Sisir Lohar, Sougata Sinha, Debasis Das; tri-color emission and colorimetric recognition of acetate using semicarbazide and thio-semicarbazide derivatives: Experimental and computational studies. *Spectrochimica Acta A* 2016, 155, 75-80.
103. Subrata Ghosh, M. Venkateswarulu, Pankaj Gaur, Sougata Sinha, Avijit Pramanik; at the molecular level through photophysical studies: structural implications on the reactivity of dual-site sensitive positional isomers toward a gas transmitter (H₂S). *Journal of Physical Chemistry C* 2015, 119, 19367-19375.
104. Subrata Ghosh, Sunil Kumar, Punita Singh, Ritu Srivastava; packing Directed Beneficial Role of 3-D Rigid Alicyclic Arms on Templated Molecular Aggregation Problem. *RSC Advances* 2015, 5, 61249-61257.
105. Subrata Ghosh, Sougata Sinha, Pankaj Gaur, Sagarika Dev, Subhrakanti Mukhopadhyay, Trinetra Mukherjee; hydrazine responsive molecular material: Optical signaling and mushroom cell staining. *Sensors and Actuators B: Chemical* 2015, 221, 418-426.
106. Subrata Ghosh, Sougata Sinha, Pankaj Gaur, Trinetra Mukherjee, Subhra Kanti Mukhopadhyay; exploring 1, 4-dihydroxyanthraquinone as long-range emissive ratiometric fluorescent probe for signaling Zn²⁺/PO₄³⁻: ensemble utilization for live cell imaging. *Journal of Photochemistry and Photobiology, B: Biology* 2015, 148, 181-187.

Book / Book Chapters Published

- R. Giri, B. VanSchouwen, M. Akimoto, S. Boulton, K. Moleschi and G. Melacini, 10 Assessing Cyclic Nucleotide Binding Domain Allostery and Dynamics by NMR Spectroscopy, *Cyclic Nucleotide Signaling* 13, 165. CRC Press.

Conferences Attended and Papers Presented

1. Dr. C. S. Yadav, attended a conference “2015 Gordon Research Conference: Unconventional Superconductivity: Materials and Mechanism”, held at Chinese University of Hong Kong, Hong Kong China, from May 24-29, 2015.
2. Dr. C. S. Yadav, G. Seyfarth, P. Pedrazzini, H. Wilhelm, R. Černý and D. Jaccard, presented a paper Titled: Unconventional Superconductivity in Iron: Effect of Pressure Cycling.
3. Dr. Nitu Kumari, attended Workshop on “Dynamical Systems, Statistics, Networking and Control” held at IIT Mandi on 30th April, 2016. Presented a talk titled “Modeling language dynamics in India: A New Twist”, in the workshop.
4. Dr. Nitu Kumari, attended SIAM Conference on Analysis of Partial Differential Equations (Pd15), December 7-10, 2015, Arizona, USA. Presented a paper titled “Turing Pattern Formation in a Host-Parasitoid-Hyper Parasitoid System”.
5. Dr. Nitu Kumari, delivered an invited talk at the Nano Bio Interface 2016 conference, organized by the School of Biotechnology and School of Computational and Integrative Science, Jawaharlal Nehru University (JNU), New Delhi. Date: 18th-20th March.: Nanotechnology for sensing and

Theranostics.

6. Dr. Syed Abbas, invited talk on "Periodic and almost periodic solutions of some ecological models" in BioMat-2015, IIT Roorkee, 2-6 Nov, 2015.
7. Dr. Syed Abbas, analysis of fractional differential equations in "ICMBAA 2015", AMU, India.
8. Masakapalli S.K., mapping cellular metabolism with metabolome and ¹³C fluxomics studies. 2015 NNMCB national meet, IISER-NCL Pune 27-30 Jan. (Invited speaker)(<https://sites.google.com/site/mathbiosymposium/home>).
9. Manushree, Masakapalli S.K., optimal substrate design to capture metabolic flux phenotypes of *Xanthomonas campestris*, 2015 NNMCB national meet, Pune 27-30 Jan. (<https://sites.google.com/site/mathbiosymposium/home>).
10. Manushree, Masakapalli S.K., in silico evaluation of different [¹³C]Glucose tracers to rationalise ¹³C-fluxomics studies of *Xanthomonas campestris* - an industrial Xanthan producer. Abstract accepted for poster presentation. Indo-US workshop on Cell factories (<http://www.che.iitb.ac.in/cellfactories/>), IIT Bombay, March 18-20, 2016.
11. Masakapalli S.K., National Network for Mathematical and Computational Biology (NNMCB)-meet 2015, Pune (<https://sites.google.com/site/mathbiosymposium/home>).
12. Masakapalli S.K., BioXAIC Academia-Industry Conclave 6th-7th Nov 2015 organised and attended at IIT Mandi.
13. Masakapalli S.K., attended Workshop on Product Design and Innovation, 18-19 December, 2015 at IIT Mandi.
14. Dr. Prosenjit Mondal, attended an International Symposium On Neuropeptides and Neurotransmitters: Role in Physiology and Pathophysiology 13-14 December 2015 (National Institute of Science Education and Research(NISER) Bhubaneswar, Odisha, India).
15. Dr. Prosenjit Mondal, attended Young Investigators' Meeting (YIM) 2016 in Manesar, Delhi-NCR.
16. Dr. Aditi Halder, presented paper at International conference of Electron Microscopy held at IIT, BHU. Title: Low Cost High Density Copper Oxide Nanorods For Electrochemically reduction of Co₂.
17. R. Bindu and R. K. Maurya, structural studies on doped MnTiO₃, AIP Conference Proceedings 1731, 140051 (2016).
18. Dr. Muslim Malik, participated in the Advanced Summer School on Control and Numeric for Fluid-Structure Interaction Problems, TIFR Bangalore, 22-26 June, 2015.
19. Dr. Muslim Malik, participated in the Workshop on Control and Numeric for Fluid-Structure Interaction Problems, TIFR Bangalore, 29 June - 1 July, 2015.
20. Dr. Muslim Malik, presented a research paper in an International Conference on Recent advances in Mathematical Biology, Analysis and Applications, AMU, Aligarh, June 4 - 6, 2015. The title of my talk was Controllability of an Abstract Differential Equation with Deviated Arguments.
21. Dr. Muslim Malik, presented a research paper in an "International Conference on Analysis and its Applications (ICAA-2015)" during December 19-21, 2015. The title of my talk was Controllability of Second order Nonlinear Differential Equation with Deviated Arguments.
22. Dr. Muslim Malik, gave a talk in the International Conference on Current Trends in Partial Differential Equations: Theory and computations during the period 28-30th December 2015, held at South Asian University, New Delhi. Title of my talk was Controllability of Second order Nonlinear Impulsive Differential Equation with Deviated Arguments.
23. Dr. Muslim Malik, gave a talk in the Advanced Level Workshop on the "CONTROLLABILITY OF HEAT

AND WAVE EQUATIONS" during November 16-20, 2015 at IIT Mandi. Title of my Talk was Introduction to the Controllability of Fractional Differential Equations.

24. Prem Felix Siril and Raj Kumar, "Preparation and characterization of solid lipid nanoparticles for the delivery of poorly water soluble drugs" International conference on Nanoscience, Nanotechnology and Advanced Materials, 14-17 December 2015, Gitam University, Visakhapatnam, India
25. Prem Felix Siril, Tripti Vats, Sunil Dutt and Raj Kumar, "A novel approach towards the synthesis of Pristine Graphene/Pd nano-composite using swollen liquid crystals as soft templates and its extraordinary catalytic property in C-C coupling reactions." 4th Nanotoday conference, December 6-10, 2015, JW Marriott Marquis Hotel Dubai, UAE
26. Prem Felix Siril and Raj Kumar, "Solid lipid nanoparticles for controlled delivery of poor water soluble drugs" International Conference on Nanotechnology in Medicine, NanoMed 2015 Nov 23-25, Manchester, United Kingdom.
27. Prem Felix Siril and Raj Kumar, "Preparation and characterization of polyvinyl alcohol stabilized Griseofulvin Nanoparticles." in International Conference on Recent Advances in Nano Science and Technology, RAINSAT 2015 July 8-10, Sathyabama university, Chennai, India.
28. Prem Felix Siril and Sunil Dutt, "Morphology controlled synthesis of polyaniline nanostructures and its nanocomposites using swollen liquid crystals as soft templates" International conference on nanostructured polymeric materials (ICNPM-2015) 13-15 November 2015, Mahatma Gandhi University, Kottayam.
29. Prem Felix Siril, Mohit Chawla and Sunil Dutt, "Controlling the morphology of metal nanostructures and composites using swollen liquid crystal templates" CCEM Summer School on Electron Microscopy 2015, June 1-5, McMaster University, Hamilton, Ontario, Canada.
30. Chayan Kanti Nandi, "Molecular Mechanism of Protein Corona: Recent updates on both the theoretical and Experimental Findings" International Conferences in Recent Advances in Molecular Spectroscopy (RAMS 2016), 2-4th March 2016, Central University of Hyderabad.
31. Chayan Kanti Nandi, "A recent updates on the photoluminescence origin of carbon dots and its application in single molecule blinking microscopy" International conferences in Optics in Life Sciences (OWLS 2016), 15-19th March 2016, TIFR an IIT Mumbai.
32. Chayan Kanti Nandi, "Single Molecule Blinking and Localization Based Super Resolution Microscopy using Carbon Dots" 12st international workshop on Single Molecule Spectroscopy and Super Resolution Microscopy in the Life Sciences, 2-4th Sept 2015, Berlin Germany.
33. Chayan Kanti Nandi, "Self-assembled Nanoparticles for Plasmonic Solar Cell" 31st August 2015, Technical University Braunschweig, Germany.
34. Chayan Kanti Nandi, "Single Molecule Localization Based Multicolor 2D-STORM with Photoswitchable Carbon Dots" 1st Sept 2015, Technical University Braunschweig, Germany.

Conferences & Workshop Organized

1. Dr. Nitu Kumari, Member of Organizing committee of Advanced level workshop on "Controllability of Heat and Wave Equations" held at IIT Mandi during 16-20 November, 2015.
2. Dr. Nitu Kumari, Member of Organizing committee of Workshop on "Dynamical Systems, Statistics, Networking and Control" held at IIT Mandi on 30th April, 2015.
3. Dr. Syed Abbas, Member of the organising committee of "Advanced level workshop on controllability of heat and wave equation" sponsored by NPDEA-IITB and DST, 16-20 Nov. 2015.

4. Dr. Muslim Malik has organized an Advanced Level Workshop on the "CONTROLLABILITY OF HEAT AND WAVE EQUATIONS" during the period from November 16 - 20, 2015 at IIT Mandi under the National Programme on Differential Equations, Theory, Computation and Applications funded by DST government of India. Link is here: <http://iitmandi.ac.in/news/articles/mathworkshop2015.html>
5. Dr. Prem Felix Siril, Third international conference on Nanostructured Materials and Nanocomposites (ICNM-2015), "Preparation of nanostructured materials using swollen liquid crystal templates" 12-14 December 2015, Hindustan Engineering College, Mathura.
6. Dr. Prem Felix Siril, International conference on current challenges in drug discovery research (CCDDR-2015) "Novel methods for the nanoformulation of pharmaceutical drugs" 23-25, November 2015, NIT Jaipur, Jaipur.
7. Dr. Suman K Pal, Carrier Dynamics in Dye Anchored Quantum Dots (Qds): Femtosecond Insights in the Theme Meeting of Ultrafast Sciences UFS-2015, SNBNCBS Kolkata, November 19-21, 2015.
8. Dr. Suman K Pal, Time-Resolved Spectroscopic Studies on Photoexcited Processes in Composites of Graphene and Semiconductor Nanomaterials with Organic Molecules in the International Conference on Frontiers of Spectroscopy, BHU, January 10-12, 2015.
9. Dr. Chayan K Nandi, Summer Interns for Mr. Souvik Chakraborty and Ms. Srija.

Participants of "Controllability of Heat and Wave Equations" workshop By Dr. Muslim Malik

Outreach Programmes

1. Dr. Shyam Masakapalli, organised Botanical Garden Inauguration event on 12th July 2015 at IIT Mandi. (http://www.iitmandi.ac.in/news/articles/botanical_garden.html).
2. Dr. Aditi Halder, contributed in organizing Ishan Vikas Program.
3. Dr. Aditi Halder, Participated and presented a poster at the 10th mid-year CRSI symposium in chemistry held at the National Institute of Technology Trichy from Jul. 23 to 25, 2015.



4. Dr. Aditi Halder, Represented IIT Mandi at the YIM 2015 held at Cambridge, U.K. on Sep. 09, 2015.
5. Dr. Aditi Halder, Participated as a mentor, interacted with students and presented a lecture at DST

INSPIRE Internship Camp for school students at Palampur, India on Oct. 14, 2015.

6. Dr. Chayan K. Nandi, visited GE Health Care, TIFR Mumbai, Central University of Hyderabad and Technical University of Braunschweig Germany during 2015-16.
7. Dr. Aditit Halder, visited Industrial Organizations Semi-conducting Research Laboratory, Mohali, Chandigarh.
8. Dr. Muslim Malik, visited the Indian Institute of Space Science and Technology (IIST) Trivandrum for 15 days and did some collaborative research worked with Professor Raju K. George during the period 2nd July 2015 to 15th July 2015.

Other Achievement/Awards

1. Dr. Pradeep C. Parameswaran, received the prestigious 'Newton Bhabha Fund Researcher Links Workshop Grants' for the year 2015-16 from British Council. The application for this grant was submitted in collaboration with University of Nottingham, UK. A workshop titled 'Advanced Nanomaterials for Energy, Health and Sustainability' will be organized in October 2016 at IIT Mandi as part of this grant in which 20 early career researchers each from UK and India are expected to participate.
2. Dr. Arti Kashyap, received Simons Associate Award of ICTP, Trieste, Italy starting from Jan 1, 2015.
3. Dr. Syed Abbas, appointed as Associate Editor of Numerical Algorithm published by Springer (IF: 1.4) from March 2016.
4. Dr. Chayan K. Nandi, received best researcher award at IIT Mandi Foundation Day.

Patents

1. M. Hussain, P. Mondal, W. Song, Hepatic Kisspeptin secretion impairs insulin secretion from pancreatic beta cell Kisspeptin receptor GPR54 antagonist for treatment of prediabetes and diabetes mellitus in humans. US Provisional Patent application Serial number: 61/971,743.
2. Inventors - Raj Kumar, Prem Felix Siril and Pramod Soni, application Number 3939/DEL/2015 dt. 03/12/2015 entitled "A novel EASAI method for preparing nanoparticles of High energetic compounds".

Seminars/Invited Talks

1. Dr. Prosenjit Mondal, gave a talk during the 'Second Meeting of Indian Sub-Continental Branch of the International Neuropeptide Society' - 13-14 December 2015 (National Institute of Science Education and Research (NISER) Bhubaneswar, Odisha, India) Title: Glucagon regulates hepatic kisspeptin to impair insulin secretion.
2. Dr. Bindu Radhamany, conducted international conference "Advances in Electron Spectroscopy-Experiment and Theory (AESET2016)" during the period 18th to 21st Jan 2016.
3. Dr. Chayan K Nandi, gave a talk at Tata Institute of Fundamental Research, Mumbai.
4. Dr. Chayan K Nandi, gave a talk at Technical University Braunschweig, Germany.
5. Dr. Subrata Ghosh, gave a talk on "Photoresists for Nanoelectronics" in the Department of Chemistry, Visva-Bharati University, on 16th July, 2015.
6. Dr. Subrata Ghosh, gave a talk on "Organic Photoresists for Semiconductor Technology" in 'Professor

Ram Chand Paul National Symposium on Progressive Trends in Chemical Sciences' on 23rd Jan, 2016, Department of Chemistry, Punjab University.

7. Dr. Pradeep C. Parameswaran, gave a lecture titled 'Development of Chemosensors for Potential Biological Applications' Lecture at ExMI, RWTH Aachen University on January 25th, 2016.
8. Dr. Venkata Krishnan, delivered an invited talk at the First Finnish Indian Joint Symposium held at Turku, Finland from Oct. 27 to 29, 2015.
9. Dr. Venkata Krishnan, attended an invited lecture at National Workshop on Electron Microscopy and Allied Techniques, University of Delhi, India on Dec. 23, 2015.

Other Activities

New Research Facility Created/ Installed

1. Dr. C. S. Yadav and Dr. Kanstav Mukherjee : During the year 2015-2016, two important sophisticated instruments (PPMS and MPMS) for low temperature studies of Physical and Magnetic properties, were installed in the laboratory. One set up for electrical resistivity measurement at high temperature was designed and fabricated at the laboratory.
2. Dr. Bindu Radhamany: Setup Photo-emission lab.
3. Dr. Chayan K. Nandi: Established a complete custom built super resolution set up at IIT Mandi.

School of Humanities and Social Sciences (SH&SS)

One of the strengths of the School of Humanities and Social Sciences at IIT Mandi is its young and talented faculty who are engaged in broad ranging research work. The year 2015-2016 saw the addition of new faculty in disciplines such as Economics and German Studies, areas where courses have consistently attracted our bright and energetic B. Tech students. In addition the School proposed a Minor in Management. This Minor is expected to equip our undergraduate students for key decision-making and management roles in government, non-profit and business organizations after their B. Tech degrees from the Institute. The Management Minor will also be helpful for those undergraduate students who would like to pursue MBA degrees in their careers. One of the main roles the School plays at IIT is equipping students with communication skills and linguistic abilities to participate in the global arena. To achieve this aim the School with generous funding from the Institute is setting up a Language Lab at IIT Mandi. It is hoped that this Lab will provide the space for both teachers and students to engage in effective language learning and dissemination. This past year saw a number of publications by the faculty in national and international journals, conferences and prestigious fellowships. Special mention may be made of visiting faculty Prof. Pramod Talgeri who was conferred the Cross of the Order of Merit of the Federal Republic of Germany ("Bundesverdienstorden") in recognition of his outstanding achievements in promoting Indo-German cultural interaction and deepening the relations between Germany and India. The Order of Merit is the highest civilian tribute the Federal Republic of Germany bestows on individuals for services to the nation. Other faculty achieved their own milestones getting their books in press. Faculty also engaged wholeheartedly in graduate and undergraduate teaching including participating in the Interdisciplinary Socio Technical Practicum, a signature third year B. Tech course.

Faculty

Dr. Rajeshwari Dutt

Chairperson

Assistant Professor

Specialisation: Latin America, Social and Cultural History

Ph.D. from Carnegie Mellon University, USA

Home Town: Kolkata, West Bengal

Phone: 01905-267043

Email: rdutt

Dr. Ashok Kumar Mocherla

Assistant Professor

Specialisation: Sociology of Religion, Caste and Christianity in India

PhD from IIT Bombay

Home Town: Tenali, Andhra Pradesh

Phone: 01905-267135

Email: ashok

Dr. Aruna Bommareddi

Assistant Professor

Specialisation: Comparative Literature, Indian Literatures in English

PhD from University of Hyderabad

Home Town: Hyderabad, Andhra Pradesh

Phone: 01905-267121

Email: aruna

Prof. Balasundaram Subramanian

Visiting Professor

Specialisation: German Studies and Political Philosophy

Ph.D in German Studies

Home Town: Velachery, Chennai

Phone: 01905-267062

Email: bs

Prof. Bhavender Paul

Adjunct Professor
Specialisation: Management Strategy, Managerial Finance, Biotechnology & Pharmaceutical Technology
PhD Biochem. E. Rutgers U., New Brunswick NJ '77; MBA, Syracuse U., Syracuse NY '85
Home Town: San Mateo, CA USA
Phone: 01905-267046
Email: bp

Dr. Gokul Somasekhran

Teaching Fellow
Specialisation: German Literature
PhD from Free University, Berlin
Home Town: Thrissur, Kerala
Phone: 01905-267134
Email: gokul

Prof. Pramod Talgeri

Visiting Professor
Specialisation: Philosophy of Hegel and Critique of Modernity and Contemporary Western Philosophy, Modern German Literature, Comparative Literature
PhD from University of Munich, Germany
Home Town: Pune, Maharashtra
Email: pramod

Dr. Ramna Devi Thakur

Visiting Assistant Professor
Specialisation: Development Economics
PhD from HPU Shimla
Home Town: Mandi, Himachal Pradesh
Phone: 01905-267044
Email: ramna

Dr. Shail Shankar

Assistant Professor
Specialisation: Identity and Group Dynamics, Health and Well Being
PhD from University of Allahabad
Home Town: Deoria, Uttar Pradesh
Phone: 01905-267149
Email: shail

Dr. Devika Sethi

Assistant Professor
Specialization: Modern Indian History, Colonialism and Decolonization, Free Speech and Censorship
PhD from JNU, New Delhi
Home Town: Allahabad, Uttar Pradesh
Phone: 01905 267050
Email: devika

Dr. Manu V. Devadevan

Assistant Professor
Specialisation: Literary practices in South Asia, Political and economic processes in premodern South Asia & South Asian Epigraphy
PhD from: Mangalore University, Mangalore
Phone: 01905-267147
Email: manu

Dr. Puran Singh

Assistant Professor
Specialization: Corporate Finance, Microfinance
PhD from Punjab University, Punjab
Home Town: Mandi, Himachal Pradesh
Phone: 01905 267146
Email: puran

Ms. Sara Ladas

Visiting Instructor German
Specialisation: German and Roman Philology
Home Town: Weil der Stadt / Stuttgart

Dr. Sharmila Sreekumar

Visiting Associate Professor
Specialization: Autobiography Studies, Gender Studies
Ph.D. from University of Hyderabad
Home Town: Ernakulam, Kerala

Dr. Suman Sigroha

Assistant Professor
Specialisation: Colonialism, Post colonialism, Imperialism and Romance Literature
PhD from IIT Delhi
Home Town: Faridabad
Phone: 01905-237994
Email: suman.sigroha

Dr. Shyamasree Dasgupta

Assistant Professor

Specialisation: Energy and Environmental Economics, Economics of Climate Change, Applied Econometrics

PhD from Jadavpur University, Kolkata

Home Town: Kolkata, West Bengal

Phone: 01905-267118

Email: shyamasree

Dr. Surya Prakash Upadhyay

Assistant Professor

Specialisation: Sociology of Religion, Urban Sociology, Post-Reform India

PhD from IIT Bombay

Home Town: Lucknow, Uttar Pradesh

Phone: 01905-267142

Email: surya

Dr. Tripti Singh

Teaching Fellow

Specialisation: Indian Digital Arts, Visualisation, New Media Arts and Visual Content Development. PhD from Banasthali University, Rajasthan

Home Town: Kanpur, Uttar Pradesh

Phone: 01905-267053

Email: tripti

Dr. Varun Dutt

Assistant Professor (Joint Appointment)

Specialisation: Judgment and Decision Making, Environmental Decision Making, Artificial Intelligence, Human-Computer Interaction

PhD from Carnegie Mellon University, USA

Home Town: Lucknow, Uttar Pradesh

Phone: 01905-267041

Email: varun

Research Projects

Externally Sponsored Research Projects

Sr. No.	Project Sponsoring Agency	Title	Investigators	Project cost(in ₹)
1	UGC	The Sixteenth Century Renaissance in South India	Dr. Manu V. Devadevan	48,00,000
2	Ministry of Culture	Preservation of Himalayan Culture	Dr. Ramna Thakur	7,00,000

Seed Grant Project/Internal Project

Sr. No.	Project Sponsoring Agency	Title	Investigators	Project cost(in ₹)
1	Seed Grant	Mayans in 19th Century Mexico & Belize	Dr. Rajeshwari Dutt	6,20,000
2	Seed Grant	Disaster at Mass Gatherings: A study of pilgrims shared identities and responses to catastrophic flooding	Dr. Shail Shankar	4,20,000
3	Internal	Entrepreneurship Cell (IEC) IIT Mandi	Prof. Bhavender Paul	2,00,000

Books Published

- Aruna Bommareddi, Narrative Traditions of a Telugu Epic, Palnativirula Katha. (In press).
- Manu V. Devadevan, A Prehistory of Hinduism, De Gruyter, 2016.
- Manu V. Devadevan, Clio and Her Descendants: Essays for Kesavan Veluthat, Primus, 2016 (forthcoming).

Book Chapters Published

- Aruna Bommareddi, Translation of Saraswati Ammal's story into Telugu Darulesina Aksaralu (Women Writing in India). (eds) Susie Tharu and K Lalitha, Hyderabad: Anveshi Research Centre for Women's Studies & Hyderabad Book Trust, 2015, P.137-144.
- Shyamasree Dasgupta, "Designing PAT as a climate Policy in India: Lessons learnt from EU-ETS" in N. Ghosh, P. Mukhopadhyay, A. Shah, M. Panda (Eds.) Nature, Economy and Society: Understanding the Linkages. 2016. Springer. With Frank van der Salm and Joyashree Roy.
- B. Subramanian, Engineering Education in India. A Comprehensive Overview. In: Christensen, S. H. Didier, C. Jamison, A. Meganck, M. Mitcham, C. Newberry, B. (eds.); International Perspectives on Engineering Education: Engineering Education and Practice in Context. Volume I. Springer Science + Business Media B.V. Heidelberg/New York/ London 2015.
- Suman Sigroha, Violence, Social Welfare and Popular Hindi Cinema. MCSWELL-2016, New Delhi, 2016.

Papers Published in Reputed National and International Journals

- Aruna Bommareddi, Conference proceedings: of Death. BESSH-2016, SBN No. 978-969-670-252-8.
- Devika Sethi, 'The Lived Experience of Technology' (Review of Ritika Prasad, Tracks of Change: Railways and Everyday Life in Colonial India, 2015), The Book Review, Vol. XL, No. 5, New Delhi, May 2016.
- Devika Sethi, 'Material, Spiritual, Divine Ganga' (Review of Assa Doron, Richard Barz and Barbara Nelson (eds), An Anthology of Writings on the Ganga: Goddess and River in History, Culture, and Society, 2014), The Book Review, Vol. XXXIX, No. 10, New Delhi, October 2015.
- Devika Sethi, 'Origins of the Present, Legacies of the Past' (Ishita Banerjee Dube's, A History of Modern India), The Book Review, Vol. XXXIX, No.4, New Delhi, April 2015.
- Ramna Thakur and Shivendra Sanger, Increasing Inequality in the Western Indian Himalayan Region, Economics and Finance, Elsevier, 30, 2015, PP. 910-922.
- Ramna Thakur and Shivendra, Changing Pattern of Catastrophic Payment in Health and Health Inequality in Himachal Pradesh, The Indian Economic Journal, Special Issue, December, 2015, PP. 204-211.
- Shyamasree Dasgupta and Roy, J. (2015). Understanding technological progress and input price as drivers of energy demand in manufacturing industries in India. Energy Policy. 83 (August 2015). Pp.1-13.
- B.Subramanian, Alexander von Humboldt's Travelogue. A „Convenient Vehicle for Miscellaneous Discussions“? Journey as Philosopheme in Humboldt and Darwin. In: "Le Soi et le Cosmos d'Alexander von Humboldt à nos jours". Ed. Soraya Nour Sckell. Berlin (Duncker & Humblot) 2015.
- B.Subramanian, Das postkathartische Moment moderner Essayistik. Zum Essay "Der blinde Schütze" von Rudolf Kassner. In: Studia Germanica Gedanensia, 2015.
- Manu V. Devadevan, "Problems and Prospects in the History of Literature", Beyond Disciplines: An International Journal of Central University of Karnataka, 1, 2016.
- Suman Sigroha, Deconstructing False Identity: Exploring Gender Discrimination And Role-Playing in The Girl Who Touched The Stars. Neeraj Sankhyan and Suman. CELT- Journal of Culture, English

Language Teaching and Literature, 15: 2, 165 - 177, (2015).

- Suman Sigroha, David Omissi. 2014. Indian Voices of the Great War. *Millennial Asia*. 6, 2: 205-208, (2015).
- Suman Sigroha, Experimental Fiction by Julie Armstrong. *Transnational Literature*, 7: 2, (2015).
- Ashok Kumar M. SavioAbreu, & Rowena Robinson. "Indian Christians: History and Contemporary Challenges" in Mujibur Rehman (Ed.) *Secularism in India: Changing Counters*. New Delhi: Routledge Publications, 2016.

Conferences Attended and Papers Presented

- Aruna Bommareddi, Attended a Conference in 28-9 March 2016 at the Bondung Institute of Technology, Jakarta on Humanities and Social Sciences and presented a paper Of Death. BESSH-2016, SBN No. 978-969-670-252.
- Ramna Thakur and Shivendra Sanger, Increasing Inequality in the Western Indian Himalayan Region, 4th Economic and Finance Conference, IISES, London, United Kingdom, August, 2015.
- Ramna Thakur and Shivendra Sanger, Changing pattern of catastrophe in paying for health care in India: a disaggregated analysis, 18th International Academic Conference, IISES, London, United Kingdom, August, 2015.
- Ramna Thakur and Shivendra Sanger, Changing Pattern of Catastrophic Payment in Health and Health Inequality in Himachal Pradesh, 98th Annual Conference of Indian Economic Association, India, 2015.
- Ramna Thakur, Dutt Varun and Sangar Shivendra, Human Resources and Infrastructure for Health in the Himalayan Region, Conference Organised by Indian Health Economics and Policy Association (IHEPA), University of Rajasthan, 13-14 February, 2015, Rajasthan, India.
- Ramna Thakur, Round-Table Discussion on "Framing Women's Health Issues in 21st Century, India" organized by the George Institute for Global Health, University of Oxford, March, 2016.
- Ramna Thakur, Oxford-India Health Research Network Symposium (OIHRN), the George Institute for Global Health, University of Oxford, U.K., October, 2015.
- Tripti Singh In 18th Generative Art Conference (GA2015) Conference Paper Presented Digital Art Fabric Prints: Procedure, Process and Progress in Dec 2015.
- Tripti S. Second Solo Show 'Bindi', at Jehangir Art Gallery, Kala Ghoda, Mumbai, from 18-25 March 2016.
- Pramod Talgeri, Participated in the XIIth International Congress of German Studies in China at Shanghai from August 23, 2015 to September 1, 2015. I was invited as Co-Chairman of the Section on "Multilingualism" and also presented a paper on "Multilingualism in India".
- B.Subramanian, Indienoder die Abwesenheit der Tragödie. XIII World Congress of the International Association for Germanic Studies, Tongji University, Shanghai 2015.
- B.Subramanian, "EsgiebtimmerZuschaun." ZurAnamnetik des Vater-Sohn-Konfliktsbei Rilke. XIII World Congress of the International Association for Germanic Studies, Tongji University, Shanghai 2015.
- B.Subramanian, Vielfalt in der Einheit. Indienim Zeichen der Mehrsprachigkeitheute. XIII World Congress of the International Association for Germanic Studies, Tongji University, Shanghai 2015.

- B.Subramanian, Goethes Reiseins Lande der Dichter. Conference on “Goethesliterarische Reisen” organized by Goethe Society of India, University of Rajasthan, Jaipur 2015.
- Rajeshwari Dutt, Rajeshwari, “Between Two Worlds: British and the Maya in Nineteenth Century Belize” The British Scholar Society's Britain and the World Conference, Austin, 2015.
- Suman Sigroha, Poetry as Counter-Culture: Reading Identity in Kynpham Sing Nonkynrih's Poetry. With Neeraj Sankhyan. IIAS Shimla, India (2016).
- Suman Sigroha, Violence, Social Welfare and Popular Hindi Cinema (Dil Se, Mission Kashmir, Fanaa). Lingaya's University, Faridabad, India (2016).
- Suman Sigroha, Literature as Social Agenda: Exploring Social Concerns/Motives in the poetry of Tamsila A. MELOW Delhi, Indraprastha University, Delhi, India (2016).
- Suman Sigroha, The Voice of the Common Man: Humour and Public Discourse in R. K. Laxman's Cartoons. 27th Conference of the International Society for Humor Studies. Holy Names University, California, USA (2015).

Conferences and Workshop Attended/Organised

Workshop/ Conference Attended

- Shyamasree Dasgupta, Empowering people. Onsite - Training Workshop on Market Research and Customer Insight. Siemens Stiftung Foundation. (March 10-12, 2016) in Panaruban, Indonesia.

Workshop/ Conference Organized

- Prof. Janak Pandey, “Psychology and Societal Development” 3rd lecture, in the Distinguished Lecture Series (DLS), 19th May, 2015.

Invited Lecturers/Continuing Education Programs (From other Institutes)

- Devika Sethi, Delivered an invited lecture at the Indian Council of Historical Research (ICHR), New Delhi, on 25 June 2015, titled 'The Ban Formula: Non-Indian Authors and the Colonial State in the 1920s-30s'.
- Shyamasree Dasgupta, Two lectures on 'Energy and Industry: Growth Accounting and Decomposition Analysis' delivered at QIP Workshop on 'Sustainable Development' at Department of Humanities and Social Sciences, Indian Institute of Technology, Kanpur (1-4th December, 2015)□.
- Pramod Talgeri, Delivered a lecture on "Modernity" ("What does it mean, when a European says 'I am Modern?') as a guest lecture for the IIT Faculty and students.

Outreach Programmes

Outreach Activities

- Bhavender Paul, “Coordination of the Ishan Vikas program”, and the support of village high school education with the objective of motivating high school students to study science and engineering, and to help improve the quality of their overall education.

Academic Visits

- Suman Sigroha, Visiting Researcher, Stanford University, California, USA (June-July 2015).
- Suman Sigroha, RWTH Aachen, Aachen, Germany (July 2015).

Other Achievements

Professional Achievements, Honours and Awards

- Ramna Thakur, 'ERASMUS MUNDUS' Academic Research Fellowship, University of Oxford, UK, 2015.
- Pramod Talgeri, Cross of the Order of Merit of the Federal Republic of Germany, 2015.

Membership of Professional Societies

- Shyamasree Dasgupta, The International Society for Ecological Economics
- Tripti Singh Membership of the Scientific and Technical Committee & Editorial Review Board on Humanities and Social Sciences. May 09, 2016.
- B.Subramanian, Member, International Association for Germanic Studies (IVG).
- B.Subramanian, Member, International Rilke-Gesellschaft.
- B.Subramanian, Member, International Goethe-Gesellschaft.
- B.Subramanian, Vice-President, Goethe Society of India.
- B.Subramanian, International Representative, International Association for Intercultural German Studies (GiG).
- Shail Shankar, Association of Psychological Sciences.
- Shail Shankar, International Association of Cross Cultural Society.
- Shail Shankar, American Psychological Association.
- Shail Shankar, International Association of Applied Psychology.
- Rajeshwari Dutt, Latin American Studies Association.
- Rajeshwari Dutt, American Historical Association.
- Rajeshwari Dutt, British Scholars Society.

MEMORANDA OF UNDERSTANDING (MoU)

Collaboration between Indian Institute of Technology Mandi and Institutions Overseas



International Activities of IIT Mandi with the Overseas Institutions

International Bachelor's, Master's and Ph.D. students can spend up to one year at IIT Mandi under student exchange programme. Also, International students can pursue graduate degree programs at the Institute. Students, coming under student exchange or degree programs, can get academic credit for courses they take at IIT Mandi. International students can work with the Institute's faculty on collaborative research topics involving institutional, regional, and national interests. IIT Mandi also provides possibilities for faculty members at international Universities/Institutes to spend time at the Institute for the purposes of teaching and research. The fields where IIT Mandi is currently involved at the Bachelor's, Master's, and Ph.D. levels include; Computer Engineering, Electrical Engineering, Civil Engineering, Mechanical Engineering, Basic Sciences, and Humanities and Social Sciences. For those international universities with which IIT Mandi has an existing Memorandum of Understanding (MoU)/agreement, the terms and conditions for the exchange of students and faculty is determined by the underlying MoU/agreement. For students and faculty of international universities with which IIT Mandi does not have an MoU/agreement, the terms and conditions on exchange, IPR, and funding pattern need to be worked out.

Using an existing MoU with Worcester Polytechnic Institute (WPI), USA, IIT Mandi invited a team of 23 WPI undergraduate students and two faculty mentors to visit the Institute for two-months during March, 2016. These students worked with similar number of IIT Mandi Undergraduate students in solving a number of socio-economic issues concerning the local communities in Mandi, Kamand and its surroundings. Furthermore, a number of international students visited IIT Mandi in the preceding years. Clara Hayn, Florian Peter, and Marcel Padilla visited IIT Mandi under DAAD RISE program from TU Dresden, TU Stuttgart, and TU Berlin, respectively, between July, 2015 and October, 2015. Julian Baumgartel visited IIT Mandi from TU Munich under student-exchange program. Julian was the first international student, who took courses at IIT Mandi for academic credit. Furthermore, Zipporah Wanjiku Muthui visited IIT Mandi between in January 2016. for her Ph.D. work from University of Nairobi, Kenya. Muthui is working on a Postgraduate Training Fellowship by the Organization for Women in Science for the Developing World (OWSD).

There were a number of workshops conducted at IIT Mandi involving visitors from universities abroad between April 2015 and March 2016. IIT Mandi organized a workshop on "Advances in Electron Spectroscopy - Experiment and Theory (AESET 2016)" in January 2016. As part of this workshop, a number of faculty and researchers visited IIT Mandi from institutions and labs in Japan (University of Tokyo), France (Ecole Polytechnique and Palaiseau Cedex), Germany (IFW Dresden; University of Wuerzburg; TU Dresden; Max Planck Institute for Chemical Physics of Solids; University of Duisburg; and, University of Goettingen), and USA (Argonne National Laboratory and Brookhaven National Laboratory).

In addition, IIT Mandi hosted a workshop on "Applications of Smart Materials" on 17th July, 2015. Dr. Jens Twiefel from Leibniz, Germany and Prof. Michael Sinapius from German Aerospace Center visited IIT Mandi for this workshop. Prof. Balthasar Novak from TU Stuttgart visited IIT Mandi to attend the 3rd Workshop of Civil Engineering on 2nd & 3rd March, 2015. This visit was related to the development of the B. Tech. Civil Engineering curriculum at IIT Mandi.

Delegates from Purdue Pharma L.P., a pharmaceutical company located in Stamford, Connecticut, USA, visited Indian Institute of Technology (IIT) Mandi on 21st and 22nd July, 2015. The delegation from Purdue Pharma included, Mr. Larry A. Pickett, Jr., Vice President & Chief Information Officer; Mr. Sayee

Natarajan, Director, Systems Development and Business Analytics; and, Mr. Nataraj Dasgupta, Data Scientist and Senior Lead. IIT Mandi has an on-going collaboration with Purdue Pharma on projects that are worth more than USD 100,000. Innovative research involving machine learning and data mining for sales and analytics in pharma is ongoing as part of these projects.

IIT Mandi's graduate and undergraduate students have visited several EU institutions under academic exchange programme during 2015-16. The undergraduate visits include; 5-students to TU, Munich; 2-students to RWTH Aachen, Germany, 3-students to Aalto University, Finland; 3-students to IT University of Copenhagen, Denmark; and, 1-student to Blekinge Institute of Technology, Sweden. One MS student visited TUM under DAAD Scholarship from 1st September, 2015 to 31st March, 2016.

A number of IIT Mandi's faculty also visited TU9 institutions, Germany in 2015 for fostering academic collaborations with international partners. Dr. Prem Felix Siril and Dr. Rik Rani Koner visited KIT Germany between May, 2015 and August, 2015; and, Dr. Pradeep Parameswaran visited RWTH Aachen University between November, 2015 and January, 2016.

The existing MoU between BTH and IIT Mandi has been renewed for next five years. IIT Mandi in partnership with BTH Sweden obtained Erasmus+ International Credit Mobility (ICM) financing for student, staff, and faculty mobility between the two Institutions for the period from June 2016 to August 2018. IIT Mandi has signed an MoU with McMaster University, Canada in February 2016 to collaborate and strengthen academic and research cooperation for mutual benefit for the next five years.

Selected Photographs



A Group Photo of workshop on “Applications of Smart Materials” on 17th July, 2015



AESET 2016 Group, a workshop on “Advances in Electron Spectroscopy - Experiment and Theory (AESET 2016)” 18th to 21st January 2016

THRUST AREA RESEARCH CENTRES

Advanced Materials Research Centre (AMRC)

Coordinator : Dr. Venkat Krishnan

AMRC Administrator : Dr. Rik Rani Koner

Development of advanced materials, particularly for engineering devices, is a critical area for competing at the international level. In this endeavor, IIT Mandi has started researching in the interdisciplinary area of novel materials for electrical, electronics, biological and other applications by setting up laboratories that house synthesis and characterization facilities. In order to serve research activities, fully functional synthesis and characterization labs are already established at IIT Mandi with a full range of basic instruments and facilities. In addition, an Advanced Materials Research Centre (AMRC), a centralized research facility has been established in a purpose-built building in the new campus. At AMRC, researchers investigate the basic structure of materials, and develop novel materials for electrical, electronics, biological, and other applications. AMRC caters to about 45 Ph.D. scholars and 10 postdoctoral researchers, who work in an inter-disciplinary team led by about 20 faculties. In addition, about 40 M.Sc. (Chemistry) and M.Tech. (Energy Materials) also make use of the facilities as a part of their academic curriculum.

AMRC houses several state-of-the-art equipments for materials research including:

- (1) High Resolution Powder X-ray Diffractometer
- (2) Single Crystal X-ray Diffractometer
- (3) High Resolution Transmission Electron Microscope
- (4) Nuclear Magnetic Resonance Spectrometer
- (5) Fluorescence Confocal Microscope
- (6) High Resolution Mass Spectrometer
- (7) Femtosecond Pump-Probe Set-Up
- (8) Field Emission Scanning Electron Microscope
- (9) Magnetic Property Measurement System
- (10) Physical Property Measurement System
- (11) Raman Spectrometer and
- (12) X-ray Photoemission Spectrometer

Several other equipments such as Atomic Layer Deposition (ALD) and Surface area isotherm (BET instrument), will be installed in the near future. In addition to the above mentioned sophisticated instruments, AMRC also houses regular characterization instruments, such as UV-vis spectrophotometer, circular dichroism spectrometer, atomic absorption spectrometer, optical microscope, fluorescence spectrometer, electrochemical analyzer, thermos gravimetric analyzer coupled with differential scanning calorimetry, high performance chromatography, gel permeation chromatography, gas chromatography, dynamic light scattering setup, etc.

The facilities available at AMRC is not only used by the researchers of IIT Mandi, but are also extended to outsider researchers and industrial users. Predominantly, AMRC gets external users from the neighboring regions in Himachal Pradesh, Punjab and Jammu-Kashmir states, although there are also some external users from distant institutions. Several external users often visit or send-in their samples for analysis at the AMRC facilities. A representative list of external institutions that have made use of the AMRC facilities is given below.

List of external institutions that have made use of AMRC facilities:

- Himachal Pradesh University (HPU), Shimla, Himachal Pradesh
- Institute of Himalayan Bio-resource Technology (IHBT), Palampur, Himachal Pradesh
- Jawaharlal Nehru Government Engineering College, Sundernagar, Himachal Pradesh
- National Institute of Technology (NIT), Hamirpur, Himachal Pradesh
- National Institute of Technology (NIT), Warangal, Telangana
- National Institute of Technology (NIT), Durgapur, West Bengal
- University of Jammu, Jammu, Jammu and Kashmir
- Punjab University, Chandigarh
- Punjabi University, Patiala, Punjab
- Guru Nanak Dev University (GNDU), Amritsar, Punjab
- Shoolini University, Solan, Himachal Pradesh
- Sirda Group of Institution, Sundernagar, Himachal Pradesh
- Santlongowal institute of engineering and technology, Sangrur, Punjab
- Shiv Nadar University, Gautam Buddha Nagar, Uttar Pradesh

Publications using AMRC facilities:

The research results, obtained using the facilities available at AMRC, have been published in reputed international journals. AMRC has produced more than 150 research articles since its inception in 2013 and in the year 2015-16, more than 60 research articles have been published.

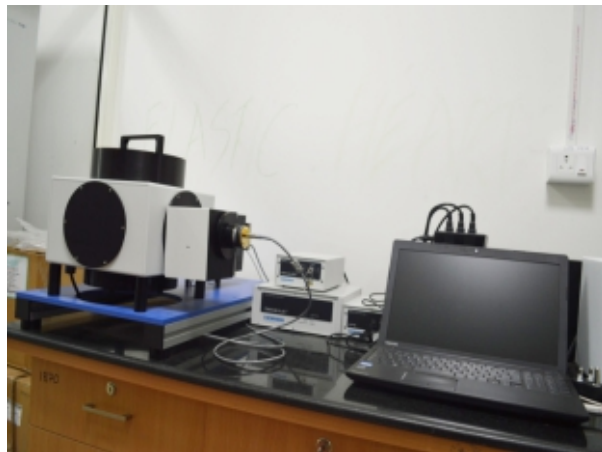
Major equipment recently installed:



Photoemission spectrometer



Raman spectrometer



TCSPC Lifetime



Multimode plate reader



Sonicator (Qr 500)

Centre for Design & Fabrication of Electronic Devices, (C4DFED)

Co-ordinator : Dr. Satinder Kumar Sharma

The upcoming Centre for Design & Fabrication of Electronic Devices (C4DFED) will be a unique institute facility for multidisciplinary research. The centre will have Class 100, Class 1000 & Class 10000 laboratories where high end tools and sophisticated equipment will be housed. This centre will be capable of handling research projects like Development and Application of Nanoelectronics, Development of Extreme Ultraviolet Lithography (EUL) resists materials for the next generation technology node, IC design and fabrication and Nano-Micro (NEMS & MEMS) systems and designs etc.

The centre consists of three class 100 clean labs of about 1100 Sq Ft to house Lithography equipment, Nano & Micro Imaging with other device characterising equipment and related tools. One class 100 lab will be dedicated for sample preparation. 400Sq Ft of Class 1000 lab to house material preparation & synthesis equipment & tools. Approx. 300 Sq Ft Class 10000 lab will be used to house required oxidation furnace and other related equipment. A separate lab is being developed for designing work.

The development of the centre is in full swing. IWD, CPWD, Civil contractor and Clean room vendor are working together to complete the centre before September 2017. A full time consultant has also been hired to check for fast and proper development of the centre. All equipment will be installed after

successful commissioning of the centre.

Total Cost of the Project: Rs. 10 Crores + Equipment

Total Power Requirement: 600 KVA

We expect that a large number of (~ 200 to 500) Masters and PhD students will be using this facility for their dissertation and thesis work in next 15 years.

Availability of such high end facility will increase the number of submission of fresh proposals to various sponsoring agencies and industries for further funding. We also expect drastic increase in number and quality of research papers.

Addition of these high end facility will place IIT Mandi as an elite institution in India in the design and fabrication of electronics devices as there are very few such facilities exist in the country.

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT



PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

BioX

Co-ordinator : Dr. Tulika P. Srivastava

R & D and Teaching:

Situated in the largely agrarian, scenic and fragile Central Himalayas, IIT Mandi has a focus on agriculture and the environment. Another important focus area of research is human health. Towards this, IIT Mandi has initiated activities in the life sciences in the broad areas of immediate relevance to the Himalayan region, and to health care particularly for the rural and lower-income strata of society.

There is an immediate need to extend the benefits of advanced knowledge and technology to the traditional farmers, particularly those engaged in the cultivation of fruits, vegetables, saffron and medicinal plants in this region. Also, with the advancements in technology, better health care regimes need to be evolved. Towards these goals, IIT Mandi has recruited six faculties in Life Sciences as a part of the School of Basic Sciences. The faculties are engaged in highly interdisciplinary research including life sciences, biophysics, nanotechnology, bioinformatics, plant systems biology, and others. The thrust areas of research which are being focused are as mentioned below:

- Himalayan biodiversity conservation
- Immunomodulators for inflammatory disorders
- Natural products biotechnology for health and industry
- Nanotechnology for Theranostics
- Diabetes and related endocrine disorders
- Big data analysis and bioinformatics
- Biophysics, protein folding and Intrinsically Disordered Proteins (IDPs)

The research areas related to human health primarily involve exploring potential therapies for diabetes, Alzheimer's, Parkinson's, Cardiovascular disease, and cancer. These involve developing therapy and diagnostics, drug/gene delivery systems, and noninvasive bioimaging procedures for the above, and other diseases. Another target is the exploration of potential probiotics for human health and gaining insights into gut microbiota for health benefits.

The research areas related to the environment include exploration of microflora and extremophiles of the Himalayas, development of biofuels from agricultural and food waste material, and the development of nanosensors for pollutant detection in different environments.

Himalayan flora and fauna are known for their unique medicinal values and this traditional knowledge needs rigorous scientific validation using modern technological tools. The program on agriculture involves screening of medicinal plants from the Himalayan region for pharmaceuticals and crop protection, improvement and productivity enhancement.

IIT Mandi has already acquired some of the basic experimental facilities for the research activities in life sciences and related areas. The basic experimental facility is already in place at two locations: one as a part of the Advanced Material Sciences Center (AMRC) in the Kamand Campus and another is situated in the Mandav block of Mandi Campus. In addition, another basic biology research facility, animal house facility, and more advanced facility housing sophisticated and state of the art instrument are being planned. A basic computational facility to support bioinformatics research is also in place and a high performance computing facility to support biological research activities is planned already.

The institute plans to evolve its teaching and research in several areas of biotechnology, viz. systems biology, bioinformatics, biophysics of misfolding diseases, Intrinsically Disordered Proteins (IDPs), metabolic engineering, nanobiotechnology, translational medicine, synthetic biology, etc. exploiting their strong synergy with different areas of technology. Towards achieving these goals, IIT Mandi is committed to intensify academic research and development in several areas of BioX. Along with the ongoing PhD programme in BioX, IIT Mandi has started an M.Tech in Biotechnology programme from August 2016 with the goal to train the next generation of students with cutting edge knowledge and skills suitable towards biotechnological research and bio-pharma based industry.

M.Tech in Biotechnology programme at IIT Mandi is intended to nurture and train the students with strong interest in research and Bio-industry to meet the existing challenges of the biomedical research/ industry. The curriculum is directed towards fundamental and practical understanding of the core biotechnology areas along with specialized fields in the form of specialization programs in “Systems Biology” and “Medical and Nano-biotechnology”. In addition, elective courses from other disciplines will provide interdisciplinary exposure to the students. The core-subjects, specialized theme areas of BioX, electives from other schools, hands on laboratory training along with the Thesis project component to be undertaken in-house/ other R&D institutes/ industries will enrich students with right skills required in the current Job market both in academia and industries, on completion of the program.

Research Groups

UHL: The Centre for Uplifting Himalayan Livelihood (UHL):

IIT Mandi with its focus on multi-disciplinary approach carries a 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*. With this goal in mind, many of the faculty members at IIT Mandi have involved themselves into the activities which in the long run will help to achieve the vision of IIT Mandi. One such effort is the **Centre for Uplifting Himalayan Livelihood (UHL)** which was set up in 2012 with the help of a grant by DST, Govt of India. Within a small span and limited resources, the center has already undertaken many projects of social and economic importance and has created an impact. Details of these projects are as following

1. Eco- friendly Utilization of hazardous Pine Needles for social benefits

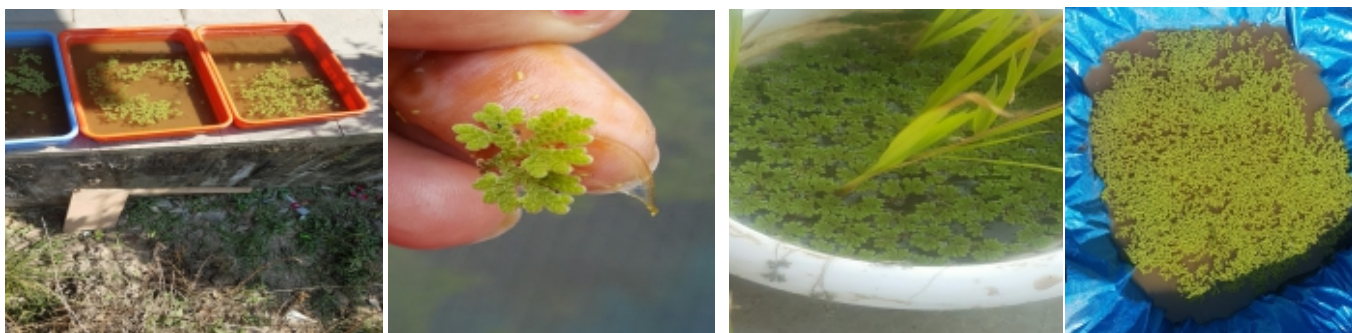
Pine Needles cause major threat to environment, biodiversity and local economy in entire Himalayan region due to their non-bio-degradability and highly-inflammable nature. In this project, utilization of pine needles by the pelletization/ briquetting in conjunction with various biomasses is the central focus for social benefit.

As a first step, the briquettes of pine needle with the combination of saw dust and wood chips are prepared. This experiment is successfully conducted at Ochha Fuels Private Limited situated in Nagrota Bagwan. The commissioning of the set up at IIT Mandi premises is under process. Some photographs are shown below



2. Azolla as livestock feed

Azolla is a water fern which can be a better alternate of cattle feed. It can also be used as a bio- fertilizer. The main advantage of Azolla is that it improves the quantity as well as quality of milk. The conducted experiments reveal that Azolla can significantly increase the milk yield by 15-20%. We are observing the optimal conditions for the production of Azolla. Considering the cold temperatures of the region it is turning out to be a challenging task to save it from hard winters. Furthermore, we also aim to check the viability of the Azolla as a replacement of fertilizer in rice field. We are also conducting surveys and a social awareness program regarding the production of Azolla. Some photographs of Azolla are given below



Apart from these long term activities many short term projects are also taken up in various domains like education, health and social benefits etc.

Design and Innovation Centre:

The Design Innovation Centre at IIT Mandi provides necessary ecosystem for graduates and research scholar to develop much needed skills that are required to design and develop products and technologies. Since India is moving towards “Make in India” policy and IIT Mandi’s mission and vision are coherent with the country vision, our institute attempt to produce graduates and research scholars with skills that would enable them to think independently in terms of creativity and innovation. With the conviction that technological innovation constitutes an essential element for achieving progressive development and permanent improvement in any activity, state-of-the-art design centres being set-up in the campus funded by MHRD. Since the next wave of economic growth globally will be led by innovation and entrepreneurship, this would be the key economic driver for India in the coming years.

Multimedia Analytics and Systems (MAS):

The multimedia analytics and systems (MAS) lab at IIT Mandi broadly focuses on extracting useful information from various types of data including images, audio and video streams, social networks, documented records etc. The group is currently looking at topics on computer vision, medical image analysis, speech and audio signal processing and social and data network analysis. The current research as the MAS lab can potentially contribute to various domains. Some of these are healthcare, security and surveillance systems, human computer interaction, ecology and environment and social media. One of the current efforts from the group is to develop low-cost low-magnetic field magnetic resonance imaging (MRI) systems. The proposed MRI system is intended to screen and monitor the limb and brain injuries of subjects at remote locations and is proposed to be transportable. Along the same objectives, some of the faculty are working in collaborations with industry to develop computer aided diagnostic system for PAP smear image processing for cervical cancer detection. Other activities include ongoing collaboration efforts with hospitals and industry for radiological and histo-pathological image processing, analysis of healthcare census data, and medical instrumentation. Another interesting task which marries environmental/ecological aspects to technology is automatic classification of bird sounds, images and videos. This can be used to monitor environmental changes and promote conservation efforts. The group is also involved in projects related to 3-D vision and human activity analysis.

<http://maslab.iitmandi.ac.in/>

Condensed Matter Physics:

The condensed matter physics group is one of the prolific groups at IIT Mandi, with approximately 30 researchers including 7 faculty members, studying various problems related to the exotic electronic states of matter such as multiferrocity, superconductivity, metal-insulator transition, and magnetism; along with the study of energy materials such as thermoelectric, photovoltaic and optoelectronics of graphene etc.

The group is well equipped with the state of art facilities for material characterization such as Physical Properties Measurement System (PPMS), Magnetic Properties Measurement System (MPMS), Raman Spectrometer, Photoemission Spectrometer (PES), Low temperature X-Ray Diffractometer etc. These facilities are well complemented by homemade experimental setups for high temperature electrical resistivity, thermoelectric power and dielectric measurement. The group has procured Arc-melting furnace and three-zone furnace also, along with the regular muffle and tube furnaces for the synthesis of material in single-crystalline, polycrystalline, and nano-crystalline forms. The group is well supported by the institute's computational facility for the Density Functional Theory (DFT) based electronic structure calculations.

All the above research work has been supported by the various funding agencies such as DST, BNRS, SERB, CSIR and UGC-DAE CSR besides the generous financial support from the institute.



SUMMER INTERNSHIP PROGRAMME

IIT Mandi organized the “SUMMER INTERNSHIP” program this year as well. This Internship program spanned from 1st June -25th July, 2015. Twenty two interns were selected from hundreds of applications received this year based on the recommendations of the faculty advisors. The participants selected were from various Institutes/Universities across India including Thapar University - Patiala, Jaypee Institute of Information Technology - Noida, Sardar Vallabhbhai National Institute of Technology, VIT Univeristy, IISER Bhopal, Central University of Jharkhand, Motilal Nehru National Institute of Technology, IIT Roorkee, Univeristy of Delhi, MIT Manipal, NIT Goa, Sri Ramakrishna Engineering College, Bharathiar Univeristy, IIT Hyderabad, NIT Rourkela, IIT Kharagpur, Institute of Medical Sciences BHU, NIT Kurukshetra, SMVDU Katra and Kurukshetra University. Each student's skill set was matched with an appropriate project from the following areas:

- Physical Chemistry, Nanotechnology, Protein Folding, Drug Delivery
- Theoretical Chemistry
- Experimental Condensed Matter Physics and Nanomaterials
- Magneto-transport Study of the Superconducting Materials
- Big Data Analytics
- Numerical Analysis and Computational Fluid Dynamics
- Climate Change, and Disease Modeling
- Kernel Methods for Pattern Analysis
- Cognitive Science and HCI
- Supramolecular Chemistry
- Renewable Energy with the Topic of Production of Renewable Fuel from Auto-exhaust Product
- Piezoelectric and Pyroelectric Energy Harvesting Materials and Methods
- Semiconductor / Electro Chemical Deposition of Nano Structures
- Differential Equations/ Inverse Problem/Control Problem
- Geology and Geo-techniques
- Power
- Nanobiotechnology
- Nanoscience and Nanotechnology
- Artificial Photosynthesis
- Water quality Analysis and Parameter Estimation
- Development of Civil Engineering Labs
- Order Tracking System
- To Develop a System by the help of which we can Generate the uses stats reports pertaining to different e-resources based on the log files
- E-resource Management Portal
- To Create a Portal regarding the Open Access Resources pertaining to different subjects

The internship included a stipend and housing assistance.

Internship/Science and Engineering Awareness for School Students

A group of 30 children of class 9th and 10th from two states (20 Assam, and 10 from Mizoram) have successfully completed a 15 day program at IIT Mandi.

Under the program, named ISHAN VIKAS - 2015, the Northeast students, accompanied by 3 of their teachers, were selected by IIT Guwahati, and were funded by Ministry of Human Resources and Development.

ISHAN VIKAS -Training Program 2015, IIT Mandi. The program is aimed to motivate bright school students from North East states as well as states of Himalayan region to go for higher studies in science or engineering, and to promote national integration. During this program, the students interacted with IIT Mandi faculty from disciplines ranging from basic sciences to different branches of engineering as well as biosciences and medicinal herbs.

The program was coordinated by Prof. B. Subramanian of IIT Mandi's School of Humanities and Social Sciences, supported by 9 faculty members, 8 Research scholars as well as several staff members and students. Topics such as Academic motivation to get the students excited about studying Science and Engineering, Cultural Exchange and National Integration including some interaction with IIT Mandi students, career planning, what is engineering, physics-math-and-engineering in daily life, reverse engineering, computer aided design, renewable energy, nanomaterials, superconductivity, Landmarks in Technology, TBD, General Techniques for studying better; how to prepare for entrance exams, documentation of experience, Discussion with Astronomy club, Application in Signal Processing, Power Systems, Power and Digital World of Electronics, Electricity and Transportation without coal and petroleum, Introduction to Photovoltaic Technologies, Biology/Biotechnology, Communication, Evolution in Civil Engineering, Wind Turbine Technology, Control Theory Application, observations on working in Modern Workforce and quantum mechanics were covered.

The students participated in a variety of hands-on workshops and labs demonstration as well as field trips on and off the IIT Mandi Campus. Physics, Computer, Electrical, Electronic and Mechanical lab and Advanced Materials Research Center (AMRC) are few places in IIT Mandi Campus, that students had visited along with the volunteers. This helped them gain an insight of few on going research work at IIT Mandi and also to learn about the working of different instruments in the labs.

The curious questions of the students starting from how to get an admission in a technical institutions in India, procedures and preparation for admission as well as purpose of various lab instruments were answered by the volunteers.

The School students were very enthusiastic to know more and more about different technical activities being undertaken at IIT Mandi, the questions raised by them on the subject topics indicated the high level of interest, enthusiasm and quest for knowledge within them related to Engineering.

CENTRAL LIBRARY



Central Library plays a vital role in furthering the academic and research mission of IIT Mandi and facilitates creation and dissemination of knowledge. Library provides essential support by offering current library services which are integrated with teaching, learning and research activities. The Library facilitates excellence in teaching, creates an appropriate learning and research environment, anticipates and responds to student learning and research needs, and provides the information infrastructure essential in today's changed environment.

Central library at IIT Mandi is rapidly developing its collection of books, reference books, reports, periodicals, and electronic resources. The Text Book Collection in the Library provides vital supports for on-going undergraduate teaching programs. The books are on various disciplines ranging from Computer Science Engineering, Mechanical Engineering, Electrical Engineering, Mathematics, Physics, Chemistry, Economics, Philosophy, Psychology & English literature. The collection for Post Graduate programs is also being developed simultaneously.

Central Library provides access to the various e-journals databases. This includes access to hundreds of journal titles on subjects such as Mathematics, Chemistry, Physics, Computer Science, Electrical Engineering, Mechanical and Astronomy. Central Library is completely automated by using open source library management software **KOHA**. All documents are bar-coded and by retro conversion all collections acquired prior to automation are also included in the Central Library books database. Transaction of books is also automated. Library has introduced various innovative services including CAS/SDI, On-line status of ILL, On-line reservation of books etc. By using Web OPAC, users can check their borrowing details online. Two workstations have been set up for users to access library holdings.

Recently, RFID System has been implemented in the Central Library. The RFID system facilitates automatic charging/discharging of book, improves anti-theft system, proper arrangement of shelves, automatic identification of lost book and stock management of library collection.

Software Applications Used in Library:

- (i) **KOHA**: For automation purpose.
- (ii) **DSpace**: For digitization purpose.
- (iii) **Greenstone**: For digitization purpose.
- (iv) **Linux**: Operating system for servers and desktops.

1. Collection Development and Management

Collection building is one of the important functions of the library that supports academic and research work of the students, faculty, staff, and other users. Library collection comprises of books, journals, reports, pamphlets and other reading material in science, engineering, technology, humanities and social sciences.

1.1 Print Documents added during the year 2015-16

During the period of 2015-16, Central Library acquired 1292 books including 22 reference books. It also added few periodicals/magazines, besides reprints, technical reports and annual reports of other universities/institutions.

A list of new additions of books is issued every week and can be accessed on the library home page. This list also circulated by e-mail. An email alert is also sent to the requesting faculty members(s) about the arrival of publications requested by them.

1.2 New electronic resources subscribed during the year 2015-16

The Central Library provides web-based access to the following e-resources:

1.2.1 Full-text e-journals: Access to 10,000 + full-text journals from the following databases:

AIP, ACM Digital Library, ACS, APS, ASME, Cell Press, IOP, Elsevier's Science Direct, IEEE Electronic Library, JSTOR, SIAM, Springer Link, Taylor & Francis (S&T complete Collection), Nature, Annual Reviews etc.

1.2.2 Bibliographic e-databases: SciFinder, MathSciNet, SCOPUS & Web of Science.

1.2.3 E-Books: Central Library provides access to a collection of more than 10,000 e-Books in various disciplines. The e-book collection contains the titles which are a rigorous recommendation by the subject experts of the institute and cater to the needs of the users. The publishers of e-books collection include Science-Direct (Elsevier), McGraw Hill, Pearson, T&F, IEEE, IEEE-MIT press, IEEE-Wiley, Morgan Claypool, CUP, ASME, World Scientific and John Wiley. The e-books collection also includes the Lecture Notes Series on Mathematics (LNM), Physics (LNP) & Computer Science (LNCS) of Springer publisher.

The process of e-book collection development for this year has already been started. The efforts are being made to include the book collection of other renowned publishing houses.

2. Circulation

Circulation activities are now automated. Library users can check their borrowing details by using WebOPAC. We serve the users consisting of the faculty, research scholars, students and staff. Circulation desk is kept open for 50 hours a week. On an average, the monthly circulation transactions are about 1670.

3. Digital Library

Central Library has its own homepage (<http://www.iitmandi.ac.in/academics/lib/>), which provides web-based access to its resources, procures over 10,000 electronic journals and databases. An institutional repository of publications has recently launched which provides access to the intellectual output of the IIT Mandi community. The library is a part of the institute-wide network and has adequate computing infrastructure to cater to the needs of the users.

4. OPAC (On-line Public Access Catalogue)

The OPAC is one of the most heavily used databases of the library and is accessible 24*7 via library web page (<http://www.webopac.iitmandi.ac.in/>). Besides listing all the documents available in the library, it allows on-line renewal and reservation, circulation and tells the current status of each & every book. OPAC is searchable by keyword, author, title & subject.

5. Services Offered

- Fully automated Circulation with SMS & email enabled service
- Online book reservation, Information search, Patron's library book loan status check
- Web OPAC (Web based Online Public Access catalogue)
- Reserve collection development for student's in-house reading
- New Arrival Book Section
- Reference Service
- Inter-Library Loan
- Document Delivery Service
- Information Alert Services
- Selected e-resources subscription for Central Library
- Digital library services
- User education program

6. Future Plans:

- Database for Table of Contents of Library Books.
- Database for Institutional Repository.
- Database of different software available with CDs/DVDs available in the Library.
- Database of indexes available in the print books
- Single Search Platform
- Starting the publication of Library Newsletter



Library Web Page

CONVOCATION

3rd Convocation

Third Convocation of the institute was held on 31st October, 2015. Prof. Narayanasami Sathyamurthy, Director, Indian Institute of Science Education and Research Mohali was the Chief Guest and Shri M. Natarajan, Chairman, Board of Governors, IIT Mandi was Guests of Honour of the function.

As part of this Convocation, 105 B.Tech. students, 7 M.S. (by Research) students, and 3 Ph.D. students graduated from the Institute.

Mr. Sachin S. Bhat was awarded the President's Gold Medal, Mr. Prashant Prazapati was awarded the Director's Gold Medal for all around excellence in academics and extra-curricular activities. Mr. Sachin S. Bhat, Mr. Ingale Swapnil Sushil were awarded the Institute Silver Medals. Furthermore, Ms. Makhijani Nidhi Manoj was awarded the Rani Gonsalves Memorial Medal for Outstanding Female B. Tech. Student and Mr. Prashant Prazapati was awarded the Balasundaram Endowment Prize for German.



STUDENT AMENITIES AND FACILITIES

Sports Facilities and Activities

The mission of IIT Mandi student's gymkhana is to provide opportunity for students, faculty and staff to promote healthy lifestyles, enhance a sense of community, foster growth in leadership and teamwork skills, through active participation in sports and recreational activities.

Year 2015 was land mark in the students activities because for the first time all the B.Tech. students have moved to Kamand campus. It was a huge challenge for student's gymkhana to provide them an active life with the little playing facility existing in the Kamand campus. This objective was achieved to some extent because the new facilities for Badminton, T.T., Volleyball, Basketball, Football, Hockey, Cricket, Lawn Tennis and Athletics were added this year in our campus.

There are various activities organized by student's gymkhana like induction program & NSO activity for freshers, International yoga day, summer camp for Inter IIT participants. The intramural program organize competition for various sports with three hundred and more students participated last year. Inter branch, Inter house, Inter year and Inter hostel and Intra class competition for the maximum participation of students that promotes wellness by fostering an environment of values and practices healthy lifestyles and encourages personal growth and enjoyment, through sports and recreational activities.

For those who wish to engage in active recreational programs, student's gymkhana arrange group exercise program for mind and body coordination, personal and group sport coaching are also organized to develop community by embracing the uniqueness of each individual.

Rann 2015 (Inter House Tournament)

"Changes call for innovation and innovation leads to progress".

To ensure continuous participation from all quarters, the student community of IIT Mandi was divided into four different houses AGNI, JAL, PRITHVI and VAYU. The first Inter house sports event, christened 'Rann', was organized from 24th to 26th September, 2015. The event encompassed a number of team events in different sports. The event saw a zealous participation of sports enthusiasts from all the houses. The first-year undergraduate students showed up in large groups and accounted for a large part of the cheering crowd during all the games. The games also saw a decent participation by the post-graduate and doctoral students. To allow maximum participation, students were allowed to play in no more than three games for their respective house.

The presentation ceremony took place on the evening of 26th Sep.2015. Prof. B. Subramanian, Prof. Bhavinder Paul and Dr. S. N. Jha graced the ceremony and awarded the victors. The winners were awarded a medal and a certificate of appreciation in recognition of their efforts. Karan Mahajan, Sports secretary of the student Gymkhana, provided special mention to first-year students who showed exceptional skills during the tournaments. The general championship was shared by Vayu and Prithvi houses, amassing a total of 45 points each.

S.No.	Game	Winner	Runner
1.	Badminton Girls	Prithvi	Jal
2.	Badminton Boys	Vayu	Prithvi
3.	Chess Boys	Vayu	Prithvi
4.	Lawn Tennis Boys	Prithvi	Jal
5.	Cricket Boys	Vayu	Prithvi
6.	Volleyball Boys	Jal	Agni
7.	Football Boys	Jal	Agni
8.	Table Tennis Girls	Agni	Vayu
9.	Table Tennis Boys	Jal	Agni
10.	Hockey Boys	Prithvi	Vayu
11.	Basketball Boys	Agni	Vayu

Sportech 2016 (Sports festival of IIT Delhi)

IIT Mandi participated in Sportech 2016 held at IIT Delhi from 3rd march 2016 to 6th March 2016. There were total 103 contingent of students including 13 girls and 90 boys. We participated in most of the sports like Basketball, Football, Cricket, Volleyball, Badminton, T.T., Lawn Tennis, Hockey and Athletics. Our Basketball, T.T. and Badminton boys teams played semifinals and two athletes qualified for 100 mtr final and showed great improvement as compared to the performance in previous Inter IIT Meets.

Udghosh 2015 (Sports festival of IIT Kanpur)

Nine B.Tech. & Ph.D. students participated in the Udghosh 2015 sports festival of IIT Kanpur in T.T. & Badminton sport and qualified for quarter final.

Battle ground four

Battle ground Badminton tournament was organized from 22.08.2015-30.08.2015. In which more than 80 students participated and Mr. Akshat Gupta B.Tech. 3rd Year and Mr.Thirumurgan Ph.D. secured 1st and 2nd position respectively in boys event. Ms. Mamta Bhagia B.Tech. 1st year secured 1st position and Ms. Anuksha Jain B.Tech. 1st year secured 2nd position in girls event. Mr. Aayush Sharma B.Tech. 1st year was awarded with best fresher award.

16th Senior National Para Badminton tournament

Nitesh Kumar student of B.Tech. 2nd year participated at 16th Senior National Para-Badminton tournament held at Faridabad from 16th -18th Jan 2016 and won bronze medal in singles event and also qualified for quarter finals in men's double. He got selected to represent India at 3rd Indonesia Para Badminton International tournament 2016 to be held at Solo city, Indonesia from 2nd -7th August 2016.

M.S. & Ph.D. Badminton tournament

Special tournament for M.S. & Ph.D. students were organized in which more than 30 students (Boys & Girls) participated. The winners were awarded a medal and a certificate of appreciation in recognition of their efforts.

Staff and faculty participation

Cricket wicket inauguration match was organized for staff, faculty and students Inter IIT teams. Chief guest for the inauguration of newly built cricket wicket was Prof. B. Subramanian and Prof. Bhavinder Paul. The match was won by Inter IIT student team of IIT Mandi. Badminton match was also organized for staff, faculty and students Inter IIT teams which was also won by Inter IIT student team of IIT Mandi.

Mandi district Table Tennis tournament

IIT Mandi boys Table Tennis team participated in the district tournament and Mr. Rishabh Trivedi student of B.Tech. 3rd year was selected for State Table Tennis championship.

Participation in Cricket Tournament

IIT Mandi Inter IIT student team participated in the Satya Pratap memorial Cricket tournament 2015 held at Mandi. Also played practice match with H.P. BSNL Cricket team at MLSM College ground at Sundernagar.

Awards given to the students

Awards were given to various students for their outstanding performance in sports activities in 2015-2016

S.No.	Award Name	Name of Student	Game	Course and Year
1.	Color award	Himanshu Nandeshwar	Badminton	B.Tech. Final Year
2.	**	Anurag G.P.	Hockey	B.Tech. Final Year
3.	**	Sagar Peddinti	Volleyball	B.Tech.3 rd Year
4.	**	Rishabh Trivedi	TT	B.Tech.3 rd Year
5.	Special mention	Nikhil Kumar	Cricket	B.Tech.2 nd Year
6.	**	Divyanshu Verma	Football	B.Tech.2 nd Year
7.	**	Vicky Verma	Hockey	M.Sc.1 st Year
8.	**	Lovedeep Singh	Volleyball	B.Tech.2 nd Year
9.	**	Dhairya Verma	Basketball	B.Tech.1 st Year
10.	**	Thirumurgan	Badminton	Ph.D.
11.	**	Sujay Khandagale	Lawn Tennis	B.Tech.1 st Year
12.	**	Shruti Kaushik	TT	----
13.	**	Deepak Kumar	Athletics	M.Sc.1 st Year
14.	**	Aayush Sharma	TT	B.Tech.1 st Year
15.	**	Neha Muthiyan	Badminton	B.Tech.2 nd Year
16.	Player of the year	Anil Mathur	Basketball	B.Tech. Final Year
17.	Fresher of the year	Bipin Sharma	Football	B.Tech.1 st Year

Community sports activities

Community sports activities were organized on the eve of foundation day for students, staff, faculty and children like volleyball, tug of war, chair race, painting and memory game.

National Service Scheme (NSS)

NSS is a voluntary group of students working for the betterment of the community around them. They are the social workers of the institute striving for an improved society around them. The motto of NSS is "NOT ME BUT YOU". This reflects the essence of democratic living and upholds the need for selfless service. The overall objective of this scheme is Education and service to the community by the community.

National Service Schemes parted in following sections:-

Literacy Section

Education is the greatest gift you can give or receive. It does not take away anything from the giver, yet gives him a sense of self-fulfillment and inner-joy. With this spirit in mind, NSS unit IIT Mandi Literacy Section comprises a group of students who have devoted themselves to the task of the advancement of the nation by spreading the most powerful tool of change that goes by the name of education. They help the poor and the financially disabled by providing them free study materials and guiding them through their course structure. The students of literacy section have conducted various seminars and awareness campaigns in the government schools of the city. They are promoting higher education in the surrounding areas by spreading the knowledge of various competitive examinations like JEE-Mains (formerly AIEEE), JEE-Advanced (formerly IIT-JEE), AIPMT etc. The literacy section conducts free classes for the students in our very own campus in the evening.

Awareness Section

The Awareness section thrives to create awareness about all sorts of evils which are present in the society, be it the evils related to child labour, bad effects of smoking or even the cleanliness of the city. The students of the institute voluntarily take part in the activity and spread the message by publishing various pamphlets and hooking up banners right throughout the city. They along with the help of various faculty members organize various campaigns and programme to make the people aware of all the ill-happenings going.

Health Section

A good health is one of the first and foremost requirements of a healthy society. A healthy body enables a person to focus on their lives, to maximize their potential and provides stability to a society. Better yet, by properly focusing on one's health, one can adopt hygienic methods which provide good prevention measures. The Health section conducts various campaigns right through the year, promoting the donation of blood and creating awareness about some commonly spread diseases by disseminating information throughout Mandi city. They educate the people about the various causes of common diseases and also highlight them with the means which can be undertaken to avoid them. One of the major achievements of the health section is the organization of the blood donation camp. Students of the institute voluntarily take part in the program and donate their blood for the needy. In the last few programs an active participation from the city has also been seen with the local inhabitants stepping forward to donate their blood.

Activities Under Taken

S.No.	Name Of The Activities	Date of The Activity
1.	Bhartiya Chatra Sansad	10 th -12 th January, 2015
2.	Old Age Home Visit	12 th April, 2015
3.	PRAYAS (Teaching Programme)	18 th April, 2015 - 16 th January, 2016
4.	Library Set Up Programme	25 th April, 2015 - Till Continue
5.	Blood Donation Camp	05 th May, 2015
6.	Slum Kids Teaching Programme	3 rd June, 2015 - 16 th October, 2015
7.	NSS Orientation Day At IIT Mandi, Kamand Campus	6 th August, 2015
8.	NSS Quiz Competition- Personality Development	11 th September, 2015
9.	NSS Day Celebration	24 th September, 2015
10.	Mahatma Gandhi Jayanti	02 nd October, 2015
11.	Blood Donation Camp	06 th November, 2015
12.	Migrant Worker's Children Bridge School Program	29 th February, 2016
13.	Highlights	
	Donation For Blind Association	December, 2015
	Donation For Labour Kids Teaching Programme	November, 2015
	Cloth Collection Drive	November, 2015

NSS Activities And Expenditure Incurred During 2015-2016

S.No.	Activities	Date of the Activity	Expenditure	
			on Activity	Remarks
			14,312.00	
1.	Bhartiya Chatra Sansad	10 th -12 th January, 2015	6,601.00	
2.	Old Age Home Visit	12 th April, 2015	9,453.00	
3.	PRAYAS (Teaching Programme)	18 th April, 2015-16 th January,2016	4,263.00	
4.	Library Set Up Programme	25 th April, 2015 - Till Continue	8,080.00	
5.	Blood Donation Camp	05 th May, 2015	6,588.00	
6.	Slum Kids Teaching Programme	3 rd June, 2015 - 16 th October, 2015	2,800.00	
7.	NSS Orientation Day At IIT Mandi, Kamand Campus	6 th August, 2015	6,096.00	
8.	NSS Quiz Competition- Personality Development	11 th September, 2015	4,024.00	
9.	NSS Day Celebration	24 th September, 2015	2,412.00	
10.	Mahatma Gandhi Jayanti	02 nd October, 2015	7,620.00	
11.	Blood Donation Camp	06 th November, 2015		
12.	Migrant Worker's Children Bridge School Program	29 th February, 2016		Rs.25,750.00 Exp. from Donation Money
		Expenditure incurred	72,252.00	25,750.00
		Total Expenditure	98,002.00	

Old Age Home Visit on Dated: - 12th April 2015



Volunteers asking senior citizens about their problems



NSS team with senior citizens at old age home

PRAYAS (Teaching Programme) on Dated: - 18th April, 2015 - 16th January, 2016



Senior Secondary Kamand School students with Prayas volunteers

Blood Donation Camp



Teaching Program for Children of Migrant labourers



NSS Orientation Day



Quiz Competition among NSS Volunteers



Cleanliness Camp at IIT Mandi, Kamand Campus

Hiking and Trekking

For an IIT in the lap of Himalayas, a full-fledged Hiking and Trekking club caters to the spirit of adventure that resides in the students of IIT Mandi, Himachal Pradesh is one of the most beautiful places on earth. Places like Prashar, Rewalsar, Kamand, Manikaran etc. are ideal for hiking. Nature truly signifies its beauty in these set of mountains where our institute is situated. With the Director himself having keen interest in hiking, the club arranges trips on regular basis for its members to various places. Hiking and Tracking club of IIT Mandi is the single largest club at IIT Mandi.

Students, Staffs and Faculty members are the members of this club. More than 250 members registered in this club during 2016. During the period of 2015 to 2016 the club had carried out various hiking and trekking activities. The members trekked to Prashar lake, Kheer Ganga, Rudra Naag and Naagthan.

Trek To Prashar Lake



Trek To Kheer Ganga



Trek To Naagthan



Trek To Rudra Naag



Guidance & Counselling Service (GCS)

Orientation 2015

With the start of a new academic year, IIT Mandi welcomed a fresh batch of budding engineers and scientists. An extensive orientation program was organized by the Guidance and Counseling Service to acquaint them with the institute and to facilitate a smooth transition into new life at IIT Mandi.

The undergraduate students had a week long orientation from 2nd to 8th of August 2015. B.Tech students from all over India arrived at Kamand campus on 2nd of August to join for B.Tech in Computer Science and Engineering, Electrical Engineering, Mechanical Engineering and IIT Mandi's first ever batch of Civil Engineering. The Director and Deans welcomed the students and interacted with parents during the Welcome function held on 3rd. The admission formalities were also completed on 3rd. Senior students and staff members provided necessary assistance to perform various formalities like registration, identity card making, bank account opening, and mobile connection.



Figure 1: Prof. T. A. Gonsalves, Director IIT Mandi, addressing the freshmen and parents during the welcome function



Figure 2: Faculty, staff, students and parents at the orientation venue.

During the orientation week the students were treated to various indoor and outdoor activities to get acquainted with IIT Mandi and its surroundings. Throughout the week English club was organized by a group of faculty members to improve their language skills. Some of the class room sessions include session on what is engineering, over view of different disciplines, academic structure, essential student oriented services, and flora and fauna of Kamand campus. A workshop on “life skills” was organized for the freshmen. The workshop had sessions on communication skills, personality development, time management and stress management.

The students participated in a series of informal and outdoor activities during the afternoons and evenings. Informal activities started with 'fresher mixer' on 2nd evening and included activities such as, hiking, computer gaming, treasure hunt, scavenger hunt, movie screening, and board games. These events provided a fun filled and enthusiastic start for their stay at IIT Mandi. A total of 135 B.Tech students have joined IIT Mandi this year.



Figure 3: Mr. N. S. Bhandari, Librarian, introducing students to the library and its procedures.



Figure 4: B.Tech freshmen getting ready for Scavenger Hunt

An orientation program was organized by the deanery of academics for the postgraduate students and research scholars. A batch of 45 MS/PhD, 18 MSc-Chemistry and 5 MTech-Energy Materials students have joined IIT Mandi this year. IIT Mandi also welcomed its first ever batch of Integrated PhD in Physics (I-PhD) students. 7 students have joined for this program. The PG orientation included sessions on academic structure, research at IIT Mandi, ethics in research, life on campus and technical writing. The research scholars were introduced to the central facilities like Library, Advanced Materials Research Centre and were taken for a hiking trip around the campus. They actively participated in some of the informal activities with the undergraduate students.



Figure 5: PG and Ph.D freshmen relaxing during hike to a nearby village.

Volunteer Activities: Other than the routine counseling, the GCS coordinated the following programs for the benefit of student community.

Mentoring Program: The GCS was able to implement the peer mentoring program for B.Tech. students with success for the third consecutive year. GCS volunteers were assigned as mentors to the freshmen students. These mentors were the contact persons before the freshmen reached Mandi and remained their guide throughout the first year.

Study Support Group: GCS volunteers organized study support group during Aug-Nov 2015 semester. Meetings were held among students to share study materials and tips.

Cultural Society

Exodia, the annual tech-cult fest of IIT Mandi

Annual technical & cultural fest was organized from 3rd-5th April at Kamand Campus. This year Exodia witnessed teams from NIT Kurukshetra , PEC , HPU , Baddi and many more. About 50+ events were organized at Exodia by the team headed by Mohit Sharma.

Day 1 had events like Junkyard Wars, Big Stink, Exodia Idol. Apart from this, a seminar of a NGO known as NCFW was also organized. Day 2 started with Sumo Wars followed by Band Slam which was judged by well-known band "Deface". Day ended with Pronite by Famous Hindi Rock band of India, "The LOCAL TRAIN".

Event continued with same enthusiasm on Day 3 which had events like Line Follower, Groove Fanatics, Gatka. The 3-Day event finally ended with Synchronians followed by "DJ Night".



Exuberance'15

Intra College Cultural festival:"Exuberance'15". This time Exuberance witnessed Inter Year competitions in field of Music, Art, and Dance. General Championship was won by 4th year.

Important Events

69th Independence Day Celebrations

IIT Mandi proudly celebrated the 69th Independence Day of India. Everyone on the campus was geared up and enthused for the momentous occasion. Celebrations started by the hoisting of flag by Prof. Timothy Gonsalves, Director IIT Mandi. The Director, took salute by the security personnel in the presence of faculty, officers, staff and students. Flag hoisting was followed by national anthem and a wonderful march past. Soon after the march past the gathering moved to A1-NKN where the celebrations continued. In the welcome speech, the Director defined the actual meaning of freedom and advised all to live

happily with mutual understanding. He also advised the students to work hard for the betterment of the nation. The gathering was addressed by two girls of the fresher batch, Mamta Bhagia and Deveshi Soni. In their speech they highlighted the progress of India since independence and motivated the students to take India ahead. Prof. Mark Yoder, visiting faculty also addressed the gathering. Speeches were followed by the cultural programs. The Music group added a lot of color to the entire show by the patriotic songs. The Choreography group of the institute won hearts of the people by their dazzling performance. Vote of Thanks was given by Col. Devang Nayak (Retd), Manager (I&S). After the vote of thanks everyone was served with high tea and sweets.



Aakarshan'15

Aakarshan, the first cultural fiesta for the year took place on 22nd of August 15. The event is supposed to be the introduction of the



cultural society to the fresher batch. All the cultural clubs be it dramatics, music, dance and more prepared the best they could to showcase their talent and what is it they have to have to be a part of the club. The event was a great success both in terms of participation and audience. The event was 3 hours long. Approximate footfall for the event was more than 350 which include students from all study programmes, faculties and college staff. Total student participation was around 45 (highest until now). New benchmarks in performance, stage setups and everything else involved were set this time and the bar was raised immensely. The event got huge amounts of appreciation from faculty staff as well as the students.

Janmashthmi Celebrations

Janmashthmi was celebrated in a grand manner at Kamand campus on 5th September, 2015. The celebrations began with Dahi handi competition. Teams of 9 were invited to form human pyramid of 5+3+1. The competition saw participation of 16 teams, with teams from all years of B.Tech and M.Sc students. Top two teams were awarded and a special token of appreciation was given to the team showing best effort from the freshers. After efforts of the competition, the students enjoyed the dance on the DJ. Sweets were also distributed. In the evening, a set of cultural programs were celebrated in the lounge. Grand Abhisheka, Kirtan, cultural performances and distribution of Prashadham was witnessed. The event saw participation of both faculty and students.



Photography Workshop

Photography Club organized a two day long photography workshop (12-13th Septmeber) under the expert guidance of Ms Khushi Mishra (www.khushimishra.com). The workshop began with an introductory session for beginner photographers from 10:00 AM to 1:00 PM. This session was aimed at mobile phone photographers. The introductory session for advanced DSLR photographers happened in the afternoon from 2:00 PM to 5:00 PM.

Ms Khushi Mishra talked us about the basics of composition, framing, tools, colour and light. There was also a practical assignment which involved finding shapes similar to alphabets and clicking pictures of them. The workshop attracted a lot of photography enthusiasts from all departments, B.Tech, M.S, Ph.d, M.Sc as well as Faculty.

Day two began with a photo walk around the campus, and a live photography competition. After the photo walk all of participants went to the riverside to relax and click pictures. At 2:00 PM all assembled in A1-NKN to discuss about our photos with Ms Khushi. She also judged our photos for the competition. After the discussion there was a prize distribution ceremony.

First Art Fest: VIBGYOR

It was a three day art festival organised by Art Geeks. It was open for all (students, faculties, staff). Some of the events that were organized in the fest: Painting, Sketching, Doodling (online event) , Paper Craft, Origami, Bug making on round stones. The event was greatly appreciated by a heavy participation crossing the numbers by 100 Plus people with more than 85 art pieces all together include various form of art such as origami, painting, sketching , stone painting and paper craft. More than 200 people including both students and staff were present as spectators

This was all only possible with combined effort of club coordinator -miss “Neha Grewal”, with great experience of Miss Tripti Singh and Mr. “Chandan Purbia”, all with their hard working Team which made this event remembering. The event was so deeply liked by the people that they asked for re occurrence of the event in few weeks. After the 2 day competition, the art exhibition 8th of October was inaugurated by Dr. Priscilla Gonsalves. Dr. Suman Kalyan Pal (Dean Students) , Dr Bhakti Joshi (Advisor Cultural Society), Ms Lishma Anand (G.C.S coordinator) were invited to be part of judge committee for various sub events. This was followed by the prizes distribution for winners of the competitions.

Diwali Celebrations

One of the most significant festivals in Indian culture, Diwali, the festival of lights, sees millions attend firework displays, prayers and celebratory events across the world every autumn. It is celebrated by everyone irrespective of the religion they follow. The festival is celebrated for a variety of reasons, although the main theme which runs throughout is the triumph of light over darkness and good over evil. And, IIT Mandi was no exception. IIT Mandi's Diwali saw all the traditional celebrations an Indian house is accustomed to.

Rangoli Competition: There's no other way better than a rangoli to decorate the entrance and please the guests. IIT Mandi organised an inter-house rangoli competition and witnessed great enthusiasm for the same. The fine artists of the college put their feelings into the colour and came up with some astonishing art. The event was judged by Dr. Hitesh Shirmali, Dr. Suman Kalyan Pal and Dr. B. Subramanian and house “Prithvi” was declared as winner.

Laxmi Pujan :It is believed that Goddess Laxmi visits her devotees and bestows gifts and happiness on the day of Diwali. So, people at IIT Mandi prayed for the betterment of one's innerself, society and the whole

human race. The pooja was carried by Paawan Mukker.

Special Sweets: No festival is completed without sweets. Delicious sweets were distributed during snacks, dinner and as 'Prasad' after the completion of pooja.

Decoration and Bursting of crackers: The traditional decoration style truly adds a whole different look to the place. The 'Diyas' (light-lamps) were lighted all around the place to enlighten this auspicious day. We also marked the day with bursting of crackers and having a little dance celebration. All really enjoyed themselves.



The 67th Republic Day Celebration

IIT Mandi celebrated this day with patriotism, enthusiasm and unity. Prof. Timothy A Gonsalves, Director, IIT Mandi, hoisted the national flag and addressed the gathering. During his speech the Director, IIT Mandi described regarding provisions and parts of the constitution of India; fundamental rights and fundamental duties mentioned in parts III & V; emphasized on applicable duties of ours being engineers and academicians. Further he deliberated on possibilities of human cooperation with and in favor of wild animals in Himachal. Security personnel, faculty, staff and students present there saluted the national flag.



Holi Celebrations

Holi was celebrated with great zeal and zest at Kamand Campus. Celebrations started with Holika Dahan on 23rd Night at 11 p.m which was followed by dance and sweets distribution. On 24th, celebrations started at 10 a.m in front of B2 Hostel with colors and water along with DJ. Event ended on a great note.



TECHNICAL SOCIETY

Avishkar' 15

On 16-17th May'15, IIT Mandi witnessed 'Avishkar', the Inter Year technical festival organized by the Science & Technology Council (SnTC). Different events were organized over the weekend and all students took part actively. The day one started with the event "Code Fight" by the Programming Club followed by "Line Follower" organised by Robotics Club in which teams have to make a line following robot. In the night, Space Technology and Astronomy Cell (STAC) organised "Star Nacht (Star Hunting Challenge)". Day two witnessed "Electronics Club Open House" in which students of 1st year displayed their projects. The festival ended with a prize distribution by Dr.Timothy Gonsalves, Dr. Ramesh Oruganti and Prof. Balasundram Subramanian.

Utkarsh'15

The Science and Technology Council organized Utkarsh 2016 , the first inter house technical event of IIT Mandi on 7th-8th November, 2015. Events from all technical disciplines were included, including robotics, programming, electronic, and also a mechanical design contest in the form of junkyard wars. Students from diverse backgrounds participated with enthusiasm . The event saw the participation of about 100 students, with the participant ranging from the first year students to the Post graduate students.

The following events were held as a part of Utkarsh:

- Codewars
- Junkyard Wars
- Electrolight
- Astro Quiz
- Robohacks
- Android App Development Contest



4th Inter IIT Tech Meet

The 4th Inter IIT Tech meet took place at IIT Mandi during 29th-31st January, 2016. Participants from 9 different IITs came together during the event.

The first event of the meet was social media analysis, which involved the teams studying twitter streams and developing a web tool to visualize tweets related to several different topics, while also doing a temporal analysis of the tweets. IIT Kharagpur, IIT Mandi and IIT Madras bagged the first, second and third place respectively. The second event was Internet of Things, in which the teams were turning IIT Mandi's rooms into smart rooms. From the speed of the fans to the power of the lights, all being controlled by smartphones and web apps. The event was won by IIT Madras. IIT Kharagpur and Kanpur shared the second place and IIT Patna third. The third event was the Software development event, which saw the teams making an android app to help people who are in the sight of danger. The teams came up with several innovative ideas to mitigate the problem. The event was won by IIT Kharagpur, with IIT Kanpur coming second and IIT Mandi third. The fourth event was Embedded Systems, which required the teams to make a voice controlled robot which can pick and place objects. The event was won by IIT Kharagpur. IIT Kanpur coming second and IIT Mandi third. Next up was the Tech Quiz. This event involved questions from all different domains of technology. IIT Ropar won this event, while IIT Kanpur came second and IIT Bhubaneswar third.

On the last day we had the first event in the form of the Product Exhibition, which invited projects of all kinds to be brought up and presented. The event saw several innovative products coming up. The first and second both prizes went to teams from IIT Kharagpur, while third went to IIT Madras. The next event was the Portfolio defender event, which required the teams to come up with an innovative solution to a stock market problem. The event was won by IIT Kharagpur, with IIT Mandi coming second and IIT Madras third. The last was the Hardware Modelling event which involved teams coming up with really innovative hardware solutions. The event was won by IIT Kharagpur, with IIT Kanpur being second and IIT Roorkee third.

The participants as well as the judges, appreciated the quality of the projects on display. The enthusiasm of the students was highly appreciative. It was good to see students from different IITs coming together to compete on a common platform. The meet is expected to bring in better chances of collaborations between different IITs.



LITERARY SOCIETY

JAM as part of Lounge event series

As a part of Lounge activities, EDLS conducted a Just A Minute (JAM) session on May 3, 2015 at 7 pm, though not in the lounge but out in the mess courtyard owing to the cool nocturnal breeze which is a speciality of the Kamand campus. Funny and engaging as JAMs always are, this edition too saw amazing participants, throwing away witty remarks and showing off their literary prowess. Spanned over 4 rounds, the JAM witnessed an outstanding display of rich English lexicon of the participants, constant watch to pick one another's tidbit-iest of mistakes and gripping tension which rose as rounds went by. Sagar Ghai was the JAM Master and certainly had his share of controversies and arguments in resolving ties. Deepika Kalyan had kindly consented to be the timekeeper of the event. Farah Anjum, B.Tech II year, CSE secured I position while Shruti Garg, B.Tech II year, CSE stood second after a long and tough fight. All in all, this event proved to rejuvenate the oral English skills of the populace and provided mental fuel to the literary ones.

Movie Screening

English Debating & Literary Society (EDLS) organised a movie screening in which, the movie 'The Great Debaters' was shown. The movie is a real life story of three great personalities from U.S.A. who made it possible to abolish racism in U.S.A. It shows the power of Debating and literature that how it can turn even the most unlikely into reformers and leaders. The event saw a participation of 25 students, all from the EDLS. After the commencement of the movie-screening a healthy discussion of characterization and plot took place followed by light snacks.

Inter House Literary Event

Inter house open literary competitions spell bee, general quiz and JAM were organised by the literary society.

Spell bee: This event saw a footfall of 18 people. The competition was divided in two sections: written and pronunciation round. 6 people qualified for the final round wherein Subba Rao of house Vayu won with Mamta Bhagia of house Agni as the runner up.

Quiz : In this competition, four teams representing the four houses competed, each consisting of four persons. The quiz covered topics ranging from technology to entrepreneurship to movies and TV series. Buzzer round, rapid fire and pick-a-questions were the categories in which the quiz was divided. House

Jal stood first and house Vayu second.

JAM: Just A Minute competition saw amazing enthusiasm by the participants and seeing the footfall, it had to be divided into 3 qualifying rounds. 12 people made it to the finals wherein Sagar Ghai was the JAM master. Farah Anjum of House Jal came first and Ankush Jindal of house Jal came second.

RESEARCH SOCIETY

3rd Research Fair 2016

The 3rd Research Fair -2016 “ANUSANDHAN'16” was held at Kamand campus on 27th February, 2016. IIT Mandi research scholars were participated and presented their research work to a live audience. The Director, IIT Mandi Prof. Timothy A. Gonsalves, Dean Academics Prof. B. D. Chaudhary and Prof. Ramesh Oruganti inaugurated the event with motivating speech. Prof. Timothy A. Gonsalves had an interaction with research scholars on different social problems of the society and pick up the research problems which can be helpful to society. Prof B.D.Chaudhary was explaining the importance of critical reading and objective of the research. Prof. Ramesh Oruganti was suggesting to the scholars, how to organize a research event and how to give a seminar in research event. Total 84 research scholars participated in the event. Among them, 16 were oral and 68 were poster presentations. The research fair was scheduled in 4 session's starting from 10AM to 5.30 PM.



7th Foundation Day Celebrations, 24th Feb., 2016

IIT Mandi celebrated its 7th Foundation Day on February 24th, 2016, at its permanent Campus at Kamand. Dr. Sanjay Kumar, Director, Institute of Himalayan Bioresource Technology, Palampur, was the Chief Guest for the function. On the occasion, the Director, IIT Mandi, Prof. Timothy A. Gonsalves welcomed dignitaries, faculty, staff, and students. The dignitaries included, Prof. Subrata Ray, Dean (I&S); Prof. B. D. Chaudhary, Dean (Academics); Dr. Prem Felix Siril, Dean (SRIC); Dr. Suman Kalyan Pal, Dean (Students); Senior Professors, Prof. Ramesh Oruganti and Prof. B. Subramanian and Mr. Mohammad Shakeel, Registrar, IIT Mandi.

Seven years ago, IIT Mandi's foundation stone was laid on the very same day at Kamand to mark the beginning of this Institute. Now, the Institute has a large number of its students and faculty residing at the Kamand campus. With academic, research, cultural activities happening on its permanent campus on a regular basis, the Institute has developed a strong foundation and is already proving to be a single destination for excellence, innovation, and learning in the Himalayas. The day was commemorated with various sports events, cultural activities, and an award ceremony for students, faculty, and staff of IIT Mandi.

The sports events included games like the volleyball, tug-of-war, and musical chairs for men and women with participation from faculty, staff, and students. A painting and memory-game competition was also organized for the children from the IIT Mandi Takshila primary school. The volleyball game was won by a student team comprising of 2nd and 3rd year B. Tech. students. The tug-of-war was won by the Institute staff and faculty team. The painting and memory-game competitions were won by children from Takshila primary school.

The sports activity was followed by the foundation day function and honouring of dignitaries. The foundation day function started with Director's address. In his address, the Director highlighted that IIT Mandi was first among the new IITs to develop and use its permanent campus at Kamand. The Director mentioned that currently 90% of IIT Mandi faculty had their labs and teaching at Kamand. Also, he mentioned that, by June 2016, significant amount of construction will be accomplished in the Institute's North campus, including a 400-bedded hostel and an independent mess for students. The Director also mentioned that this rapid growth of IIT Mandi will allow the Institute to start newer Master's programs in engineering and sciences and expand its existing Master's programs ahead in this year. He stressed the point that the Institute had developed a solid foundation and this foundation will help the Institute to grow its research and academic activities in the near future.

The Director's address was followed by an address by Prof. Subrata Ray, Dean (I&S). In his address, Prof. Ray highlighted the flexible structure that the Institute possessed, which was unlike that of the older IITs. He mentioned that the flexible structure allowed IIT Mandi to undertake Interdisciplinary projects that cut across different boundaries and disciplines. Citing the example of Albert Einstein, Prof. Ray stressed that the Institute faculty need not just produce a large number of publications; rather, the faculty's focus should be to work on research problems in frontier and novel areas of science and technology.

Prof. Ray's address was followed by an address by the Chief Guest, Dr. Sanjay Kumar. In his address, the Chief Guest emphasized the importance of the 7th foundation day as IIT Mandi's logo contained a bridge with 7-pillars. He also emphasized the importance of thinking beyond the problem at hand and unleashing one's imagination. He highlighted that students in India are comfortable when told facts; however, they hesitate when shown phenomena not explainable by facts alone. He asked the students to

be passionate about their work and not take things on face value but question the reason (i.e., “why”) behind them.

The Chief Guest's address was followed by a cultural programme. In the cultural programme, children of IIT Mandi's Kamand and Mandi day cares and Takshila School put-up entertaining dance performances. Other items included a musical number by Dr. Puran Singh, Faculty in Humanities and Social Sciences, IIT Mandi; and, a mix of Western and Indian style music and dance performances by the cultural section of the Institute.

The day also saw distribution of awards to the students, staff, and faculty for their achievements and excellence in their work at IIT Mandi. At the event, 11 faculty, 17 staff, 3 officers, and 44 students were awarded for their exemplary achievements and contributions to building the Institute. The day got to a close with a vote of thanks by Dr. Prem Felix Siril, Dean (SRIC), and this marked the start of a new semester in the New Year at the Institute.





Career and Placement Cell

Along with the campus placements and internships, the CnP cell organizes all throughout the year various career counseling, guidance and training workshops, lectures and interactions to help students gain an exposure to various career options available to them and how to approach those.

Major Career Counselling Activities during the year

Career and Placement Cell organized an open house discussion cum motivational talk of Prof. Vinayak Eswaran on 8th March, 2016, where students from different departments had participated. Currently he is Professor in Mechanical Engineering at IIT Hyderabad and also served the Dean Faculty, HOD and many more posts at IIT Hyderabad. He had hold many posts including secretary of alumni association of IIT Kanpur for many years and established a very good relationship with alumni of IIT Kanpur and has a very vast knowledge across the specialization of engineering.

The Career and Placement (CnP) Cell of the institute facilitates campus placement of the final year B.Tech. students as well as graduating M.Sc., M.Tech., and research students. For the just graduated 2016 batch of B.Tech. students some of the placement statistics are as follows:

Total number of students who applied for placements: 104

Total number of student placed so far: 87

Detailed statistics

Computer Science

Companies visited for campus placement for Computer Science are as follows : Flipkart, Ebay, Microsoft IT, Microsoft IDC, United Health Group, Practo, Nucleus Software, Samsung, TCS Research, Khosla Labs, Cognizant, Drishtisoft, Grofers, Innoplexus, Statlabs, R Systems, Kuliza.

Students Registered for placement in Computer Science branch : 43

Students appeared for placement in Computer Science branch : 40

Total number of students placed : 40

Electrical Engineering

Companies visited for campus placement for Electrical Engineering are as follows : Flipkart, Texas Instrument, Tejas Networks, Coal India, HPCL, Tecumseh, Sigmoid, Mojo Networks, Ushva Technology, Urmi.

Students Registered for placement in Electrical Engineering branch : 34

Students appeared for placement in Electrical Engineering branch : 31

Total number of students placed : 27

Mechanical Engineering

Companies visited for Mechanical Engineering are as following: Mahindra & Mahindra, Coal India, Tecumseh, HPCL, BPCL, CNH Industrial, Sentiss Pharma, Cognizant, TCS Research.

Students Registered for placement in Mechanical Engineering branch : 35

Students appeared for placement in Mechanical Engineering branch : 33

Total number of students placed : 20

Apart from the campus placements, the CnP cell also arranges internships to our students in various reputed organizations to provide them an exposure to the best professional practices and environments. These internships also include industrial internships, an academic requirement, to our third-year B.Tech students.

UG Students Placement during the year (2015-16)

S.No.	Courses/ Programme	No. of students placed during the year
1	Computer Science Engineering	40
2	Electrical Engineering	27
3	Mechanical Engineering	20

Students Placement details of M.S., M.Tech and M.Sc. Chemistry programme:

S.No.	Courses/ Programme	No. of students placed during the year
1	M.S.	2
2	M.Tech	2
3	M.Sc. Chemistry	9

No Ph.D student has been registered for placement.

Internship details

Total number of students who applied for internship: 77

Total number of student placed so far: 77

Detailed statistics are as follows

S.No.	Courses/ Programme	No. of students Joined internship during the year
1	Computer Science Engineering	38
2	Electrical Engineering	21
3	Mechanical Engineering	18

Computer Science

Students Registered for Internship: 47

Students joined Internship: 38

Electrical Engineering

Students Registered for Internship: 32

Students joined Internship: 21

Mechanical Engineering

Students Registered for Internship: 27

Students joined Internship: 18

Alumni Affairs

3rd Graduation Dinner

IIT Mandi hosted the Third Graduation Dinner for the batch (2011-15) of B.Tech. students and scholars who are graduating this year at Kamand Campus on May 22, 2015. It was preceded by group photo sessions.

On the historic evening the Director, IIT Mandi, Prof. Timothy A. Gonsalves congratulated them for being the first batch to shift to permanent campus in the year 2012 and also mentioned few achievements of this batch, to make a low cost 3D printer, getting the first medal in Inter IIT sports meet, Shubham Ajmera to be placed directly in Google US and Pradeep Seervi secures All India First Rank in the GATE Exam.

The students were also given mementos by their respective faculty advisor and the evening ended with a formal dinner.



Alumni Meeting in Hyderabad

Prof. Timothy A Gonsalves, Director, IIT Mandi met IIT Mandi Alumni residing in Hyderabad on 18th January 2016. Followed by dinner in Firewater Restaurant, with Damini, Anjaly, Vikhyat, Shiva Teja, Umang Jain and Abhra Basak.



Alumni Meeting in Bangalore

Prof. Timothy A Gonsalves, Director, IIT Mandi met IIT Mandi alumni from the 2009 and 2010 batches on June 19th 2015 in Bangalore. This was arranged in the DRDO Officers Mess by Mohit Malhotra. It was a delightful evening, reminiscence and dissecting the past, catching up on current activities and plans for the future. Mohit is working at ADA on the flight control system for the Tejas Light Combat Aircraft, and Pramod Jayant is working on the ejection seat. Antra is enjoying her work on a new product at Amazon. Uday Mittal from Khosla Labs took photos.



Alumni in News

Mr. Athar Aamir Khan, an IIT Mandi alumnus, has secured second rank in the prestigious civil services examination 2015. It is a proud moment for all IIT Mandi Community. Mr. Aamir, born on 5th September 1992, a resident of Anantnag, Jammu & Kashmir, joined IIT Mandi in 2010 as a B.Tech (Electrical Engineering) student and graduated in 2014.



Mr. Pradeep Seervi, a 4th year B.Tech. (Electrical Engineering) student at IIT Mandi has successfully cracked the GATE 2015 exam securing All India Rank of 1 in Electrical Engineering. Pradeep hails from Jodhpur, Rajasthan. Earlier, he was also awarded the DAAD scholarship and visited University of Applied Sciences, Zwickau, Germany during June-August, 2014.

Some additional information: -

- Total number of Alumni till March 2016 has reached to 339.

Breakup:	B.Tech	:	315
	M.S.	:	17
	Ph.D	:	07

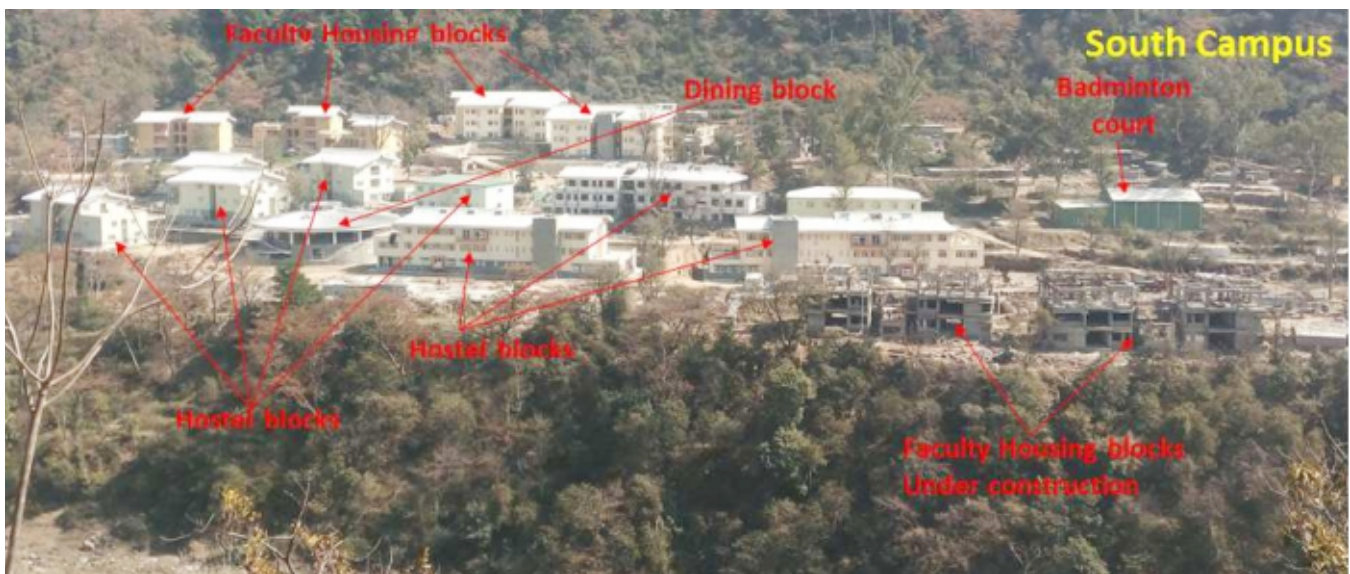
Our Campus at Kamand

The construction work for permanent Campus of IIT Mandi was started from April 2012. Initially 10,180 sq. mt. (approx.) area was proposed to be constructed in the South campus which includes three Academic blocks, four Students' Hostels, one Dining block and three Faculty housing blocks. The Construction Work was entrusted to CPWD. This was completed and has been in use from 2012-2013.



Based on increased requirement, the work of few more buildings like Students' hostels, Academic blocks, Faculty housing and one dining block was awarded in South campus beside sports facilities including cricket and football fields, badminton, tennis, basketball and volleyball courts. Now all these buildings, sports fields/ courts have been completed and are functional in the South Campus.

Since 2015-16, all B.Tech students and programmes have been accommodated in the permanent South Campus, along with most of the PG students. The remaining PG students will be accommodated in 2016-17.





In addition to above, section of the large number of residential/academic buildings were planned in the North Campus which is 3 kms. away from South section. As per the plan, 1400 students with faculty and staff shall be accommodated in North Campus for which 138 three BHK flats for faculty, 19 no. students hostel blocks, 2 dining blocks are to be constructed. The construction of 65,926 sq mt. work had been entrusted to CPWD. One students hostel block and few faculty flats blocks have been completed and are functional. The remaining work is in progress.



Besides the above, the construction work of Staff housing blocks having 12 two BHK flats and 24 one BHK flats, Community Centre & School building was entrusted to NBCC in land parcel-1 in North Campus. The work is at a very advanced stage and shall be completed in the next few months. The Campus School building was occupied in early 2016.



Besides this, the work for 60,504 sq. mt. of Academic buildings and the Village Square comprising a guest house, gymnasium with swimming pool, hospital and shopping area has been awarded to NBCC. The construction is progressing rapidly and is expected to be completed in 2017-18.

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Thyagaraja Colony,
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New Delhi - 110 025

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**During this year meetings of the Board of Governor were held on 08/08/2015, 30/10/2015 & 26/02/2016.*

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Members

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Indian Institute of Technology Mandi
Mandi - 175001 (H.P.)

Finance Advisor

MHRD

Shastri Bhawan

New Delhi - 110001

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(Ex-officio)

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Mandi - 175005(H.P.)

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Indian Institute of Technology Mandi

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Indian Institute of Technology Mandi
Mandi - 175001 (H.P.)

Bureau Head (Technical Education)

Addl. Secretary (HE)

MHRD

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Indian Institute of Technology Madras

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Former Director

Dhirubhai Ambani Institute of Information and
Communication Technology (DAICT)

Gandinagar - 382 007

Prof. P. Sriram (from January, 2016)

Dean(Admin), Professor & Head

Dept. of Aerospace Engineering

Indian Institute of Technology Madras

**During this year meetings of the Finance Committee were held on 08/08/2015, 30/10/2015 & 26/02/2016.*

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Indian Institute of Technology Delhi
New Delhi - 110026

Prof. S. R. Gandhi (from January, 2016)

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Sunder Nagar - 174402, (H.P.)

Prof. Sunil R. Kale

Professor
Dept. of Mechanical Engineering
Indian Institute of Technology Delhi
New Delhi - 110026

The Institute Engineer(Ex-officio) **Superintending Engineer**

Indian Institute of Technology Mandi
Kamand Campus, VPO Kamand
Distt. Mandi - 175005 (H. P)

Special Invitee

Er. A.K. Jain

Retd.Spl. D.G. CPWD
Senior Construction Consultant IIT Mandi

**During this year meetings of the B & W Committee were held on 25/05/2015, 01/07/2015, 29/10/2015 & 12/03/2016.*

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Dr. Bharat Singh Rajpurohit, Associate Professor & Dean (Faculty), IIT Mandi

Dr. Suman Kalyan Pal, Associate Professor & Dean (Students), IIT Mandi

Prof. Subrata Ray, Distinguished Visiting Professor, School of Engineering, IIT Mandi

Prof. Ramesh Oruganti, Emeritus Professor, School of Computing and Electrical Engg., IIT Mandi

Prof. B. Subramanian, Visiting Professor, School of Humanities and Social Sciences, IIT Mandi

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Dr. Rajeev Kumar, Associate Professor & Chairperson, School of Engineering, IIT Mandi

Dr. R. Dutt, Assistant Professor & Chairperson, School of Humanities and Social Sciences, IIT Mandi

Dr. Pradeep Parameswaran, Associate Professor & Associate Dean (Courses), IIT Mandi

Dr. Subrata Ghosh, Associate Professor & Associate Dean (Research), IIT Mandi

Dr. Samar Agnihotri, Assistant Professor & Associate Dean (SRIC), IIT Mandi

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Dr. Varun Dutt, Assistant Professor & Associate Dean (International Relations), IIT Mandi

Dr. Tulika Srivastava, Assistant Professor & Associate Dean (Recruitment), IIT Mandi

Dr. Aniruddha Chakraborty, Associate Professor, School of Basic Sciences, IIT Mandi

Dr. Bindu Radhamany, Assistant Professor, School of Basic Sciences, IIT Mandi

Dr. Shail Shankar, Assistant Professor, School of Humanities and Social Sciences, IIT Mandi

Mr. Vivek Sharma, Student General Secretary, IIT Mandi

Mr. Tushar Gupta, Student Academic Affairs Secretary, IIT Mandi

Mr. C. Thirumurgan, Student Research Affairs Secretary, IIT Mandi

Shri Mohammad Shakeel, Secretary & Registrar, IIT Mandi (Ex-officio)

Outside Members

Prof. B. K. Mishra
IIT Roorkee

Prof. Anant R. Shastri
Dept. of Mathematics, IIT Bombay

Prof. Arghya Taraphder
Dept. of Physics, IIT Kharagpur

Prof. R. K. Sharma
Dept. of Mathematics, IIT Delhi

Prof. D. K. Mehra
E&C, IIT Roorkee

Prof. Shormishtha Panja
Dept. of English, DU, Delhi

Prof. Deepak Khemani
Dept. of CSE, IIT Madras

Prof. Sunil Kale
Dept. of ME ,IIT Delhi

Prof. N. S. Narayanswamy
Dept. of CSE, IIT Madras

Prof. Hema Murthy
Dept. of CSE, IIT-Madras

Prof. S. N. Singh,
Dept. of EE, IIT-Kanpur

Prof. Rafikul Alam,
Dept. of Mathematics, IIT Guwahati

Prof. A. D. Gupta
Dept. of Mechanical Engg. IIT Delhi

Prof. P. Vellaisamy
Dept. of Mathematics, IIT Bombay

Prof. Rahul Roy
Unit of Mathematics, ISI Delhi

Prof. Thamban Nair M
Dept. of Mathematics, IIT Madras

Prof. P. Veeramani
Dept. of Mathematics, IIT Madras

Prof. Anil Prabhakar
Dept. of EE, IIT-Madras

Prof. Babu Viswanathan
Dept. of ME, IIT Madras

Prof. Milind A. Sohoni
Dept. of CSE, IIT-Bombay

Prof. S. B. Krupanidhi
Material Research Centre, IISc, Bangalore

Prof. Arindama Singh
Dept. of Mathematics, IIT Madras

Prof. P. K. Kapoor
Dept. of Operations Research, University of Delhi

Prof. Dharendra Bahuguna
Dept. of Mathematics & Statistics, IIT Kanpur

Prof. T. Raja Sekhar
Dept. of Mathematics, IIT Kharagpur

*During this year meetings of the Senate were held on 27/10/2015.

Academic Officials as on 31.03.2016

Director

Prof. Timothy A. Gonsalves

Director, IIT Mandi

Deans

Prof. B. D. Chaudhary

Dean (Academics)

Dr. Bharat Singh Rajpurohit

Dean (Faculty)

Prof. Subrata Ray

Dean (Infrastructure and Services)

Associate Deans

Dr. Pradeep Parameswaran

Associate Dean (Courses)

Dr. Vishal Singh Chauhan

Associate Dean (Finance & Accounts)

Dr. Samar Agnihotri

Associate Dean (SRIC)

Chairpersons

Dr. Anil Sao

Chairperson, School of Computing and Electrical Engineering

Dr. Prasanth P. Jose

Chairperson, School of Basic Sciences

Prof. Lalit Malhotra

Dean (Finance & Accounts)

Dr. Suman Kalyan Pal

Dean (Students)

Prof. Prem Felix Siril

Dean (SRIC)

Dr. Varun Dutt

Associate Dean (International Relations)

Dr. Subrata Ghosh

Associate Dean (Research)

Dr. Tulika P. Srivastava

Associate Dean (Recruitment)

Dr. Rajeev Kumar

Chairperson, School of Engineering

Dr. Rajeshwari Dutt

Chairperson, School of Humanities and Social Sciences

Administrative Officials as on 31.03.2016

Mr. Mohammad Shakeel

OSD & Registrar

Dr. A. K. Solanki

Deputy Registrar (Admin)

Mr. Naresh Singh Bhandari

Deputy Librarian

Mr. C. L. Sharma

Assistant Registrar (Audit & Accounts)

Mr. Vivek Tiwari

Assistant Registrar (Academic)

Dr. Chander Singh

Medical Officer

Dr. K.C.Sharma

Medical Officer

Dr. Shib Nath Jha

Principal Sports Officer

Er. Sunil Kapoor

Superintending Engineer

Mr. J. R. Sharma

Finance & Accounts Officer

Mr. Suresh Kumar Rohilla

Assistant Registrar (Admin)

Mr. Parminder Jit Singh Gill

Assistant Registrar (S&P)

Dr. Jyoti Sharma

Medical Officer

Dr. Ghanshyam Kapoor

GDMO

List of Regular Employees as on 31/03/2016

S.No.	Name	Designation
Group 'A'		
1	Mr. Naresh Singh Bhandari	Deputy Librarian
2	Mr. Suresh Kumar Rohilla	Assistant Registrar (Admin)
3	Mr. Vivek Tiwari	Assistant Registrar (Academics)
4	Mr. Parminder Jit	Assistant Registrar (S&P)
5	Dr. Chander Singh	Medical Officer
Group 'B'		
6	Ms. Monika Kashyap	Superintendent
7	Mr. Vinod Kumar	Sr. Library Information Assistant
8	Mr. Ashish Kumar Ahirwal	Sr. Library Information Assistant
9	Er. Neeraj Chauhan	Jr. Engineer (Electrical)
10	Dr. Khushi Ram Bhagat	Physical Training Instructor
11	Ms. Chandan Sharma	Junior Superintendent
12	Mr. Abhijeet Tiwari	Sr. Library Information Assistant
13	Mr. Anuj Kumar Dubey	PA to Registrar
14	Mr. Sudhir Kumar Gurung	Security Officer
15	Mr. Puneet Kumar	AE(Civil)
Group 'C'		
16	Mr. Ramesh Kumar	Sr. Accountant
17	Ms. Suchetna Shachi	Jr.Assistant
18	Ms. Sushma Kumari	Stenographer
19	Mr. Sunil	Jr.Assistant
20	Mr. Sushil kumar Pal	Jr.Assistant
21	Mr. Amit Sharma	Jr. Lab Assistant
22	Mr. Lalit Kumar	Jr. Lab Assistant
23	Mr. Pawan Kumar	Jr. Accountant
24	Mr. Ankush Kapil	Sr. Lab Assistant
25	Mr. Manoj Kumar	Jr. Attendant

List of Contract Employees (On Consolidated Emoluments) as on 31/03/2016

S.No.	Name	Designation
1	Mr. J.R. Sharma	Finance & Accounts Officer
2	Dr. Ghanshyam Kapoor	GDMO (Full Time)
3	Mr. C.L. Sharma	Assistant Registrar (Audit & Accounts)
4	Er. Anil Kumar Jain	Sr. Consultant (Part time)

5	Dr. K.C.Sharma	Medical Officer
6	Dr. Jyoti Sharma	Medical Officer
7	Dr. Shib Nath Jha	Principal Sports Officer
8	Col. Devang Naik	Manager (I&S)
9	Mr. Kaul Singh	Physical Training Instrucor
10	Mr. R.S.Raghav	Technical Superintendent
11	Ms. Lishma Anand	Counsellor
12	Ms. Sonia Sachdeva Sharma	Assistant Manager (Hospitality & Event Management)
13	Er. Anand Prakash Kapoor	Planning Assistant
14	Ms. Debleena Mukherjee	Green Consulatant
15	Ms. Jyoti Singh	CnP Executive
16	Ms. Susmeeta Pattanayak	Web- content Developer
17	Mr. Om Shankar Dwivedi	Deputy Manager (Office Automation)
18	Mr. Daulat Ram	Field Supervisor
19	Mr. Pavin Samuel	Deputy Administrator

List of Deputation/Foreign Service Employees as on 31/03/2016

S.No.	Name	Designation
1	Mr. Mohammad Shakeel	OSD & Registrar
2	Er. Sunil Kapoor	Superintending Engineer
3	Dr. Ashok Kumar Solanki	Deputy Registrar
4	Ms. P.V.Suguna	Technical Superintendent

Student Leadership - 2015-16

Vivek Sharma	General Secretary
Kisna Mahajan	Cultural Secretary
Karan Mahajan	Sports Secretary
Abhishek Pandey	Technical Secretary
Farah Anjum	Literary Secretary
Anurag G. P.	Hostel Affair Secretary
Tushar Gupta	Academic Secretary
C. Thirumurgan	Research Secretary

Students Admitted in the Institute during the Year 2015-16 Ph.D. Scholars

S.No.	Roll No.	Name	School
1	D15001	Supriya Rani	SHSS
2	D15002	Rayees Ahmad Dar	SCEE
3	D15003	Akash Porwal	SCEE
4	D15004	Prabhjot Kaur	SCEE
5	D15005	Kanahiya Kumar	SCEE
6	D15006	Preeti Gulia	SE
7	D15007	Subrata Mondal	SE
8	D15008	Gaurav Tripathi	SE
9	D15009	Tushar Kant Swain	SE
10	D15010	Manju Bisht	SE
11	D15011	Piyush Kumar Avasthi	SE
12	D15012	Ankita Mathur	SE
13	D15013	Ashish Tiwari	SE
14	D15014	Abhimanyu	SE
15	D15015	Sharad Kumar Gupta	SE
16	D15016	Khyati	SBS
17	D15017	Deepak Kumar	SBS
18	D15018	Nitin Sharma	SBS
19	D15019	Pranjal Kumar	SBS
20	D15020	Moumita Ganguly	SBS
21	D15021	Nishtha Sharma	SBS
22	D15022	Manu Shree	SBS
23	D15023	Mahak Saini	SBS
24	D15024	Ashish Ranjan	SBS
25	D15025	Naina Arora	SBS
26	D15026	Rajesh Dhayal	SBS
27	D15027	Shekhar Singh	SBS
28	D15028	Sudeb Majee	SBS
29	D15029	Savin Shynu Varghese	SBS
30	D15030	Ganesh Gurjar	SBS
31	D15031	Aamir Mushtaq	SBS
32	D15032	Afsal Thuppilakkadan	SBS
33	D15033	Paromita Dutta	SBS
34	D15034	Supriya Ghosh	SBS
35	D15035	Bandhana Devi	SBS

36	D15036	Birender Singh	SBS
37	D15037	Suman	SBS
38	D15038	M Naresh	SE
39	D15039	Akansha Garg	SCEE
40	D15040	Vyoma Singh Pindoriya	SCEE
41	D15041	Rajesh Manjibhai	SCEE
42	D15042	Adil Usman	SCEE
43	D15043	Shruti Kaushik	SCEE
44	D15044	Rais Ul Majid	SHSS
45	D15045	Bhed Ram	SHSS
46	D15046	Amrutha NV	SHSS
47	D15047	Ashish Kumar	SCEE
48	D15048	Dauood Saleem	SCEE
49	D15049	Abhinav Choudhury	SCEE
50	D15050	Gaurav Sharma	SCEE
51	D15051	Yashika Arora	SCEE
52	D15052	Mona Subramaniam	SCEE
53	D15053	Monika Sharma	SCEE
54	D15054	Vijendra Kumar Sharma	SCEE
55	D15055	Dhairya Singh Arya	SCEE
56	D15056	Raju Biswas	SBS
57	D15057	Rohit	SBS
58	D15058	Nagaraju Nakka	SBS
59	D15059	Chandrasekhara Pratap G C	SE
60	D15060	Manoj Kumar	SE
61	D15061	Tarun Kumar	SE
62	D15062	Akash K Rao	SCEE
63	D15063	Mohammad Ishtiyag Qureshi	SCEE
64	D15064	Shitole Pankaj Popatrao	SE
65	D15065	Salim Yusuf	SBS
66	D15066	Sonalika Maurya	SBS
67	D15067	Ashutosh Singh	SBS
68	D15068	Shikha Gupta	SCEE

M.S. (by Research) Scholars

S.No.	Roll No.	Name	School
1	S15001	Gaurav Sharma	SCEE
2	S15002	Srishti Gautam	SCEE
3	S15003	Prakash Pratik	SCEE
4	S15004	Abhay	SE
5	S15005	Abhishek Vishwanath	SE
6	S15006	Prithviraj Sen	SE
7	S15007	Naman Bartwal	SE
8	S15008	Ankur Kaundal	SE
9	S15009	Sarthak Nag	SE
10	S15010	Harsha Mathur	SCEE
11	S15011	Merlin Sundar	SCEE
12	S15012	Akshay Sood	SCEE
13	S15013	Abhilash Awasthi	SE

B.Tech. Students Computer Science & Engineering

S.No.	Roll No.	Name	School
1	B15101	Aayush Mishra	CSE
2	B15102	Abhijeet Sharma	CSE
3	B15103	Abhishek	CSE
4	B15104	Abhishek Poonia	CSE
5	B15105	Akash Yadav	CSE
6	B15106	Aksh Gautam	CSE
7	B15107	Ankit Amrit Raj	CSE
8	B15108	Anshu Puri	CSE
9	B15109	Avnish Kumar	CSE
10	B15110	Barpati Avinash Kumar	CSE
11	B15111	Chebathini Sonith	CSE
12	B15112	Dhairya Verma	CSE
13	B15113	Gaingamsin Pamei	CSE
14	B15114	Gurmeet Singh	CSE
15	B15116	Jonty Purbia	CSE
16	B15117	Mamta Raju Bhagia	CSE
17	B15118	Mohit Sharma	CSE
18	B15119	Nisha Kumari	CSE
19	B15120	Parinaya Chaturvedi	CSE

20	B15121	Pramod Jonwal	CSE
21	B15122	Pulkit Kumar Sharma	CSE
22	B15123	Pulkit Sapra	CSE
23	B15124	Puneet Yadav	CSE
24	B15125	Rahul Kumar Rajpoot	CSE
25	B15126	Rajanish Kumar Upadhyay	CSE
26	B15129	Sahil Singla	CSE
27	B15130	Sahil Yadav	CSE
28	B15131	Sai Tarun Reddy Palla	CSE
29	B15132	Sandesh Joshi	CSE
30	B15134	Shreyak Kumar	CSE
31	B15135	Solanki Pinank	CSE
32	B15136	Sonam Kag	CSE
33	B15137	Swapnil Sharma	CSE
34	B15138	Utkrisht Dhankar	CSE
35	B15139	Vaibhav Agarwal	CSE

Electrical Engineering

S.No.	Roll No.	Name	School
1	B15201	Aakash Dagar	EE
2	B15202	Aayush Sharma	EE
3	B15203	Abhishek Pal	EE
4	B15204	Abhishek Sonal	EE
5	B15205	Aditi Mann	EE
6	B15206	Akash Sharma	EE
7	B15207	Aman Singh	EE
8	B15208	Amit Ghanghas	EE
9	B15209	Anuksha Jain	EE
10	B15210	Ashutosh Kumar	EE
11	B15211	Avinav Sanyal	EE
12	B15212	Dhruv Patel	EE
13	B15213	Gourav Bhatt	EE
14	B15214	Himanshu Kumar	EE
15	B15215	Himanshu Mewara	EE
16	B15216	J Raghunath	EE
17	B15217	Khandagale Sujay Sanjay	EE
18	B15218	Kishore Kumar Singh	EE
19	B15219	Kislaya Mishra	EE

20	B15220	Lokesh Bairwa	EE
21	B15221	Lokesh Gehlot	EE
22	B15222	Mukesh Kumawat	EE
23	B15223	Munish	EE
24	B15224	Nemani Sri Hari	EE
25	B15225	Pankaj Kumar Sheoran	EE
26	B15226	Piyush Anand	EE
27	B15227	Pranav Gupta	EE
28	B15228	Rahul Jain	EE
29	B15229	Rahul Mahawar	EE
30	B15230	Rahul Meena	EE
31	B15231	Rahul Singh	EE
32	B15232	Ramchandani Hitesh Bharat	EE
33	B15233	Sagar Gupta	EE
34	B15234	Sanidhya	EE
35	B15235	Shrawan Kumar	EE
36	B15236	Shubham Kumar Singh	EE
37	B15237	Sumit Patidar	EE
38	B15238	Tiwari Abhishek	EE
39	B15239	Vipin Tolia	EE

Mechanical Engineering

S.No.	Roll No.	Name	School
1	B15301	Aditya Sharma	ME
2	B15302	Adnaan Nazir	ME
3	B15303	Akash Agrawal	ME
4	B15304	Akash Marmat	ME
5	B15305	Akhil Singhal	ME
6	B15306	Aman Choudhary	ME
7	B15307	Anand Mohan Tiwari	ME
8	B15308	Atul Yadav	ME
9	B15309	Avinash Kumar	ME
10	B15310	Banwari Lal Airwal	ME
11	B15311	Deepanshu Tyagi	ME
12	B15312	Deepesh Goel	ME
13	B15313	Devendra Bairwa	ME
14	B15314	Dheeraj Kumar Meena	ME
15	B15315	Divya Ranjan	ME

16	B15316	Divyansh Verma	ME
17	B15317	Indresh Kumar Gupta	ME
18	B15318	Kanikaram Sai Sandeep	ME
19	B15319	Kushagra Singhal	ME
20	B15320	Manoj Kumar Jangid	ME
21	B15321	Mehul Raj Kumawat	ME
22	B15322	Nijasure Atharva	ME
23	B15323	Pankaj Upadhyay	ME
24	B15324	Patel Manthan Dilipbhai	ME
25	B15326	Pradeep Kumar	ME
26	B15327	Preeti Mkannapan	ME
27	B15328	Revu Sri Harsha	ME
28	B15329	Riyansh Goyal	ME
29	B15330	Rushil Singhal	ME
30	B15331	Sakhile Naga Koti Reddy	ME
31	B15332	Sanjay Netriwal	ME
32	B15333	Shekhar Shubham	ME
33	B15334	Shobhit Ola	ME
34	B15337	Udit Soni	ME
35	B15338	Utkarsh Kunwar	ME
36	B15339	V Sai Subba Rao	ME
37	B15340	Vijay Shankar Meena	ME
38	B15341	Vishvajeet Patel	ME
39	B15342	Wasim Salih.T	ME

Civil Engineering

S.No.	Roll No.	Name	School
1	B15401	Abhay Singh Chauhan	CE
2	B15402	Akshit Kaushik Devgun	CE
3	B15403	Amit Kumar	CE
4	B15404	Ankit Dahiya	CE
5	B15405	Archit Kumar	CE
6	B15406	Arnav Mittal	CE
7	B15407	Bipin Sharma	CE
8	B15408	Chirag Mahawar	CE
9	B15409	Deveshi Soni	CE
10	B15410	Gantavya Gupta	CE
11	B15411	Gaurav Purohit	CE

12	B15412	Lokesh Tungariya	CE
13	B15414	Mayuresh Gupta	CE
14	B15415	Navya Agarwal	CE
15	B15416	Nikhil Kumar	CE
16	B15417	Prashant Singh	CE
17	B15418	Priyanshu Meena	CE
18	B15419	Rahul kumar Chaudhary	CE
19	B15420	Rakesh Kumar Meena	CE
20	B15423	Tushar Aggarwal	CE
21	B15424	Vikas	CE

M.Sc. (Chemistry)

S.No.	Roll No.	Name
1	V15001	Akshita Sharma
2	V15002	Parveen Kumar
3	V15003	Ganga Singh
4	V15004	Deepak Kumar
5	V15005	Sanjhal Jain
6	V15006	Navneet Matharoo
7	V15007	Shubham Biswas
8	V15008	Swadhapriya Bhukta
9	V15009	Tapas Adhikary
10	V15010	Anu Kumari
11	V15011	Kanika Bharti
12	V15012	Shivani Verma
13	V15013	Vicky Varma
14	V15014	Ankita Dhiman
15	V15015	Mohammad Ashraf
16	V15016	Priyanka Negi
17	V15017	Sudhanshu Sharma
18	V15018	Tushar Verma

M.Tech. in Energy Engineering with Specialisation in Materials

S.No.	Roll No.	Name
1	T15001	Sidhant
2	T15002	Vikrant
3	T15003	Anil Singh Chauhan
4	T15004	Abhijeet Seth
5	T15005	Rajgaurav

I-Ph.D. (Physics)

S.No.	Roll No.	Name
1	Di1501	Chinmoy Samanta
2	Di1502	Gopika Lakshmi Bhai.S
3	Di1503	Kavita Yadav
4	Di1504	Ruchika Mahajan
5	Di1505	Saravanan R
6	Di1506	Swati Mudra

12/11/2015

The Registrar
Registrar's Office
Indian Institute of Technology Mandi
Kamand Campus, VPO Kamand
Distt. Mandi - 175005 Himachal Pradesh
India

Tel: +91 01905-267015 Fax: +91 1905-267075

Email: registrar@iitmandi.ac.in



www.iitmandi.ac.in