

INDIAN INSTITUTE OF TECHNOLOGY MANDI [ARI-U-0184][U-0184]

Section 1: Policy And Institutionalization Of I&E Activities In HEIS (Academic Calendar Year 2020-21 & 2021-22)

1.1) Adoption Level of Innovation and Entrepreneurship (I&E) Policy in HEIs: Registration; Policy Formulation; Policy Implementation

Completion of Action Items (status as on 31st October 2022)						
Registered in the NISP portal for I&E Policy Adoption	Yes					
Institute has Formulated an Innovation and Entrepreneurship (I&E) Policy	Yes					
Institute has Action Plans for Implementation of the I&E Policy	Yes					

Contact:

Faculty Name:	Dr. Gopi Shrikanth Reddy		
Designation:	Assistant Professor		
Email ID:	gopishrikanth@iitmandi.ac.in		
Mobile No.	9833990418		

1.2) Performance Level of Institution's Innovation Councils (IICs) Established in HEIs: Scores and Stars Obtained

Annual Performances of IIC Institute	Stars Secured
IIC 1.0 (2018-19)	
IIC 2.0 (2019-20)	
IIC 3.0 (2020-21)	1
IIC 4.0 (2021-22)	0 (On Progress)

Contact:

IIC President of the Institute:	Dr. Tushar Jain
Designation:	Associate Professor

Email ID:	eadcce@iitmandi.ac.in
Mobile No.	905267920

1.3) Activeness of Trained Innovation Ambassadors in Driving Campus I&E Ecosystems in HEIs: Trained IA/HEI and Nos of Prescribed Activities undertaken by IA

Sr. No.	Name of the Faculty IA	Level of Training	No of I&E Expert Talks/Sessions Conducted
1	Dr. Shubhajit Roy Chowdhury	Advance	0
2	Dr. Shyam Kumar Masakapalli	Basic	0
3	Dr. Atul Dhar	Basic	0
4	Dr. Mohammed Talha	Basic	0
5	Dr. Kaustav Sarkar	Basic	0
6	Dr. Sunny Zafar	Basic	0
7	Dr. Gopi Shrikanth Reddy	Basic	0
8	Dr. Tushar Jain	Basic	0

1.4) Participation in KAPILA/SIH Program

HEI Registered in the KAPILA Portal	U-0184	Yes
HEI Participated in the Smart India Hackathon (2022)	U-0184	Yes

Section 2: Teaching and Learning: Academic Programs related to Innovation and Entrepreneurship (I&E) Offered by the HEI

2.1) Academic Courses in Innovation, Entrepreneurship and IPR

Srno	Title of Course	Course Code	Academic Year	Type of Course	Level of Course	Course Offering Department/ Centre/ Unit Name	Total Credit Score
1	Essentials of Enterprenureship	HS510	2020-21	Elective Course	Bachelor, Master, PhD	School of Humanities and Social Sciences	3
2	Essentials of Entrepreneurship	HS510	2021-22	Elective Course	Bachelor,Master,PhD	School of Humanities and Social Sciences	3
3	Reverse Engineering	IC 101P	2021-22	Core Course	Bachelor	SE	2
4	CMOS Digital IC Design Practicum	EE 519P	2020-21	Elective Course	Bachelor,Master,PhD	SCEE	2
5	CMOS Digital IC Design Practicum	EE 519P	2021-22	Elective Course	Bachelor,Master,PhD	SCEE	2
6	Design Practicum	IC 201P	2021-22	Core Course	Bachelor	SE	4
7	ISTP	DP 301P	2020-21	Core Course	,Bachelor	SCEE	4
8	ISTP	DP 301P	2021-22	Core Course	,Bachelor	SCEE	4
9	Major Technical Project	DP 401P	2020-21	Elective Course	Bachelor	SCEE SE SBS	3

2.2) Non-Academic Courses in Innovation, Entrepreneurship and IPR

Srno	Title of Course	Academic Year	Type of Certificate Program	Certificate Program/MDP/FDP/EDP Sponsored/Supported by	Certificate Program Offering Department/ Centre/ Unit Name	Program Start Date	Pi Ei D
1	Faculty development program for faculty from polytechnic institutions	2021-22	Faculty Development Program (FDP)	State Govt. Agency	Centre for Continuing Education	18-07- 2022 00:00:00	24 20 00
2	Faculty development program for faculty from engineering institutions	2021-22	Faculty Development Program (FDP)	State Govt. Agency	Centre for Continuing Education	29-08- 2022 00:00:00	04 21 01

Section 3: Pre-Incubation and Incubation Infrastructure & Facilities are Currently in Operation to Promote I&E Agenda (AY 2020-21 & 2021-22)

3.1) Existence of Pre-Incubation Facility (Tinkering Lab/Makers' Space/Design Centre/New Gen IEDC/IEDC/EDC/Innovation Cell/Startup Cell) (>= 600 Sq. Ft. Floor Area)

Sr. No.	Type of the Unit	Name of Unit	In-charge Name	Contact no	Email	Govt. Schemes
1	Tinkering Lab	Design and Innovation Center	Dr Shubhajit Roy Chowdhury	9816683456	src@iitmandi.ac.in	Mentoring Support,Seed Grant Support,Pre- Incubation Facility Support (Idea to Prototype and Innovative Business Plan Development)

Sr. No.	Type of the Unit	Name of Unit	In-charge Name	Contact no	Email	Govt. Schemes
2	Tinkering Lab	Design and Innovation Centre	Prof. Shubhajit Roy Chowdhury	9816683456	src@iitmandi.ac.in	Mentoring Support,Pre- Incubation Facility Support (Idea to Prototype and Innovative Business Plan Development)
3	IEDC	QIP	Atul Dhar	9119052671	add@iitmandi.ac.in	Mentoring Support
4	IEDC	Unnat Bharat Abhiyan Cell IIT Mandi	Shyam Kumar Masakapalli	8628088505	shyam@iitmandi.ac.in	Mentoring Support

3.2) Existence of Incubation Facility (>= 1500 Sq. Ft. Floor Area)

Sr. No.	Name of Unit	In-charge Name	Contact no	Email	Govt. Schemes
1	IIT Mandi Catalyst	Dr. Puran Singh	7807201834	puran@iitmandicatalyst.in	DST/NSTEDB/NIDHI,MeitY,Own Resource,Other Central/State Government
2	Catalyst	Dr. Puran Singh	7807201834	puran@iitmandi.ac.in	Other Central/State Government,None

3.3) Existence of IPR Cell / Patent Facilitation Unit / Technology Transfer Centre at the institute

	Type of					
Sr.	the	Name of	In-charge			
No.	Unit	Unit	Name	Contact no	Email	Govt. Schemes

Sr. No.	Type of the Unit	Name of Unit	In-charge Name	Contact no	Email	Govt. Schemes
1	IPR Cell	Intellectual Property and Technology Transfer Cell	Dr. Satvasheel Powar	7875307000	satvasheel@iitmandi.ac.in	Mentoring Support,Seed Grant Support,Pre- Incubation Facility Support (Idea to Prototype and Innovative Business Plan Development),Incubation Facility Support (Innovative Business Model to Startup and Market Linkage & Development); Growth Stage)

Section 4: Generation and Support of Ideas / Prototypes / Innovations at HEI and Recognition received (AY 2020-21 & 2021-22)

4) Total no. of Innovations (Verified and Recommended) in Different TRLs (4-9) are Recorded in the YUKTI National Innovation Repository of the IIC Institute (Status as on 31st October 2022)

Sr. No.	Innovation Name	Developed as part of	FY of Development (FY. 2020- 21,2021-22)	TRL Stage	Team Lead/Innovator Name	Current Engagem of Team Lead in Institute
1	HPD Pumps	Independent Assignment/Non- academic Study Project	2021-22	TRL 5 : Large scale prototype tested in intended environment	Ajay Kumar	Entrepren
2	PINEPAk- Natural inner & outer packaging material from waste pine needles	Independent Assignment/Non- academic Study Project	2021-22	TRL 4 : Small scale prototype built in a laboratory environment ("ugly" prototype)	Rajan Minhas	Entrepren

Sr. No.	Innovation Name	Developed as part of	FY of Development (FY. 2020- 21,2021-22)	TRL Stage	Team Lead/Innovator Name	Current Engagem of Team Lead in Institute
3	Mycelium Based Packaging Materials	Independent Assignment/Non- academic Study Project	2021-22	TRL 4 : Small scale prototype built in a laboratory environment ("ugly" prototype)	Prithviraj Jayakumar	Entreprer
4	Portable All Purpose Braille Printer Assignment/Non- academic Study Project		2021-22	TRL 4 : Small scale prototype built in a laboratory environment ("ugly" prototype)	Kaviraj Prithvi	Entrepren
5	Radar Based Perimeter Security Solution	Independent Assignment/Non- academic Study Project	2021-22	TRL 4 : Small scale prototype built in a laboratory environment ("ugly" prototype)	Kiran deep	Entrepren
6	NIAJ Media Pvt. Ltd.	Independent Assignment/Non- academic Study Project	2021-22	TRL 4 : Small scale prototype built in a laboratory environment ("ugly" prototype)	Nishant	Entrepren
7	A Microfluidic- based Point of Care Testing Device for Measuring Urine Albumin using a Novel Organic Dye	Academic Research Assignment/Industry Sponsored Project	2021-22	TRL 4 : Small scale prototype built in a laboratory environment ("ugly" prototype)	Dr. Venkata Krishnan	Faculty

Sr. No.	Innovation Name	Developed as part of	FY of Development (FY. 2020- 21,2021-22)	TRL Stage	Team Lead/Innovator Name	Current Engagem of Team Lead in Institute
8	Decentralised Biogas Upgradation Technology using Microbial Electrosynthesis	Independent Assignment/Non- academic Study Project	2020-21	TRL 5 : Large scale prototype tested in intended environment	Ravineet Yadav	Entrepren
9	Carbon Hubs Air Purification	Independent Assignment/Non- academic Study Project	2020-21	TRL 6: Prototype system tested in intended environment close to expected performance	Shalom Kingson	Entrepren
10	Electronic sowing Implement (ESI)	Independent Assignment/Non- academic Study Project	2020-21	TRL 9 : Full commercial application, technology available for consumers	Deepak Reddy	Entrepren

Section 5: Start-ups/Ventures Established and Supported at HEI and & Recognitions Received (AY 2020-21 & 2021-22)

5) Total no of Ventures/Startups (Verified and Recommended) are Recorded in the YUKTI National Innovation Repository of the IIC Institute (Status as on 31st October 2022)

Sr. No.	Startup/Venture Name	Startup/Venture Registered as	CIN No/LLP/OPC/RC No	GST No	FY of Establishment	Startup/ Recogniz DPIIT/St; India
1	Tensor Matics Pvt Ltd	Private Limited Firm (Pvt. Ltd.)	U72900PB2017PTC047334	null	2021-22	1

			ATT Treat Kanking of Institutions on Innovati			
						Startup/
Sr.	Startup/Venture	Startup/Venture		GST	FY of	Recogniz DPIIT/Sta
No.	Name	Registered as	CIN No/LLP/OPC/RC No	No	Establishment	India
2	Himjoy	Private Limited Firm (Pvt. Ltd.)	U37200HP2021PTC008532	null	2021-22	1
3	SWAITT LLP	Limited Liability Partnership Firm (LLP)	AAW-0150	null	2021-22	1
4	Farmoid Robotech Pvt Ltd	Private Limited Firm (Pvt. Ltd.)	U29200KA2021PTC152007.	null	2021-22	1
5	Wellnesys Technologies Private Limted	Private Limited Firm (Pvt. Ltd.)	U74999KA2018PTC117664	null	2021-22	1
6	Eduvizo	Not Yet Registered as an entity	null	null	2021-22	0
7	Dharaksha Ecosolutions	Private Limited Firm (Pvt. Ltd.)	U36999DL2020PTC372981	null	2021-22	1
8	Task Tracker Private Limited	Private Limited Firm (Pvt. Ltd.)	U72900DL2021PTC386863	null	2021-22	1
9	Electron	Not Yet Registered as an entity	null	null	2021-22	0
10	BuySellEmpire	Private Limited Firm (Pvt. Ltd.)	U22219JK2015PTC004557	null	2021-22	1
11	Campsvilla	Private Limited Firm (Pvt. Ltd.)	U92490HP2021PTC008581	null	2021-22	1
12	Hapster Your Happy Place	Limited Liability Partnership Firm (LLP)	AAS-9978	null	2021-22	1
13	VectorInteractive Studios Private Limited	Private Limited Firm (Pvt. Ltd.)	U72900HP2020PTC008031	null	2021-22	1
14	Vimaana Aerospace Technologies LLP	Limited Liability Partnership Firm (LLP)	AAT-0307	null	2021-22	1

			-			
Sr. No.	Startup/Venture Name	Startup/Venture Registered as	CIN No/LLP/OPC/RC No	GST No	FY of Establishment	Startup/ Recogniz DPIIT/Sta India
15	Hills Bio Innovations Pvt. Ltd.	Private Limited Firm (Pvt. Ltd.)	U01100OR2021PTC036213	null	2021-22	1
16	trash to cash	Not Yet Registered as an entity	null	null	2021-22	0
17	Portable All Purpose Braille Printer	Not Yet Registered as an entity	null	null	2021-22	0
18	Rowbotix Agtech Pvt Ltd	Private Limited Firm (Pvt. Ltd.)	U29309PN2022PTC208336	null	2020-21	1
19	LYNSLER SERVICES PRIVATE LIMITED	Private Limited Firm (Pvt. Ltd.)	U93000HP2021PTC008302	null	2020-21	1
20	Enord	Private Limited Firm (Pvt. Ltd.)	U29305DL2021PTC376261	null	2020-21	1
21	Square Comp Solutions	Private Limited Firm (Pvt. Ltd.)	U72900TN2021PTC147032	null	2020-21	1
22	Sunfox Technologies	Private Limited Firm (Pvt. Ltd.)	U74999DL2016PTC304475	null	2020-21	1
23	SapRootz Pvt. Ltd.	Private Limited Firm (Pvt. Ltd.)	U72900HP2021PTC008381	null	2020-21	1
24	Flutterbuy Ecom Ventures Private Limited	Private Limited Firm (Pvt. Ltd.)	U72900HP2022PTC009099	null	2020-21	1
25	ManaliSwing	Private Limited Firm (Pvt. Ltd.)	U92419HP2021PTC008510	null	2020-21	2
26	INDIH2O Bioengineering pvt. ltd.	Private Limited Firm (Pvt. Ltd.)	U90000HP2021PTC008767	null	2019-20	2

Section 6: Collaboration with Other Incubation Units, HEIs and Industry Associations to Strengthen Better Services and Support to Innovation & Startups at HEI (AY 2020-21 & 2021-22)

6) Collaboration with Other Incubation Units, HEIs and Industry Associations to Strengthen Better Services and Support to Innovation & Startups at HEI (AY 2020-21 & 2021-22)

Sr. No.	Collaborated Agency Name	Collaborated Agency Type	Period of Collaboration (No. of Years)	Current Status of Collaboration	Date of MOU / Agreement Signed on	View
1	Department of Science & Technology AND IIT MandiiHub and HCI Foundation	Non Govt. Agency	Five	Active	22-12-2020	View (/Uploac
2	IIT Mandi Catalyst	Incubation Unit	Five	Active	02-09-2022	View (/Uploac
3	CSIR - Institute of Himalayan Bioresource Technology (IHBT)	Govt. Agency (Central)	5	Active	13-04-2021	View (/Uploac
4	Departmet of Revenue, Govt. of HP	Govt. Agency (State)	5	Active	20-10-2020	View (/Uploac
5	All India Institute of Medical Sciences, Bilaspur	Govt. Agency (Central)	5	Active	29-10-2021	View (/Uploac
6	National Institute of Disaster Management (NIDM)	Govt. Agency (Central)	2	Active	22-07-2021	View (/Uploac

Sr. No.	Collaborated Agency Name	Collaborated Agency Type	Period of Collaboration (No. of Years)	Current Status of Collaboration	Date of MOU / Agreement Signed on	View
7	Norwegian University of Science and Technology	Educational Institute	5	Active	12-01-2022	View (/Upload
8	Shraman Foundation	Corporate/Industry Association	2	Active	27-06-2022	View (/Upload
9	Missouri University of Science and Technology	Educational Institute	3	Active	08-11-2022	View (/Upload
10	Sardar Patel University Mandi	Educational Institute	5	Active	05-09-2022	View (/Upload
11	Hitachi India Pvt Ltd	Corporate/Industry Association	2	Active	19-10-2022	View (/Upload
12	Vehant Technologies Pvt. Ltd	Corporate/Industry Association	5	Active	10-08-2022	View (/Upload
13	Tata Consultancy Services Ltd	Corporate/Industry Association	2	Active	29-09-2022	View (/Upload
14	Semiconductor Laboratory	Govt. Agency (Central)	5	Active	01-12-2021	View (/Upload
15	I-Hub Foundation for Cobotics (IHFC)	Non Govt. Agency	3	Active	26-05-2022	View (/Upload

Section 7: Intellectually Property (IP) Generated and Commercialization

7.1) IPR Filed and Published (Copyrights & Design only) Has this IP(Copyright & Designs Only) been

Sr. No.	(Copyright/Design	Type of IP	Number of Portification Number of	Date of Filed/Published Date of	Fagether fire traped of the state of the sta
Sr. No.	(Copyright/Design COOK STOVE WITH Only) TOP COVER	Type Design of IP	338274-001 Copyright/Design	Filed/Published	to Industry/Startup/Society?
2	Cooking Stove	Design	338275-001	29-01-2021	Yes
3	Space Heating Fins Usable with Cook Stove	Design	338273-001	29-01-2021	Yes
4	Foldable Solar Thermal Collector	Design	338736-001	08-02-2021	No

7.2) Patents Filed by HEI

Sr. No.	Title/Name of Patent	IP Registration Number	Date of Filed/Published
1	ADAPTIVE HYBRID ANALOG-TO-DIGITAL CONVERTER WITH FRACTIONAL/ MULTI BIT PER CYCLE CONVERSION	202013054196	14-12-2020
2	HYBRID ANALOG-TO-DIGITAL CONVERTER WITH FRACTIONAL/MULTI BIT PER CYCLE CONVERSION	202011053662	10-12-2020
3	MIMO Diversity antenna	338999-001	12-02-2021
4	Filter capacitor dynamics-based fault detection along with time-frequency localization of the fault in low-voltage dc microgrid for building applications	202111002237	18-01-2021
5	Method for manufacturing thermoplastic composite from microwave-assisted compression moulding	202011008147	26-02-2020
6	A rapid and efficient strategy for creating economical antibacterial surfaces on Portland cement based structures	202011006402	14-02-2020
7	Single step synthesis of multimodal magneto-fluorescent coreshell superparamagnetic	202011021910	26-05-2020
8	Method for Forming TiO2 paste at Ambient Temperature	202021031349	22-07-2020
9	System for cooking eatables	202021049173	11-11-2020
10	Detection unit and method of operation thereof	202041047604	31-10-2020
11	System For Waste Water Treatment	202011052699	03-12-2020
12	Nanofibers from Plastic Bottles	202011022177	27-05-2020

Sr. No.	Title/Name of Patent	IP Registration Number	Date of Filed/Published
13	ANTIBACTERIAL CONSTRUCTION MATERIALS USING CaO 202111001897 INCLUSION		15-01-2021
14	System and method for separating air from air-liquid mixture	202111009994	10-03-2021
15	ANTIBACTERIAL OPAL GLASS-CERAMICS AND METHOD FOR PRODUCING ANTIBACTERIAL OPAL GLASS-CERAMICS	202111002667	20-01-2021
16	A QUICK AND EFFECTIVE POLING TECHNIQUE FOR 20 FERROELECTRIC MATERIALS		13-08-2021
17	SYSTEM AND METHOD FOR CONCENTRATING THE WASTE AND PRODUCING VALUABLE GASES FROM WASTE OF TREATED WATER	202111015581	04-01-2021
18	METHOD FOR CLADDING INTERNAL CYLINDRICAL/CURVED SURFACE VIA MICROWAVE	202111033942	28-07-2021
19	Functionalized nanofiber membrane and method of preparation thereof	202111060593	24-12-2021
20	"Single step hydrothermal synthesis of nitrogen doped carbon coated Ultra small iron oxide core shell nanoparticles (NIC) and nitrogen doped Carbon dot nanoparticles (NCD) "	202111003023	21-01-2021
21	A low-cost subsurface landslide monitoring and early warning system	202111001337	12-01-2021
22	Indian Design: Space Heating fins	338273-001	29-01-2021
23	Indian design: Cookstove design with topout cover	338274-001	29-01-2021
24	Indian design: Cookstove design with top cover	338275-001	29-01-2021
25	Indian design: Foldable Solar thermal collector	338736-001	08-02-2021
26	"System and method for concentrating the waste and producing valuable gases from waste of treated water"	202111015581	01-04-2021
27	"Carbogenic Fluorescent Nanodot as New Probe for Super Resolution Microscopy and Method of Application Thereof"	202011019980	05-12-2020
28	"BSA-dye bioconjugate probe as a lysotracker"	202111049251	28-10-2021

7.3) Patent Published / Granted Data

Sr. No.	Patent Registration Application No	Patent Title	Patent Application Date	Status of Patent Applications	Patent Published / Granted Calendar Year	Institute applied the Patent as
1	202111060593	Functionalized Nanofiber Membrane And Method Of Preparation	24-12-2021	Granted	2022	Other(Individual)
2	202011052699	System For Waste Water Treatment	03-12-2020	Granted	2022	Other(Individual)
3	202041047604	Detection Unit And Method Of Operation	31-10-2020	Granted	2021	Other(Individual)
4	202021031349	Method For Forming TiO2 Paste At Ambient Temperature	22-07-2020	Granted	2021	Other(Individual)
5	202011021910	Single Step Synthesis Of Multimodal Magneto- fluorescent Core- shell Superparamagnetic	26-05-2020	Granted	2021	Other(Individual)
6	202111003023	Single Step Hydrothermal Synthesis Of Nitrogen Doped Carbon Coated	21-01-2021	Granted	2022	Other(Individual)
7	338273-001	Indian Design: Space Heating Fins	29-01-2021	Granted	2022	Other(Individual)
8	338274-001	Indian Design: Cookstove Design Without Top Cover	29-01-2021	Granted	2022	Other(Individual)
9	338275-001	Indian Design: Cookstove Design With Top Cover	29-01-2021	Granted	2022	Other(Individual)
10	202141007495	A Process For I- Line Resist Dissolution Modulation Using Hydroxy-polymer	23-02-2021	Granted	2022	Co-Applicant

Sr. No.	Patent Registration Application No	Patent Title	Patent Application Date	Status of Patent Applications	Patent Published / Granted Calendar Year	Institute applied the Patent as
11	201911051725	An Apparatus For Heating Or Cooking Ingredients	13-12-2019	Granted	2020	Other(Individual)
12	201821043971	Public Information Display System And Method	22-12-2018	Granted	2020	Other(Individual)
13	201821047020	A Solar Powered System For Displaying Information	12-12-2018	Granted	2020	Other(Individual)
14	201611022219	Highly Senstive Mapdsm-mapdst Based Resist Technology For Next Generation Lithography Applications	29-06-2016	Granted	2021	Other(Individual)
15	201611015638	Use Of Hydrogen Produced Through Exhaust Heat Recovery For Nox Reduction	05-05-2016	Granted	2021	Other(Individual)
16	3939/DEL/2015	A Novel Easai Method For Preparing Nanoparticles Of High Energetic Compounds	03-12-2015	Granted	2021	Other(Individual)
17	2599/CHE/2015	A Method For Medical Screeening And A System Thereof	25-05-2015	Granted	2022	Other(Individual)
18	201711003716	Compounds For Visualization And Quantification Of Albumin, Method For Preparation And Use Thereof	01-02-2017	Granted	2020	Applicant

7.4) IP Commercialized and Transferred to Industry/Startup

Sr. Name of Technology No. Licenced/Transferred/Commo	Technology (Patent/Licence Holder name (Institute Co- ownership is Must)	Technology Transferred to	Name of Licensee	C T
---	--------------	--	---------------------------------	---------------------	--------

No Data Found

Declaration

To, The ARIIA Committee MHRD's Innovation Cell New Delhi

Joint Declaration by the Head of the Institute and Nodal Officer

Dear Sir,

Herewith, myself Prof. Laxmidhar Behera (Head of Institute) and Dr. Aditi halder (Nodal Officer) jointly declaring on behalf of our institute is that all the information submitted are true and correct to best of our knowledge.

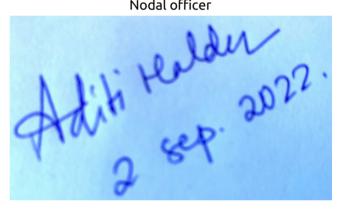
Thank you

The Head of Institute

Believe 2 cep 22

Prof. Laxmidhar Behera, Head of the Institution, INDIAN INSTITUTE OF TECHNOLOGY MANDI, MANDI, Himachal Pradesh

Nodal officer



Dr. Aditi halder, Nodal Officer, INDIAN INSTITUTE OF TECHNOLOGY MANDI, MANDI, Himachal Pradesh