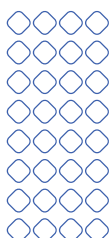
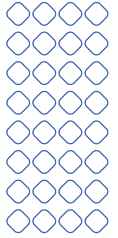




IIT BOMBAY



ANNUAL REPORT 2021-22







The Visitor



Mr. Ram Nath Kovind
President of India

Members of Board of Governors

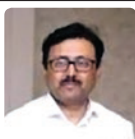


Dr. Pawan Goenka- Chairperson
MD and CEO, Mahindra & Mahindra,
Mahindra Towers, GM Bhosale Marg, Worli, Mumbai.



Prof. Subhasis Chaudhuri- Ex-officio,
Director, Indian Institute of Technology Bombay
Mumbai - 400076

Council Nominees (Four)



Dr. Rakesh Ranjan,
Additional Secretary,
Ministry of Education (TE),
118-C, Shastri Bhawan,
New Delhi - 110015



Mr. Sharad Kumar Saraf,
Chairman, Technocraft Industries (India) Ltd.,
Technocraft Group, Bombay, Technocraft House,
A-25, MIDC, Marol Industrial Area, Road No. 3,
Opp. ESIC Hospital, Andheri (East), Mumbai - 400 093



Prof. Aniruddha B. Pandit
U.G.C. Professor, Department of Chemical Engineering,
Institute of Chemical Technology Bombay, Matunga,
Mumbai - 400019



Prof. Pares K. Joshi,
Room 106, NIUS Building,
Homi Bhabha Centre for Science Education,
TIFR, V.N. Purav Marg, Mankhurd, Mumbai - 400088

State Government Nominees (Two)



Mr. Vikas Rastogi, IAS
Principal Secretary,
Higher and Technical Education
Government of Maharashtra, Mantralaya, Mumbai - 400032



Shri Praful K. Patel
Administrator,
U.T. of Daman & Diu, and
Dadra and Nagar Haveli, Silvassa - 396 230

Senate Nominee (Two)



Prof. Virendra Sethi (from 01.01.2022)
Prof. P.V. Balaji (upto 31.12.2021)
Environmental Science & Engineering Department,
IIT Bombay, Mumbai - 400076



Prof. Narayan Rangaraj (from 01.01.2022)
Prof. S.C. Patwardhan (upto 31.12.2021)
Industrial Engineering and Operations Research,
IIT Bombay, Mumbai - 400076

Secretary



Mr. Ganesh Bhorkade (from 01.12.2021),
Dr. R. Premkumar (upto 30.11.2021)
Officiating Registrar, IIT Bombay,
Powai, Mumbai - 400076



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By
Prof. Subhasis Chaudhuri
*Director, IIT
Bombay*

*Sixtieth Convocation
20th August, 2022*

“

Many graduating students are wearing self-woven Uttariyas. We appreciate their efforts to learn weaving.

”

Opening Remark

Chief Guest Mr. Kumar Mangalam Birla, Prof. Margaret Gardner, President & Vice-Chancellor of Monash University, members of the Board of Governors, members of the Senate, Parents, distinguished guests, colleagues and most importantly, graduating students.

I have great pleasure in welcoming you all to the 60th Convocation of the Indian Institute of Technology Bombay. We are indeed privileged to have Mr. Kumar Mangalam Birla grace this occasion as the Chief Guest.

Mr. Kumar Mangalam Birla is the Chairman of the Aditya Birla Group, which is India's largest business conglomerate. The Group's legacy dates to over a century and it was the first Indian business group to venture abroad. Under his leadership, the Aditya Birla Group of companies have made several bold moves in India and overseas. Today, the group is present in 36 countries across six continents with over 50% of its revenues coming from overseas operations. The Group's turnover is around \$55bn and its listed entities are valued at around \$74 bn (as of December 31, 2021).

Mr. Birla started his career at a very young age, when he was 28. Today (at the age of 55), Mr. Birla chairs the Boards of all major Birla Group companies in India and globally. In the 25 years that he has been at the helm of the Group, he has accelerated growth, built meritocracy, and enhanced stakeholder value. In the process, he has raised the Group's turnover by 25 times. He has been the architect of over 40 acquisitions in India and globally, among the highest by any Indian multinational.

Under his stewardship, the Aditya Birla Group enjoys a leadership position in all the major sectors in which it operates, from cement to chemicals, metals to textiles, fashion retail and apparels, to financial services. Over the years, Mr. Birla has built a highly successful meritocratic organisation, anchored by an extraordinary force of 140,000 employees belonging to over 100 nationalities.

Mr. Birla is a strong proponent of values of business ethics and the social responsibilities of business. Outside the Group, Mr. Birla has held several key positions on various regulatory and professional boards. He was a Director on the Central Board of Directors of the Reserve Bank of India. As the Chairman of Securities and Exchange Board of India (SEBI) Committee on Corporate Governance, he framed the first-ever governance code for Corporate India. He was also the first industry nominee on the board of SEBI. He was Chairman of the Advisory Committee constituted by the Ministry of Company Affairs and also served on the Prime Minister of India's Advisory Council on Trade and Industry. He is also the first Indian industrialist to be conferred an Honorary degree by the Institute of Company Secretaries of India (ICSI).

Over the years, Mr. Birla has been conferred several prestigious awards. He was the first Indian industrialist to receive the The Indus Entrepreneurs (TiE) Global Entrepreneurship Award for Business Transformation in 2021. Mr. Birla has been a recipient of the ABLF Global Asian Award in 2019. This marquee award was constituted by the Dubai-based Asian Business Leadership Forum, under the patronage of the UAE Ministry of Economy. Mr. Birla has also received the Business Leader of the Year Award twice at the Economic Times Awards for Corporate Excellence. In addition, he has received several awards and honours from leading institutions like EY, Forbes, CNBC, CNN-News 18, WEF etc.

Mr. Birla is deeply engaged with educational institutions. He is the Chancellor of the Birla Institute of Technology and Science (BITS) with campuses in Pilani, Goa, Hyderabad and Dubai. He is also the Chairman of India's premier management institute – Indian Institute of Management Ahmedabad. On the global arena, Mr. Birla is an Honorary Fellow of the London Business School. In 2019, Mr. Birla constituted a £15mn scholarship programme at the London Business School in memory of his grandfather, Mr. B.K. Birla, marking the largest ever endowed scholarship gift to a European Business School.

A firm practitioner of the trusteeship concept, Mr. Birla has institutionalised the concept of caring and giving at the Aditya Birla Group. With his mandate, the Group is involved in meaningful welfare driven activities that distinctively impact the quality of lives of close to 10 million people annually.

I take this opportunity to congratulate Dr. Sharad Saraf, for becoming the first Institute alumnus to be appointed as the Chairperson of the Institute's Board of Governors (BoG) and to welcome him at this 60th Convocation (as the Chairperson) of the Institute.

I am pleased to inform you that the Institute continues to be ranked as one of the top universities of the country and among the best in the world. IIT Bombay attracts the brightest students from the country for its Bachelor's, Master's and Doctoral programmes. Over the last six decades, more than 65,000 students have graduated from IIT Bombay. The alumni of the Institute have made their alma mater proud through their achievements and contributions in diverse fields and our engagements with them are steadily growing. Research is an increasing focus of activity of the Institute coupled with strong efforts to see that the fruits of the research are translated into commerce through licensing or through start-ups. The Institute has been able to attract outstanding faculty members from not just India but other parts of the globe also. Today, I am happy to inform you that we have over 689 faculty members on roll – the largest by far among all the IITs – with many of them globally acknowledged for their research contributions. We have also been able to further our links with international and national peer universities, enabling us to enhance research and educational programmes at the Institute.

The progress of IIT Bombay on all fronts has been creditable in the past year and I would like to acknowledge the devoted efforts of the faculty, staff and administration of the Institute towards these goals. I will now present a brief report of the Institute activities this year.



ACADEMIC PROGRAMMES



◀◀
The Hon'ble Minister of Education and Minister of Skill Development and Entrepreneurship, Government of India Mr. Dharmendra Pradhan unveiling the plaque during his visit for the inauguration of Hostel 17 at IIT Bombay campus on March 27, 2022.

IIT Bombay continues to make forays into newer territories pertinent to undergraduate and postgraduate education. At undergraduate level, IIT Bombay has introduced a new programme called 'The Liberal Arts, Sciences and Engineering (LASE)'. [Under this programme, the students admitted through JEE (Advance) for the UG programme of the Institute will choose their own 'Concentrations' at the end of their first academic year from list of four presets. The 'Concentrations' chosen will lead to a B.S. degree in one of the following: 1) Engineering Sciences; 2) Natural Sciences; 3) Social Sciences; and 4) Art & Design]; BSc. (Engineering) Exit degree for UG Programme; and Dual Degree (BS+MSc) Programme in the Department of Mathematics.

At postgraduate level, a two-year Master of Arts Programme by Research (M.A. Res) in three disciplines viz. 1) Human Sciences (HS), 2) Linguistics, Literature and Performance (LLP), and 3) Sociology (Soc.), in the Department of Humanities and Social Science (HSS); Master of Science by Research in Data Science and Artificial Intelligence and PhD programme in Centre for Machine Intelligence and Data Science (CMinDS); Master of Development Practice (MDP) programme in Centre for Technology

Alternatives for Rural Areas (CTARA); Dual Degree (BTech+MTech) Joint Masters Programme between IIT Bombay and Lehigh University, USA, in Chemical Engineering; and PhD Programme in Koita Centre for Digital Healthcare (KCDH).

IIT Bombay continues to be a sought after destination for undergraduate (UG) and postgraduate (PG) studies and attracts the top performers in national examinations such as GATE, CEED, UCEED, NET, JAM and JEE(ADV). Out of 37 available seats for BDES-2022 through Undergraduate Common Entrance Exam for Design (UCEED) 2022 at IIT Bombay, 16 out of top 30 rankers have joined IIT Bombay.

IIT Bombay was the organizing Institute for JEE (Advanced) 2022 and the exam was scheduled on 28th August, 2022.

With an increase in undergraduate (UG) and postgraduate (PG) intake, the student population has undergone significant changes in the last 10 years. In 2010-11, the number of UG students on-roll was 3111 (43.69%) while the number of PG students was 4009 (56.30%) (Masters – 2321, PhD – 1688). This changed to 4146 (41.46%)

and 5855 (58.54%) for UG and PG students, respectively in 2015-16. Presently, the Institute has about 12919 students of which 5496 (42.54%) are UG and 7423 (57.45%) are PG.

In order to continue imparting high-quality and holistic education to the much larger student populace, the Institute continues to modify and evolve processes which can effectively address the changing situations.

The PhD student strength has increased in leaps and bounds in the last 10 years. From 1895 PhD students in 2011-12, the number increased to 3534 in 2020-21 and currently stands at about 3727. Number of PhDs awarded in the 60th interim convocation is 189.

The number of students graduating with a PhD has also been steadily increasing. In the last 10 years, the number of PhD degrees awarded has gone up from about 181 to 449 this year. A significant fraction of these are in the engineering discipline. All students involved in research at the Institute are given an opportunity to interact with research community at the national and international level by providing funds to attend international conferences. During the academic year 2021-22, 277 students were granted financial

assistance for attending international conferences and an amount of Rs. 3,70,29,987 was utilised for this purpose.

This year, one MTech student was selected for the DAAD scholarships 2021-22 under the Sandwich System for Master's students.

At the main-session of the 60th Convocation, a total of 2551 degrees were awarded to 2324 students. The degrees include 206 PhD, 34 (MTech/ MPhil+PhD), 24 Dual Degree (MSc+PhD), 3 MS (by research), 700 MTech, 53 MDes, 14 Dual Degree (BDes+MDes), 23 MPhil, 115 MBA, 1 EMBA, 17 MPP, 204 two-year MSc, 326 Dual Degree (BTech+MTech), 654 BTech Degrees, 50 Interdisciplinary Dual Degrees (BTech/ BS+MTech/ MSc), 6 five-year Integrated MSc, 6 Dual Degrees (BS+MSc), 48 BS, 14 BDes, and 24 PDGIIT. This year, IIT Bombay granted 25 joint PhD's along with Monash University. Prof. Margaret Gardner, President and the Vice-Chancellor of Monash University conferred the degrees in person. *(data as on August 18, 2022)*

This year, 35 research scholars have been selected for the award of 'Naik and Rastogi Award for Excellence in PhD Thesis' for the year 2020-22.

SUPPORT FROM MINISTRY OF EDUCATION

Grant in Aid Received from MoE for the F.Y. 2021-22 includes:

Recurring	Rs. 687.16 crores
Non Recurring	Rs. 35.00 crores
Total	Rs. 722.16 crores

Under Institute of Eminence (World Class Institution)

Non Recurring	Rs. 82.80 crores
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Income including Student Fees and Other Income:

	Rs. 145.85 crores
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IIT BOMBAY IN NATIONAL AND INTERNATIONAL RANKINGS

National Institutional Ranking Framework (NIRF)

The National Institutional Ranking Framework (NIRF) was approved by the Ministry of Education (then MHRD) and launched by former Honourable Minister of Human Resource Development Smt. Smriti Irani in September 2015. This framework outlines a methodology to rank institutions across the country. The methodology draws broad understanding from the overall recommendations, arrived at by a Core Committee set up by MoE to identify the broad parameters for ranking various universities and institutions. The parameters broadly cover “Teaching, Learning and Resources”, “Research and Professional Practices”, “Graduation Outcomes”, “Outreach and Inclusivity” and “Perception”.

IIT Bombay's Rank in NIRF

Category \ Year	2017	2018	2019	2020	2021	2022
Overall	3	3	4	4	3	3
Engineering	2	2	3	3	3	3
Management*		5	10	11	10	11
Research*					3	4

* Management and Research category in NIRF started in 2018 and 2021 respectively.

Atal Ranking of Institutions on Innovation Achievements (ARIIA)

Atal Ranking of Institutions on Innovation Achievements (ARIIA) was initiated by the Ministry of Education (then Ministry of Human Resources Development (MHRD), Government of India on August 30, 2018, to systematically rank all major higher educational institutions and universities in India on parameters related to “Innovation and Entrepreneurship Development” amongst students and faculties. The parameters used for consideration for ARIIA rankings include budget, facilities, awareness, entrepreneurship, commercialization, learning methods and governance.

IIT Bombay secured second position in the Atal Rankings of Institutions on Innovation Achievements (ARIIA) 2021 under the CFTI's category ‘Institute of National Importance (Technical)’. For the third consecutive year, IIT Bombay secured second position in ARIIA rankings. The result was announced by the Hon'ble Minister of State for Education, Dr. Subhas Sarkar, on December 29, 2021.



QS World University Ranking

Survey conducted by Quacquarelli Symonds	2018		2019		2020		2021		2022	
	Int.	Nat.	Int.	Nat.	Int.	Nat.	Int.	Nat.	Int.	Nat.
QS World University Rankings	179	2	162	1	152	1	172	1	177	1
QS World University Ranking by Region										
Asia	34	1	33	1	34	1	37	1	42	1
BRICS*	9	1	8	1	-	-	-	-	-	-
QS World University Ranking by Subject										
Overall	-	-	53	1	44	1	49	1	65 ^{\$}	1
Art and Design	51-100	1	51-100	1	51-100	1	51-100	1	51-100	1
Computer Science	51-100	1	51-100	1	51-100	1	67	1	67	2
Civil Engineering	51-100	1	51-100	1	51-100	1	51-100	1	51-100	1
Chemical Engineering	51-100	1	51-100	2	50	1	70	1	67	1
Electrical Engineering	51-100	1	51-100	1	51-100	2	61	2	56	1
Mechanical Engineering	51-100	1	51-100	1	51-100	1	82	2	57	1
Minerals Engineering	-	-	38	1	41	1	41	1	39	3

*ranks were not announced in 2020, 2021, 2022 | \$ in Engineering and Technology Category |
Int. = International, Nat. = National



RESEARCH AND DEVELOPMENT ACTIVITIES

In financial year (FY) 2021-22, IIT Bombay received external funding of Rs. 329.08 crores for R&D related activities. This included funding from government agencies, industries and others, both within and outside India.

R&D Activities

The Office of Dean (R&D) continued to engage and facilitate research and development initiatives at IIT Bombay by administering R&D projects, facilitating industry interactions, managing intellectual property and licensing activities, reviewing and finalizing R&D related agreements and contracts, supporting high-end research infrastructure and disseminating R&D related information in various fora, amongst other roles. Many new R&D projects and related activities were undertaken during the year 2021-22.

R&D projects, both as short-duration consultancy projects and long-duration sponsored research projects were initiated (Table 1).

Table 1: Information on new projects sanctioned during last three years

FY	Sponsored Projects		Consultancy Projects	
	Number	Sanctioned outlay (Rs. in crores)*	Number	Projects outlay (Rs. in crores)*
2021-22	242	220.29	648	79.95
2020-21	246	297.68	538	68.79
2019-20	345	251.00	705	79.80

*: includes GST for Indian party/ clients

Sanctioned outlay for sponsored projects during FY 2021-22 ranged from few lakh rupees to Rs. 33 crores. The distribution of sanctioned outlay v/s number of projects is shown in the Figure 1.

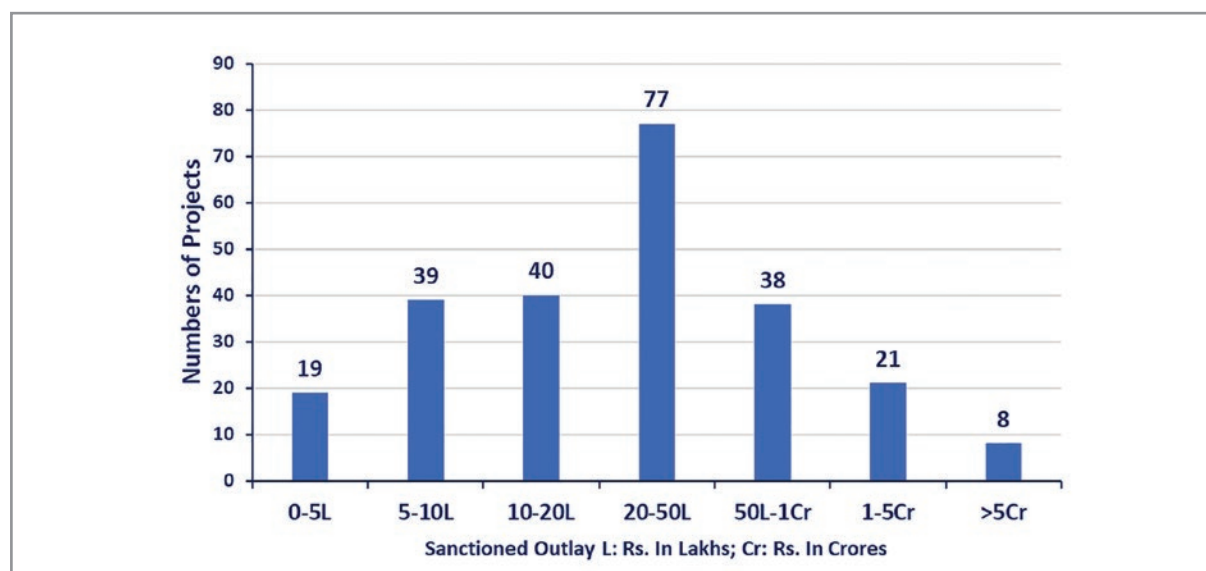


Figure 1: Distribution of sponsored projects-sanctioned outlay ranges

a) External grants for R&D

IIT Bombay received funds to the tune of Rs. 329.08 crores in FY 2021-22 from external agencies. This includes funds for new as well as ongoing projects as indicated in Table 2.

Table 2: Funds received for R&D in 2021-22

Project Type	Funds received (Rs. in crores)
Sponsored Projects	252.27
Consultancy Projects	66.89
Royalty	3.85
Equipment usage	6.07
Total	329.08

This year, funds received were majorly from government agencies with a sizeable contribution from industries (both Indian and foreign) as well as trusts, societies etc. The percentage contribution of different types of funding agencies is shown in Figure 2:

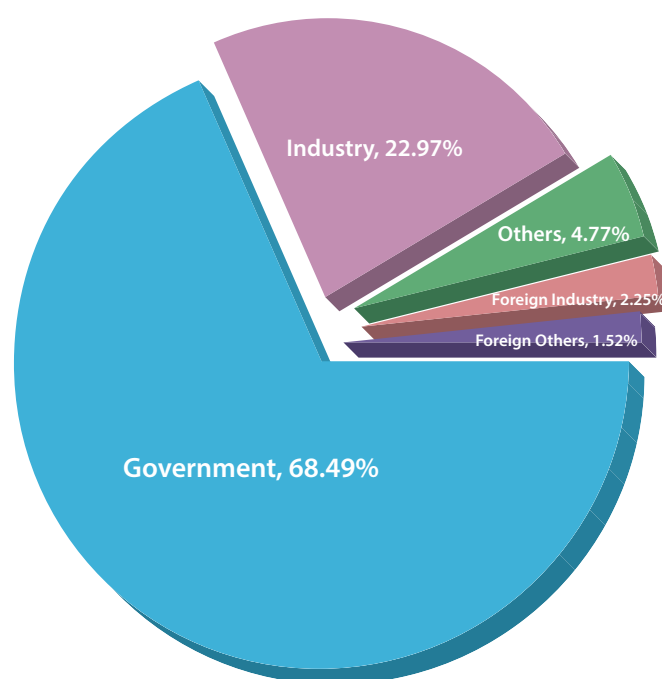


Figure 2: Types of funding agencies and percentage contribution for R&D receipts
(Sponsored Projects + Consultancy Projects)

In FY 2021-22, IIT Bombay initiated 242 R&D projects with sanctioned outlay of Rs.220 crores. These span various domains of research in science and engineering – both applied and basic as well as humanities, social sciences and management studies. Some highlights are given below:

- **National Centre of Excellence in Carbon Capture and Utilization (NCOE-CCU):** Set up with support from the Department of Science and Technology (DST), the Centre will act as a multi-disciplinary, long-term research, design development, collaboration and capacity- building centre. It focusses on carbon dioxide capture, compression, transport, and utilization, in enhanced hydrocarbon recovery



as co-benefit pathways. It will serve as a hub for state-of-the-art research and application-oriented initiatives associated with industries and leading research institutes in India and abroad. The Centre will work towards setting up a carbon capture plant. (**Sanctioned Outlay:** Rs. 5.41 crores over 5 years).

- **Geospatial Information Science and Engineering (GISE)** has evolved as a critical component of Digital India. Supported by DST, the advanced lab for GISE at IIT Bombay will assume a leadership role for the growth and transformation of geospatial technology to develop the lab into an interdisciplinary hub advancing the state-of-the-art in different aspects of geospatial technologies. [**Sanctioned Outlay:** Rs. 33.51 crores over 5 years.]
- **The 5G testbed project funded by the Department of Telecommunications (DoT)** was aimed to indigenously build a 5G network from scratch, with an objective of encouraging telecom R&D in India. As a partner Institute in this multi-institute collaboration, IIT Bombay was involved in the development of the 5G packet core subsystem, which connects the 5G-base station to other networks and services such as voice or Internet. 5GCore, N3IWF with Multi-RAT SDN controller and RANemulator technologies were successfully licensed to industry.
- **ICMR-BETIC Hub** for medical-grade pilot manufacturing and pre-compliance testing along with relevant expertise and quality management system is proposed to be established in this project. It will have precision equipment to manufacture bio-compatible plastic, metal, ceramic and composite parts, post-manufacturing operations (laser marking, packaging, sterilization, etc.) and pre-compliance testing (mechanical safety and electrical compliance). The facilities and quality management systems will be ISO 13485 certified.
- A research team from the Department of Energy Science and Engineering, IIT Bombay installed a 50 kWp solar microgrid facility for an army base camp in Sikkim. The Sustainable Energy Storage Suitable for Microgrid (SENSUM) project is a part of the 'Mission Innovation India' plan. It is a step towards India's ambitious goal to tap into renewable energy sources, and the Department of Science and Technology, Government of India, funded the 95 lakh venture.
- As a response to the challenges posed by the COVID-19 pandemic, IIT Bombay continued to develop technologies and solutions along with collaboration with hospitals and industry partners to find solutions and mitigate problems.



Solar panel installed in Sikkim



Indigenous system to produce oxygen using PSA unit

Following technologies and designs were developed at IIT Bombay:

- o Conversion of nitrogen generation plant to an oxygen generation plant
- o Sustainable and economical oxygen production via neutral water electrolysis with an efficient binary catalyst
- o Cost effective instant-care oxygen delivery system (Covid-OxyGen)
- o Oxygen concentrators
- o Water electrolysis for oxygen generation
- o Innovative oxygen mask system for reuse of exhaled oxygen to enhance the lifetime of oxygen cylinder for COVID-19 patients (reBreather)

reBreather: Breathing device that reuses exhaled oxygen to enhance the lifetime of oxygen-cylinders





- IIT Bombay's Student Technical Project teams continue to bring laurels for the Institute. The IIT Bombay Racing team secured 1st rank and was crowned the Overall Winner in the Formula Student Concept Class category, a first for an Indian team at any international Formula Student Competition. The team also secured 1st position in the design event of the FSUK 2021 competition among 65 teams, participating from 18 countries. IIT Bombay students also participated and secured 4th place globally in American Society of Mechanical Engineers (ASME) Student Design Challenge 2021.

Some major sponsored projects initiated:

- **Indian Nano-electronics Users Program-Idea to Innovation (INUP i2i)**
Funding Agency: Ministry of Electronics and Information Technology
Sanctioned Outlay: Rs. 17.10 crores over 3 years
- **ICMR-DHR-CoE IIT Bombay**
Funding Agency: Indian Council of Medical Research
Sanctioned Outlay: Rs. 15.20 crores over 3 years
- **Sustainable Energy System for Achieving Novel Carbon neutral Energy Communities (SUSTENANCE)**
Funding Agency: Department of Science & Technology
Sanctioned Outlay: Rs. 14.96 crores over 3.5 years
- **Indigenous Development of Monolithic Perovskite Module Manufacturing by Printing**
Funding Agency: Central Mine Planning & Design Institute Ltd.
Sanctioned Outlay: Rs. 12.86 crores over 3 years
- **Next Generation Wireless Research and Standardization on 5G and Beyond**
Funding Agency: Ministry of Electronics and Information Technology
Sanctioned Outlay: Rs. 9.15 crores over 3 years

- **DBT-Pan IIT Center for Bioenergy - Phase 2**
Funding Agency: Department of Biotechnology
Sanctioned Outlay: Rs. 6.11 crores over 5 years
- **Capacity building and Phase-I multi-center clinical trial of indigenous anti-CD19 CAR T- cell therapy for adolescent and adult patients with relapsed/ refractory B-cell malignancies**
Funding Agency: Indian Council of Medical Research
Sanctioned Outlay: Rs. 4.77 crores over 3 years
- **Indian Participation in the ALICE Experiment at CERN**
Funding Agency: Department of Science & Technology
Sanctioned Outlay: Rs. 4.46 crores over 5 years

Along with sponsored R&D efforts, consultancy activities were taken up for different government, public sectors and industries, both Indian and international. The types of consultancy provided included expert advice, retainership, product/ process/ software development, analysis, evaluation, product design and limited testing.

Some representative consultancy projects initiated during this year:

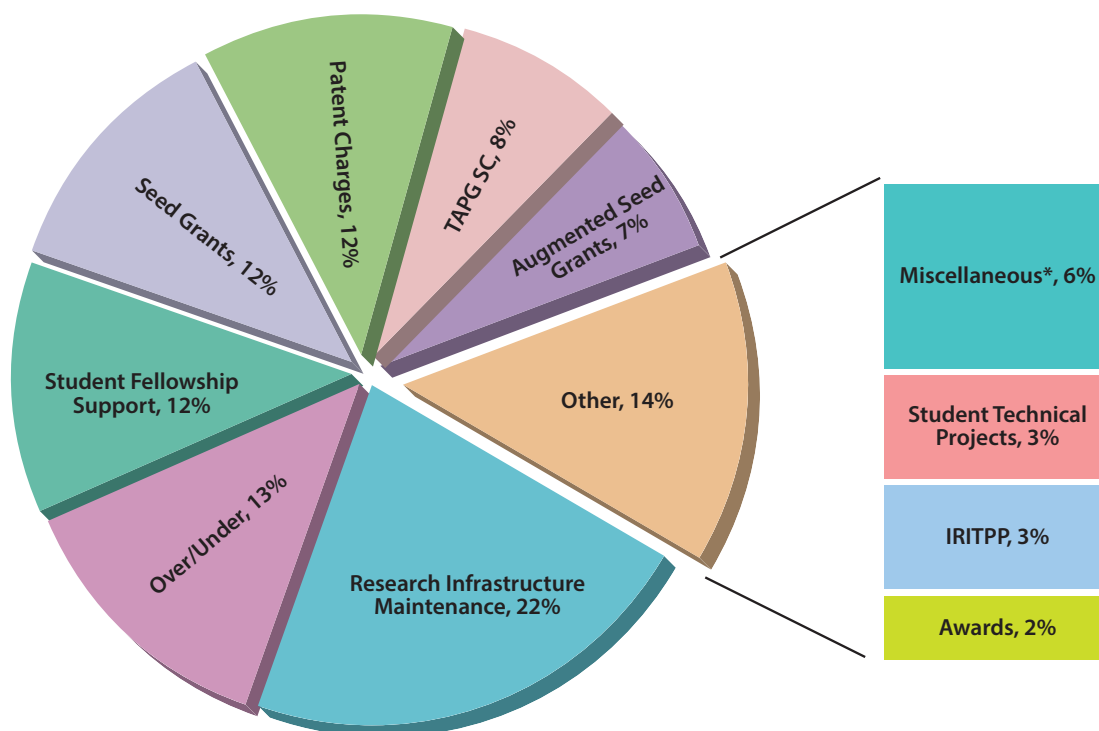
- Artificial intelligence and machine learning (AI & ML) based models and approaches
- NMR Studies
- Power Drive Train for Heavy Vehicles
- National Smart Grid
- Development of Glycated Albumin and Hemoglobin A1C (HbA1C) panel
- Na-ion battery
- Charging systems for Electric Vehicles
- Air Dispersion Modeling Study of VOCs (Hazardous Air Pollutants)
- Proof checking of structural designs
- Air Quality Monitoring
- Bio-Polymers
- SCADA Controlling System in Solapur Smart City under Smart Cities Mission
- Structural audits

Internal Funding for R&D

The Institute released funds to the tune of Rs. 39 crores in total for R&D related activities. Funds to the tune of Rs. 8 crores were sanctioned as seed grant and augmented seed grant for initiation of research for new faculty members. Research Infrastructure Funding Committee (RIFC) reviewed augmented seed grants sanctioned in 2016-19 to understand how the grant has been useful in fostering research requirements. The funds released by the Institute during the FY 2021-22 were distributed across the following areas:

- Seed grant for initiation of research for new faculty
- Augmented seed grants for procuring high-end research equipment
- Maintenance of central and national research facilities

- Awards and recognition to faculty recipients of Research publication award, Impactful research award, Research dissemination award and Early research achiever award
- Facilitating grants to faculty members for filing patents, research publications and/or international travel
 - Leverage grants and bridge grants
 - Fellowships for PhD student
 - Conferences, seminars, exhibitions
 - Publications
- Student research/ competition/ event: projects such as 'Mars Rover', Team 'Shunya', AeRoVe, Rakshak, STRIDE, Intelligent Ground Vehicle Competition, IITB Racing, Student Satellite project, AVU IIT Bombay.



* **Miscellaneous:** Midstage, Conferences/ Seminars/ Exhibitions, Publications, Covid Projects, Membership-Fee

Figure 3: Percentage distribution of Institute funding related to R&D activities.



IIT Bombay – Industry Interactions for R&D

The Institute continued its efforts to enhance interaction with its industry collaborators. Around 335 Indian and international industries approached IIT Bombay for partnership through collaborative R&D projects and consultancy services. The interactions were managed seamlessly by facilitating exploratory meetings and technical discussions with faculty members in areas of mutual interest. Around 200 meetings in both physical and virtual modes, were coordinated by IRCC during the year 2021-22. Agreements were entered into to establish formal association.

- L&T Defense
- V-Guard
- Baker Hughes
- NTT India
- TotalEnergies
- Vedanta (Hindustan Zinc)
- Google India
- Maharashtra Energy Development Agency (MEDA)
- Cipla
- BELIMO Actuators India
- Blue Star
- GE Aviation
- Shree Satya Minerals
- Reliance Industries
- Starburst Aerospace
- PRS Permacel
- Marico Innovation Foundation
- Mumbai Port Trust
- Shipping and Waterways
- Parivahan
- Film & Television Institute of India (FTII Pune)
- Sushrut Chemicals
- Adani Power Limited
- Eaton
- Cleanos Ventures
- Sony India
- Airbus
- Subros
- Jindal Specialty Chemicals
- Honeywell
- Bajaj Hindustan Sugar
- Biocon Biologics
- Dabur
- Kohler
- Amazon
- Serum Institute of India
- Avanthiya Pharma
- Puri Crawford
- Indian Metro Rail Organizations' Society (I-Metro)
- Efftronics Systems
- KPIT Technologies
- HLE Glascoat
- Bharat Forge
- Weatherford
- Mercedes Benz
- Accenture
- Daiichi-Sankhyo
- Mukand Ltd. (Bajaj Group)
- Cyient
- Pfizer
- PowerGrid Corporation
- Symphony
- Nuclear Power Corporation of India
- Gujarat Fluorochemicals
- Nirmitee Robotics India
- Telawne Power Equipments
- Kirloskar Pneumatic Company Limited
- Kallola Media Creations
- Adani Electricity Mumbai
- Ministry of Ports
- V-Guard
- Ordnance Factory Badmal
- Indian Oil Corporation
- Alphard Maritime
- Jukshio Technology Innovation
- Mahindra & Mahindra
- Varroc Engineering
- Voltas
- Schindler India
- Menon and Menon
- IFFCO Kalol
- Xitadel Group
- Magma Photovoltaics
- SEEPZ-SEZ Mumbai
- Sterling Generators
- Shinkan
- L&T Power
- RIF Technologies
- Godrej Aerospace
- Solutino Technologies
- Reliance Consumer Brands FMCG
- Jio Platforms
- Sonae EV
- Maruti Suzuki India

Discussions with many of the above industries are currently ongoing, and a few have resulted in projects.



Meeting with Maruti Suzuki



All India Service Officers (IAS, IPS and IFS) Exposure Visit

R&D Related Agreements

More than 250 agreements were finalized and signed during the year including those for research collaboration, setting up consortia/ centres of excellence, licensing, non-disclosure agreements, IP transfer, student sponsorships, endowment, material transfers, etc. with industries, organizations, universities and government, both national and international.



MoU signing between TCE and IIT Bombay for R&D and IP Licensing



Augmentation of Research Infrastructure

To promote the research in low temperature science and engineering, a new liquid Helium facility worth Rs. 20 crores (approx.) has been approved with an equal contribution from Industrial Research Consultancy Centre (IRCC) and Institute of Eminence (IoE) fund.

Intellectual Property (IP) Protection Activities:

During FY 2021-22, 189 intellectual property (patent, trademark, design and copyright) applications were filed. The graphical representation of year-wise growth in number of intellectual property applications filed (in the last five years) are indicated in Figure 4 and list of all Indian and international IPR filings and grants are given in Table 3.

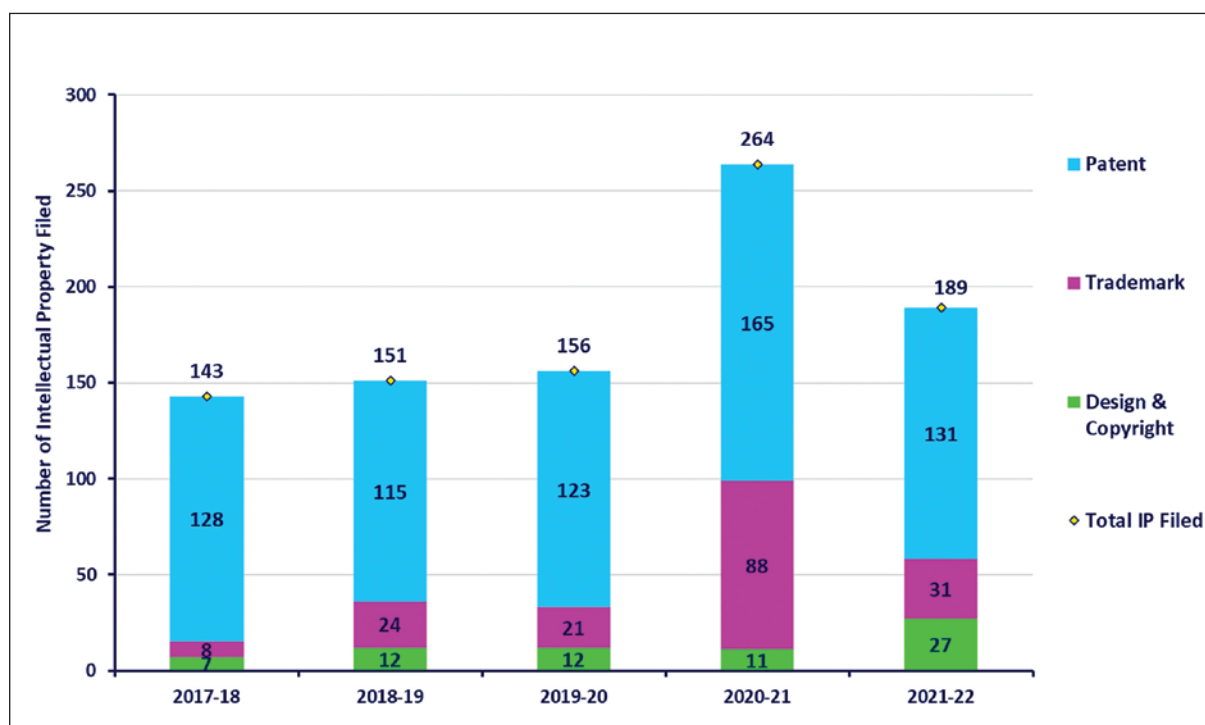


Figure 4: Year-wise growth in number of intellectual property applications filed

Table 3: Patents and other IPR Applications filed and granted during FY 2021-22

IP type	Applications filed (No.)	Granted (No.)
Indian Patents	115	85
Patent Cooperation Treaty (PCT)	8	NA
US Patents	6	7
Other foreign patents	2	4
Trademark	31	58
Industrial Design	21	8
Copyright	6	3
Total IPs	189	165

Licensing Activities in FY 2021-22

Support to Entrepreneurship

Rights to ten technologies/ Intellectual Property created and developed in the Institute were given to researchers for incubation/ entrepreneurship activity in the IIT Bombay's incubator (SINE)/ elsewhere during the year. The start-ups created for translating the technologies include:

- OneSolar Technologies Pvt. Ltd.
- LeTS Foundation
- Flexmotion Technologies Pvt. Ltd.
- Impact Platform LLP
- Mecentro Pvt. Ltd.
- Nano Group
- Ajivam Water Private Limited
- Geo Radar AI Private Limited

Technologies licensed to the industries

IIT Bombay licensed technologies to various industries and companies. Some of them are:

- 5GCore, N3IWF with Multi-RAT SDN controller, and RANEmulator
- N3IWF and SDN controller components for WLAN interworking with 5G mobile network
- Floating Solar Photo-Voltaic (FSPV) system
- CAR T-cell platform for immunotherapy
- Methods and Systems for constructing sensing matrices
- DC Motor Kit
- Learn English Through Stories (LETS) content creation process
- Compliant mechanisms
- Bloomsscope
- Nutrient loaded Cosmetics
- Process of making Levodopa (L-DOPA)
- A Portable System And Method For 3-Dimensional Surgery Planning Using Conventional 2-Dimensional X-Ray Images
- Tapestry Pooling
- Hybrid-model approach for weather and climate forecasting
- Short-Term Load Forecasting (STLF)
- Methods and systems for Discontinuity Detection in Pipelines
- Method and apparatus for patterning 3D nano-microstructures of sub-wavelength resolution with two photon lithography

- A zonal storage water supply system with Hydraulic Isolation Structures and a method thereof
- Instant cooling of sugarcane juice
- Smart vending e-cart
- Detection of virus and bacteria by electrical impedance
- Electronic hardware, software and antenna designs, and signal processing techniques for the GPR
- Portable Electroluminescence (EL) camera
- Retrofit Manual Cart Assembly
- E-Assist Pedal Cart

IIT Bombay, along with its technology partners, has licensed 5GCore, N3IWF with Multi-RAT SDN controller, and RANEmulator licensed to industry. IIT Bombay was involved in the development of the 5G packet core subsystem, which connects the 5G basestation to other networks and services like voice or internet. IIT Bombay's components have been licensed to industry for development into a commercial grade product. The components developed by all partner institutions were integrated at IIT Madras.

For the first time, IIT Bombay faculty members have founded a Section-8 company to promote English learning through content creation process under 'Learn English Through Stories (LETS)' project. It is an initiative that facilitates English language learning in remote, rural schools of India using contextual stories collected from the learners themselves. Additionally, LETS' digital applications (animated videos and the interactive mobile application) translate these into audio-visual content to aid language learning.

An IIT Bombay researcher has founded a start-up based on technology related to air sanitization device. The clean air delivery device sanitizes, disinfects and removes airborne pathogens using integration of self-cleaning UV source, filtration technology and also optional use of chemical oxidants. The said technology has been commercialized as a product called "anti-microbial air purifier" and is currently available



vSure Anti Microbial Air Purifier

IIT Bombay has designed and developed the smart vending E-cart which has been licensed to industry. The smart vending E-cart is a fully electric vehicle with solar assist and it is suitable for usage by vendors and small companies in the rural, peri-urban, and farm sectors. The Smart Vending E-Cart is a user-friendly technology and features proper storage and temperature for enhanced shelf life of perishable foods/ items like vegetable and fruits etc.

IIT Bombay Awards for R&D related activities :

This year, various R&D research awards such as Research Publication Awards, Research Dissemination Awards and Early Research Achiever Awards were conferred on the faculty recipients based on a call-for-nominations and selection by a committee appointed by the Director. Following are the awards and recipients:

IIT Bombay Research Publication Awards 2020

1. Prof. Anirban Banerjee, Department of Biosciences and Bioengineering
2. Prof. Debabrata Maiti, Department of Chemistry
3. Prof. Nagendra R. Velaga, Department of Civil Engineering
4. Prof. Anurag Garg, Environmental Science and Engineering Department
5. Prof. Sandip K. Saha, Department of Mechanical Engineering



Smart Vending E-Cart

Smart Vending E-Cart

IIT Bombay Research Dissemination Awards 2020

1. Prof. Suvarn S. Kulkarni, Department of Chemistry
2. Prof. Atul Sharma, Department of Mechanical Engineering

IIT Bombay Early Research Achiever Award 2020

1. Prof. Achintya Kumar Dutta, Department of Chemistry
2. Prof. Amrita Bhattacharya, Department of Metallurgical Engineering and Materials Science
3. Prof. Biplab Banerjee, Centre of Studies in Resources Engineering

IIT Bombay Impactful Research Awards 2020

1. Prof. Samir K Maji, Department of Biosciences and Bioengineering
2. Prof. Ruchi Anand, Department of Chemistry
3. Prof. Avik Bhattacharya, Centre of Studies in Resources Engineering

These awards were conferred to the recipients on the occasion of National Education Day (Rashtriya Shiksha Diwas) on November 11, 2021 by the Director of IIT Bombay Prof. Subhasis Chaudhuri at a virtual function, in the presence Dr. R. A. Mashelkar, former Director General of the Council of Scientific and Industrial Research.

Dr. P. K. Patwardhan Technology Development Awards 2020

Dr. P.K. Patwardhan Technology Development Awards were conferred to the recipients on the occasion of Teacher's Day function (virtual) celebrated on September 6, 2021. The chief guest of the function was Prof. K. Vijay Raghavan, Principal Scientific Adviser to the Government of India.

- **Prof. Prasanna Gandhi**, Department of Mechanical Engineering
- **Prof. Ganesh Ramakrishnan and Mr. Vishal Kaushal**, Department of Computer Science and Engineering

Prof. Krithi Ramamritham Award for Creative Research 2020

Prof. Abir De, Computer Science and Engineering

Other R&D and IP Awards

Clarivate South and Southeast Asia Innovation Award 2021 :

IIT Bombay was selected as a winner of the Clarivate South and Southeast Asia Innovation Award 2021 in the Academic Institutions category. The Institute has won the award for the second consecutive year, placing it amongst top innovators in India.

The Rakesh Mathur Awards 2021

The Rakesh Mathur awards were conferred to the recipients on the occasion of Institute Foundation Day on March 10, 2022 by Dr. Anil Kakodkar, Chancellor, Homi Bhabha National Institute, Chairman, Rajeev Gandhi Science and Technology Commission and Member, Atomic Energy Commission. Award recognition included cash awards, research grants and arranging Institute-wide dissemination through lectures.

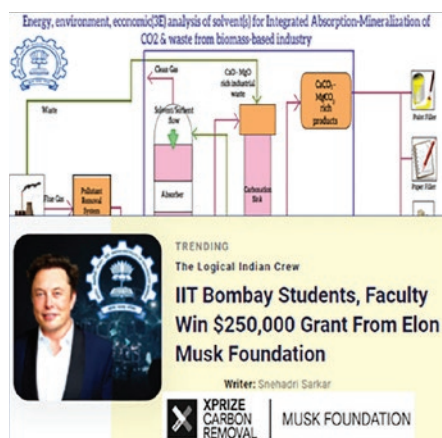
- **Prof. Jugal K. Verma**, Department of Mathematics, has been awarded the Prof. S.C. Bhattacharya Award for Excellence in Pure Sciences
- **Prof. Jayesh Bellare**, Department of Chemical Engineering has been awarded the **Prof. H.H. Mathur** Award for Excellence in Applied Sciences



IIT Bombay wins Clarivate Innovation Award 2021

X-PRIZE Student Competition:

A student-led team named SASIITB (the only team from India), with four students and two professors was one of the 23 winning global teams in the X-PRIZE Carbon Removal Student Competition, supported by the Elon Musk Foundation. The team received USD 250,000 prize for proposing a novel method for capturing carbon dioxide and converting it into valuable chemicals.



Members of the team SASIITB win X-PRIZE competition



New Discovery Award 2020

IIT Bombay students Ms. Kritti Sharma, Department of Mechanical Engineering, Mr. Kunal Deshmukh, Department of Metallurgical Engineering and Materials Science and Mr. Harsh Kumar, Department of Physics were given a special mention under the 'New Discovery award 2020' by the Astronomical Society of India. The team works with GROWTH-India Telescope (GIT) to confirm Near-Earth asteroids.



Kunal Deshmukh



Harsh Kumar



Kritti Sharma

New Discovery Award 2020 – Special Mention

R&D Dissemination/ Outreach Activities

IIT Bombay E-Mobility Workshop

A one-day virtual workshop on E-Mobility was organized by the Office of the Dean (R&D) on February 19, 2022 to foster interdisciplinary collaboration between faculty, researchers, students across departments and industry personnel working on varied aspects of electric vehicles spanning from advancements in power drive train, smart charging infrastructure, sustainable battery technology, hydrogen-based mobility, environmental impact, e-transportation planning, new vehicle design and mechanics.

The workshop included three plenary talks, two keynote talks, panel discussion, a fireside chat, and about 30 technical talks. The plenary speakers were Dr. Pawan Kumar Goenka, Chairperson, Board of Governors, IIT Bombay and Ex. Managing Director - Mahindra and Mahindra; Mr. Bhavish Aggarwal, Founder and CEO - OLA; and Mr. Sunjay Kapur, Chairman, Sona Comstar and President, ACMA.

Panel discussion on 'Challenges and Opportunities for EV in India' by eminent personnel from academia and industries highlighted the present and future scenario of EV deployment in India and the relevant implementation challenges.



The workshop provided a platform for cross-fertilization of ideas, collaboration across departments, and outreach to the industry. The event had an e-count of about 1380, with participation from various stakeholders, including OEMs, vehicle manufacturers, policy makers, testing agencies, entrepreneurs, faculty members, students, and IIT Bombay alumni.

Pan IIT Global Virtual Technology Summit: PI-WOT 2021

IIT Bombay participated in the Global Virtual Technology Summit 'PI-WOT 2021' organised by Pan IIT Alumni India.

The event was held in a virtual mode bringing together innovators, researchers, start-ups, academics, investors and policy makers. The exhibition was open 24x7 from August 20, 2021 onwards and ended with the two-day summit held during September 17-18, 2021. The themes included 'Magic of Artificial Intelligence (AI)', 'Smart and Secure', 'Health is Wealth', 'Automate it All', 'Powering Cloud', and 'Going Virtual'.

IIT Bombay exhibited posters giving a glimpse of R&D activities at the Institute, academic programmes, industry interactions, technology transfers and licensing of IIT Bombay IP, R&D towards the mitigation of COVID-19 etc., in addition to several posters on key technologies developed in the Institute. Introductory videos on various departments, centres and technologies of IIT Bombay were also showcased. brochures like 'R&D Highlights', 'Partner with Us', 'Innovations licensed to Industry', 'Glimpses of Research' and 'Research Facilities' were exhibited to the visitors for information dissemination. Visitors interacted with IIT Bombay staff live via online video teleconferencing, audio conferencing and messaging modes during the event.

The IIT Bombay stall was well-received and attracted a good response, with more than 100 visitors.



IIT Bombay stall at Pan IIT Global Virtual Technology Summit



Award Lectures at IIT Bombay

The recipients of various prestigious awards gave online and offline talks (details given below) on their research works to the IIT Bombay academic community:

- Rakesh Mathur Award Lectures were held on March 16, 2022 in VMCC



Prof. Jugal K. Verma, Department of Mathematics (4th from left) and Prof. Jayesh Bellare, Department of Chemical Engineering (2nd from left) with Deans (R&D) and respective HoDs

- **Talk by Prof. S. C. Bhattacharya Award for Excellence in Pure Sciences 2021 winner:**
Prof. Jugal K. Verma, Department of Mathematics spoke on “Multivariate Polynomial Equations and Mixed Volumes of Newton Polytopes”
- **Talk by Prof. H. H. Mathur Award for Excellence in Applied Sciences 2021 winner:**
Prof. Jayesh Bellare, Department of Chemical Engineering, spoke on “Resorbable Nanomaterials and Nanomedicines for Healthcare”

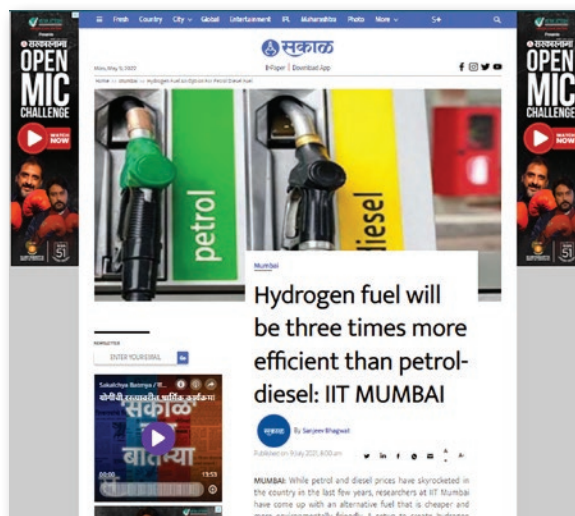
Institute Award Lecture series comprising of IRCC Awards, Prof. Krithi Ramamritham Award and Bhatnagar Award were conducted during November 1-2, 2021 in virtual mode.

Dr. P. K. Patwardhan Technology Development Award Lectures were held on August 25, 2021 in virtual mode where the awardees presented their work to the IIT Bombay academic community.

Media Outreach for R&D

IRCC realizes the need to communicate its R&D efforts with wider society. Towards this, IRCC has collaborated with Gubbi Labs to bring out 25 easily accessible stories conveying IIT Bombay's

achievements. These articles have been released in English, Hindi and Marathi languages. Many of these articles have been picked up by mainstream and online media and disseminated further (screenshots of the articles are below):



R&D Film: On the occasion of IIT Bombay's 63rd Foundation Day, a short R&D film featuring IIT Bombay's research ecosystem was released. The film was released by Dr. Anil Kakodkar, Chancellor, Homi Bhabha National Institute and Chairman, Rajiv Gandhi Science & Technology Commission and Member Atomic Energy Commission, in the presence of Director Prof. Subhasis Cahudhuri and Dean (R&D) Prof. Milind Atrey of IIT Bombay. The film is available on the Institute's official YouTube channel at the following link: <https://www.youtube.com/watch?v=8iyx9Vk2md8&feature=youtu.be>



Brochures: Brochures titled 'R&D Highlights' reporting some of the outcomes of R&D efforts undertaken at the Institute and 'Partner with Us', highlighting the interactions with industry and the possible modes of collaboration, were updated and distributed in forums like Global Virtual Technology Summit, PI-WOT 2021 and industry partners to disseminate information on R&D activities and industry interactions of the Institute.



Coverpages of the Brochures

Focussed Initiatives on Ethics and Safety

Institute Ethics Committee (IEC): During the year 2021-22, Institute Ethics Committee reviewed 32 proposals. 20 proposals were approved in expedited, full board or exempt mode depending on nature of proposals. The IEC is provisionally registered with National Ethics Committee Registry for Biomedical and Health Research (NECRBHR), Department of Human Research (DHR) since September 2021.

Institutional Review Board (IRB): The Institute Review Board (IRB) has been constituted in view of the increasing number and varied nature of research proposals received for ethics clearance. The board received 57 proposals during the period 2021-22 from various departments and 48 proposals were approved.

Safety: The procurement of firefighting equipment and necessary accessories as approved by the Fire and Safety Section Committee was started this year. The firefighting equipment will be used by the security section and setting up of a new fire and safety section has been approved. The recruitment process for the fire and safety section is in progress.

The Institutional Biosafety Committee (IBSC) reviewed 20 proposals during the period 2021-22. Of the proposals reviewed, eleven have been approved by the committee.

Online Processes

Following activities were undertaken to upgrade the online system:

- Modules related to student fellowship support and committee details were added
- Modules on consultancy, project staff hiring changed to suit staff needs
- Intellectual Property Submission module updated with several forms
- Scheduler program for sending automated email notifications regarding received funds implemented
- Drona System upgraded in May 2021

Project Manpower

Number of Project staff/ fellow working in various projects as on March 31, 2022 is 1051. Among them, 336 joined during the FY 2021-22.

OUTREACH PROGRAMMES

The Continuing Education and Quality Improvement Programme (CE & QIP) office at IIT Bombay has been actively reaching out to working professionals from both academia and industry to serve the competency development and training requirements. A large number of working professionals from industry as well as faculty and students from academia have participated and acquired knowledge from short and long-term certificate courses during 2021-22.

Many of the Institute's CEP courses for the industry are well established worldwide and continue to attract large participation, both from within India as well as from abroad. The courses on "Artificial Intelligence and Machine Learning (AI/ML) with Python", "Digital Marketing and Applied Analytics", "Design Thinking", "Product Management", "Business Analytics", "Supply Chain Management", "Electric Vehicles", "Digital Transformation", "User Experience Design", and several in-house courses were offered online in partnership with EdTech companies.

Based on the success of large open courses with EdTech partners, the CEP office made a presentation to the Board of Governors on the need to scale up its executive education activities worldwide, in partnership with EdTech companies. Expected results of this initiative also align with the Institute's objective of expanding education outreach and generating significantly higher revenue. The presentation was well

received by the board members and an approval was accorded to empanel four EdTech partners. Further, it was approved that the Professor-In-Charge (PIC) position be upgraded to Dean (Education Outreach) along with the necessary initial investments in office renovation and new staff recruitment.

The Director appointed an empowered committee to review and approve the selection process and to recommend the list of four EdTech partners based on open 'Request for Proposal' (RFP) process. At the time of writing the report, the RFP document was released as on April 29, 2022. The work on blended courses is scheduled to commence from the second week of July 2022. Gradually the office is developing the internal revenue share model and policies for online courses with EdTech partners.

In terms of the overall performance of CE&QIP during 2021-22, a total of 53 CEP courses were conducted with about 2449 participants from across disciplines as well as industries, organizations and institutions, with a revenue of about Rs.12.60 crores.

Under the QIP category, six PhD students from AICTE- approved engineering colleges were admitted. In addition, eight teachers were inducted into PhD programme under the advance admission scheme who joined the Institute for the regular programme from July 2022.



ADMINISTRATIVE AFFAIRS

The Office of Dean (Administrative Affairs) deals with Manpower Management (non-faculty and non-project staff (permanent, temporary and out-sourced)) and Administration Process/ Services for the Institute. Accordingly, the office is responsible for the formulation for policies regarding administrative structures/ links, assessment of staffing/ manpower needs at different levels, defining duties/ responsibilities and authority levels, job functions/ profiles, recruitment policies, career/ promotion stages and allocation and sanctioning of optimal manpower resources to different units and related staff hiring/ recruitment.

For effective implementation of revised/ new policies, the office is supported by the concerned units of the Registry and Applications Software Cell (ASC).

Following is the month-wise (count) of recruitment of (group-wise viz. A, B, C) non-academic staff during 2021-22:

Sr.No.	Month	Group		Staff count
		B	C	
1	April 2021	1	0	1
2	May 2021	0	0	0
3	June 2021	0	0	0
4	July 2021	0	0	0
5	August 2021	0	0	0
6	September 2021	0	0	0
7	October 2021	0	0	0
8	November 2021	11	1	12
9	December 2021	3	1	4
10	January 2022	1	0	1
11	February 2022	1	1	2
12	March 2022	0	4	4
	Total	17	7	24

The Office of Dean (AA) organised series of lectures (online) on administrative and technical skills required for enhancing operational efficiency and effectiveness as a part of celebration of 75 years of Independence 'Azadi Ka Amrit Mahotsav' during the year.

- On November 29, 2021, the Institute organized a talk on “New Entrepreneurial Opportunities in Digital India” by Dr. Ganesh Natarajan, an entrepreneur and businessperson. He is the recipient of the Distinguished Alumnus Award of IIT Bombay and the National Institute of Industrial Engineering (NITIE).
- On September 1, 2021, the Institute organized a talk on ‘The Role of Administration in Institutions of Higher Education’ by Dr. Premkumar, former Registrar, IIT Bombay, as a part of the Amrit Mahotsav. The talk (online) emphasised on administrative and technical skills required for enhancing operational efficiency and effectiveness.

FACULTY ACHIEVEMENTS AND RECOGNITIONS

During the year, 22 faculty members (15 Assistant Professor Grade I, one Associate Professor and one Professor) on regular basis and five on Assistant Professor Grade II joined the Institute. The number of full-time faculty members on the roll of the Institute has risen to 689 comprising 324 Professors, 01 Professor (Contract), 176 Associate Professors, 170 Assistant Professors (Grade-I), and 18 Assistant Professors (Grade-II). In addition, there are 62 adjunct faculty members and 343 post doctoral fellows on the roll. Around 12 faculty members retired – nine of whom were re-employed and two resigned during the year.

The Institute provided financial assistance to 16 faculty members for participating in international conferences.

Apart from educational and research pursuits, the faculty of the Institute meet national and global obligations in diverse ways. Many of them have accepted membership of various national committees and editorship of journals. They also review manuscripts for publications. We are proud that their efforts have received recognition in the form of many awards and distinctions, some of which are listed below:

Prof. Rohit Srivastava, Department of Biosciences and Bioengineering, has been awarded the prestigious Shanti Swarup Bhatnagar Prize for Science and Technology 2021 in Medical Sciences.

Prof. Chandramouli Subramaniam, Department of Chemistry, has been awarded the Swarnajayanti Fellowship 2021 for his innovative proposal to generate 'green heat'.

Prof. Amartya Mukhopadhyay, Department of Metallurgical Engineering and Materials Science, has been awarded the Swarna Jayanti Fellowship 2021, for his contribution to the field of Engineering Science.

Prof. Chandra Venkataraman, Department of Chemical Engineering has been elected as a Fellow of the Indian National Science Academy (INSA) 2021.

Prof. Dinesh Sharma, Department of Electrical Engineering, has been elected as Fellow of the Indian National Science Academy (INSA) 2021.

Prof. Roop Mallik, Department of Biosciences and Bioengineering, has been elected as Fellow of the Indian National Science Academy (INSA) 2021.

Prof. Ruchi Anand, Department of Chemistry, has been admitted as Fellow of Indian Academy of Sciences (IASc).

Prof. Samir K. Maji, Department of Biosciences and Bioengineering, has been admitted as Fellow of Indian Academy of Sciences (IASc).

Prof. Sunita Sarawagi, Department of Computer Science and Engineering, has been admitted as Fellow of Indian Academy of Sciences (IASc).

Prof. S. Sudarshan, Department of Computer Science and Engineering has been admitted as Fellow of Indian Academy of Sciences (IASc).

Prof. Suhas Joshi, Department of Mechanical Engineering has been elected as Fellow of National Academy of Sciences (NASI) 2021.

Prof. Sunoj Raghavan, Department of Chemistry, has been elected as Fellow of National Academy of Sciences (NASI) 2021.

Prof. Atul Sharma, Department of Mechanical Engineering, has been elected as Fellow of Indian National Academy of Engineering (INAE).

Prof. Ravindra Gudi, Department of Chemical Engineering, has been elected as Fellow of Indian National Academy of Engineering (INAE).



Prof. Saurabh Lodha, Department of Electrical Engineering has been elected as Fellow of Indian National Academy of Engineering (INAE).

Prof. Suparna Mukherji, Environmental Science and Engineering Department, has been elected as Fellow of Indian National Academy of Engineering (INAE).

Prof. Rohit Srivastava, Department of Biosciences and Bioengineering, has been elected as Fellow of Indian National Academy of Engineering (INAE).

Prof. M. Ravikanth, Department of Chemistry has been awarded the very prestigious J.C. Bose Fellowship.

Prof. Abir De, Department of Computer Science and Engineering, has been awarded the INAE Young Engineer Award 2021.

Dr. Achintya Kumar Dutta, Department of Chemistry, has been awarded 'NASI Young Scientists Platinum Jubilee Award' in the field of Chemical Sciences.

Prof. Anshuman Kumar Srivastava, Department of Physics, has been awarded NASI-Young Scientist Platinum Jubilee Award 2021 in the field of Earth Sciences, Mathematics, and Physics.

Prof. Asmita Mukherjee, Department of Physics, has been awarded the prestigious SERB-POWER Fellowship.

Prof. Parinda Vasa, Department of Physics, has been awarded the prestigious SERB-POWER Fellowship.

Prof. Dulal Panda, Department of Biosciences and Bioengineering, has been elected as the Fellow of 'The World Academy of Sciences (TWAS)'.

Other Fellowships:

Prof. Subhananda Chakrabarti, Department of Electrical Engineering, has been elected to the

rank of Fellow of the Institution of Engineering and Technology (IET), UK.

Prof. Shobhna Kapoor, Department of Chemistry, has been awarded DBT/ Wellcome Trust India Alliance Intermediate Fellowship starting from January 2022.

Prof. Sudarshan Kumar, Department of Aerospace Engineering, has been selected as the Fellow of the Combustion Institute, USA, for his outstanding contributions to applied research in the field of Flameless/ mild combustion and accurate measurement of laminar burning velocity, high pressure and temperature conditions.

Prof. Rajkumar S. Pant, Department of Aerospace Engineering, has been elevated to the rank of Fellow of The Aeronautical Society of India.

Prof. Ranjith Padinhateeri, Department of Biosciences and Bioengineering, has been awarded Fulbright-Nehru Academic and Professional Excellence Fellowship (2022-23).

Prof. Srinivasan Ramakrishnan, Department of Chemistry, has been awarded Ramanujan Fellowship.

Prof. Narayan Rangaraj, Industrial Engineering and Operations Research, has been selected as a Fellow of the Operational Research Society of India (ORSI).

Prof. S. Sudarshan, Department of Computer Science and Engineering, has been selected as a Fellow of Institute of Electrical and Electronics Engineers (IEEE), USA.

Prof. Sunita Sarawagi, Department of Computer Science and Engineering, has been selected as Fellow of Association of Computing Machinery (ACM) 2021.

Prof. Suryakant Waghmore, Department of Humanities and Social Sciences, has been selected to receive the New India Foundation Fellowship for the year 2021. He is awarded this fellowship

to work on his book tentatively titled “Is a Post-Caste City Possible? Examining Caste Erasure in Ahmedabad and Mumbai”.

Other Awards:

Prof. Subhasis Chaudhuri, Department of Electrical Engineering, has received the Advanced Computing and Communications Society (ACCS) Award for the year 2021. The award recognizes his outstanding research in the area of Computer Vision and Computational Photography.

Prof. Prasanna Gandhi, Department of Mechanical Engineering, and his team have received the “Technology Translation Award” from SERB (SERB-TETRA) for their work titled “Method Apparatus for dynamic amplification of motion with frictionless precision guidance”.

Prof. Santhosh Gharpure, Department of Chemistry, has been awarded the prestigious INSA Teachers Award (2021).

Prof. Malhar Kulkarni, Department of Humanities and Social Sciences, has received the Mahakavi Kalidas Sanskrit Sadhana Puraskar for the year 2020 from the Government of Maharashtra in recognition of his work as a Teacher of Sanskrit.

Prof. Debabrata Maiti, Department of Chemistry, has been selected for the Sun Pharma Science Foundation Research Awards 2021-Pharmaceutical Sciences.

Prof. Debabrata Maiti and Prof. Gopalan Rajaraman, Department of Chemistry, have been selected to receive the Chemical Research Society of India (CRSI) Bronze Medal for the year 2022.

Prof. Samir K. Maji, Department of Biosciences and Bioengineering, has been awarded the P. B. Rama Rao Memorial Award for the year 2021 for

his contributions in the field of Biochemistry and Allied Sciences from the Society of Biological Chemists (India).

Prof. Biswabandan Panda, Department of Computer Science and Engineering, has been selected as one of the recipients of the “2022 Qualcomm Faculty Award” for his contributions to microarchitecture research.

Prof. Jayesh Pillai, IDC School of Design along with **Mr. Abhishek Verma**, an alumnus of IDC School of Design and Manhole Collective, have won an award for their film ‘Manhole’, a 3D animated short film, in Unreal Engine’s Shorts India Program.

Prof. K. Ramasubramanian, Department of Humanities and Social Sciences, has been awarded “Mahakavi Kalidas Sanskrit-Vrati National Award 2021” by Kavikulaguru Kalidas Sanskrit University.

Prof. Eswar Rajasekaran, Department of Civil Engineering, has been selected for the Prof. K. K. Nageswara Rao Young Achiever Award-2021 given by the Indian Society of Geomatics for his significant contributions in the field of Geomatics.

Prof. Gulab Singh, Centre of Studies in Resources Engineering, has been awarded the “National Geomatics Award for Excellence” by the Indian Society of Geomatics (IGS) during National Symposium on i-GEOMATICS and Annual Convention of ISRS and ISG 2021.

Prof. Anshuman Kumar Srivastava, Department of Physics, has been awarded INSA Medal for Young Scientists 2021.

Prof. Prakriti Tayaliya, Department of Biosciences and Bioengineering, has been chosen for the Merck Young Scientist Award-2021 in the Biological Sciences category.

Prof. Chandra M. R. Volla, Department of Chemistry, has been selected for Organisation of Pharmaceutical Producers of India (OPPI) Young Scientist Award 2021.



Prof. Chandra M. R. Volla, Department of Chemistry, has been chosen for the Merck Young Scientist Award-2021 in the Chemical Sciences category.

Prof. Chandra M. Volla, Department of Chemistry, has been selected to receive the A. V. Rama Rao (AVRA) Young Scientist Award for the year 2020 in recognition of his contributions to research in Chemistry. This award was presented to him during the National Technology Day celebrations at CSIR- Indian Institute of Chemical Technology on May 11, 2021.

Prof. Mythili Vutukuru, Department of Computer Science and Engineering, has been selected as one of the recipients of the “2022 Qualcomm Faculty Award” for her contributions to systems research.

Other Recognitions:

Prof. Ruchi Anand, Department of Chemistry, has been inducted as an Associate Member in the IUPAC Standing Committee on Chemical Research Applied to World Needs (CHEMRAWN) for the term 2022-23.

Prof. Maryam Shojaei Baghini, Department of Electrical Engineering, has been appointed as Distinguished Lecturer of the IEEE Sensors Council for the period 2022-2024.

Prof. Pushpak Bhattacharyya, Department of Computer Science and Engineering, was invited by CERN, the European Organization for Nuclear Research, at Geneva to the first edition of Sparks! to discuss the future of AI in an event called “Future Intelligence”.

Late Prof. Rinti Banerjee, Department of Biosciences and Bioengineering, **Prof. Maryam Shojaei**, Department of Electrical Engineering and **Prof. Suparna Mukherjee** Environmental Science and Engineering Department have been selected as Women Achievers in STEM from all over India in both academia and industry by Confederation of Indian Industry (CII).

Prof. Supratik Chakraborty, Department of Computer Science and Engineering, has been recognized as a Distinguished Member of the ‘Association of Computing Machinery’ (ACM) for his outstanding scientific contributions to computing.

Prof. Arnab Dutta, Department of Chemistry, has been selected as a member of the Indian National Young Academy of Sciences (INAYAS), for the 5-year period of 2022-26.

Prof. B. N. Jagatap, Department of Physics, has been elected as a Chairman, Steering Committee of the National Initiative on Communicating India’s Scientifically Validated Traditional Knowledge to the Society.

Prof. B. N. Jagatap, Department of Physics, has been elected as a Chairman, Governing Body of S.N. Bose National Centre for Basic Sciences, Kolkata.

Prof. B. N. Jagatap, Department of Physics, has been elected as a Chairman, Research Council of National Institute of Science Communication and Policy Research (CSIR), New Delhi.

Prof. Shobhna Kapoor, Department of Chemistry, has been nominated to serve as the National Co-Chair (India) for the International Chemical Biology Society (ICBS) for three years. She will be chairing the ICBS Membership, Outreach and Services Committee.

Prof. Sudarshan Kumar, Department of Aerospace Engineering, has been selected as an Associate Fellow-Class of 2022 in the American Institute of Aeronautics and Astronautics (AIAA)

Prof. Manish Kumar and Prof. Prakash Nanthagopalan, Department of Civil Engineering, have been felicitated at the ARMREB Silver Jubilee Celebrations and Raising Day for jointly executing the project for Armament Research Board (ARMREB) with regard to their outstanding contributions for “Analysis Design and Detailing of Burster Slab Against Missile Impact”.

Prof. Abhijit Majumder, Department of Chemical Engineering, has been elected as the Executive Committee member of Global Young Academy (GYA) for 2021-22.

Prof. Asmita Mukherjee, Department of Physics, has been elected as the non-US/ Non-European member of the EIC user group steering committee member.

Prof. Dulal Panda, Department of Biosciences and Bioengineering, has been appointed as Director of NIPER Mohali.

Prof. Parinda Vasa, Department of Physics, has been elected as an Officer (Secretary) for IUPAP Commission 17 (C17) for Laser Physics and Photonics for the next triennial (2022-24).

Editorial Boards:

Prof. Niranjana Bhalchandran, Department of Mathematics, has been invited to join the Editorial Board of "Proceedings - Mathematical Sciences", published by the Indian Academy of Sciences.

Prof. S. Bhargava, Shailesh J. Mehta School of Management, has been invited to join the panel of Associate Editors of IIMB Management Review (Elsevier).

Prof. Avik Bhattacharya, Centre of Studies in Resources Engineering, has been selected to serve as the Editor-in-Chief for IEEE Geoscience and Remote Sensing Letters (GRSL).

Prof. Abhijit Chatterjee, Department of Chemical Engineering, has been invited to join the editorial board of Modeling and Simulation in Material Science and Engineering (MSMSE) as a member from Dec-2021 to 2023 Editorial board - Modelling and Simulation in Materials Science and Engineering – IOPscience.

Prof. Gopal Dixit, Department of Physics, has been invited to join the Youth Editorial

Board of Journal Ultrafast Science (from the prestigious Science - American Association for the Advancement of Science (AAAS) publisher).

Prof. Jayaditya Ghosh, Department of Civil Engineering, has been invited to join the prestigious ASCE Journal of Bridge Engineering (ISSN: 1084-0702) as an Associate Editor.

Prof. Rashmi Gupta, Department of Humanities and Social Sciences, has been invited to serve as an Editorial Board Member for Scientific Reports (Nature Portfolio journals).

Prof. Rashmi Gupta, Department of Humanities and Social Sciences, appointed as an Associate Editor for Humanities and Social Sciences Communication (Nature Portfolio journals).

Prof. Shobhna Kapoor, Department of Chemistry, has been invited to join the Early Career Advisory Board (ECAB) member of Chemistry- An Asian Journal from 2022 onwards.

Prof. Manoj K. Keshari, Department of Mathematics, has been invited to join the Editorial Board of "Proceedings - Mathematical Sciences", published by the Indian Academy of Sciences.

Prof. Suvarn Kulkarni, Department of Chemistry, has been invited to join the Editorial Advisory Board of ChemistrySelect.

Prof. Nandita Madhavan, Department of Chemistry, has been invited to join the Editorial Advisory Board of Chemistry Select.

Prof. Nandita Madhavan, Department of Chemistry, has been invited to join the Editorial Advisory Board of the Journal of Physical Organic Chemistry (Wiley).

Prof. Samir Maji, Department of Biosciences and Bioengineering, has been invited to join the Editorial Advisory Board of American Chemical Society Journal "ACS Bio & Med Chem" for the term of three years.



Prof. Arpita Mondal, Department of Civil Engineering, has been appointed as an “Associate Editor” of the Journal Earth’s Future of the American Geophysical Union (AGU) 2022.

Prof. Arpita Mondal, Department of Civil Engineering, has been selected to feature in the second edition of the ‘She Is’ book series by the Office of Principal Scientific Adviser (PSA), Government of India and the Red Dot Foundation featuring 75 Women in STEAM (fields of Science, Technology, Engineering, Arts and Mathematics) in India.

Prof. Bhaskaran Muralidharan, Department of Electrical Engineering, has been appointed as Associate Editor in the IEEE Transactions on Nanotechnology starting with July 2021.

Prof. Bhaskaran Muralidharan, Department of Electrical Engineering, has been invited to join the Editorial Board of Nanoelectronics as a review editor. He will also be a co-topic editor in the field of “Superconductivity in Topological Materials” edition.

Prof. Bhaskaran Muralidharan, Department of Electrical Engineering, has joined the editorial board of Materials for Quantum Technology (from the prestigious IOP Publishing). As part of his editorial duties, he will lead special issues on key topics in Quantum technology.

Prof. Debasattam Pal, Department of Electrical Engineering, has been invited to join the Editorial Board of the Journal- Mathematics of Control, Signals and Systems.

Prof. Bakul Rao, Centre for Technology Alternatives for Rural Areas, has been invited to join the Editorial Board of Development Engineering - a journal published by Elsevier.

Prof. Dharamveer Singh, Department of Civil Engineering, has been appointed as an Associate Editor of International Journal of Pavement

Research and Technology (IJPRT), Springer.

Prof. Rohit Srivastava, Department of Biosciences and Bioengineering, has been invited to join the editorial board of Imaging and Diagnostics, a section within Frontiers in Biomaterials Science, as an Associate Editor.

Prof. Riddhi Singh, Department of Civil Engineering, has been appointed as “Associate Editor” of Journal of Hydrology, Elsevier, for a period of two years starting from January 2022.

Prof. Parinda Vasa, Department of Physics, has been invited to join the Editorial Board of Journal of Optics (Institute of Physics Publishing, UK) as a member for two years.

Prof. Pradeep Dixit, Department of Mechanical Engineering, has been invited to serve as the Associate Editor of Microsystem Technologies by Springer Publications for a period 3 years.

Prof. Anurag Garg, Environmental Science and Engineering Department, has been invited to join as an Associate Editor on the Editorial board of Frontiers in Sustainability Journal (Sustainable Chemical Process Design Section).

Prof. Sahana Murthy, Interdisciplinary Programme in Educational Technology, has been elected to the Board of Directors of International Society for Learning Sciences for a six year term 2021-2027.

Prof. K. Ramasubramanian, Department of Humanities and Social Sciences, has been invited to give a distinguished lecture at the International Congress of Mathematicians (ICM) 2022.

Prof. Kantimay Das Gupta, Department of Physics, has been invited to join the Editorial Board of “Superconductor Science and Technology”, a journal published by Institute of Physics (IOP).

STUDENT ACTIVITIES

SPORTS COUNCIL

- **Freshiesta** - A flagship freshmen event conducted in April 2021 to ease freshers before the start of the mid-sem, this event was full of fun, frolic and fierce competition. The teams Gryffindor, Slytherin, Ravenclaw, and Hufflepuff lived up to every word of “Winning isn’t everything, it’s the only thing”.
- **Freshie La Vista** - The ultimate sendoff, ‘Freshie La Vista’ was organized on July 3, 2021. The first year wasn’t exactly the ultimate prize they were promised at the end of trials and tribulations. Nevertheless, the prickly path hadn’t been one completely deprived of solace and solidarity. It is to this crazy year that the students raised a toast.
- **Femme Fiesta** - The Institute Sports Council organized ‘Femme Fiesta’, a one-of-its-kind sporting event where the students explored the untapped potential of women in sports and celebrated womanhood in sports on Women’s Day. From cricket, football and hockey to chess and frisbee, the event provided a platform for all the female athletes of the Institute to showcase their amazing skills. There were workshops to cater to the beginners as well.
- **Racketlon** - In a unique one-of-its-kind event covering the A-Z of racquet sports, IIT Bombay Sports organised the Racketlon. All 64 players were divided into pairs where each player was a master of two out of the four racquet sports. From Squash to Badminton, from Lawn Tennis to Table Tennis, we had it all covered!
- **instizens participated.** The attendees also got a chance to get their pictures clicked at the Holi-themed photoshoot, ColourInCliques.
- **Revive Sports League** - In March 2022, IIT Bombay Sports organized the Revive Sports League (RSL) as a part of Aavhan 2022. RSL was conducted across seven sports - football, cricket, hockey, basketball, athletics, kho-kho and volleyball. The event concluded with a grand award ceremony and DJ Night.
- **Ballers Shootout** - The Ballers’ Shootout, a skills challenge contest, was organized for basketball enthusiasts during March 11-13, 2022. The event gave the ballers the perfect chance to hone and showcase their crazy tricks after the recurrent lockdowns had put a halt on basketball activities.
- **Chess 960 Fiesta 2.0** - The second edition of the Chess 960 Fiesta was a battle of creativity and skill. The tournament took place on October 31, 2021, which also happens to be the ‘National Unity Day’. The event was a three-team battle, with the teams named after the top three players in this format, as a fitting tribute to their skills and achievements in Chess 960. IIT Bombay students were teamed up with IIT Tirupati, IIT (BHU) Varanasi, IIT Kanpur and IIT Ropar. The ‘Chess 960 Fiesta 2.0’ saw players displaying great creativity and imagination to play positions never seen before with less than a minute on the clock.
- **Mixed Cricket League** - IIT Bombay Cricket organized the Mixed Cricket League, a full-fledged cricket tournament where teams consisting of both girls and boys battled it out for the crowning glory! With 32 teams and 250 participants which included 60+ girls, the Mixed Cricket League provided an
- **Color Run** - Color Run 2022 was a colossal celebration of bright colors, cold splashes and warm embraces. The event route consisted of various color zones and music all the way. T-shirts and refreshments were provided to all registered participants. More than 700



enthralling week full of cricketing action with the excellent participation and performance by the girls being a highlight of the event.

- **Powerlifting Open** - The Institute Powerlifting Open included squats, deadlifts, bench press and a lot of willpower. The event concluded with Mr. Viren Parmar being the strongman and Mr. Almaas Ummu Salma winning the title of Strongwoman.

CULTURAL COUNCIL

- **Annual Stand Up Showcase** - The annual showcase event of the club took place in offline mode on April 6, 2021. The event had stand-up performances from the Institute audience to showcase the best talent in the field within the Institute. The event also had performances by Prof. Amit Sethi and guest host Lerow Mathey. The event was headlined by Shreeja Chaturvedi.
- **Laughter Riots 2.0** - The second edition of Laughter Riots was conducted during February- April 2022. Internal jammings were conducted to help the freshers write their sets and open mics were conducted to help them practice their performances. The final showcase competition took place on April 3, 2021 where the freshers performed their sets and the competition was judged by three professional artists in the field.
- **Inter IIT Parliamentary Debate League** - During this six-month long debate league conducted between six IITs viz. IIT Bombay, IIT Kanpur, IIT Kharagpur, IIT Delhi, IIT Madras, IIT Guwahati consisting of five rounds, each IIT competed against each other with each round having a different theme for Debate Motions, IIT Bombay debaters secured the first position.
- **Talk Masters** - This series of six workshop sessions helped people learn public speaking

delivered by public speaking trainers, TedX speakers and entrepreneurs. The Talk Masters series provided a free-for-all training platform for people to learn the ways to improve their public speaking including question and answer sessions. The event received more than 600 registrations.

LITERATI

- **Literarium (Literati Flagship)** - Literarium is Literati's flagship festival, showcasing the best activities of the club to not just the Institute populace but also to students from colleges across the country. This year, a plethora of events, beginning with the Literarium General Quiz, followed by a workshop on Found Poetry, a panel discussion with acclaimed authors published by Harper Collins and a one-on-one session with bestselling investigative journalist and author S. Hussain Zaidi were held.
- **Inter-IIT Scrabble League** - In collaboration with IIT Madras, IIT Bombay hosted the second edition of the much-praised Inter-IIT Scrabble League, this time with two more IITs being added to the roster. Sixteen students each from IIT Bombay, IIT Madras, IIT Hyderabad, IIT Roorkee, IIT Kanpur, IIT Kharagpur, IIT Delhi and IIT Guwahati participated in scrabble matches against each other on the platform ISC.ro in a round-robin fashion over the span of one week in July 2021.
- **Steller 2022 (Storytelling Competition)** - This year, in collaboration with Tape-a-Tale for the second time in IIT Bombay's history, the round one of the Stellar storytelling competition was held for the students of IIT Bombay. From a final roster of 12 participants, two students were selected for the second and national round of the competition.

ROOTS

- **Duet Classical Music General Championship (GC)** - For the first time in the GC, hostels competed against each

other by submitting entries in which two performers (singers/ instrumentalists in any combination) performed a piece in pure Classical music. The judges then marked each performance and decided the winners. Later in the event, the winners were announced and their performances were showcased.

- **Folk Artober** - During this month long event, participants get weekly prompts to create various artworks in any folk art of their choice. Each week has a different prompt, and the participants have full freedom to explore and draw whatever comes to them from the prompt. After it's ready, the participants uploaded their work on Facebook using the hashtags.
- **Classical Music Improvisation Sessions** - Classical music sessions were conducted by some of professional singers of the Institute. They discussed classical music and theory behind it and even performed live during the session. The event helped to bring together the music enthusiasts.

SYMPHONY

- **Surbahaar** – This event saw 8 bands on the stage of the convocation hall giving breath-taking performances. It was one of the biggest offline events this year.
- **The Advanced Learning Programme (ALP)** - This well-structured learning programme included learning programmes in guitar, piano, music production and vocals mentored by seniors with adequate expertise in their respective specializations. ALP also promoted its participants: the mentors and the mentees, to form bands that could compete in events within and outside of the Institute.
- **Break It Down** - This online series of workshops aimed at promoting music

production right from the beginner to an intermediate level. The event gave an opportunity to the musicians in the Institute to showcase their original work to a varied audience.

SILVERSCREEN

- **Sophie Films** - This inter-hostel music video making competition was the first event to be held in hybrid mode in 2021.
- **VFMS (Virtual Filmmaking Session)** – This online event was conducted for both PG and UG students after the club orientation. Once the teams were formed, mentors were allotted to every team in order to make some good output films.

STYLEUP

- **ICSP in Fashion** – Ms. Khushbu Singh, a fashion design student from NIFT Mumbai conducted sessions on “Value Addition in Garments” in the “Fashion Genre”. The following topics were taught: Embroidery, Fabric painting, Patchwork, Fabric manipulation.

FOURTHWALL

- **Annual Production 2022:** Annual flagship event of the dramatics club showcased eight plays created by the members of the club. A total of 80+ students participated to perform and contribute to the showcase.
- **Creation of a stage play and a MIME performance** - The stage play “Kaafir? Musaaafir?” bagged first place in the all India competition.
- **Drama Tactics** - An online two-day long workshop taken by Mr. Shivprateek, an NSD graduate and professional theater artist, covered stage combat, how to prepare for a theater play, the setting of a play, scene description, acting exercises etc.



INSYNC

- **Annual InSync Dance Show** – The flagship event of InSync was conducted in offline mode with over 150+ participants, both offline and online. Eight thematic performances with various styles and themes were ideated, choreographed by club seniors. The event witnessed release of ‘Reverse’ - an online reels challenge.
- **Dance-A-Thon** - Entire August (2021) was dedicated to promote street dance culture in the Institute. One genre per week (street styles) was selected and workshops were conducted with help of senior members of the club who had experience in select style. Street styles selected: Rock-and-roll, waacking, house, K-pop etc.

PIXELS AND RANG

- **Kaladarshan** – This is an annual fine arts and photography exhibition with theme based ambience and pre-publicity events. Pre-publicity events included DP campaign (Photo booth creation and photoshoot) at several major events in the Institute and road painting. The main exhibition witnesses collecting almost more than 150 artworks and 200+ photographs submission from Institute residents.

VAANI

- **Izhaar- flagship event of Vaani** -
Day 1: Rubaroo - Interactive Session with Mr. Annu Kapoor
Day 2: Chhatra Kavi Sammelan - A poetry competition and open mic
Day 3: Kavi Sammelan, 5 poets were invited to perform
- **Ka Kha Ga** – Hindi Learning Programme - A Hindi learning programme was organized where basic Hindi is taught by TA's (student teaching assistants) to students who aren't well acquainted with the language to ease their communication with people on campus. TAs are students themselves who know Hindi

well. Students were divided into batches and classes were organized online and offline.

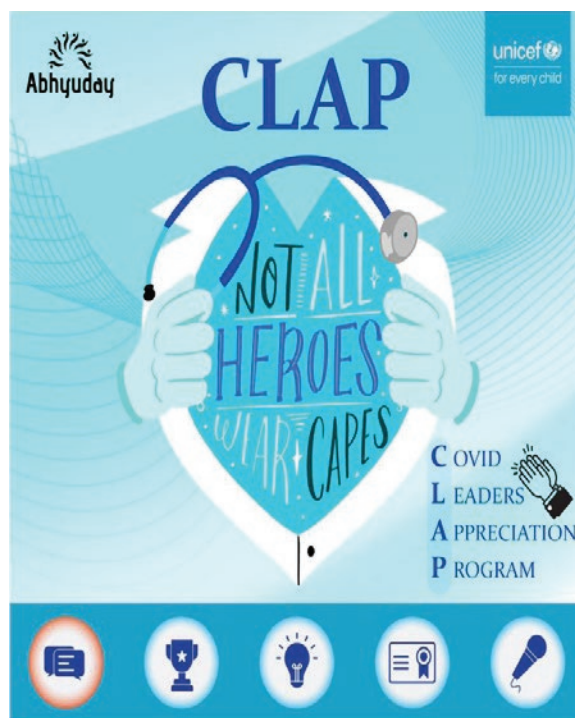
- **Goyam interacts with IIT Bombay** - An interactive session with the founders of Goyam Foundation was held on August 14, 2021. Participants discussed about different forms of speaking arts, and how poetry is different and how performance poetry can be revolutionized into a more professional art form etc.

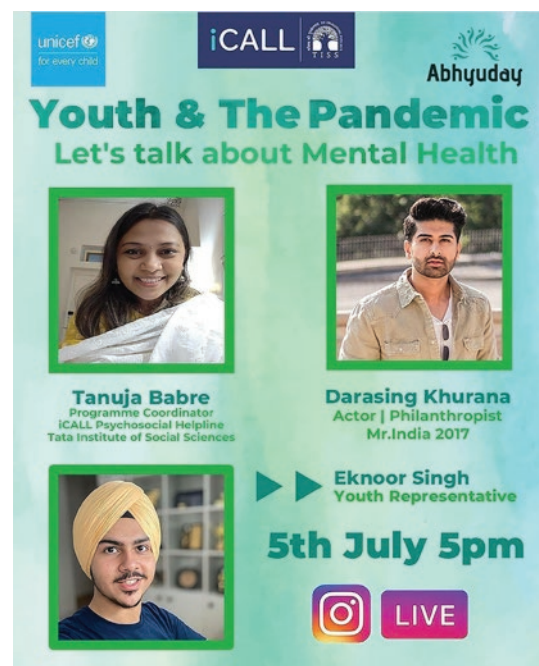
ABHYUDAY

Following year-long activities were conducted by Abhyuday 2021 -22 with the focus on creating social awareness and impact through the offline and digital modes of communication.

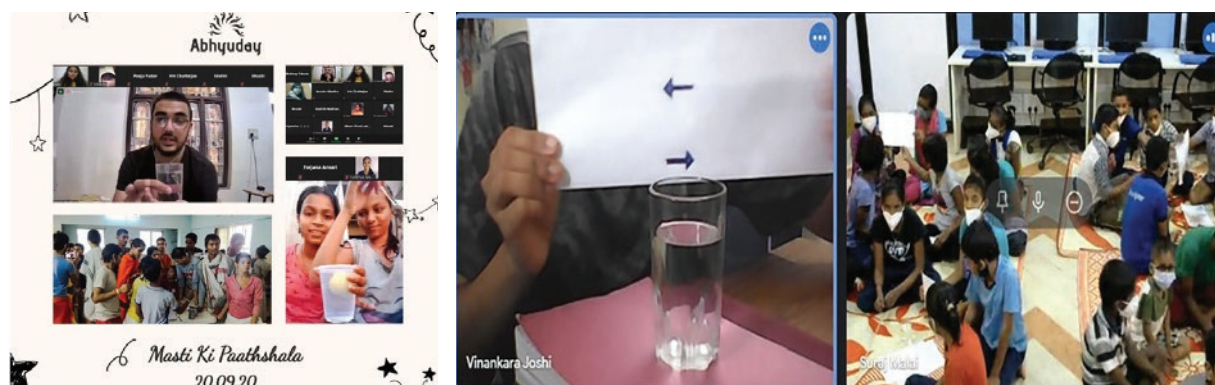
Campaigns –

- **Sangharsh - Conquering COVID** - In collaboration with UNICEF India, this event aimed to spread awareness to help people shed negative thoughts and fight COVID together. The team shared testimonials of frontline workers, shared artwork from competition participants and conducted a live talk on mental health by I-Call and UNICEF.





- **Career Counselling Campaigns (CCC)** were conducted for 800+ students with the help of 100+ volunteers from IIT Bombay and other colleges. The students were told about the myriad career opportunities through video conferences with help of their school.
- **Masti Ki Paathshala** conducted 20+ online sessions to reach out to 1000+ orphanages and underprivileged students, teaching science via toys and stimulating fun experiments.





- **Grow Green Gold** – In this nationwide plantation drive, 300+ people planted trees on a single day, and more than 950 people pledged to plant trees.
- **Clean-up Drives** – IIT Bombay students with a group of some volunteers visited Versova beach, Mithi river and Sanjay Gandhi National Park in April 2021 for the cleanup campaigns and conducted the clean-ups under the leadership of UN Environment Champion of the Earth'16, Mr. Afroz Shah.

Events –

- **Socio-Weekend** - Abhyuday's annual Socio-Weekend was held in a hybrid mode encompassing many events dealing with social issues. Several renowned personalities including author Mr. Shiv Kherra, psychiatrist Dr. Era Dutta; IAS officer Rishi Garg; Editor-in-Chief Mr. Sriram Iyer, Business Insider India; President Mr. Sanjeev Saxena, Automotive Technology, Schaeffler India and many more spoke on pressing issues like climate change, emotional intelligence, menstrual hygiene, addiction etc. A health checkup camp was also conducted.



- * **Blood Donation Drive** - Abhyuday and Sthaniya Lokadhikar Samiti with support from Blood Bank K.E.M. Hospital conducted blood donation drive. About 316 units of blood were collected.
- * **Profectus** – This fellowship program of Abhyuday provided 69 internships across 23 NGOs and social startups in 39 different profiles.

Competitions –

- ▶ **Action Plan** - The event challenges the youngsters across the country to come up with feasible and optimistic solutions to tackle social issues present in Indian society. This year, 850+ teams from all over India participated in the competition and 18 teams were invited to present their solutions in front of a panel of 30 incubators and investors. This year, the prize amount was worth 3 lakh with many other incentives.
- ▶ **Public Interest Litigation (PIL) competition on animal abuse** - To promote student involvement in laws and policies related to social issues, this event provided a fair and competitive environment for exchange of thoughts.
- ▶ **Kalamanch** - This year's theme 'A melioristic paradigm' invited participants to express their thoughts through art.

TECHNICAL AFFAIRS

- **IndustryXL** - During July 9-11, 2021, the event IndustryX weekend was held. A series of virtual talks and Q&A sessions conducted by the industry leaders and leading researchers in rapidly developing fields saw participation of 370+ students. Topics like Cryptocurrency Blockchain, Space Technology Quantum Computing etc. were covered.
- **Institute Technical Summer Projects (ITSP)** - Students are encouraged to target some real-life problems that can be solved using technology. Selected projects are provided with mentorship by senior undergraduates who have worked on similar projects. The year witnessed a record high in the number of projects completed (40 projects).
- **Inter IIT Tech Meet** - IIT Bombay secured fifth position this year in the 10th Inter IIT Tech Meet organized by IIT Kharagpur virtually during March 25-27, 2022.
- **Tech Cup** - This year's Traditional General Championship (GC) was restructured with a combination of both Traditional General Championship (GC) and Industry Technical Challenge (ITC) to solve participation problems and to give participants industry exposure and more border views.
- **Technovation** - To give students the technical backbone to develop a technical project product, Technovation secured promising external funding to fuel the further growth of technopreneurship projects in the Institute.
- **Technical Summer School** - This year, Career Cell conducted Technical Summer School in collaboration with the Institute Technical Council with a wide range of courses that saw more than 2700 participants. Several new courses like aircraft design and stability analysis using XFLR5, controls theory bootcamp, SynBio, Matlab and Simulink workshop, Blockchain and Computer Vision were introduced.
- **Internships and Industry Technical Projects** - The project team planned to organize internships for students. The team received offers from a total of five companies for internships viz. Atomberg, Lightstone, Anakin, Assert Securetech and Wings EV. For the Industry Tech Projects initiative, they partnered with five companies for a total of seven roles. Thirteen Internship Announcement Forms (IAFs) have been floated through the Placement and Training cell, and a couple of internships were floated externally.
- **InstiX** - InstiX was launched as a group of motivated students building hardware-based products deployable in the institute, which could help solve some prevalent problems. Over the past year, the ITC team has already worked on a few projects, like mess digitalization and Ldap based printer internally. The upcoming project planned is 'Smart Laundry'. A project head was appointed and the recruitment for this particular project is going on.



- PG Tech - One of the key objectives of Institute Technical Council (ITC) is to include PG students since the beginning.

CLUBS: 30 workshops, 14 competitions including hackathons and 40 talks were organised by all the clubs together reaching an audience of over 2700 students. To establish an online presence, weekly problems and updates on technology were delivered via newsletters and social media. Some clubs started their own Podcast series and some clubs also participated in national competitions like Boeing, Skyrush, Rocketry, E-Yantra. All clubs conducted freshie orientation in online mode with interactive workshops at the end. Most of the clubs revamped their websites to improve presentation and make club-related information more accessible for all. The Instagram and Facebook series were launched by various clubs which includes quizzes, general info posters etc. Group discussions were held as a continuing tradition to promote knowledge sharing. The clubs launched various projects to engage the students productively during the holidays.

OFFLINE EVENTS

XLR8 was the very-first hardware-based offline event of this tenure conducted following all the Covid protocols. It was a competition-based month-long event where students were asked to build a suitable remote-controlled bot, RC plane. Online semesters were conducted for those who were on campus and interested in aeromodelling. It gives freshers a chance to build their own plane from scratch and fly them, Machine training sessions was organized in Tinkerers Laboratory (TL) with the aim to familiarize students with different machines and facilities in TL. Students were educated about the operations of TL machinery including Laser Cutter, 3D Printer, Power Tools, Electrical workbench et.

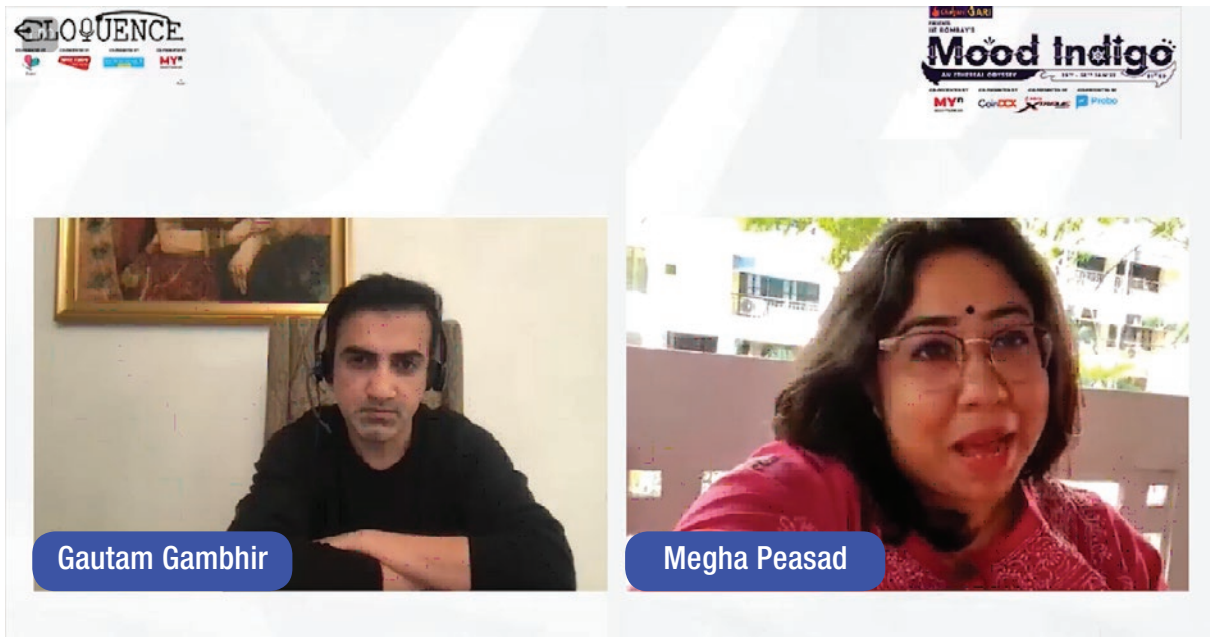
CodeWars V2 was based on the hot domain of algorithmic trading, inspired by the famous competition of the same name held by MIT annually. Integration bee and many more events were held.

Devcom (Developers' Community) : Resobin and LAP are the two major projects developed this year. LAP is for the ease of access in the entry/exit system with restricted access during Covid situations. Resobin is a platform being used by the students for taking course feedback, scheduling their time table and other academic purposes. InstiApp and RVP were also updated with various new features and optimization for faster use. Some of the projects being ideated for the upcoming tenure are 'No Dues portal', 'Hostel Room Management' and P.H.O Portal.

MOOD INDIGO

Mood Indigo 2021, IIT Bombay's annual cultural festival and Asia's largest college cultural festival took place virtually during January 29-30, 2022. Attracting a viewership of over 1,00,000 from around 2000+ colleges PAN India, Mood Indigo entertained the visitors with an incredible array of artists, both national and international on its one-of-a-kind virtual gamified platform. The two-day fiesta centered around the theme of "**An Ethereal Odyssey**" served the visitors with the best festive feelings. Like every year, the team took upon a social cause 'The Green Oath – Sowing Seeds of Sustainability' and worked towards encouraging students to move towards a sustainable way of living with a series of events like beach cleanup with Bollywood actor Sanya Malhotra, talk shows and workshops for the same.

The unique virtual initiative called '**Indoor Indigo**' was an ensemble of YouTube Live and Instagram Live events, competitions, workshops and virtual concerts hosting well-known personalities in the fields of sports and art like actors Mithila Palkar, Ali Fazal, Elli Avram, Sanjana Sanghi, singer Javed Ali. The days leading to the fest saw some exciting events like IPL finals screening, reviving the multicities, hysteria and livewire. The social media space was extensively used with initiatives like MI Studio, Tangents in Time, MI Diaries to connect with the target group. Events like Coordinator's All Team Meet were organized.



- **Proshows** - Eloquence featured interactive sessions with eminent personalities like **Gautam Gambhir** who talked about his transition from a cricketer to a politician. Author **Amish Tripathi** provided the audience insights into Indian mythology. It also featured panel discussions by **Prajakta Koli**, **Sejal Kumar** and **Kusha Kapila** on the rise of women as content creators. Famous Bollywood singer **Salim Merchant**, chef **Sanjeev Kapoor** and politicians **Suresh Prabhu** and **Smriti Irani** added to the euphoria. With a purpose to celebrate and cherish the rise of OTT, MI had actor **Tahir Bhasin**, **Anchal Singh** and **Shweta Tripathi** promoting their webseries 'Yeh Kaali Kaali Ankhein'. Adding the Slam Poetry touch to our Eloquence, the team invited **Lovely Sharma**, **Manhar Seth** and **Shweta Singh**. **Dr. Shashi Tharoor** gave an inspirational talk on Indian education post COVID. Actors turned authors **Tusshar Kapoor** and **Divya Dutta** also graced this year's Eloquence. Stand-up sensations **Abhishek Upmanyu** and **Sapan Verma** along with **Ansaas Channa**, **Naveen Kasturia**, **Revati Pillai** and **Shivankit Singh Parihar** attended. Popular creators **Ranveer Allahbadia (BeerBiceps)**, **Raj Shamani**, **Nikunj Lotia (BeYouNick)**

and **Sanjyot Keer** also graced the HumorFest. The international music festival had a crowd relishing the performances from international artists and bands like **The Attic**, **Chango Spasiuk**, **My My Sugar** and **Toklowicz**. The organisers also had Indian youth sensations like **Underground Authority**, **Antariksh** and **Rudraksh INC** amaze the crowd with their brilliant performances. In addition to this, Mood Indigo saw performances from artists belonging to various cultures from Poland, Portugal, Germany, Argentina, Italy, Belgium, France etc. Increasing the takeback value for the crowd, interactive and DIY workshops were held for beginners.

- **Pronites** - The concerts at Mood Indigo have always been known for the perfect blend of unique, upcoming talent and the most renowned names in the industry. This time around, the sets were shot in state-of-the-art studios and a heavy stage production was used along with gamified 3D interactive visuals which made the concerts more engaging and interactive for the crowd who could witness the performance right from their homes. Fusion Nite saw ace singer **B Praak** perform on a great set. Popular Nite saw a full-house crowd to witness singer **Kailash Kher** along



with upcoming star of today's indie pop music **Kanishk Seth**.

- **Competitions:** Known to attract the best student talent from across the country, Mood Indigo saw competitions in the field of dramatics, dance, film and photography, music, debating and creative writing, and informal events with a quirky twist. The city wide tour, titled under **Multicity Eliminations**, was taken to three cities with around 10+ competitions conducted in each city. The college with the most winning points was crowned the '**Mood Indigo Champion**'. Entry of competitions in niche fields like improvisational theater, rap, photography and folk dance saw increased participation by 50%. Free music courses from **Lost Stories Academy** were given to the winners of the music competition. A music distribution opportunity by **Hungama Artist** aloud

was given to the winners of a speaking arts competition. Display of artwork at **Jaipur International Film Festival**, video streaming by **Humaramovie** and various recording and showcase opportunities helped draw participants from over 2000 colleges.

- **Media and Publicity:** A great deal of media houses and online and offline partners helped in publicising the festival. An extensive coverage deal from media partners for the publicity of the festival on all platforms including TV, Facebook, Twitter and Instagram was received. **Chingari** was the title sponsor of the festival. Mood Indigo had the highest coverage across mediums including television, print and digital media, radio and mobile applications. Incubation of the influencer program was executed, engaging social media marketing and skill development among potential student influencers.



- **Homecoming Nite** - To give the Institute the revival it deserved after two years of COVID, Mood Indigo planned a homecoming nite for all the Institute's residents. The nite was opened by the super funny **Biswa Kalyan Rath** followed by one-of-its-kind music album launch for the movie **Attack** which featured

John Abraham, Jacqueline Fernandez, Rakul Preet Singh and singer **Jubin Nautiyal**. The night ended on a high-note with a breathtaking performance from the Indian pop rock band **Sanam** who took us back in time via their versions of old classics!

TECHFEST

Techfest is IIT Bombay's annual college festival and is widely recognized as Asia's largest science and technology festival. The 25th edition of Techfest was a major hit, with five million online reach on its official website. Techfest conducted the first virtual festival covering lectures, exhibitions, competitions, summits and technoholix, as well as international robowars and Auto-Expo as the first offline events after the pandemic.



- **Virtual portal** - The 25th edition was conducted on 3-D Virtual portal for the first time. The audience experienced the familiar roads and buildings of the IIT Bombay campus in a setting that was world apart and attended the multitude of events organized in a 3D free-roaming environment.
- **Lectures** - Eminent personalities such as **Hon. Kevin Rudd** (Former Prime Minister of Australia), **Hon. Ehud Olmert** (Former Prime Minister of Israel), **Scott Belsky** (CEO of Adobe) graced the 25th edition of Techfest with their presence. Apart from this, Techfest conducted an Ed conclave wherein several renowned professors from top IITs shared their knowledge and experiences.





- **International Summit** - With an aim to give thoughtful insights into the highly relevant fields of fintech, media, and industry, Techfest launched its international summits. Speakers like **Viral V. Acharya, Priya Sharma, Yashish Dahiya, Sandeep Karwa, Prasun Kumar, Abhishek Gupta, Rahul Shivshankar, Raj Kamal Jha** attended the event.

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 Kalibotics Nigeria AI-powered robot capable of beating top chess players	 Samson Sky United States The first amateur built roadable aircraft	 ADAM Russia Humanoid robot capable of moving omnidirectionally
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Register at techfest.org/exhibitions

- **International Exhibitions** - The 25th edition of Techfest included humanoid robots like **Ai-Da, ADAM, and Sirena**, as well as some of the greatest and most unusual inventions in science and technology. Exhibitors from more than 20+ nations participated in the exhibitions, which attracted a huge crowd.



- **Auto Expo:** This year, Techfest also organized an offline event of the grand auto expo that witnessed high-performance supercars and the future of tech in automobiles, live on the IIT Bombay campus. From Porsche and Mercedes AMG to Audi and Nissan GTR, it was an inimitable experience for everyone out there.



- **Competitions:** The competitions in various fields from IoT, AI/ ML, trading, designing, etc. witnessed an amazing response with 35,000+ participants across 23 competitions. Many competitions were created specifically to solve real-life problems.

- **Robowars:** This year, Techfest revived its most coveted offline event International Robowars. With each bot being unique in terms of design and performance, the wide audience of 4000+ people was in for a treat. The competition reached new highs this year as the Indian teams **BlankaBotz** and **Venus** took on **Brazil Riobotz** in the biggest arena, with the largest prize pool this country has ever seen.

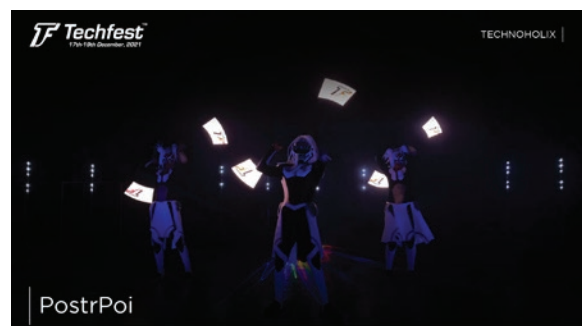


Social Initiatives -

- **NIDAAN** - Techfest established the NIDAAN campaign to raise awareness about Breast Cancer and how one can take precautions against it.
- **DRISHTI** - Techfest team held numerous webinars on dispelling misunderstandings and myths regarding eye donation as part of its humanitarian project 'Drishti'.
- **SAKSHAM** - Saksham is an initiative to support and introduce physically challenged people to new technologies for their betterment.



- **Technoholix:** This year, Techfest again delivered an extravagant array of performances from various international artists such as the POI Performance Artist, **POSTRPOI**, the world-famous magicians, **Steven Brundage**, and **Mike D'Urzo** and **Eduardo Braz**, and the dance groups **UDI** and **Skeleton Dance Crew**.





Entrepreneurship-Cell (E-Cell):

- **The Entrepreneurship and Business Club**
– With an aim to create an ecosystem for the budding entrepreneurs in IIT Bombay, various events are held around the year like speaker sessions, workshops, competitions and personal interaction sessions with venture capitalists.
- **Eureka!** This annual business model competition aims at encouraging people from across the globe to flesh out new ideas and form enterprises that combine technology, vision and business acumen. It is Asia's largest B-Model competition and has witnessed massive participation every year since its inception in 1999. This year, Eureka! collaborated with Westbridge Capital, Gulf Islamic Investments, SBI General, Meesho, and others. This year, the team went global with Eureka! GCC finals being conducted in Dubai Expo 2022 offline zone.
- **Eureka! Junior** - Eureka! Junior is a competition for those inquisitive minds who try to solve problems in the most innovative way. Aimed to bring out the entrepreneur in children at an early stage, it is a 5-month long educational experience, starting off with a workshop, followed by mentoring; covering everything from writing a business plan to pitching it before an investor in the final competition at the Entrepreneurship Summit. Scaling up to a whopping total of 30k entries from a mere 2.5k entries last year, from students across India, Eureka! Junior proceeded to be a major success this year. CBSE permitted the club to use their logo on the website and social media posts of associates of Eureka! Junior as a Government Partner. They also sent a mailer to all of their affiliated schools promoting Eureka! Junior and became a partner to encouraging entrepreneurship among the younger generation.
- **The Entrepreneurship Summit:** The Entrepreneurship Summit, held during February 5-6, 2022, with the theme of "A Trailblazing Realm", witnessed speaker sessions from **Byju Raveendran, Vijay Shekhar Sharma, Kunal Shah, Aman Gupta** and others. The summit was held in a hybrid mode, where a few events like 'The Ten Minute Million and Networking Arena' were conducted offline and others were held online using a platform created by the team.
- **The Ten Minute Million (TTMM):** This unique event was first launched at E-Summit'15. Since then, The Ten Minute Million Challenge has been a huge success every year. This year too, nascent start-ups looking to raise an investment of Rs. 2.4 million got an opportunity to do so in the on-the-spot funding event. After an online filtering process, 9 startups got 10 minutes each to pitch in front of a panel of angel investors and seed-founders during the E-Summit.
- **EnSpace:** EnSpace is an initiative by E-Cell IIT Bombay to provide all the intellectual resources needed by entrepreneurs at a single place. The EnSpace website boasts a huge collection of books, videos, case studies and to top it off, a blog containing articles about IIT Bombay alumni and their startups, for example NFTically of **Mr. Toshendra Sharma** and RenewBuy of **Mr. Balachander Sekhar**. An annual magazine is also published as a part of Enspace containing articles from students and entrepreneurs alike.
- **Networking Arena:** Networking is one of the most crucial capabilities that an entrepreneur requires. The Networking Arena in E-Summit 2022 had different sub-arenas and different chapters to provide participants from various cities an opportunity to interact with people in different sectors.

- Content Creation Conclave (CCC):** Creating engaging digital content has turned into one of the most critical (and trending) skills to have in today's age, and the E-Summit gave its audience a chance to learn these skills from the very best in the country - through the Content Creation Conclave! A wide range of famous speakers shared their stories with lots of budding entrepreneurs and explained the rising importance of social media and how to use social platforms to establish themselves and earn profits. Some of the speakers in CCC were **Aman Gupta**, CEO Boat and Shark Tank judge, **Ranveer Brar**, Masterchef Judge and **Shraddha Sharma**, Founder of Your Story.
- RnD Conclave:** Research and Development conclave brought sessions by leaders who drive research and development (R&D) growth engine for major companies, entrepreneurs and demonstration of research projects and their transformation according to current industry needs. This gave an idea to the viewers on how to commercialize their inventions. It also presented a chance to work on innovative projects under the guidance of professors and researchers in diverse profiles.
- I-Hack:** I-Hack 2022 brought together India's best coders, developers, designers, innovators, creators, and entrepreneurs of tomorrow. I-Hack is an event for those who are passionate about building, designing, and innovating. This year I-Hack recorded more than 600 entries competing in the product prototyping competition. Prizes worth more than Rs. 8.5 lakhs were awarded to the winners.
- National Entrepreneurship Challenge:** E-Cell, IIT Bombay launched the National Entrepreneurship Challenge (NEC) to give wings to the entrepreneurial ambitions of students across different colleges in India. The initiative aimed to assist other colleges create an ecosystem for budding entrepreneurs by establishing an E-Cell in their respective institutes.
- Internship and Job Fair (IJF):** Finding the right talent as well as finding the best internship or job profile is difficult and tedious for both companies and applicants. Internship and Job Fair (IJF) provides a platform for companies to hire India's best talent for different profiles, as well as a platform for students to get an internship or a placement in top companies.
- Incubator Summit:** Incubator Summit is a one-stop solution for incubation centres to improve their work by learning from the experience of well-established incubation centres through speaker sessions and getting an excellent chance to incubate India's most promising startups. The first edition of the Incubator Summit highlighted the importance of an incubation centre in mentoring and propelling early-stage startups to greater heights. The event saw the inclusion of India's top incubation firms like iCreate, T-Hub, DERBI Foundation and many more. More than 150 startups registered and 35+ got selected in different incubation programmes.
- Entre-MUN:** Entre - MUN was introduced with a vision to provide a forum for leadership and diplomacy, providing an opportunity to discuss ideas, debate upon contemporary issues, learn about UN council and international relations, and formulate solutions for the impending global problems related to entrepreneurship, business, world market, digitization and economic reforms. More than 200 students delegates participated in the two-day conclave.
- Campus Ambassador (CA) Programme:** The E-Cell team reached out to all institutions throughout India to encourage an entrepreneurial mindset among students by engaging them in various



E-Cell activities. As a result, the team launched E-Cell IIT Bombay's Campus Ambassador (CA) programme for various college students who serve as E-Cell IIT Bombay representatives in other colleges. Campus Ambassadors (CAs) were given tools to aid in their personal development as well as the advancement of their college's entrepreneurial ecosystem. The programme received registrations from over 2500 different colleges from which over 5000 students were selected to be our CAs.

- **Association of E-Cell with Shiru Cafe:** Shiru Cafe and E-Cell IIT Bombay have partnered together to develop the startup ecosystem in IIT Bombay. They have now in partnership with E-Cell, rebranded as Shiru Startup Cafe. Startup specific events would be organized throughout the year under the banner of Entrepreneurship and Business (EnB) Club including weekend networking, club meets and much more. Rest assured, Shiru and E-Cell will keep providing the best services to all as always.
- **Virtual Stock Market (VSM):** A three-day stock market competition to give students an idea of the techniques and risks involved in trading. A speaker session was conducted by **Mr. Shiv Sharma**, Vice-President International, Stocktwits on investing in US and Indian Tech stocks and Indian Tech IPOs. The sessions focused on both the beginners and the masters and aided many students interested in the stock market. The initiative was conducted by E-Cell, IIT Bombay in partnership with Upstox and Stocktwits. The second edition of VSM was conducted on the same lines as the first one in collaboration with Fyers.
- **Startup Services Platform:** This initiative aims to provide some of the most necessary services availed by startups at very concessional rates compared to the market rates. Here, the organisers convince some of the most reliable vendors in our network

to provide their services to startups at discounted rates. This allows the seed-stage startups to cut down on their costs and make rapid progress on essential fronts.

- **Illuminate:** These series of pre-Eureka! workshops on entrepreneurship and business model drafting across India encourage youth towards entrepreneurship. It was ensured that participants engaged with the mentors, asked questions regularly during the session, and learned the topics thoroughly. Breakout rooms were made in order to ensure that the participants network with each other. The speakers in Illuminate included **Devesh Chawla**, Founder and CEO, Chatur Ideas, **Krishnakumar Devnally**, Founder and Director, mPower Solutions, **Sudhakar Rao**, Director - Branding, ICFAI group and **Seemant Shrivastav**, Co-founder, Mool Innovation Labs Pvt. Ltd.
- **FInCoF:** The Freelancers, Interns, and Co-founders platform of E-Cell IIT Bombay is targeted at bridging the gap between students and startups. It allows startups to hire interns and freelancers easily while providing an opportunity to students to get a taste of the dynamic world of entrepreneurship. Founders that have an idea but are in the need of a co-founder can register on the portal and find the perfect co-founder for their idea.

YOGASTHA

Yogastha is the wellness club of IIT Bombay working towards a stress-free, peaceful campus community covering all wellness aspects.

- **Regular morning sessions** – The club conducted regular morning sessions in online mode at the start of the year. Later, they started yoga sessions in offline mode. The sessions were conducted daily from Monday to Friday in the morning (6:30 am -7:30 am).

International Day of Yoga 2021

Following activities were conducted as part of International Day of Yoga 2021:

- An “Improve focus with Yoga” workshop was conducted by CA Riya Bhansali
- A 3-day “Ashtanga Vinyasa Yoga” workshop by Mr. Sandeep Shiva Shankar was organized on April 23, 2021
- A three-day “Breathing Practices and Meditation” by Mr. Devang Shah workshop was also organized on June 9, 2021
- Common Yoga Protocol (CYP) was organized in the morning (7:00 am - 8:00 am)
- Yogathon: 108 Suryanamaskar Challenge was organized in the evening with 70+ members online participation
- Online quiz series, 2-minute Yoga Challenge series, best yoga pose and slogan competition were also conducted
- Conducted Hatha yoga intensive vinyasa yoga workshop taken by Mr. Amar Sri Vidya.
- **The Art of Harnessing Mind Power** - The yoga team conducted a talk session by Mr. Radheshyam Das Ji in which he explained the fundamentals of body, mind, and soul.
- **Yogastha e-conference:** Research in Yoga: Mind, Consciousness, and Identity - Yogastha’s e-conference was conducted during August 7-8, 2021 with a pre-conference workshop on August 6, 2021.
- **We are what we eat** - The lecture session titled ‘We are what we eat’ was conducted by Mrs. Forum Devang Shah. She covered the important basic aspects of healthy eating habits.
- **Decode core with Yogic aspect!** - A two-day workshop titled “Decode core with Yogic aspect” was organised in November 2021 by Ms. Rashmita Sabat.
- **Unlock Your Potential Through Yog:** Align your Body, Energy, Mind - The session was conducted in December 2021 by Ms. Garima Gupta Kapila from Swasth Yog. Every participant did a few exercises to appreciate the movement and the harmony of the whole body.
- **75 crore Surya Namaskar Project** - As part of the ‘Azadi Ka Amrut Mahotsav’, Yogastha, IIT Bombay also participated in this project run by the National Yogasana Sports Federation, Ministry of Youth Affairs and Sports, Government of India. As per the project guidelines, participants performed 13 rounds of Suryanamaskar every day for 21 days, with instructions and facilitation by Yogastha core team members.
- **Lifestyle Engineering: change the paradigm of life** - The session was conducted in January 2022 by Mr. Niranjan Pendharkar where he spoke about internal success and the intricacies of the art of balance between priorities.
- **Meditation:** Myths and Truths; Decoding DHYAN - This session was held in January 2022 by Mr. Acharya Prashant where he spoke about decoding what exactly DHYAN means.
- **The Science and Biomedical Research on Yoga** - The session was conducted in March 2022 by Sat Bir Singh Khalsa. He reviewed some of the basic science underlying the psychophysiology of yoga practices.
- **Aarambh:** An orientation programme titled Aarambh was held to start the offline events after the pandemic where the team felicitated its old core team members for their exemplary contributions.



PLACEMENT

IIT Bombay has the privilege of admitting the best pool of students into the engineering, science and management programmes. The Placement Office is the nodal point for recruitment of students from Institute. The placement season at IIT Bombay was a virtual event throughout the year, with a few in-person campus interviews during summer. The recruited students have succeeded in living upto the expectations of the recruiters worldwide. The presence of world-class research facilities, extensive Institute-industry collaborations, good international exchange programmes, interdisciplinary scientific research collaborations and excellent industrial training opportunities help the students of IIT Bombay to excel and get ahead in the competitive job market.

Placement Season 2021-22

The placement drive at IIT Bombay was a year-long event, which started in July 2021 and concluded on June 30, 2022. The company officials approached the office during July and August months to commence discussions of their job offerings and later filled up the Job Announcement Forms (JAF). Completed JAFs were released to the students in late September 2021. Pre-placement talks (PPT) and extra screening tests by a few companies were conducted prior to the interviews. There were preparatory activities conducted by the placement cell, in collaboration with other firms. Interview procedure of phase 1, were conducted online during this academic year. Phase 1 was conducted during December 1-15, 2021, which witnessed participation of over 300 companies. A total of 2056 students registered for placements and 1184 students registered for

internship programmes. The registered students belonged to engineering, science, humanities and design departments of IIT Bombay in Bachelor's, Master's and PhD programmes. Phase 2 was conducted from January 15 to June 30, 2022. For the students of IDC School of Design, the interviews were conducted during December 6-15, 2021 during phase 1.

December 1, 2021, the first day of campus placements, witnessed some of the prestigious corporates offering coveted jobs across sectors and recruiting in large numbers, which was pivotal for the success of the placement season 2021-22. IIT Bombay has achieved the highest ever number of students placed this year with total number of accepted offers being 1431 as on May 15, 2022 compared to 1150 last year. The highest number of offers was rolled out by the engineering and technology sector, ascertaining the technical proficiency of IIT Bombay students. Placement session 2021-22 has been very successful considering the market situation due to the efforts put in by the placement office and the students. Esteemed recruiters have shown faith in IIT Bombay and the sector's prominent hiring was done by core engineering, IT/ Software, finance and consulting. IIT Bombay's placement season started off with a good note on the first day i.e. December 1 and lasted till December 15 along with a break day on December 5. December 1-4, 2021 (i.e. the first-four days) of campus placements, witnessed some of the giant corporates offering coveted jobs across sectors and recruiting in large numbers, which was pivotal for the success of the placement season 2021-22.

Table 1: Highlights in Brief

Key etric	Details
Total Number of Registered Students	2056
Total Number of Participated Students	1612
Total Number of Companies Offered Jobs	332

Key etric	Details
Total Number of Offers In both phases	1878
Total Number of Accepted Offers	1441
Pre-Placement Offers Accepted	201
International Job Offers Accepted	66
Highest Domestic Salary (CTC)	Rs.1.8 crores
Mean International CTC Salary	Rs. 60.9 LPS
Mean Salary Package	Rs. 22.7 LPA
Highest International Salary	Rs. 2.1 crores
Top Recruiting Sector	Engineering and Technology

Student Preparations

The key focus of the Placement Office is to prepare students for their placement and internships. Keeping the students well prepared for what they are likely to face in the corporate world is the responsibility of every academic Institute, and the placement team at IIT Bombay takes every necessary step to train and guide the students. The first event conducted in this endeavour was “Boot Camps”, for profiles of coding, consultancy, finance, analytics, etc.

In addition, preparatory programmes were arranged to enhance the communication skills, group dynamics and interview skills. Overall, these programmes provided an insight into the job domains and prepared the job aspirants to face the challenges of the future. The students were assigned mentors for guidance and a series of aptitude tests were conducted to improve the problem-solving skills. The preparatory activities sourced information from various alumni, where the alumni background was mapped according to student preference. Various department-level activities were conducted to cater to individual domain requirements. All assessments related activities were conducted successfully.

Recruiter's profile and Overall Statistics:

While expanding its global outreach, the Placement Cell had received a total of 66

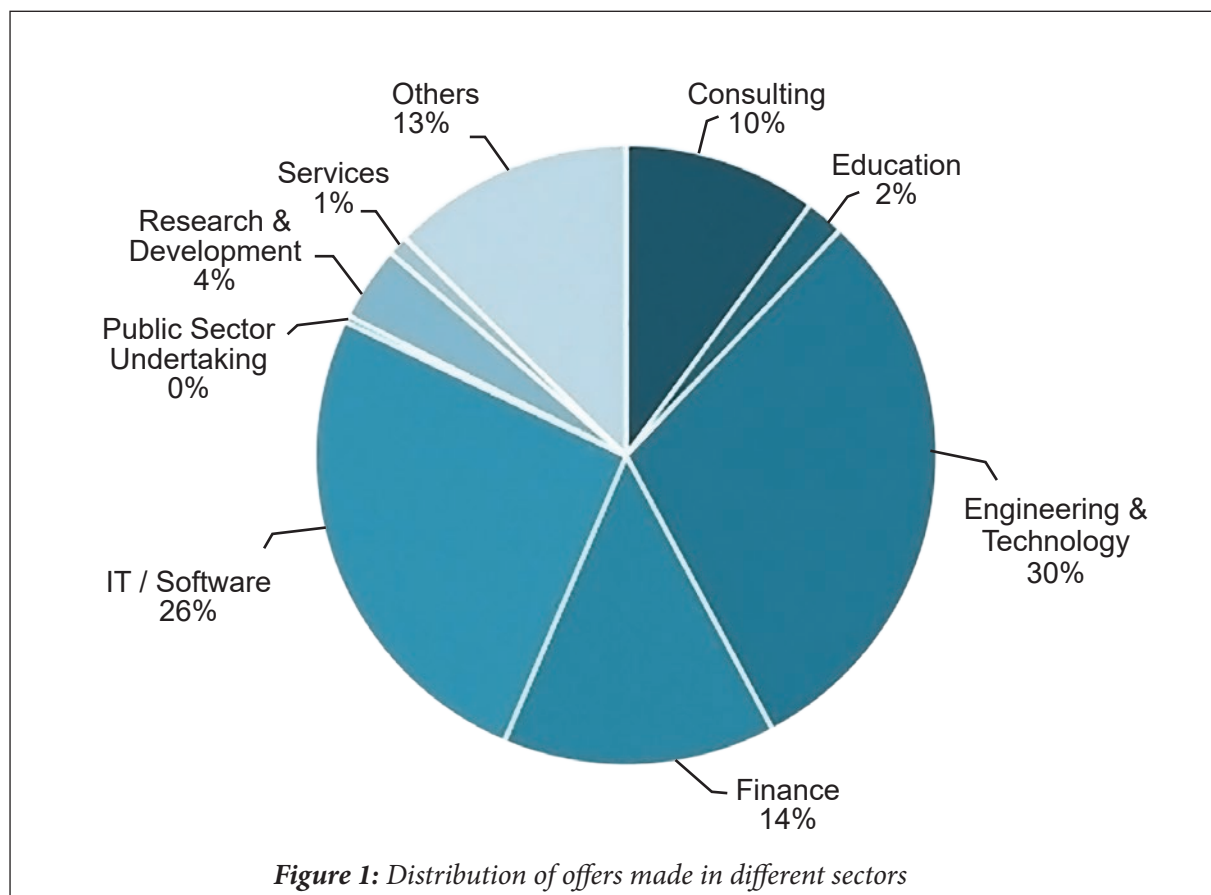
international offers from different countries like the USA, Japan, UAE, Singapore, Netherlands, Hong Kong and Taiwan. The highest numbers of students were recruited by the engineering and technology sector. In various engineering domains, 434 students were selected in 87 core companies at entry-level positions. Around 370 students have been offered IT/ Software jobs by over 86 companies through the campus placement, making the IT sector one of the biggest recruiters after engineering and information technology.

Trading, banking and fintech companies were one of the prominent recruiters. Finance sector has shown tremendous growth in the number of offers. 205 offers were made by 54 financial service firms this year. Consulting has always been the most attractive sector in the IIT Bombay campus due to its exponential growth curve, high pay and the associated perks. Over 145 consulting offers were made by 31 consulting companies. The research and development sector witnessed companies in the domain of application development, computational research, drug development, energy efficiency solutions, materials research, pharmaceutical research, scientific writing and research laboratories where 56 positions were offered by 14 organisations in 2021-22.



Table 2: Distribution of offers in different sectors of economy excluding PPOs

Sr.No.	Sector	Number of Offers	Number of Companies
1	Consulting	145	31
2	Education	29	9
3	Engineering and Technology	434	87
4	Finance	205	54
5	IT/ Software	370	86
6	Public Sector Undertaking	5	1
7	Research and Development	56	14
8	Services	15	7
9	Others	182	43
Total		1441	332



Programme-wise statistics:

All the registered students do not necessarily participate actively in campus placements, opting for higher studies abroad or in different stream. It is important to note that students also get placed through channels other than campus placements. The programme-wise placement data is provided in Table-3 and Figure-2.

Note: Participated count excludes students, who opted for higher studies or had other career options, and hence de-registered from the placement process.

Table 3: Programme-wise placement data 2021-22 including PPOs:

Programme	Registered	Participated	Placed	Percentage placed
BDes	19	17	12	71
BS	50	43	35	81
BTech	657	566	544	96
Dual Degree BDes+MDes)	10	6	6	100
Dual Degree (BTech+MTech)	206	188	184	98
MDes	56	48	38	79
MPP	20	11	5	45
MPhil	13	6	2	33
MSc	151	77	61	79
MTech	670	582	523	90
PhD	177	62	28	45
Other Programs*	26	6	3	50
Total	2055	1612	1441	89

*Includes Dual Degree (BDes+MDes), Dual Degree (BS+MS), Dual Degree (Msc+PhD) and Dual Degree (MTech+PhD)

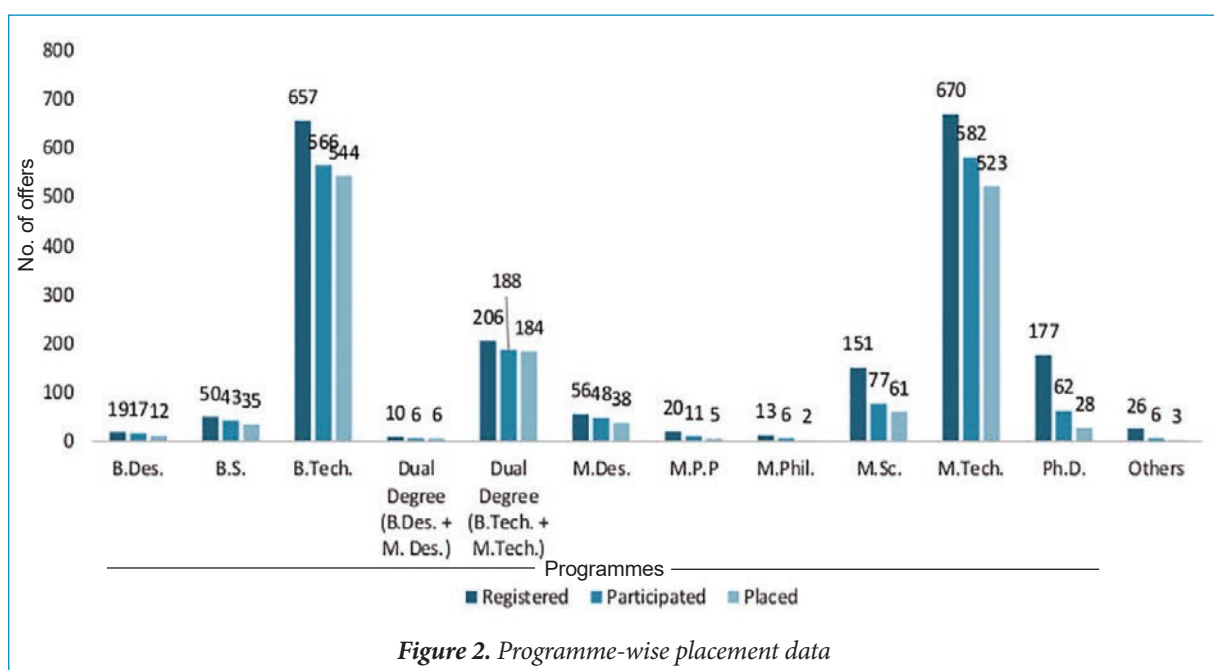




Table 4: Department-wise classification of offers

Departments	2019-20	2020-21	2021-22
Aerospace Engineering	71	54	76
Applied Statistics and Informatics	22	23	29
Biosciences and Bioengineering	21	5	7
Chemical Engineering	122	89	135
Chemistry	18	10	17
Civil Engineering	100	98	99
Computer Science and Engineering	186	199	236
Earth Sciences	10	12	13
Electrical Engineering	202	220	257
Energy Science and Engineering	30	29	32
IDC School of Design	59	69	56
Mechanical Engineering	173	151	180
MetallurgicalEngineeringandMaterialsScience	97	90	127
Physics (excluding B.S. program)	4	1	1
Other Programmes	82	91	176
Total	1197	1141	1441

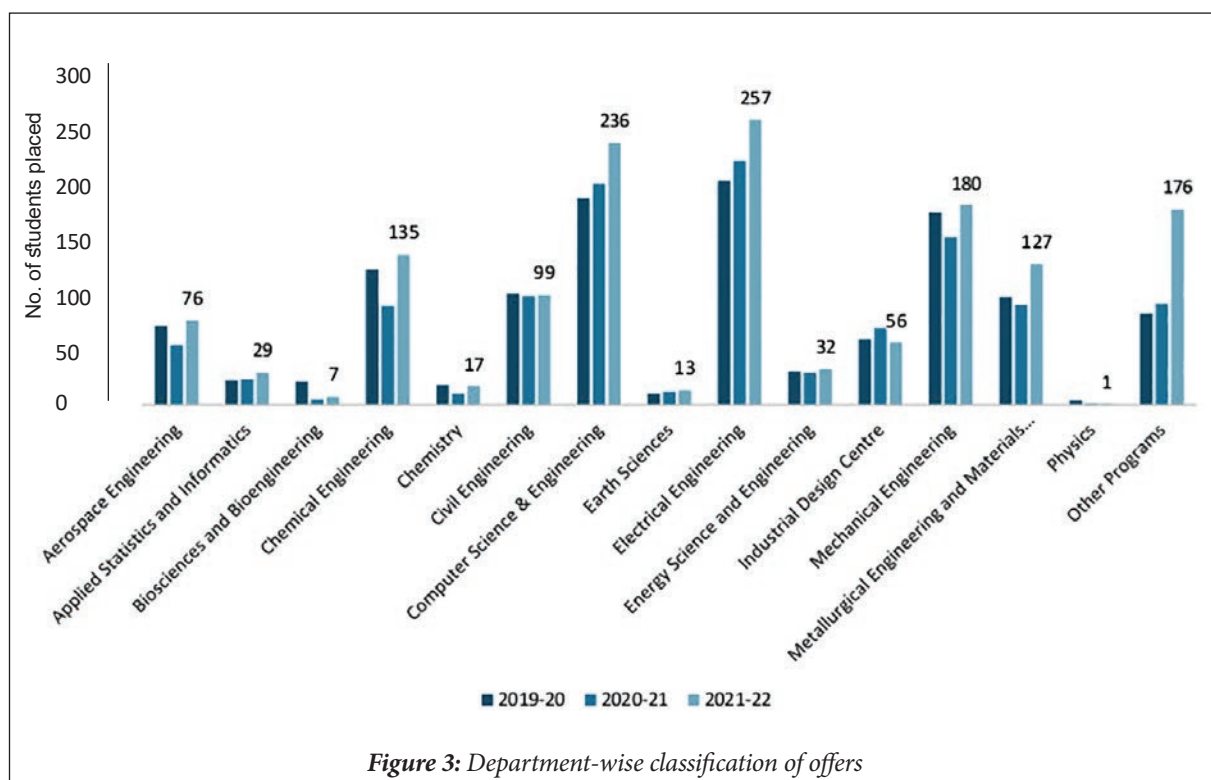


Figure 3: Department-wise classification of offers

Salary-wise statistics:

The jobs offered by recruiting organizations are divided into various categories based on the gross compensation packages. Factors other than compensation package such as job profile, past association etc. may sometimes influence the classification of a company. Salary-wise classification of total offers made in the year 2021-22 is shown in Table 5 and Figure 4.

Table 5: Placement details based on compensation including PPOs

Range of Gross Salary (Rs. in lakh per annum)	Number of Offers	Number of Companies
Above 16	562	124
Between 13.5 to 16	284	71
Between 11.5 to 13.5	230	61
Between 9.5 to 11.5	172	47
Between 7.75 to 9.5	117	42
Between 6.25 to 7.75	54	24
Between 5 to 6.25	17	9
Between 4 to 5	5	3
Total	1441	381*

**is not the sum total of companies participated as some organisations may have offered multiple jobs in different salary bands*

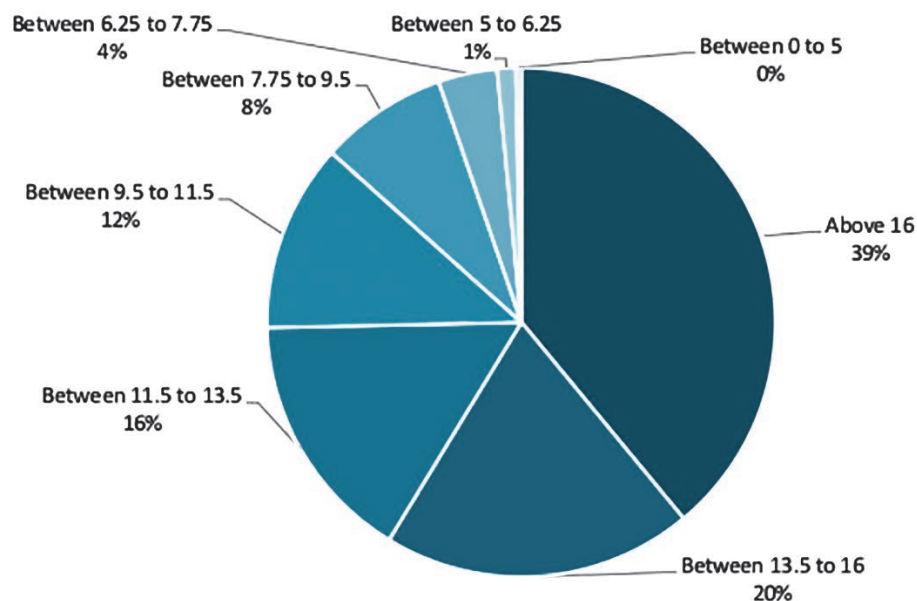


Figure 4. Compensation-wise distribution of offers (Rs. in Lakhs P.A.)



Comparison of average salary, international and pre-placement offers:

The Average Gross Salary offered was Rs. 16.5 LPA and the average salary (based on CTC) was Rs. 21.5 LPA. Total number of Pre-Placement Offers (PPO) was 201. The number of international offers was 66, excluding PPOs. This suggests an increasing and a positive trend in the pay package offered by various organizations (Refer to Table 6).

Table 6: Average salary, international and Pre-Placement offers details:

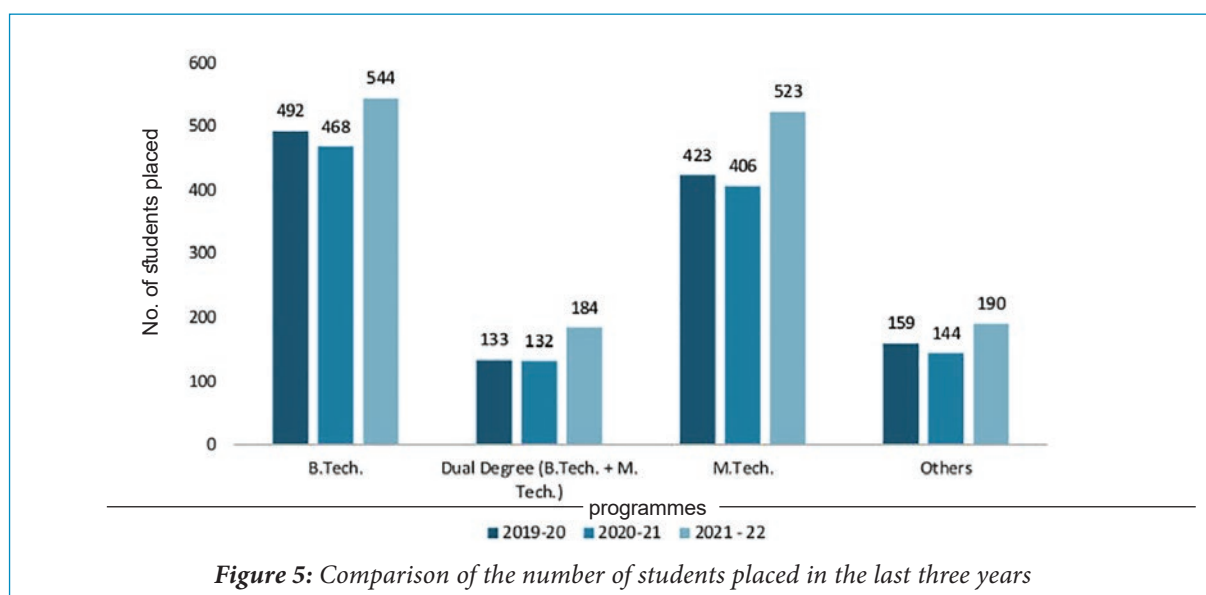
Description	2020-21	2021-22
Average Gross Salary (in LPA*)	13.67	16.50
Average CTC (in LPA*)	17.91	21.50
Total Number of International Offers	58	66
Total Number of Pre-Placement Offers	149	201

Year-wise Placement Comparison

Despite the challenging market situations this year due to pandemic, IIT Bombay remained a good attraction for the recruiting firms in the job market. Table 7 represents the comparison of students placed over the last three years.

Table-7: Comparison of the number of students placed in last three years

Program	2019-20	2020-21	2021-22
BTech	492	468	544
Dual Degree (BTech+MTech)	133	132	184
MTech	423	406	523
Others	159	144	190
Total	1207	1150	1441



Sector-wise statistics for different programmes

BTech and MTech students maintained almost the same demand amongst companies of various sectors. Sectors like engineering and technology, and institutions in education

sectors expressed greater interest in the students of IIT Bombay than the previous year. Sector-wise statistics for different programmes are shown in Table-8.

Table 8: Sector-wise statistics for different degree courses

Sector	BTech	Dual Degree	MTech	Other Programmes	Total
Engineering and Technology	106	54	235	39	434
IT/ Software	141	36	146	47	370
Finance	99	32	45	29	205
Other	88	24	41	29	182
Consulting	78	28	18	21	145
Research and Development	10	6	29	11	56
Education	15	1	4	9	29
Public Sector Undertaking	0	0	1	4	5
Services	7	3	4	1	15
Total	544	184	523	190	1441

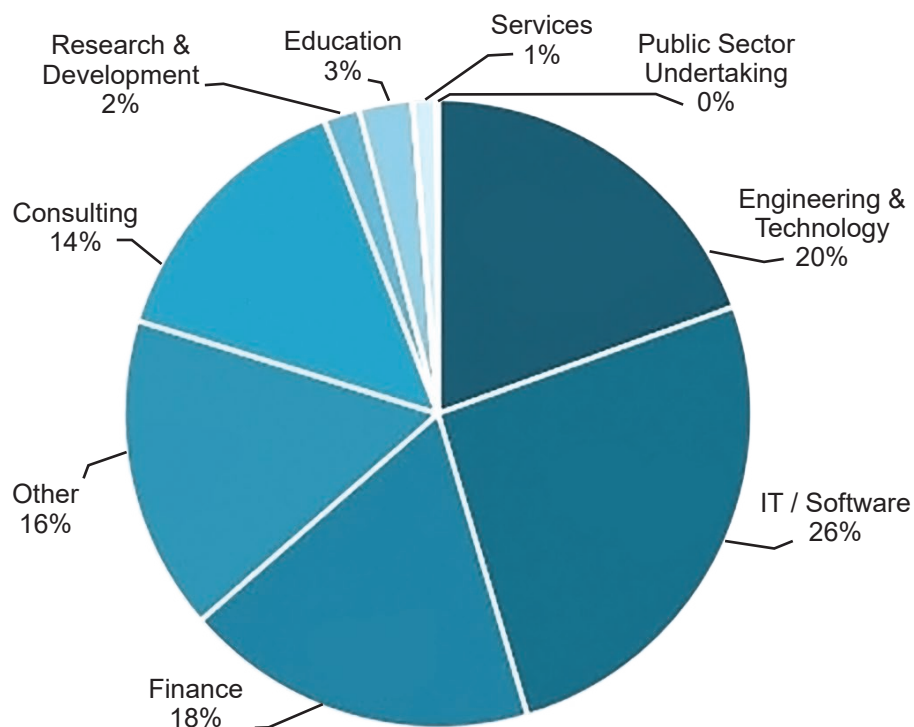


Figure 6. Sector-wise demand for BTech

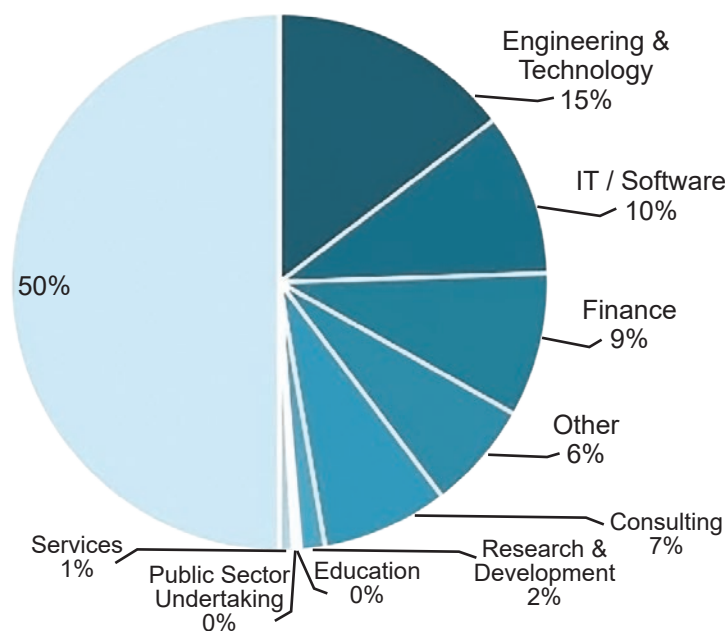


Figure 7. Sector-wise demand for Dual Degree (BTech+MTech)

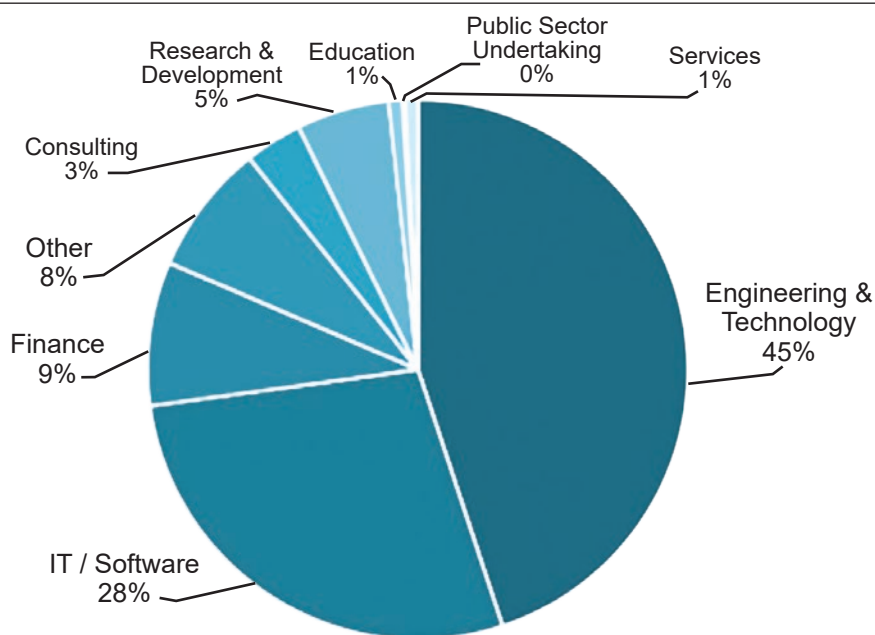


Figure 8. Sector-wise demand for MTech

Internship Report 2021-22

Pre-final year students have been offered Pre-Placement Offers (PPOs) at the end of their internship term. PPOs at IIT Bombay have improved this year, recruiter interest was highest for Computer Science and Engineering with most openings in advanced software programming in Big Data, IoT, AI and ML, 5G, R&D and Consulting. It is expected that

the rising PPOs will reduce the Institute's dependence on final placements. This year, students have received 248 PPOs, of which 201 have been accepted by students. In 2020, due to the pandemic, companies made 153 PPOs and most were accepted. The hiring trend has been on the rise specifically for technical roles, with more companies giving PPOs through internships.

Department-wise internship offers:

This year, students from all departments were in demand by firms and universities alike for internship positions, with a 15 % increase in demand. The demand for students from departments such as Computer Science, Mechanical and Electrical Engineering was strong and high. A slight decrease in the number of MSc internships and increase in Design internships was also observed in comparison with the previous year. Table-9 presents the department-wise distribution of internship offers made over the past four years.

Table 9: Department-wise internship offers over past four years

Department	2018-19	2019-20	2020-21	2021-22
Aerospace Engineering	49	41	33	58
Chemical Engineering	137	109	98	112
Chemistry	25	14	20	19
Civil Engineering	100	60	49	85
Computer Science and Engineering	203	207	237	252
Electrical Engineering	133	139	138	176
Engineering Physics	23	22	19	38
Energy Science and Engineering	18	17	11	20
Mechanical Engineering	166	132	130	155
MEMS	89	59	50	86
Others	98	101	155	194
Total	1041	901	940	1195

Summer vs. Winter Internship offers:

Summer internships usually begins in May and continues till mid-July, whereas winter internships are pursued in December. The number of summer internship offers exceeds the number of winter internships, which is attributed mainly to the longer duration available in summer.

Table 10: Summer vs. Winter internship offers

Total Number of Internships	Summer Internships	Winter Internships
1195	924	271

Companies vs. Universities internship offers

Companies of various business sectors offer internship positions to the students. This option presents an opportunity to gain industrial exposure and broaden one's skill-set in the domain of interest. A few years ago, the Institute started the credit-based internship program, by means of which the students could leverage the performance in their internship towards the academic credit requirement.

Table 11: Companies Vs. Universities Internship Offers

Total Number of Internships	Company	University
1195	1085	110



Conclusion:

The companies recruited students virtually throughout the placement season due to COVID-19 pandemic restrictions. The number of registered students in the 2021-22 placement drive has increased by 15% in comparison from the 1784 in the year 2019 to 2056 in 2020.

IIT Bombay has achieved the highest ever number of students placed this year with total number of accepted offers being 1431 as on May 15, 2022 compared to 1150 last year (2021). This is 25% increase in total number of students placed indicating higher selections due to higher buoyancy in demand. Taking into account the total number of participating students, placement percentage is 88.77. The overall average salary packages based on CTC offered increased by 27.3% over last year from Rs. 17.91 LPA to

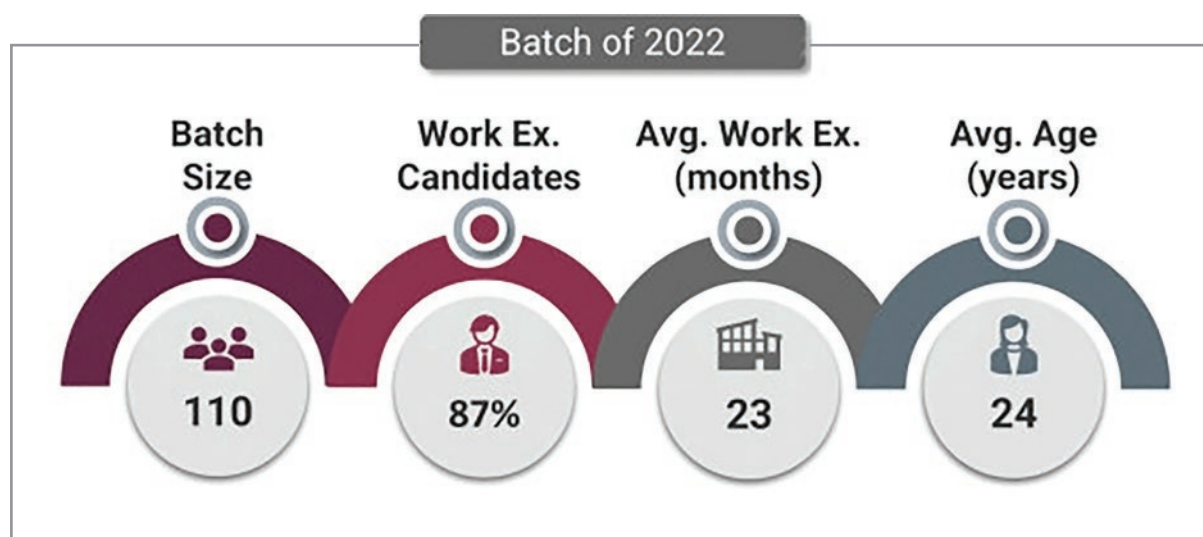
Rs. 22.8 LPA. This may be attributed to resurgence of the job generation after resumption of economic activity. During internship recruitment session, total of 1087 students secured apprenticeship opportunities and there was a 15% increase in demand for students this year.

The total number of companies offering jobs saw an 11 % increase from 292 last year to 325 companies participating this year. The placements were successfully completed in two phases, clearly demonstrating the demand of IIT Bombay graduates among the top recruiters in various segments of the economy. Placement team has achieved highest number of students getting placed with constant endeavor to create more employment opportunities.

Placement For Management Programmes

The Shailesh J. Mehta School of Management (SJMSOM), IIT Bombay has successfully concluded the final placement of the 2020-22 batch, thereby reaffirming its standing among the top B-school in India. The highest CTC stood at Rs. 49 lakhs, whereas the average CTC increased by 18.10% to Rs 25.93 lakhs. The average CTC of the top 75% stood at a staggering Rs. 28.41 lakhs. BFSI, Consulting, E-commerce, FMCG/ FMCD, Healthcare, IT and other companies have provided nearly equal opportunities, proving the diversity of expertise among the 2020-22 batch.

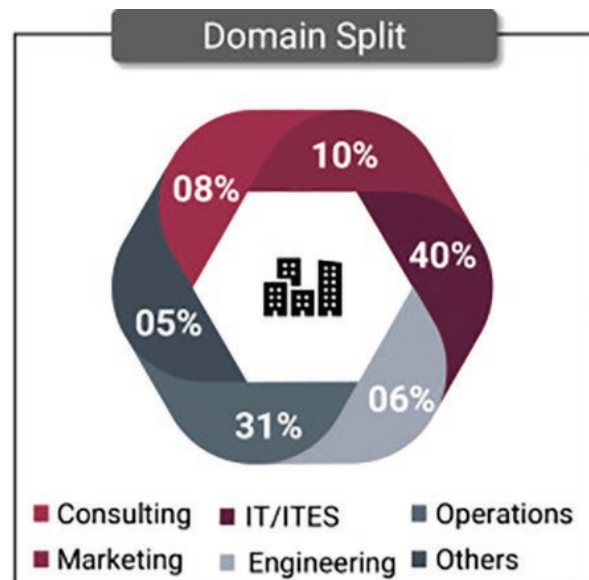
Following are the batch highlights, placement highlights and sector-wise highlights:



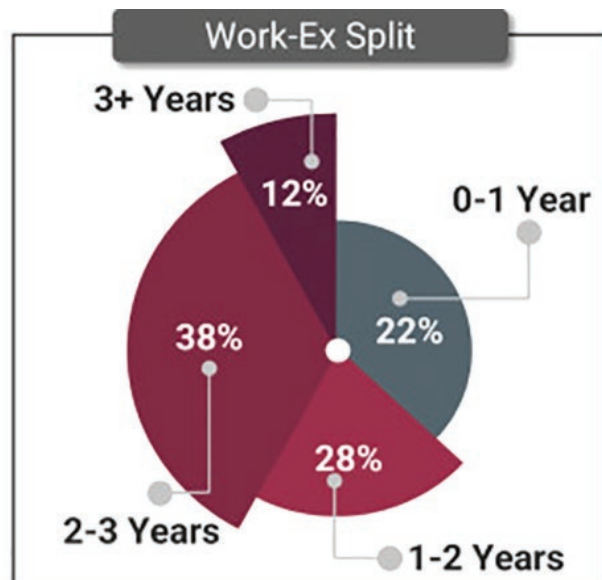
Corporate Competitions: Hall of Fame (2020-22)

 Accuracy Business Cup	 ACE Challenge 2021	 Artha Bhedam 2.0	 Chain Reaction 2021
 Flipkart Wired 5.0	 Gameplan Season 11	 FinValley 5.0	 Quest Season 9.0
 Marico OTW Season 9	 Challenge 3.0	 Credit Epic Season 3	 Vantage 2021

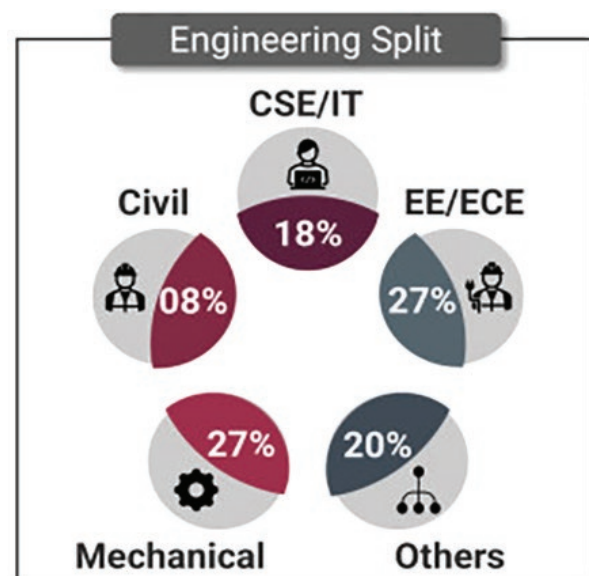
Domain Split



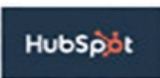
Work-Ex Split



Engineering Split

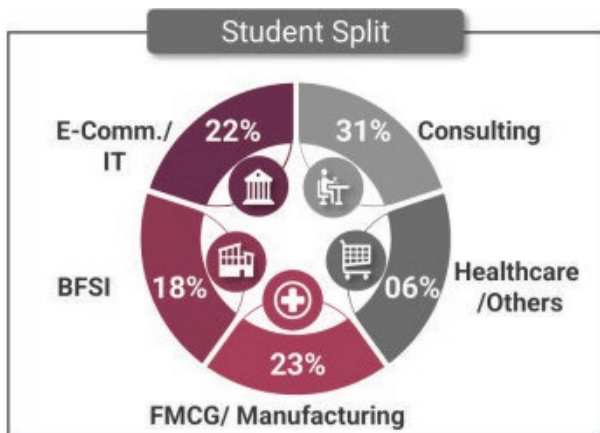
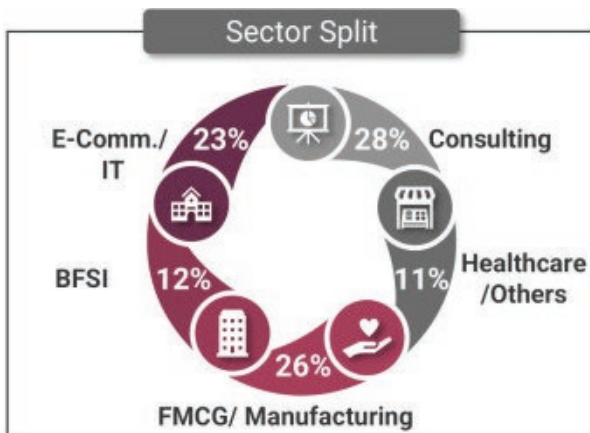
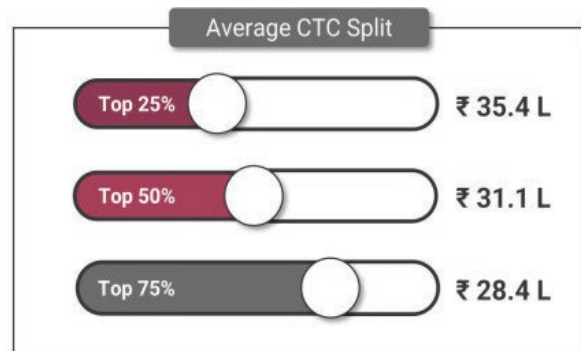
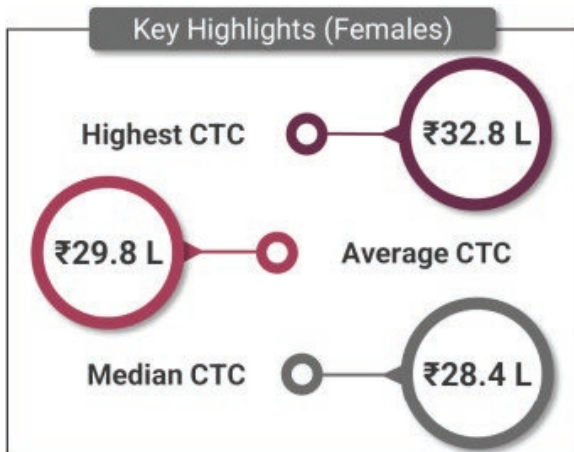
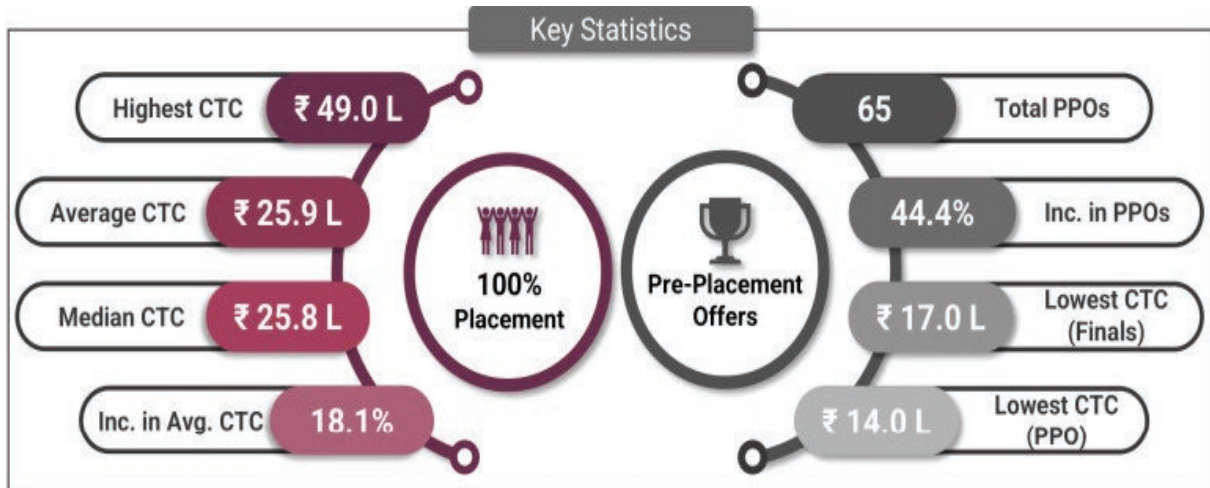


Certifications

 SCM Pro	 SUPPLY CHAIN MANAGEMENT PROFESSIONAL	 Green Belt
 CFA	 Google Digital Garage	
 HubSpot	 upGrad	
 coursera	 Udemy	



Placement Highlights:



Sector-Wise Highlights:

BFSI: The BFSI sector saw prominent recruiters such as ICICI Bank, Indus Valley Partners, JPMorgan Chase, Nomura and Yes Bank offering coveted roles such as Business Analyst, Investment Banking Analyst, Liabilities Product Manager, Risk Manager, Strategy Analyst, Treasury, and others.

Consulting: Eminent consulting firms such as Accenture Strategy, Accenture Technology Consulting, Deloitte USI, GEP, Hitachi Vantara, Infosys Consulting, Kearney, KPMG Global Servgices, PWC India, PwC US Advisory, Quintics, and Vector Consulting offered highly sought-after profiles such as Deal Analytics, IT Consulting, Management Consulting, Operations Consulting, Procurement Consulting, Technology Consulting and others.

E-Commerce/ IT: E-Commerce giants such as Amazon, eBay and Flipkart offered prestigious roles such as Analytics Manager, Operations Manager, Program Manager, Supply Chain Manager, and others. In the IT sector, prominent recruiters such as Axtria, Bristlecone, EXL Analytics, Juspay, MAQ Software, PlaySimple Games, Skit, and Wipro offered diverse roles such as Analyst, Enterprise Sales, Pre-Sales Consultant, Product Manager and others.

FMCG/ Manufacturing: Asian Paints, Britannia, Colgate-Palmolive, Gemini

Corporation, Godrej Consumer Products Limited, Kimberly-Clark, Marico, Monodelez, Procter & Gamble, Signify and Tata Consumer Products were among the top recruiters in this sector offering coveted profiles in IT, Operations Management, Supply Chain Management, Sales & Marketing and others.

Healthcare/ Others: This year saw the participation from top organizations such as Cochlear, Johnson & Johnson, OYO Rooms, Phablecare, Sony Pictures, Sun Pharma, and others offering profiles in IT, Category Management, Operations Management, Sales & Marketing, Supply Chain Management, and others.

Summary of placement for management programmes:

This year witnessed the average CTC of the batch rising to Rs. 25.93 lakhs, with the top 50% securing an average of Rs. 31.14 lakhs. The year-on-year upward trajectory shows the immense confidence corporates have in the ability of management students and the agile pedagogy of the Institute. The SJMSoM is committed to building mutually rewarding relationships with the recruiters and making the placement process a more fruitful and propitious experience for the corporates.



SOCIETY FOR INNOVATION AND ENTREPRENEURSHIP

Society for Innovation and Entrepreneurship (SINE), Technology Business Incubator of IIT Bombay, continues to provide 'Start-to-Scale' support to emerging entrepreneurs/ innovators and start-ups. Over the years SINE has gained a leadership position in business incubation community in India. SINE's practices have been referred to/ emulated by existing and upcoming incubators across the country.

SINE in its journey of 18 years has created the following impact:



The 'Start-to-Scale' support of SINE includes preincubation support like - prototyping grants for early-stage innovators and startups, entrepreneur fellowships, bootcamps for innovators, incubation and seed support to tech-startups, for scale up – conducts accelerator programmes in association with other corporates.

SINE also hosts the Bionest incubator for supporting entrepreneurs and start-ups in life sciences and med-tech space. SINE continues to collaborate with government, corporates, institutions and international organisations for activities like: Joint accelerator and mentoring programmes, Product/ service/ idea validation of incubates, and CSR initiatives.

Pre-incubation programmes – SINE has been successfully implementing prototyping grants and fellowship programmes of various government departments like the Department of Science and Technology (DST), Department of Biotechnology (DBT), Ministry of Electronics and Information Technology (MeitY) etc. These prototyping and entrepreneurial fellowship grants support aspiring or budding entrepreneurs in pursuing a promising technology business idea and helps convert their ideas into prototypes. SINE has implemented following prototyping grants and fellowship programs:

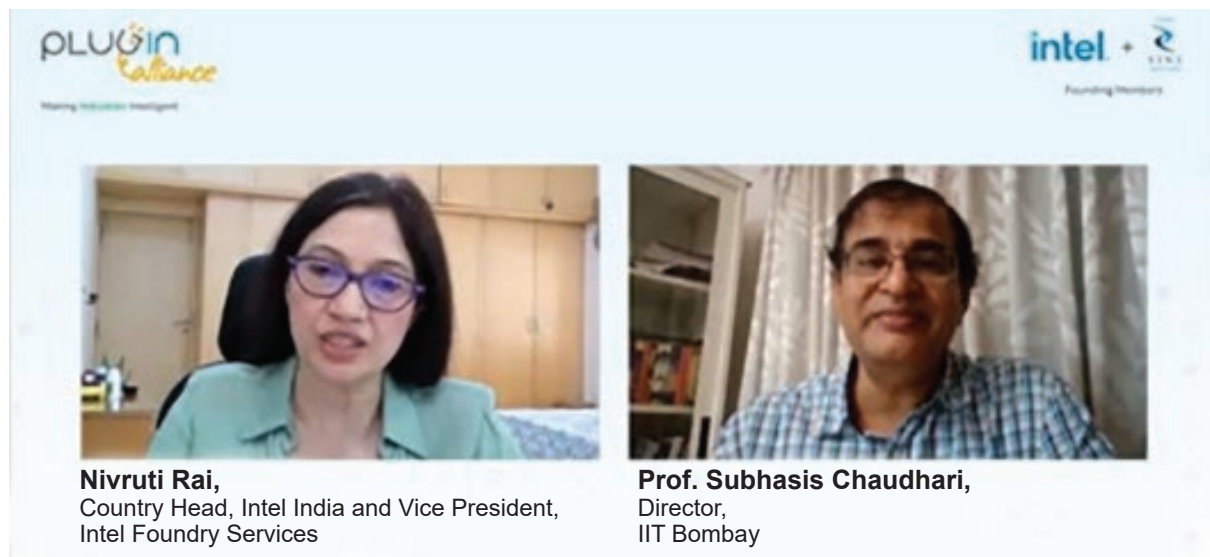
- SINE implemented three cycles of NIDHI-PRAYAS program; total 45 innovators/ start-ups were supported with total funding support of Rs. 300 lakhs
- Under MeitY TIDE 2.0, 8 innovators have been supported with the total funding outlay of Rs.42 lakhs.

- SINE as a BIG partner is executing and monitoring Biotechnology Ignition Grant (BIG) grant from BIRAC across India. During the period 2021-22, two cycles (18th and 19th) of BIRAC's Biotechnology Ignition Grant (BIG) were completed and nine participants were selected for the funding support
- Successfully implemented three cycles of DST NIDHI-EIR program wherein total of 31 entrepreneurs have been supported by providing fellowship of Rs. 30000 per month per entrepreneur for a period of one year
- Under MeitY EiR – seven entrepreneurs have been supported with the total funding outlay of Rs.24 lakhs.

SINE continues to act as a **Program Management Unit (PMU)** for implementing NIDHI-PRAYAS program nationwide and has successfully completed the implementation of four cycles. Total 44 centres are implementing this program. SINE continues to monitor and mentor these centres across the country.

Incubation: SINE hosted 195 companies since inception, of which 14 are new companies that got incubated and nine companies have graduated in 2021-22. During the year, SINE has also supported 46 innovators and entrepreneurs under its various pre-incubation programs.

Plugin Alliance: SINE in collaboration with Intel has launched its a first-of-its-kind industry technology alliance in India named 'Plugin Alliance', for Enterprise and MSME to accelerate and scale emerging technology solutions. Plugin Alliance provides an open collaborative framework for the ecosystem to nurture innovation and accelerate adoption of smart industry solutions. Plugin has created an ecosystem of deep-tech startups with credible and validated solutions, and also has a community of Enterprises and MSMEs who have access to industry 4.0 solutions.



The Plugin Alliance currently consists of:

- 71 members including 11 large enterprises, seven solution and scale members, nine funding institutions and eight ecosystem members and 35 deep-tech startups
- 265+ solutions have been listed by 35 member startups
- 30+ use cases shared by members for solution identification

Some of the notable Alliance members are TVS, Mahindra Logistics, Sun Pharma, Honeywell, and many others across industries.



During the year 2021-22, SINE signed MOU with Ministry of Power for its challenge Powerthon 2022 and continues to implement iDEX – the Ministry of Defence initiative.

iDEX: The Ministry of Defence aims to create an ecosystem which fosters innovation and encourages technology development in Defence by engaging R&D Institutes, academia, industries, start-ups and even individual innovators. The program focuses on defence technologies, on specific problem statements by defence, PSUs, DPSUs. SINE is a Partner Incubator for iDEX and till now five DISC cycles and three Open Challenge cycles have been executed. During the year 2021- 22, total eight startups were incubated with SINE under this program.

Powerthon 2022: SINE is the implementation partner for the program Powerthon 2022 providing support in screening, selection, timely facilitation, monitoring etc. This challenge is launched by the Ministry of Power (MOP), Government of India (GOI), as a part of their program viz. “Revamped Distribution Sector Scheme - A reform-based and result-linked scheme” with special emphasis on leveraging advanced technologies to analyze data generated through Information Technology (IT)/ Operational Technology (OT) devices including system meters and prepaid smart meters. Under the challenge, the applications were invited for the 10 areas of intervention suggested by DISCOMs and 239 eligible applications in total were received.

SINE-START: SINE organizes an in-house coaching program called SINE-START, Startup Training to Achieve Right Target (START) for early-stage innovators. The program aims to broaden participants’ thinking from a technology-centric mindset to a venture-centric mindset of doing business. It is a four-week module wherein the critical functional aspects of business are explained to the participants by various experts and entrepreneurs. SINE has successfully conducted two cohorts so far and the first cohort of SINE-START was held in February 2021. Total 23 startups have participated in the first two

cohorts and 17 more have registered themselves for the upcoming cohort which commenced on April 20, 2022.

Partnerships and Collaborations

Partnerships are strengthening tools for startups and ecosystem. SINE continues to partner with multiple stakeholders to achieve an improvised upshot. SINE signed various MoUs to expand its partnerships during the year. SINE is working closely with the following:

- Brihanmumbai Municipal Corporation’s business incubation centre, SMILE – Society for Mumbai incubation lab to entrepreneurship for co-incubation and infrastructure support
- STPI MOTION, a Centre of Entrepreneurship (CoE) in Autonomous, Connected, Electric and Shared (ACES) Mobility to support startups in autonomous/ connected/ electric/ shared (ACES) mobility.
- Consortium of Accredited Healthcare Organisations (CAHO) to provide an opportunity for SINE startups to closely interact with clinicians/ experts/ healthcare organizations/ hospitals/ diagnostic centres during product development phase and validation
- Reserve Bank Innovation Hub (RBIH) with the objective to build a robust fintech ecosystem to support start-ups and promote innovation across the financial sector
- Indian Bank to aid startups with financial support

Funding and Acquisition:

- ImmunoAct, a pioneer of India’s first indigenous CAR-T cell therapy, reached another milestone of fund raised at Rs. 55.75 crore from Laurus Labs. Founder and Chairman Prof. Rahul Purwar, Department of Biosciences and Bioengineering, IIT Bombay
- Safe Security, a cyber risk management firm, founded by Mr. Saket Modi raised \$33 million in their funding round led by the British Telecom, which is one of the UK’s largest telecommunications and network providers
- All-in-Call/ Cogno AI, a SINE graduate company which is a conversational Artificial

Intelligence (AI) platform to enable intelligent omnichannel conversations was acquired by Exotel – a cloud telephony platform that powers communication for enterprises, startups and small and medium enterprises in India and Southeast Asia

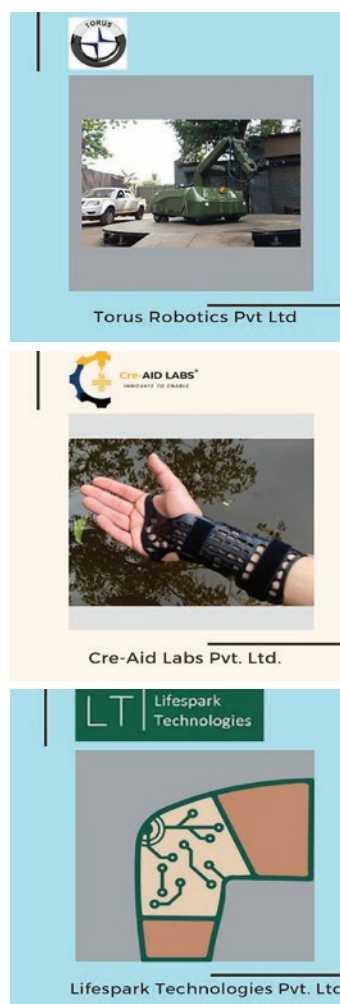
- Atomberg Technologies, a technology-led consumer product startup, raised \$20M growth funding round led by Jungle Ventures for accelerating expansion and brand growth
- Endimension Technologies, an AI powered healthcare startup raised Rs. 2.3 crore in a seed funding round by Inflection Point Ventures – one of the largest angel investment platforms
- Pidilite Industries made an investment of Rs. 1.56 crore in Constrobot Robotics/ Pacerobotics through their subsidiary Madhumala Ventures, of all the successful ventures that we fostered, this stands out as the finest example of constant courage and innovation
- Gupshup, a conversational social platform, became the first SINE startup to join the Unicorn Club with a valuation of \$1.4 billion after having raised \$100 million from Tiger Global Management. Moreover, it is the tenth Indian startup to join the Unicorn club during 2021. Founders, IIT Bombay alumni and serial entrepreneurs Mr. Beerud Sheth and Mr. Rakesh Mathur started their growth journey with us in 2004 and gained immense success in their business pursuits through their persistent efforts and well-planned strategies

Awards and Accolades:

- Zeus Numerix successfully completed a project for the Indian Navy. The composite material recirculation pump and carbon composite dewatering pump developed by them is second-of-its-kind in the world
- EmerTech Innovations received industry recognition for its work at the inaugural inspiring futures competition in Dubai.
- Virya Batteries - winners of Uber Green Mobility Innovation Challenge 2021, they are globally first to demonstrate “Ultra-Safe Lithium ion Battery Cells”
- Bionic Hope received Social Enterprise of the Year award at TiE Sustainability Summit Organized by Tie Hyderabad

- DPI enables SINE incubated startup Piscium Health Sciences to reach nationwide with its patented nanotechnology-based innovation product, Nano Diamond coated burs

Some pictures of products of SINE incubatee:



Glimpses of events at SINE:



Mr. Pavan Choudary, a best selling author and a public intellectual, shared ‘Recipe for Successful Marketing in the Healthcare Space’ with Mr. Mayur Sirdesai in a fireside chat organized by SINE.



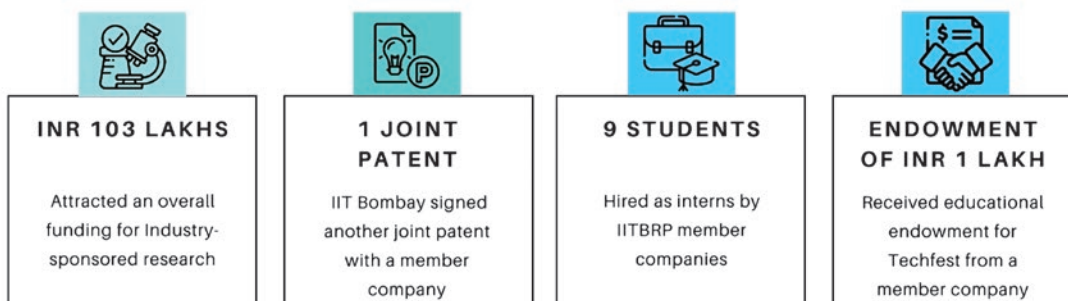
IIT BOMBAY RESEARCH PARK FOUNDATION

IIT Bombay Research Park (IITBRP) is a match-maker of interests – weaving together the various centres of excellence, industry problems, faculty expertise and student's aspirations. The Research Park helps to build meaningful relationships between IIT Bombay and IITBRP member companies to co-create global solutions to real-world questions.

Research engagements during 2021-22: IIT Bombay Research park is the single-window for industry-academia engagement aimed at technology development and its transactions.

RESEARCH ENGAGEMENTS DURING 2021-22

The Research Park is the single-window for industry-academia engagement aimed at technology development and its translation.



Student Engagement:

SLP-IDP: IIT Bombay Research Park closely worked with the student groups to introduce the Supervised Learning Program - Industry Defined Problem (SLP-IDP). The program encourages students to work during the semester on live technical problems and proposes a multi-disciplinary approach to solve industry questions.

Industry Successes:

IIT Bombay Research Park celebrates the continuing impact of all the member companies and embraces the challenges it can solve together. The year 2021 has witnessed breakthrough success of a few member companies:

- Bharat Forge won the Industry Excellence Award 2021, awarded by the Institution of Engineers
- Multi Nano Sense Technologies (MNST) won the National Startup Award 2021 by the Technology Development Board, Department of Science and Technology, Government of India



- **ideaForge** won the National IP Awards 2020 under the category ‘Top Indian MSMEs for Patents and Commercialization’ awarded by the Indian Intellectual Property Office and Confederation of Indian Industry.



Networking and Connecting:

Five years of ASPIRE: On June 28, 2021, IIT Bombay Research Park Foundation completed five successful years since its inception in 2016. A power packed panel discussion on ‘Redefining Collaborations: The Role of Research Parks’ witnessed participation from national and international leaders.



**IIT BOMBAY
RESEARCH PARK
aspire**

**A CELEBRATION OF 5 YEARS OF IITB
RESEARCH PARK - ASPIRE!**



Chief Guest
Prof. Anil D Sahasrabudhe
*Chairman of All India Council
for Technical Education*



Plenary Speaker
Dr. Brian Darmody
*Chief Executive Officer,
Association of University
Research Parks*



Plenary Speaker
Dr. Ashok Jhunjhunwala
*Professor-in-Charge,
IIT madras research Park*

Panel Discussion on:
**Redefining
Collaborations: The
Role of Research
Parks**

with

On
28th June, 2021
16:30 hrs IST

For any query contact at:
iitbrpf-events@iitbresearchpark.com



Dr. Michael Ho
*Partnership Director,
Taiwan Tech Arena*



Ms. Harshbeena Zaveri
*Managing Director,
NRB Bearings*

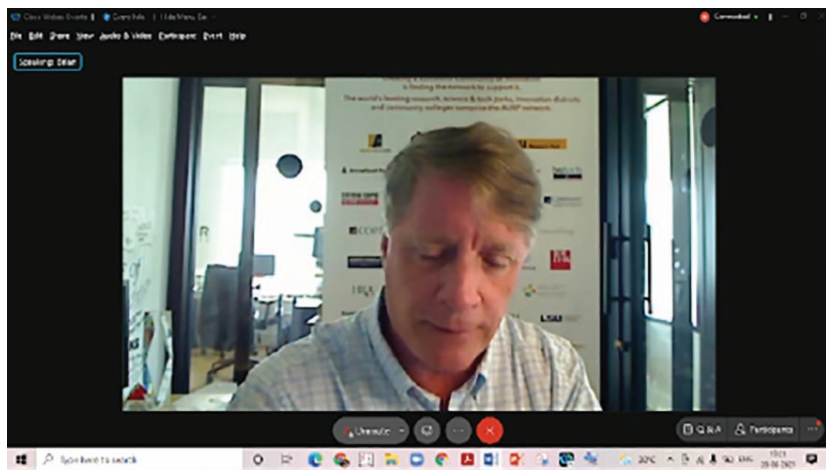


Prof. Milind Atrey
*Dean of Research
& Development,
IIT Bombay*



Dr. Nitin Kareer
*Additional Chief Secretary
(Revenue),
Government of Maharashtra*

Connecting industry and academia on 5-years celebration of ASPIRE



Plenary speaker, Mr. Brian Darmody, CEO, Association of University Research Parks

Alumni Day with the Class of 1996:

To enlighten alumni about the latest developments at their alma mater, the IIT Bombay Research Park hosted the Class of 1996 at its office. There was a wonderful exchange of thoughts, opportunities of possible collaboration and various modes of engagement.



Batch of 1996 at the IIT Bombay Research Park office on Alumni Day held on December 25, 2021

Women's Day Celebration: The IIT Bombay Research Park celebrates the values of diversity and inclusiveness. A panel discussion titled 'She Talks – Breaking Barriers and Power Structures' was organised on the occasion of Women's Day celebrations, where four incredible women from the Institute and industry shared their experiences encouraging women to navigate challenging situations.

New Research Park Building:

Within IIT Bombay Research Park, the member companies have been resilient in terms of having R&D interactions, and the 'Associate Model' or virtual mode of collaboration has received an encouraging response. During the year 2021-22, 15 companies from different domains have become members of IITBRP. Some of the names include Athena Powertech LLP, Balaji Enzymes, C-Tech, Covacsis Technologies, Earth Care Equipments, Everest, Innovinc Aspire Renewable Energy Solutions, Inventys, Jay Chemicals, NeoDocs, Tejase Aerosense and Wadhwani AI.

The civil construction of the Research Park building is almost on a verge of completion and it will be operational within a year. The space is a multi-tenant building catering to the R&D interests in core areas and emerging areas of artificial intelligence (AI) and machine learning (ML), Cyber security, E-mobility, Geospatial Tech, Internet of Everything and Quantum Tech. The IIT Bombay Research Park is rising to become a treasure trove of innovation on the campus.

Look Back and Way Forward:

During the year, the IIT Bombay Research Park bid adieu to Prof. Ravindra Gudi, former Professor-in-charge, whose guidance and enthusiasm continues to inspire everyone at the Park.

With Prof. Swaroop Ganguly, the new Professor-in-charge, the IIT Bombay Research Park is working on solving challenges, whether they are thorny life science issues, bringing an EV revolution, or delivering sustainable solutions.

It has been a year filled with stories of connecting Institute initiatives with industry interests, faculty expertise with industry problems, and student creativity with real-world opportunities. Through this, the Research Park is celebrating the power of synergy and looks forward to deepening the relationships in the coming year.



Prof. Swaroop Ganguly, Professor-in-charge, IITB Research Park Foundation giving a snapshot of the centres at IIT Bombay on Client and Associate Day 2022



INTERNATIONAL RELATIONS

IIT Bombay assigns significant value to its relationships with various international partners. Over the years, IIT Bombay has steadily built up a reputation for research and education both in India and abroad. This has helped in attracting bright and young researchers from all over the world, as faculty of the Institute.

The Institute's International Relations activities have gone online since last year due to COVID-19 pandemic. Even though the international visitors were not able to travel to the campus, many of the partners were still keen to continue our engagements with online workshops. These turned out to be very effective and we hope to leverage this activity even after the pandemic settles down. The interest in working on and signing new MoUs also continued and there are interesting joint degree programmes ready to go into the implementation phase. The Senate also approved virtual students' semester-exchange.

The number of students enrolling for the Master's degree programmes with online instruction were a bit higher than usual intake. A good number of international students have also come to the Institute either as full-time or as exchange students. During the year, IIT Bombay has signed 34 MoUs with various foreign universities and met governmental and ministerial delegations (virtually) from countries across the globe for exploring areas of collaboration and cooperation.

International Students

A total of 62 International students (from countries like Afghanistan, Bangladesh, Bhutan, Cambodia, Finland, France, Germany, Guyana, Japan, Nepal, Sudan, Syria, Turkey, USA and Yemen) have registered at IIT Bombay during the financial year 2021-22. They have joined IIT Bombay for course work/ project work/ postgraduate studies.

Memorandum of Understanding with Foreign

Universities and Indian Universities signed through Dean International Relations office during April 2021 - March 2022:-

- Alanya Alaaddin Keykubat University, Turkey
- Augsburg University of Applied Sciences, Germany
- B. S. Abdur Rahman Crescent Institute of Science & Technology, Chennai, India
- Bogazici University, Turkey
- Consortium of Finnish Universities, Finland
- Coventry University, UK
- Dalhousie University, Canada
- Dambi Dollo University, Ethiopia
- Dr. Ambedkar Institute of Technology, Bengaluru, India
- Ecole Nationale de l'Aviation Civile, France
- Ecole Nationale Supérieure de Techniques Avancées Bretagne, France
- Educare International Foundation FZ-LLC, UAE
- Instituto Tecnológico De Buenos Aires, Argentina
- Institut Teknologi Sepuluh Nopember, Indonesia
- King Mongkut's University of Technology Thonburi, Thailand
- Koc University, Turkey
- Koneru Lakshmaiah Education Foundation, K L Deemed to be University, Hyderabad, India
- Malardalen University, Sweden
- National Chiao Tung University, Taiwan
- Nottingham Trent University, UK
- Plaksha University, Punjab, India
- Polytechnique Montreal, Canada
- Riga Technical University, Latvia
- S. N. Bose National Centre for Basic Sciences, Kolkata, India
- Samarkand Branch of the Institute for Training and Training of Specialists in Physical Training and Sports, Uzbekistan
- Samarkand State University, Uzbekistan
- Technical University of Darmstadt, Germany

- The Alliance of 4 Universities, Spain
- The European University of Tunis, Tunisia
- Università Degli Studi di Napoli L Orientale, Italy
- Universitas Gadjah Mada, Indonesia
- Universiti Teknologi Malaysia, Malaysia
- Viet Nam National University Ho Chi Minh City, Vietnam
- Vyatka State University, Russia

Virtual Meetings

The virtual meetings became the new norm all around the world since lockdown and continued during the initial phase of unlocking. These meetings led to building new partnerships as well as reviving the activities with our existing partners.

Virtual Visits of International Delegations:

IIT Bombay also received a large number of international delegations for exploring areas of collaboration and cooperation. The major ones are as follows:

- **Coventry University, UK:** Prof. John Latham, Vice-Chancellor; Prof. Richard Dashwood, Deputy Vice Chancellor for Research and Development and Mr. Alan Gemmell, Trad Commissioner to South Asia and British Deputy High Commissioner for Western India on April 1, 2021.
- **Kazakh-British Technical University, Kazakhstan:** Prof. Rassim Suliyev, Dean of Faculty of Information Technologies; Prof. Alibek Bissembayev, Deputy Dean at Faculty of Information Technology and Ms. Aiza Shinbayeva, Manager, Department of Internationalization and Strategic Development on April 9, 2021.
- **University of Gadjah Mada, Indonesia:** Dr. I Made Andi Arsana, Head of Office of International Affairs; Ms. Adhe Nurcahyarini, Office of International Affairs and Ms. Sepitri Indrayanti, Office of International Affairs on April 12, 2021.
- **Persian Gulf University, Iran:** Prof. Arash Khosravi, Director of International Affairs and Overseas Students on April 14, 2021.
- **Sabancı University, Turkey:** Prof. Abdullah Dasci, Director, International Relations Office and Professor of Operations Management and Ms. Evrim Gungor, International Relations Office on April 14, 2021.
- **Chulalongkorn University, Thailand:** Asst. Prof. Natt Leelawat, Assistant Dean for Communications and International Affairs, Faculty of Engineering; Ms. Sukalin Wanakasemsan, Director of the Division of Global Academic Affairs, Office of International Affairs and Global Network; Ms. Chanita Somsuwan, International Affairs Officer, Faculty of Engineering; Mr. Phuwadech Duangmanee, International Affairs Officer, Faculty of Engineering; Mr. Nattapong Preesit, International Coordinator, Office of International Affairs and Global Network on April 19, 2021.
- **Universiti Teknologi Malaysia, Malaysia:** Assoc. Prof. Dr. Mohd Ismid Md Said, Pro-Vice Chancellor International, UTM International; Prof. Dr. Nor Haniza Sarmin, Assoc. Director Global Strategy and Engagement, UTM International and Mr. Ahmad Hilman Borhan, Manager International Relations on April 20, 2021.
- **Institut Teknologi Bandung, Indonesia:** Prof. Andika Putra Pratama (Professor School of Management), Head of Division of International Partnerships, Bureau of Partnerships; Prof. Tatacipta Dirgantara, Faculty of Mechanical and Aerospace Engineering; Prof. Ivonne Milichristi Radjawane, Faculty of Earth Science and Technology; Prof. Febri Zukhruf, Faculty of Civil and Environmental Engineering; Prof. Yuki Agriardi Koswara, Faculty of Art and Design; Prof. Mohammad Rachmat Sule, Faculty of Mining and Petroleum Engineering on April 22, 2021.



- **King Mongkut's University of Technology Thonburi, Thailand:** Assoc. Prof. Anak Khantachawana, Assistant to the President for Internationalization; Ms. Sasima Juwasophi, Director, International Affairs Office and Ms. Waralee Poolket, International Affairs Office on April 29, 2021.
- **Mahidol University, Thailand:** Ms. Wanpimon Senapadpakorn, Director, International Relations Division; Ms. Tassanaporn Hongyon, International Relations Officer; Asst. Prof. Dr. Patreeya Kitcharoen, Assistant Dean for International Relations and Corporate Communication, Faculty of Social Sciences and Humanities; Mrs. Naphanat Kongkarat, Head of International Relations Section, Faculty of Social Sciences and Humanities; Assoc. Prof. Dr. Yodchanan Wongsawat, Vice Dean for Research and International Relations, Faculty of Engineering; Dr. Allan Sriratana Tabucanon, Assistant to the Dean for Corporate Communication and International Relations, Faculty of Environment and Resource Studies; Professor Dr. Peter Haddawy, Deputy Dean for Research Development, Faculty of Information and Communication Technology; Dr. Withoon Chunwachirasiri, Head of the Department of Physics; Asst. Prof. Dr. Chanun Lewchalermvong, Deputy Head of Department of Mathematics; Ms. Nongnuch Prasomkhum, Head of International Cooperation Office, Faculty of Science; Mr. Sethavudh Kaewviset, International Relations Officer, Faculty of Science on April 29, 2021.
- **Institut Teknologi Sepuluh Nopember, Indonesia:** Assoc. Prof. Maria Anityasari, PhD, Director Global Engagement; Dr. Astria Nur Irfansyah, Senior Manager International Partnership; Ms. Nastiti Prima, Staff for International Partnership on May 5, 2021.
- **Aalto University, Finland:** Ms. Kirsi Kettula, Head of Global Engagement and Ms. Kiruthika Srinivasan, Senior Manager, Global Engagement, Aalto University on May 6, 2021.
- **Vietnam National University, Hanoi, Vietnam:** Prof. Chu Duc Trinh, Vice-Rector of International Cooperation and Research and Development, University of Engineering and Technology; Assoc. Prof. Bui Thanh Tung, University of Engineering and Technology and Dr. Pham Ngoc Thao, University of Engineering & Technology on May 7, 2021.
- **University of Gadjah Mada, Indonesia:** Dr. Danang Sri Hadmoko, Director of Cooperation, Alumni and Global Initiatives; Dr. I Made Andi Arsana, Head of Office of International Affairs; Dr. Bambang Hudayana, Head of Center for Rural and Regional Development Studies; Dr. Sudarmaji, Head of Geophysics Study Programmes, Faculty of Mathematics and Natural Sciences; Dr. Hendy Setiawan, Secretary of Magister Program Study of Geological Engineering, Faculty of Engineering and Dr. Herlan Darmawan, Secretary of Geophysics Study Program, Faculty of Mathematics and Natural Sciences on May 17, 2021.
- **Vietnam National University, Ho Chi Minh City, Vietnam:** Mr. Bui Le Vu, Deputy Director, Department of External Relations and Project Development; Dr. Nguyen Le Dung, Deputy Head of External Relations Office, University of Technology; Dr. Vo Hong Hai, Deputy Head of External Relations Office, University of Sciences; Mrs. Dinh Kim Phung, Deputy Head of External Relations Office, International University; Ms. Ho Thi Minh Phuong, Deputy Head of External Relations Office, University of Information Technology; Mr. Nguyen Huu Quy, Department of External Relations and Project Development and Ms. Nguyen Tran Nguyet Thu, External Relations Office, University of Technology on May 21, 2021.
- **Delft University of Technology, Netherlands** - Prof. Herman Russchenberg, Director Climate Institute and Head of the Department

of Geoscience and Remote Sensing and Dr. Marie Kummerlowe, Policy Advisor Global Engagement.

- Mr. Gasan Gasanbalaev, Head of the Department for the provision of Human Resources, Russian Far East and Arctic Development Corporation; Ms. Alexandra Chernova Head International Cooperation Division, Russian Far East and Arctic Development Corporation; Dr. Evgeny E. Vlasov, Deputy Vice-President for International Relations, Far Eastern Federal University; Ms. Veronika S. Gorelkina Specialist of International Relations Office International Affairs Department, Pacific National University and Ms. Lyubov Zarubina, Deputy Vice-Head of International Cooperation Department, Northern Arctic Federal University on July 1, 2021.
- Instituto Tecnológico de Buenos Aires (ITBA), Argentina: Ms. Eugenia Cannata, International Relations Director and Ms. Dolores Smuclir, Coordinator for International Cooperation on July 7, 2021.
- Dambi Dollo University, Ethiopia: Prof. Dr. R. Krishnaraj, Director, Centre for Excellence in Indigenous Knowledge, Innovative Technology Transfer and Entrepreneurship and Prof. Arthanareewan, Professor in Chemical Engineering, NIT Trichy on July 13, 2021.
- FPT University, Vietnam: Ms. Vinh Nguyen (Michelle), Head of International Admission and Global Mobility; Ms. Ngoc Tran, International Relations Executive and Ms. Bao Ngoc, International Relations Executive on July 29, 2021.
- Ecole Nationale de l'Aviation Civile, France: Dr. Nicolas Cazalis Directeur Général Adjoint Vice President and Dr. Kirsty Tan, International Dean on August 5, 2021.
- University of Tsukuba, Japan: Prof. Kyosuke Nagata, President; Prof. Caroline F. Benton, Vice President and Executive Director for Global Affairs; Prof. Osamu Ohneda, Executive Officer for International Strategy; Mr. Hiromi Matsuda, CEO, IBJ, Inc. and Ms. Shizuyo Matsuda, Executive Director, IBJ, Inc. on August 6, 2021.
- Samarkand State University, Uzbekistan: Dr. Muhtor Nasirov Vice-Rector, International Relations on August 11, 2021.
- Universiti Teknologi Malaysia (UTM): Assoc. Prof. Dr. Mohd Ismid Md Said, Pro-Vice Chancellor International, UTM International; Prof. Dr. Nor Haniza Sarmin, Assoc. Director Global Strategy and Engagement, UTM International and Mr. Ahmad Hilman Borhan, Manager International Relations on August 25, 2021.
- King Abdulaziz University, Saudi Arabia: Prof. Abdulrahman Al-Wahhabi, International Relations Head; Dr. Muhammad Kabli, Dean of Faculty of Engineering and Prof. Hamad Al-Turaif, Vice Dean for Higher Studies and Research on August 26, 2021.
- University of Peradeniya, Sri Lanka: Prof. G. B. Herath, Dean, Faculty of Engineering; Prof. Shameen Jinadasa, Director International Relations Office; Dr. Kamalanath Samarakoon, Head Dept. of Computer Engineering; Prof. M. A. R. M. Fernando Head Dept. of Electrical and Electronic Engineering; Dr. Asela Kulathunga, Head Dept. of Manufacturing and Industrial Engineering; Prof. Asanga Ratnaweera, Head Dept. of Mechanical Engineering and Dr. Panduka Neluwala, Faculty representative International Relations Office on August 30, 2021.
- Institut Teknologi Sepuluh Nopember (ITS), Indonesia: Assoc. Prof. Maria Anityasari, Director of ITS Global Engagement; Dr. Astria Nur Irfansyah, Senior Manager on International Partnership; Dr. Atok Setiawan, Head of Department of Mechanical Engineering ITS; Dr. Sigit Tri Wicaksono,



Head of Department of Materials and Metallurgical Engineering ITS and Ms. Nastiti Prima, International Partnership on August 31, 2021.

- The American University in Cairo, Egypt: Dr. Deena Boraie, Vice President for Student Life and Ms. Dahlia El Tayeb, Senior Director, International Programs and Services Office on September 16, 2021.
- Mr. Arne Jan, Consul General, Royal Norwegian Consulate General, Mumbai and Dr. Maan Singh Sidhu, Counsellor Science and Technology, Royal Norwegian Embassy in New Delhi on September 27, 2021.
- Pokhara University, Nepal: Prof. Dr. Prem Narayan Aryal, Vice-Chancellor and Dr. Umesh Singh Yadav, Executive Director, International Relations Center on October 7, 2021.
- Komsomolsk-na-Amure State University (Russia): Ms. Tatiana Nalivaiko, Vice rector for Education and General Issues; Ms. Marina Siui, Head of International Department and Ms. Natalia Soboleva, Specialist of International Department on November 9, 2021.
- Alanya Alaaddin Keykubat University, Turkey: Mr. Eren Irfanoglu, Deputy General Coordinator of the International Relations Office and Ms. Ludmilla Reger, International Relations Office on November 11, 2021.
- The European University of Tunis, Tunisia, Africa: Mrs. Linda Guedri, Executive Director and Ms. Neïla Ahlem Zakraoui, In charge of the International Relations Department on November 12, 2021.
- Mbarara University of Science and Technology, Uganda: Prof. Charles Tushabomwe-Kazooba, Deputy Vice Chancellor Finance and Administration; Dr. Imelda Kemeza, Department of Educational Foundations and Psychology and Ms. Sheila Niinye, International Relations Officer on November 17, 2021.

- University of Toronto, Canada: Prof. Joe Wong, Vice-President, International; Prof. Alex Mihailidis, Associate Vice-President, International Partnerships and Ms. Vanessa Laufer, Director, International Relations on November 22, 2021.



Consulate General of the Arab Republic of Egypt in Mumbai

- Consulate General of the Arab Republic of Egypt in Mumbai: Mr. Attia Abou El Naga, Consul General on December 8, 2021.
- Fergana Polytechnic University, Uzbekistan: Mr. Nodirbek Ismailov, Head of International Relations Department and Mr. Shohida Khamdamova, Head of Educational and Methodological Management on December 9, 2021.
- Sungkyunkwan University, South Korea: Mr. Christopher Boreman, Global Network Coordinator and Ms. Yoo Jin Choi, Global Network and Protocol Coordinator on December 15, 2021.
- Tomsk Polytechnic University, Russia: Dr. Maxim Volkov, Head of International Cooperation Division and Rector's advisor on external relations; Dr. Artyom Dankov, Head

of the International Analytics Body and Dr. Natalia Zhadovets – Head of the International Cooperation Body on December 17, 2021.

- Ms. Hannah Anzi, Country Representative India, Technion Israel Institute of Technology on December 21, 2021.



Consulate General of the Republic of Indonesia in Mumbai

- Consulate General of the Republic of Indonesia in Mumbai: Mr. Agus Saptono, Consul General; Mr. Pangky B. P. Saputra, Vice Consul for Economic Affairs and Mr. M.P. Hutomo, Staff Social and Culture on December 23, 2021.

Asian Universities Alliance (AUA)

The Asian Universities Alliance (AUA) is a consortium of Asian universities. It is a regional organization established with an objective to jointly address regional and global challenges, specifically related to higher education, economic, scientific and technological development by strengthening collaboration among member institutions. AUA was established by a core of 15 universities, with IIT Bombay being a founding university of AUA.

Following activities were organised under AUA consortium:



AUA Board Meeting: The AUA Board Meeting was held on April

8, 2021 for making major decisions related to next AUA Executive Presidency, Financial Statements

and Budget, AUA Program Proposals and Framework. Prof. Subhasis Chaudhuri, Director; Prof. Prasanna Mujumdar, former Deputy Director (Finance and External Affairs) and Prof. Amit Agrawal, Dean (International Relations) participated in this meeting.

AUA-IIT Bombay Overseas Study Programmes:

The AUA-IIT Bombay Overseas Study Program on Sustainable Energy System was hosted in online mode by the Office of International Relations in association with the Department of Energy Sciences and Engineering (DESE) during July 5-16, 2021. Prof. Rangan Banerjee and Prof. Anish Modi from the DESE coordinated the Programmes. The Programmes provided the students with an overview of various renewable energy conversion and storage technologies. Various sustainability and climate related aspects were discussed along with equipping the students with knowledge on evaluating alternatives based on economic and environmental aspects. The virtual visits to the labs and energy system installations in the Institute's campus were organised. The course gave the students a strong exposure to the current energy scenario, with a particular focus on the countries of AUA member universities, and help them develop a perspective by comparing the energy scenario in their country with that in the other countries. A diverse set of 19 students participated in this Programmes from seven AUA member universities.

AUA Programmes: The AUA Overseas Study Programmes 2021 - Key concepts of Data Science Artificial Intelligence was hosted by Nazarbayev University, Kazakhstan during June 21-25, 2021 in online mode. Four students from IIT Bombay participated in this programmes. Students were presented with core concepts and state-of-the-art applications of Data Science and Artificial Intelligence and through a combination of topical lectures and hands-on exercises became familiar with sources, methods, challenges, and current work in the field. The topics were presented by domain experts, using practical examples,



with the expectation that students are seriously considering future employment or graduate study in the field.

AUA Education Fair: AUA hosted the Live Education Fair 2021 with the participation of 15 leading Asian Universities (member universities of AUA) during September 25-26, 2021 for undergraduate (UG) and postgraduate (PG) programmes respectively. In order to attract international students for postgraduate programmes, IIT Bombay participated in this fair, held on September 26, 2021. During the education fair, every AUA member university was given a time slot to make the presentation and provide information about their university. Prof. Amit Agrawal, Dean (International Relations) shared the information on Life and Higher Education opportunities at IIT Bombay during the session.

AUA Lecture Series: The Office of International Relations in coordination with the Department of Humanities and Social Sciences (HSS) participated in the lecture series hosted by the Asian Universities Alliance (AUA). The AUA lecture series was held in online mode and was themed on “Challenges and opportunities of Asian economies in the era of COVID-19 and post COVID-19”. The aim of the lecture series was to enhance the level of understanding among students and audience about different Asian economies and offer the AUA students an opportunity to study from and have discussions with other students of Asia. The lecture series was scheduled for 15 weeks (during September-December 2021), with one lecture per week. Each member university was invited to organize a lecture conducted by the faculty member(s) of their university and Prof. Krishnan Narayanan, Department of Humanities and Social Sciences (HSS) gave a lecture on “COVID-19 and Livelihood Challenges in Rural India” in this series from IIT Bombay on October 14, 2021. Also, three students from HSS were nominated to participate in this series who attended all the lectures conducted during this lecture series.

AUA Executives Meeting: The fifth AUA Executives Meeting was held on November 10, 2021. Prof. K. V. K. Rao, Deputy Director (Finance and External Affairs), Prof. Amit Agrawal, Dean (International Relations) and Ms. Tanvi Mehta, Executive Officer, Office of International Relations participated in this meeting from IIT Bombay. This meeting consisted of a session on the review of all AUA activities and programmes held in the year 2021-22, a session on policy discussion followed by a discussion on AUA programmes to be held in the year 2022-23.

AUA Programmes: The AUA member universities i.e., Chulalongkorn University, Thailand and University of Malaya, Malaysia also hosted the AUA Overseas Study Program like IIT Bombay in July 2021 and December 2021 respectively. The Chulalongkorn University hosted the programmes on “Humanizing Digital 2021: Addressing Global Challenges in the AI and Data Science” wherein four students from IIT Bombay participated and the University of Malaya hosted the programmes on “Artificial Intelligence in Health Sciences” wherein two students from IIT Bombay participated.

HERITAGE NETWORK **Heritage Network:** The Heritage Network aims to strengthen Higher Education Cooperation (research and training) between Europe and India in the field of Engineering Sciences. The General Assembly is the supreme body of Heritage Network and meets once in a year and votes for the strategies, actions and representatives (Steering and Executive Committee members) of the Heritage Network. This year the General Assembly was held on May 24, 2021 in virtual mode and Prof. Amit Agrawal, Dean (International Relations), Prof. Sugandh Malhotra, IDC School of Design and Ms. Tanvi Mehta, Executive Officer, Office of Dean (IR) participated from IIT Bombay. About 40 representatives from the 15 Indian and 13 European Heritage Network member Institutions participated in General Assembly this year.

Sustainable Transportation System and Infrastructure (STSI):

The STSI Program is the co-educational program by Hokkaido University and three IITs (Bombay, Hyderabad, and Madras). IIT participants take STSI Basic Courses (STSI Fundamentals, STSI Basic Course on Language and Culture), and learn teamwork research ability through internship at Hokkaido University. After completing the course with the approval from both Japan and India, students receive “Certificate of Completion of STSI Program”. The 4th STSI Steering Committee Meeting was held on March 17, 2021 in virtual mode and decisions on program challenges, achievements and future improvements were made during this meeting. Prof. K.V. K. Rao, DD (FEA) and Prof. P. Vedagiri from the Department of Civil Engineering participated in this meeting along with Prof. Amit Agrawal, Dean (IR).

The U7 Alliance is a unique forum for discussion between university presidents in the fields of higher education and research. It commits leading universities worldwide to demonstrating the defining role they play, and the responsibility they carry, in the multilateral framework. The workshop on “Action for the Climate: Working together to address our Greenhouse Gas emissions” was held on June 21, 2021 and the workshop on “Promoting Student Access to courses relating to Climate, Biodiversity and Sustainability” was held on June 29, 2021. Prof. Trupti Mishra, Prof. Arpita Mondal and Prof. Sridhar Balasubramanian from IDP Climate Studies and Prof. Anil Dikshit, Prof. Munish Chandel, Prof. Swatantra Pratap Singh from the Department of Environmental Science and Engineering participated in the workshops. These workshops on sustainability were co-hosted by the University of Edinburgh, Université PSL and the University of Toronto under this alliance.

U7+ Worldwide Student Forum: On behalf of the U7+ Steering Committee and UK members of U7+, University College London (UCL) and Northwestern University co-hosted a worldwide student forum centred on the theme of “Climate Change: Intergenerational Conflict or

Intergenerational Alliance?”. The aim of the forum was to support the global student community across U7+ members in their endeavours to make a genuine difference in how climate change, intergenerational justice and sustainability issues are framed and how individuals and institutions can respond to them. Three students from IDP Climate Studies, were nominated to participate in the forum. The forum was held during June-November 2021 and it offered students an exciting opportunity to connect with students globally, learn lifelong skills and make a positive impact on global challenges.

U7+ Working Groups Workshop: The U7+ Working Groups Workshop was held during September 29-30, 2021. The theme of the workshop was “From ideation to action: Fulfilling the U7+ commitments”. The workshop was hosted by Northwestern University and highlighted the successes of the U7+ working groups, gave space for reflection on the purpose of the working groups, and lead to the creation of a new U7+ Working Groups Guide. The workshop was open for all presidential delegates along with all faculty, staff and administrators who are active in the U7+ working groups. Prof. Amit Agrawal, Dean (International Relations) and Ms. Tanvi Mehta, Executive Officer, Office of Dean (International Relations), IIT Bombay participated.

U7+ Presidential Summit: This alliance is the first coalition of university presidents aimed at defining concrete actions that universities can take to collectively address global challenges in coordination with government leaders in G7 countries and beyond. The U7+ Presidential Summit is a unique opportunity for university leaders from a wide variety of nations to discuss a common agenda and establish a framework for university actions in today’s global landscape. The U7+ Presidential Summit was held on October 25, 2021, Prof. Subhasis Chaudhuri, Director and Prof. Amit Agrawal, Dean (International Relations) participated in the summit from IIT Bombay.



SATU Presidents' Forum

The Southeast and South Asia and Taiwanese Universities (SATU) Presidents' Forum's General Assembly and Steering Committee Meeting was held during November 2-3, 2021. The forum was aimed to strengthen academic cooperation among Taiwan and Southeast and South Asian countries. It provides a venue for academicians to share their valuable experiences to improve higher education and international cooperation in the region. Prof. Amit Agrawal, Dean (International Relations) participated in this meeting and represented IIT Bombay.

Asia Technological University Network (ATU-Net)



The Asia Technological University Network (ATU-Net) University Presidents Forum 2021 is aimed to connect technology-focused institutions of higher learning in Asia. Its mission is to support member universities in achieving world-class quality of education and research in engineering and technology through strategic international alliances. Institute's Director, Prof. Subhasis Chaudhuri participated in the President Roundtable Session of ATU-Net Virtual University Presidents Forum which was themed 'Brave New World of Higher Education: Realities and Vision' and held during November 22-23, 2021. Prof. Amit Agrawal, Dean (IR) also attended the event.

Inbound Students:

During the autumn semester 2021-22, 40 students were registered for the M.Tech./ Ph.D. program. Two students from Hokkaido University, Japan,

did virtual project work for a period of two months. Currently, there are 86 international students registered for the full-time, Master's/ Ph.D degree programs at IIT Bombay.

Outbound Students:

The international semester exchange programs provide broad-based benefits to students where they get the opportunity to seek international exposure and acquaint themselves with new cultures and global educational standards. Such activities are an important part of the overall development of a student giving them awareness and help adopt alternative, multi-faceted approaches to learning. With changing global economic conditions, international exchange programs are becoming viable and effective prospects of learning and gaining international exposure.

IIT Bombay supports outbound exchange program for their students in order to add an international perspective to their education. There were eighteen students from IIT Bombay who went on for semester- exchange to foreign universities like Aalto University, Finland; EPFL, Switzerland; ETH Zurich, Switzerland, KTH Royal Institute of Technology, Sweden; University of Geneva, Switzerland; University of Calgary, Canada; University of Strasbourg, France; Technical University of Denmark; INSA Lyon, France and Technical University of Munich, Germany.



Outbound Student - Harshvardhan Nigam at Université de Strasbourg, France



Outbound Student - Janhvi Nandwani at Danmarks Tekniske Universitet (DTU), Denmark



Outbound Student - Harshit Srivastav at Danmarks Tekniske Universitet (DTU), Denmark



Students participation in Exchange Programmes (under MOU) during Academic Year 2021-22:

Sr. No.	Name of the University	No. of students/ Programmes
1	Aalto University, Finland	One dual degree student from Metallurgical Engineering and Materials Science, one dual degree student from Electrical Engineering and one BTech student from Mechanical Engineering
2	Colorado School of Mines, USA	One dual degree student from Environmental Science and Engineering Department
3	EPFL Lausanne, Switzerland	One dual degree student from the Department of Metallurgical Engineering and Materials Science, one dual degree student from the Department of Electrical Engineering, one dual degree student from the Department of Energy Science and Engineering and one BTech student from the Department of Computer Science and Engineering
4	ETH Zurich, Switzerland	Two dual degree students from the Department of Electrical Engineering, one BTech student from the Department of Physics and one BTech student from the Department of Mechanical Engineering
5	INSA Lyon, France	One dual degree from the Department of Metallurgical Engineering and Materials Science, one BTech student from the Department of Electrical Engineering and one BTech student from the Department of Civil Engineering
6	Katholieke Universiteit Leuven, Belgium	Two MBA students from Shailesh J. Mehta School of Management
7	KTH Royal Institute of Technology, Sweden	One dual degree student from Environmental Science and Engineering Department, one dual degree from the Department of Metallurgical Engineering and Materials Science, one BDes student from IDC School of Design and one BTech student from the Department of Electrical Engineering
8	Loughborough University, UK	One BS in Economics (Bachelor of Science degree) student from the Department of Humanities and Social Sciences
9	Malardalen University, Sweden	Two BTech students from the Department of Civil Engineering
10	Politecnico Di Milano, Italy	One BTech student and one dual degree student from the Department of Civil Engineering
11	Sabanci University, Turkey	One BTech student from the Department of Aerospace Engineering
12	Technical University of Denmark, Denmark	Two dual degree students from the Department of Electrical Engineering, one BTech student from the Department of Civil Engineering and one Bachelor of Science student from the Department of Chemistry
13	Technical University of Munich, Germany	One dual degree student from the Department of Electrical Engineering
14	University of Bologna, Italy	One dual degree student from the Department of Electrical Engineering
15	University of Agder, Norway	Four MBA students from Shailesh J. Mehta School of Management, one BTech student and one dual degree student from the Department of Civil Engineering
16	University of Calgary, Canada	One dual degree student from the Department of Electrical
17	University of Geneva, Switzerland	One BS in Economics (Bachelor of Science degree) student from the Department of Humanities and Social Sciences, one dual degree student from the Department of Electrical Engineering and one dual degree student from the Department of Energy Science and Engineering
18	University of Strasbourg, France	One BSc + MSc dual degree student from the Department of Chemistry

Foreign Language courses: Following language courses for the students and staff of IIT Bombay were organised in the Autumn and Spring semester:

- Japanese (in association with Koo International Co. Ltd., Japan)
- German (in association with DAAD, New Delhi)

The courses were conducted by the native speakers of these languages.

ALUMNI AND CORPORATE RELATIONS

The Dean Alumni and Corporate Relations (ACR) Office integrates two strategic thrusts for IIT Bombay. One is nurturing and enhancing alumni relations and other is developing mutually beneficial relationships with the corporate world. The alumni and corporate donations, that have picked up significantly in the last few years, also provide a great support to the Institute. The Office of Dean (ACR) performs the important task of nurturing relationships for the benefit of the Institute and raising additional resources from the alumni and other well-wishers of IIT Bombay.

During 2021-22, the Institute received a total donation of Rs.114 crores. The Institute expresses its deep gratitude and appreciation for the constant support shown by our alumni and other well-wishers of IIT Bombay. The major donors for the last financial year, among others, were Mr. Ashank Desai, Mr. Rizwan Koita (Koita Foundation), Mr. Sharad Saraf and Mr. Sudarshan Saraf (Technocraft Industries), Mr. Raj Nair, Mr. Sharad Sanghi, Mr. Arpit Mathur, Mr. Kashyap Deorah and Mr. Ramesh Mangaleswaran. The development and alumni activities of our Institute are not just a role model in India but have also been appreciated by major international universities.

The major activities for which the donations were received are as under:

Institute Development Fund: This fund primarily caters to the critical needs of the Institute such as those related to modernization and the establishment of new academic, research and campus infrastructure.

Young Faculty Awards (YFA): IIT Bombay is undergoing a rapid growth phase even as other institutions in India and abroad are planning to expand too. This creates significant challenges in attracting faculty to IIT Bombay. Given the current hiring spurt, the Young Faculty Award programmes was designed to have a substantial

long-lasting impact on IIT Bombay and its faculty profile. The YFA ensures that IIT Bombay offers a more attractive package to achieve better results in recruitment. The “Young Faculty Joining Bonus”, initially a Class of ’82 Legacy Project, has been awarded from 2010 onwards. The class of 1978, ’83, ’84, ’85, ’88, ’89, ’90, ’91, ’92, and ’93 have also contributed to this project. The project focuses on supporting young faculty in their academic pursuits in order to attract outstanding young faculty to replace retiring faculty and to augment current faculty as a key element for IIT Bombay to maintain its long-term competitiveness. A total of 95 faculty members benefited from YFA in 2021-22.

Chair Professorship: The Chair Professorship is a distinguished academic position of the Institute and is conceived as an academic honour to recognize outstanding teaching/ research work and achievements of the permanent faculty in the Institute. It is also used to attract outstanding academicians to join the Institute as visiting faculty. Each Named Chair is supported by an endowment created from a donation to the Institute. Establishment of new Chair Professorships is essential for IIT Bombay to attract and retain high quality research faculty, which is one of the key elements required to fulfil the goal of the Institute to be a leading international research university. It is envisaged that establishment of Chair Professorships will also lead to establish new areas of specialization through the recruitment of accomplished researchers in specific fields of study. The endowment for a Chair is currently Rs. 1.25 crore. Interest from the endowment will be used to meet expenses of the Chair, which include an honorarium of upto Rs. 30,000 per month and contingency expenses. The salary of the Chair Professor and all other benefits (housing, medical, etc.) continue to be borne from Institute funds. Donors have the prerogative of naming the Chairs. The broad area of specialization for instituting the Chair may also be specified by the donor. The total number of Chair Professors



for the year 2021-22 was 83, out of which 46 are Institute Chairs and 37 Donor-named Chairs.

Hostel Development: The Hostel Alumni Team Stewardship (HATS) is an important alumni-driven initiative that aims to channel the affinity and affection that many alumni have for their former hostels. This activity is run exclusively through the alumni support and contributions. The key goals of HATS are as follows:

- (a) Improve hostel infrastructure and facilities
- (b) Assist the current and retired mess workers
- (c) Increase interaction between the alumni and students
- (d) Empower students to improve their living conditions under the aegis of Make Hostel My Home (MHMH) and
- (e) Organize hostel-level reunions in each hostel on the Alumni Day.

The alumni from various batches have initiated projects to provide better facilities to the students for their academic progress.

Student Development:

- (a) **Scholarships:** One way to nurture excellence amongst students is by awarding scholarships to deserving candidates. The scholarships may be named after the donor. The Office of Dean (ACR) also works with students and alumni to identify and apply for relevant external fellowships and scholarships. The amount of scholarship is reviewed with the Institute Scholarship Committee from time-to-time to determine the viability of the same given the prevailing economic conditions. During the academic year 2021-22, about 600 scholarships of varying amounts were granted. Desai Sethi, IITBHF Named scholarships, Round Memorial, C'1990, C'1992 and Indira Foundation scholarships are some of the prominent scholarships.
- (b) **Awards and Prizes:** As every year, on the Convocation day, about 47 awards and prizes of varying amounts and forms (certificates, medals, prizes etc.) were given away during

2021-22. The awards in the name of Prof. K.C. Khillar, Mr. R.G. Manudhane, Dr. P.V. Sukhatme and Mr. Rakesh Mathur, Mrs. Rama Mathur are some of the prominent ones given during convocation.

Alumni and Corporate Relations Activities:

- a) **Institute E-Valedictory Function:** The E-Valedictory Function to celebrate the journey of the graduating students at the Institute was organised in virtual mode on May 15, 2021. The speakers for the event were our distinguished alumni – Dr. Lalitesh Katragadda, founder of Indihood; Ms. Shalini Govil/Pai, Vice-President and General Manager, TV at Google; and Mr. Lalit Keshre, Co-Founder and CEO at Groww. Delivering the valedictory address, the speakers reminisced their campus life and shared some experiences which have helped shape them. Overall 1500 participants attended the event virtually.
- b) **Phonathon:** The Student Alumni Relations Cell (SARC) organized the 33rd edition of Phonathon – a telephonic marathon which provides a common interactive platform for students and alumni over direct telephonic conversations, during July 16-25, 2021. The event helps in keeping the Institute's database updated with alumni records and it also provides a platform for alumni to participate and contribute in various student-alumni activities organized by SARC. This year 300 plus participants participated.
- c) **UPSC Talk:** To facilitate UPSC-preparation and in order to give detailed idea about the exam, the Student Alumni Relations Cell (SARC) organised "Prep-UPSC", a talk by Mr. Varun Reddy (AIR-7, UPSC CSE 2018) and Mr. Tanmay Sharma (AIR-10, UPSC CSE 2018) on August 14, 2021. The two speakers shared their experiences, tips and personal motivations that enabled them to have the edge over every other aspirant. They also shared their expertise on tackling academics

and exam preparation simultaneously. Overall 400 students attended the event virtually.

d) **Alumni Student Mentorship Programme (ASMP)** : This initiative by Student Alumni Relations Cell (SARC) aims at creating a platform to foster meaningful mentoring relationships between alumni and current students. ASMP achieves this objective by bringing together alumni mentors and student mentees and conducts various events to enrich their mentoring experience. Around 450-500 students have been mentored during ASMP 2021.

e) **Placement Mentoring Program (PmP)**: This programme aims to provide mentorship in various core and non-core fields to aid final-year students in their placement process. The programme serves as a medium to connect the mentor-mentee pair where the latter finds a helping hand to discuss the strategies to be employed while seeking placement in a particular field. The Placement Mentoring Program (PMP) enables the students to choose a mentor of their liking, the one who matches best with their interests and inclinations, and have him/ her as a professional or personal advisor in their life. Over 400 students benefited from this program.

f) **Launch of Ashank Desai Centre for Policy Studies:**



IIT Bombay launched the 'Ashank Desai Centre for Policy Studies (ADCPS)' on September 21, 2021, during a virtual event held at the Institute. The launch was presided over by distinguished personalities like Prof. Kaushik Basu, Professor of Economics and Carl Marks Professor of International Studies at Cornell University; Dr. Naushad Forbes, Co-Chairman of Forbes Marshall, India's leading steam engineering and control instrumentation company; Ms. Yamini Aiyar, President and Chief Executive of the Centre for Policy Research; and Mr. Ashank Desai, an IIT Bombay alumnus and Founder, Vice-Chairman and MD of Mastek Limited, whose generous donation to the Centre for Policy Studies at IIT Bombay has provided a much-needed boost to this nascent field.

g) **Alumination**: The flagship event of SARC, IIT Bombay 'Alumination' was organised virtually during October 22-24, 2021. The most opportune and the much-coveted three-day fest serves as a suitable medium for promoting conducive student-alumni interactions and providing largest platform for bilateral exchange between the IIT Bombay alumni and students on a spectrum spanning career guidance, corporate exposure, life learning and motivational talks.

The event witnessed participation of the following alumni - Mr. Shubham Kumar, (AIR-1, UPSC CSE 2020); Mr. Lalit Keshre, CEO Groww; Mr. Raj Mashruwala, Partner (Emeritus); Mr. Vinod K Meena, Lead, Business Finance and Strategy, OYO LATAM; Mr. Sagar Sambrani, Vice President, FX Options Trading Barclays Investment Bank; Mr. Ramandeep Singh, Consultant McKinsey and Company; and Mr. Ashwini Jain, Founder and CEO, Foreign Admits.

Moreover, students could get enlightened on a spectrum of topics spanning career guidance, corporate exposure, life learning, and motivational talks.



h) Inauguration of Executive Education Complex at SJMSOM:

Dr. Shailesh Mehta, alumnus of IIT Bombay and his wife Mrs. Kalpa Mehta, inaugurated the Executive Education Complex on the fourth floor of the Shailesh J. Mehta School of Management (SJMSOM) on November 15, 2021 at IIT Bombay. The event was attended by Prof. Subhasis Chaudhuri, Director, IIT Bombay, and all other Institute dignitaries. It was a landmark moment for the globally-recognized business school. Equipped with state-of-the-art infrastructure that includes climate-controlled classrooms, breakout rooms, lounges, a faculty room, a conference room and multimedia facilities that augment the learning experience of students, the world-class Executive Education Complex is designed specifically to conduct the Executive MBA programme offered jointly by SJMSOM, IIT Bombay and the Olin Business School at Washington University in St. Louis.



i) Inauguration of Parimal and Pramod Chaudhari Centre for Learning and Teaching (PPCCLT):

Dr. Pramod Chaudhari established the 'Parimal and Pramod Chaudhari Centre for Learning and Teaching' (PPCCLT) in 2019. Due to the pandemic, the Centre was inaugurated on November 25, 2021. The Parimal and Pramod Chaudhari Centre for Learning and Teaching (PPCCLT) collaborates with faculty, education experts, graduate and undergraduate students across Institute to foster excellence and innovation in teaching and learning. The Centre offers faculty development workshops, a series of pedagogy and technology training sessions, and a teaching-learning discussion platform to the Institute community for enhancing teaching-learning practices. The Centre has developed a state-of-the-art collaborative learning space.

j) Inauguration of Lecture Hall 102:

IIT Bombay inaugurated 'Lecture Hall 102' on December 15, 2021. This 240-seater facility has been renamed as "Class of 93 Lecture Hall" to honor the generous contribution made by the batch to enhance this space into a state-of-the-art classroom. The commemoration event included the unveiling of the signage that has been installed outside Lecture Hall 102. This



initiative by the batch of '93 is part of IIT Bombay's Legacy (Silver Jubilee) Project, a project where the alumni of the batch donate towards the Institute's biggest needs.

k) Inauguration of Café 92 and Study Room in Hostel 3 :



The Director of IIT Bombay Prof. Subhasis Chaudhuri and other functionaries along with members of the Silver Jubilee batch of 1992 inaugurated Café 92 near SJMSOM on December 18, 2021. Café 92 serves as a hangout destination for the IIT Bombay community to enjoy their free-time. The Café as well as study-room of Hostel 3 has been set up on campus through the generous donation from the '92 batch as part of their Legacy Project, where alumni of the batch come forward and donate to the Institute's greatest needs.

l) Class of 1996 Silver Jubilee Reunion:



Class of 1996 celebrated its silver jubilee reunion during December 24-26, 2021. The reunion was attended by over 135 participants. An invigorating discussion with the Director and Dean (ACR) was held on various matters related to the Institute.



m) **Institute Alumni Day and Presentation of Distinguished Service Awards (DSA):** The Institute celebrated Alumni Day in hybrid mode on December 26, 2021. The Alumni Day, saw five of the alumni, who have contributed in a notable and sustained manner to the progress of the Institute, being honoured with the 'Distinguished Service Awards 2021'. The DSA were conferred on:

- Mr. Arun Joshi (B.Tech., 1969, Chemical Engineering)
- Mr. Kiran Shesh (B.Tech., 1988, Chemical Engineering)
- Dr. Ajay Sethi (B.Tech., 1990, Computer Science & Engineering)
- Mr. Girish Nayak (B.Tech., 1991, Chemical Engineering)
- Ms. Zenobia Driver (M. Sc., 1998, Chemistry)

The Chapter Service Awards (CSA), instituted during the Diamond Jubilee year celebrations was conferred on:

- Mr. Mahesh Bhikaji Vaidya (M.Tech., 1985, Computer Science and Engineering)
- Mr. Devendra Agarwal (B.Tech., 2005, Electrical Engineering)
- Dr. Praveen Malla (Ph.D., 2006, SJMSOM)
- Mr. Divyam Goel (B.Tech., 2012, Computer Science and Engineering)
- Ms. Avishma Matta (B.Tech. 2013 Civil Engineering)
- Mr. Sandeep Dandade (M.Tech., 2013, Bioscience and Bioengineering)
- Dr. Sanjay Bhardwaj (Ph.D., 2014, SJMSOM)
- Mr. Utsab Mukherjee (M.Tech., 2014, Chemical Engineering)
- Mr. Bidyut Dutta (M.Tech., 2018, Metallurgical Engineering and Materials Science)



The Silver Jubilee Reunion of Class of 1996 was held during December 24-26, 2021. The batch of 1996 pledged a sum of Rs. 17 crores towards the Legacy project, as a way of giving back to the alma mater and to leave behind a lasting legacy and remembrance of their silver jubilee reunion.

IIT Bombay's fundraising campaign called 'Go IIT Bombay' for the year 2021-22 was launched during Alumni Day celebrations on December 26, 2021. The campaign aims to raise funds for various campus initiatives.



The event also witnessed the commencement of the first programme of 'Pramod Chaudhari Alumni Continuing Education Centre (PCACEC)', set up in a recent collaboration with the Institute. The Centre was established through the generous donation of Rs. 5 Crores by Dr. Pramod Chaudhari, a distinguished alumnus of IIT Bombay, also Founder and Chairman of Praj Industries.



- n) **EC lab inauguration by Dr. Hemant Kanakia** : IIT Bombay inaugurated Collaborative Classroom (CC) and Experiential Learning Laboratory (ELL) at the Department of Electrical Engineering (EE) by Dr. Hemant Kanakia, an IIT Bombay alumnus (B.Tech, Electrical Engineering, 1975) and founder of Maker Bhavan Foundation, on February 14, 2022. The facilities will help instructors design and execute active and hands-on learning exercises, which help improve learning outcomes for students. The CC will facilitate active learning of the courses in the Department of Electrical Engineering and

has a capacity to accommodate 60 students. The ELL will facilitate hands-on learning and has a capacity of 50 students. The Institute's collaboration with Maker Bhavan reflects IIT Bombay's continued mission of providing state-of-the-art facilities to its students to augment their learning and growth.

- o) **US Roadshow:** As part of the Institute's fund-raising initiative, a team from IIT Bombay, led by Director Prof. Subhasis Chaudhuri, visited the United States in March 2022. The team visited San Francisco, Miami and New York and held meetings with leading alumni in these cities. The objective of these meetings was to share the IIT Bombay vision and plan for the next 10 years, its funding requirements and seek contributions from alumni. Other members of the team include CEO of IIT Bombay Development and Resource Foundation (IITB-DRF) and senior DRF staff. The team met around 75-80 alumni across these locations. The meetings helped in building a strong connection with alumni, which will help in strengthening the Institute in several ways.

- p) **Foundation Day and Distinguished Alumnus and Young Alumnus Achievers Award:** The 63rd Foundation Day of the Institute was celebrated on March 10, 2022. During the function, ten alumni were honoured with the Distinguished Alumnus Awards and five Young Alumnus Achiever Awards by the Chief Guest Dr. Anil Kakodkar, Chairman of the Atomic Energy Commission of India and the Secretary to the Government of India. The Distinguished Alumnus Award is conferred on those alumni who have reached positions of eminence in the areas of business, academics, research, government, public service and entrepreneurship. The Young Alumnus Achiever Award is presented to those who have shown outstanding achievements in their chosen field of work and are below 40 years of age.



The recipients of the Distinguished Alumnus Award are as follows:

- Mr. Hari Mohan Bangur, BTech, 1975, Chemical Engineering
- Mr. Vasant Limaye, BTech, 1978, Mechanical Engineering
- Mr. Ram Varadarajan, BTech., 1982, Chemical Engineering
- Mr. Vijay Iyengar, BTech, 1982, Chemical Engineering
- Mr. Suhas Mehta, BTech, 1983, Civil Engineering
- Mr. Chandrasekhar Narayanaswami, B. Tech., 1986, Electrical Engineering
- Prof. Sharada Srinivasan, BTech, 1987, Physics
- Mr. Rajeev Rastogi, BTech, 1988, Computer Science and Engineering
- Prof. Navakanta Bhat, BTech, 1992, Electrical Engineering
- Dr. Premnath Venugopalan, BTech, 1993, Chemical Engineering
- Prof. Harmit Singh Malik, BTech, 1993, Chemical Engineering
- Mr. Keshab Panda, PhD, 1996, Aerospace Engineering
- Mr. Munish Moudgil, Dual Degree (BTech and MTech), 1996, Electrical Engineering

The recipients of the Young Alumni Achiever Awards are as follows:

- Prof. Aditya G. Parameswaran, BTech, 2007, Computer Science and Engineering

- Dr. Shahaji More, PhD, 2013, Metallurgical Engineering and Materials Science

q) **Named Lectures:** The following lectures were organised during the year by the Office of Dean (ACR):

i) **Prof. N. R. Kamath Webinar:** The webinar titled 'Chemical Engineering: Chemistry to Computers', on the occasion of the birth anniversary of Prof. N. R. Kamath was held on September 8, 2021, highlighting the thoughts and perspectives of distinguished thinkers and experts on chemical engineering, tracing the path of the discipline from chemistry to computers. The speakers of the webinar includes Prof. M.M. Sharma, Emeritus Professor of Eminence, Institute of Chemical Technology (ICT); Dr. R. A. Mashelkar, Chairman, National Innovation Foundation, Reliance Innovation Council, KPIT Technologies Innovation Council. The event received an overwhelming response, over 300 participants attended the webinar.

ii) **Prof. N. R. Kamath Distinguished Webinar:** N. R. Kamath Distinguished Webinar by Dr. Anand M. Garde, (BTech MEMS - 1967 IIT Bombay, Nuclear Fuel Consulting Engineer. M.S. in Metallurgical Engineering from Syracuse University, PhD in Material Science from University of Florida) titled "Current Perspectives on Zirconium Use in LWR Fuel and on Expansion of Nuclear Power" was organized on February 15, 2022.

Lectures, not held during 2021-22: Lectures which were not held during the year 2021-22 includes Prof. C. V. Seshadri Chair Distinguished Lecture, Prof. C. N. R. Rao Lecture, Shashwat Panda Memorial Lecture by Pureheart Capital, Institute Distinguished Lecture (in memory of Prof. K. C. Khilar), and Radhika Rajan Women Leadership Lecture.

INSTITUTE EVENTS

59th Convocation: The 59th Convocation of IIT Bombay was held online in Virtual Reality (VR) mode on August 7, 2021, keeping in view the safety measures of the COVID-19 pandemic. In a unique experience, the personalized avatar of each graduate received the degree certificate from the personalized avatar of the Director Prof. Subhasis Chaudhuri. All medal winners received their medals from the personalized avatar of the Chief Guest Prof. Geoffrey Hinton, Fellow of Royal Society (FRS), University of Toronto. The event was live-telecast on Institute's official YouTube channel. A total of 2501 degrees were awarded.

Independence Day: IIT Bombay celebrated 75th Independence Day at the SJMSOM Foyer on August 15, 2021. Following the COVID-19 rules and guidelines by the government, this year's Independence Day was celebrated in presence of a minimum number of functionaries by maintaining social distance. The celebration began with the unfurling of the national flag by the Institute's Director Prof. Subhasis Chaudhuri and later he addressed the gathering. The entire programme was broadcast live on YouTube Channel.

Teachers' Day: The 63rd Teachers' Day celebrations was held online on September 6, 2021 in view of the COVID-19 pandemic. Prof. K. VijayRaghavan, Principal Scientific Adviser to the Government of India, was the Chief Guest for the occasion. IIT Bombay Director Prof. Subhasis Chaudhuri presented the 'Prof. S. P. Sukhatme Award for Excellence in Teaching' to 15 select faculty members and 'Dr. P.K. Patwardhan Technology Development Award - 2020' was awarded to Prof. Ganesh Ramakrishnan and Mr. Vishal Kaushal, Department of Computer Science and Engineering for technology development efforts entitled "Video Analytics for Security and Compliance Applications" and Prof. Prasanna Gandhi, Department of Mechanical Engineering for technology development

efforts entitled "Compliant mechanisms for ultra-precision linear and rotary motion control". The 'Institute Academic Prizes' were awarded to select students on the occasion. The Institute also launched a Faculty Handbook during the virtual event.

The recipients of the Prof. S. P. Sukhatme Excellence in Teaching Award 2021 were:

- Prof. Krishnendu Sinha, Department of Aerospace Engineering
- Prof. Soumyajit Mukherjee, Department of Earth Sciences
- Prof. Suryanarayana Doolla, Department of Energy Science and Engineering
- Prof. Shyam Asolekar, Environmental Science and Engineering Department
- Prof. Sachin Patwardhan, Department of Chemical Engineering
- Prof. Madhu Vinjamur, Department of Chemical Engineering
- Prof. Alok Goyal, Department of Civil Engineering
- Prof. Prakash Nanthagopalan, Department of Civil Engineering
- Prof. Ajit Diwan, Department of Computer Science and Engineering
- Prof. Amitabha Sanyal, Department of Computer Science and Engineering
- Prof. Mukul Chandorkar, Department of Electrical Engineering
- Prof. Virendra Singh, Department of Electrical Engineering
- Prof. Arunkumar Sridharan, Department of Mechanical Engineering
- Prof. Dibyendu Das, Department of Physics
- Prof. Arti Kalro, Shailesh J. Mehta School of Management.

Alumni Day Celebrations: IIT Bombay celebrated its annual Alumni Day on December 26, 2021, in a hybrid mode.



Interim Session of 60th Convocation Ceremony: IIT Bombay awarded degrees to 261 students at the interim session of its 60th Convocation on February 26, 2022. Total 284 degrees were awarded. The function was presided by Padma Bhushan Dr. Krishna M. Ella, Chairman and Managing Director of Bharat Biotech and inventor of Covaxin as the Chief Guest, in the presence of Dr. Pawan Goenka, Chairperson of the Board of Governors, IIT Bombay and Prof. Subhasis Chaudhuri, Director, IIT Bombay among others.

63rd Foundation Day: The Indian Institute of Technology Bombay celebrated its 63rd Foundation Day on March 10, 2022 by honouring the distinguished contributions of its faculty members as well as alumni who have contributed eminently and made their mark in their chosen fields of profession. Dr. Anil Kakodkar, Chancellor, Homi Bhabha National Institute and Chairman, Rajeev Gandhi Science & Technology Commission and Member, Atomic Energy Commission graced the occasion as the Chief Guest of the function.

Inauguration of New Hostel 17 At IIT Bombay:

The Honourable Minister of Education and Minister of Skill Development and Entrepreneurship, Government of India, Shri. Dharmendra Pradhan inaugurated the new Hostel 17 at Indian Institute of Technology Bombay campus on March 27, 2022. The Minister also unveiled the plaque and planted a tree in the hostel campus.

IIT Bombay Participates From India In World Engineering Day: On March 4, 2022, the Indian Institute of Technology Bombay participated in the World Engineering Day 24 HRS LIVE programme, the first-ever 24 HRS LIVE broadcast of a Global UNESCO Day, celebrating a global streaming of engineering activities from across the world from Sydney to Costa Rica and everything in between. The event was hosted by the World Federation of Engineering Organizations (WFEO), its members and partners. IIT Bombay was the

sole Institute from India to participate in this one-of-its-kind programme. The event was launched in Sydney, Australia and WFEO connected with selected locations in a number of regions as they celebrated engineers and World Engineering Day.

Events initiated by the Ministry of Education

International Day of Yoga: IIT Bombay celebrated the 7th International Yoga Day on June 21, 2021 to spread awareness about the benefits of yoga in daily life. Chief Guest Padma Shri awardee Dr. H. R. Nagendra, Chancellor, S-VYASA, and Dr. Hansa Jayadeva Yogendra, Director, The Yoga Institute graced the occasion. The celebration included various workshops, online quiz series, slogan writing and poster-making competition, through a series of events over the year. The online events witnessed the participation of all the members of the IIT Bombay community. The flagship event of Yogastha named 'Yogathon: 108 Suryanamaskar Challenge' was organized online due to the pandemic. The event comprised solo pose and group/ family pose categories to encourage the theme 'Yoga with family'.

Van Mahotsav 2021: To maintain the greenery of the campus and spread awareness on environment conservation, Van Mahotsav was celebrated at IIT Bombay during August 28, 2021 to September 19, 2021. As a COVID-19 precautionary measure, the annual tree plantation drive programme was conducted by maintaining social distancing. Around 530 plant saplings were planted inside the campus.

Swachhata Pakhwada: The faculty, staff, and students of IIT Bombay took the online 'Swachhata Pledge' to promote Swachh Bharat Mission on September 1, 2021. The Institute initiated various activities during Swachhata Pakhwada to contribute towards a neat and clean environment.

Institute Organizes Various Activities To Eliminate Single-Use Plastic: With an aim to promote and spread awareness about 'Elimination of Single-Use Plastic',

IIT Bombay organized various activities, competitions, hackathons amongst students. The Institute has sought to take up collective efforts to eliminate single-use plastic on its campus. The National Cadet Corps (NCC) IIT Bombay held a webinar on 'Need for the elimination of single-use plastic' on April 9, 2021. The webinar saw the active participation of cadets and a resolution for minimal use of such plastics was established in unison.

On April 13, 2021, NCC IIT Bombay had organized another interactive webinar on the use of plastic along with poster making and drawing competition for cadets of IIT Bombay, DY Patil University, Doshi Vakil College, Campus School and Kendriya Vidyalaya. The event also included a debate on the use of plastic, to discuss the issue and come up with a solution for the optimal use of plastic, eliminating the widespread pollution caused by its unjust use.

The Entrepreneurship Cell (E-Cell) team of IIT Bombay conducted an online session on May 2, 2021 on the topic 'The Burden Of Plastic Pollution'. The session gave insight on how experts are dealing with this problem of plastic in industry. The guest speakers for the session were Ms. Wilma Rodrigues, CEO and Founder of Saahas Zero Waste Foundation and Mr. Arun Murugesh, Technical head at Saahas Zero Waste Foundation. During the session, Ms. Rodrigues enlightened on the scale of plastic pollution and consequences of the excessive use of plastic in brief and Mr. Murugesh gave a brief about the technical aspects about the scale of the problem, options to reduce use of plastic, regulations and implementation policies and shared responsibilities of the stakeholders..

Hindi Pakhawada 2021: The Institute celebrated 'Hindi Pakhawada' online during September 1-14, 2021. As part of the celebrations, an online essay writing competition was organized to encourage the staff members to use Hindi in daily official work. The winners of an online essay writing competition, held for the staff and students of the Institute, were felicitated with certificates

and cash awards. The staff members, who contributed best in Hindi official work, were also felicitated on the occasion. An online Hindi workshop was also organized for the staff members of the Institute on September 6, 2021. Mrs. Gargi Gadgil, Principal, Hindi Teaching Scheme conducted a Hindi workshop on 'Constitutional Provision of Official Language and The Official Languages Act 1963'.

152nd Birth Anniversary of Mahatma Gandhi: IIT Bombay observed the 152nd birth anniversary of Mahatma Gandhi, following COVID-19 guidelines IIT Bombay functionaries garlanded the photo of Gandhiji and paid tributes to the Father of the Nation in the foyer of the Main Building of the campus on October 02, 2021.

Rashtriya Ekta Diwas: The Institute observed Rashtriya Ekta Diwas (National Unity Day) on October 31, 2021, following COVID-19 guidelines. National Unity Day is celebrated to commemorate the birth anniversary of 'Iron Man of India' Sardar Vallabhbhai Patel. Activities such as Unity Run, slogan writing, poem recitation, essay writing competition were organized in the Institute. Rashtriya Ekta Diwas (National Unity Day) pledge was administered online and offline by the Campus School & Jr. College students and Kendriya Vidyalaya IIT Powai.

Azadi Ka Amrit Mahotsav: IIT Bombay organised various events to celebrate Amrit Mahotsav. Experts from within IIT Bombay and outside delivered talks on various topics of interest and relevance. Following are some of the events organised during the celebrations:

- An online training programme was planned in three phases by Prof. Prakash Nanthagopalan, Department of Civil Engineering, to train more than 100 rural housing engineers. In this regard, the first online CEP course, 'Refresher cum Orientation Programme for Rural Housing Engineers (Maharashtra)' was organized during May 3-7, 2021 as a part of Azadi Ka Amrit Mahotsav.



- A virtual course was organized by Prof. Manasa R. Behera and Prof. V. K. Srineash, Department of Civil Engineering during May 17-22, 2021. Practicing engineers, consultants, researchers, faculty and graduate students from technical institutes across the country attended the course lectures delivered by national and international experts in the field.
- On June 19, 2021, an international webinar on 'Overview Materials, Design and Constructions Practices for Bituminous Pavements in India' was organized by Transportation Systems Engineering, Department of Civil Engineering as research collaboration with Prof. Sherif El-Badawy, Mansoura University, Egypt. Post-doc and PhD students working with Prof. Dharmveer Singh, participated as speakers in this webinar.
- On July 24, 2021, SINE organized a webinar titled 'Role of innovative technologies to help resolve malnutrition in India' to commemorate the 75 years of India's Independence celebrations in August 2022. This webinar was a collaborative initiative under the SINE Power Hour Biotech series and roadshow series by BIRAC. The speakers at the webinar were Dr. Anant Bhan, Adjunct Professor, Yenepoya University (Moderator); Prof. Satish Agnihotri, Emeritus Fellow, CTARA, IIT Bombay; Dr. Shirshendu Mukherjee, Mission Director, Grand Challenge India for BIRAC, DBT and Dr. Saugandha Das, Co-Founder, Edhaa Innovations.
- Prof. Veena Sikri, Jamia Millia Islamia, New Delhi and Former Indian High Commissioner to Bangladesh, delivered an online guest lecture titled "India in Southasia" on March 9, 2022 hosted by IIT Bombay - Office of Dean (International Relations) and Ashank Desai Centre for Policy Studies as a part of celebrations of 75 years of India's Independence. The lecture was part of a commemorative lecture series titled "India@75: Videsh Niti Distinguished

Lecture Series" organized by the Ministry of External Affairs of India.

- In line with Hon'ble Prime Minister's vision for a fitter country with the Fit India Movement, IIT Bombay conducted Fit India Movement Freedom Run 2.0 offline within the Institute campus on August 14, 2021. The run was a cross-country race across the lush green IIT Bombay campus with limited registrations following Covid protocols. The competition was organised in two legs separately, for staff and students, with male and female categories in each of them. The Institute authorities took all necessary precautions to ensure the safety of the participants by ensuring mask compliance and distancing, with the support of security and medical personnel.

In addition, following activities were also organised under Azadi ka Amrit Mahotsav:

- Webinar on "Development of innovative technologies for waste recycling and sustainable management" organised by the Environmental Science and Engineering Department on September 3, 2021
- Online competitions for school children organised by IIT Campus School & Jr. College Powai and Kendriya Vidyalaya
- NSS IIT Bombay conducted "Don't Refuse to Reuse", an online Best-out-of-Waste competition with a goal of not only helping the young students to enhance their creativity and presentation skills but also help them to understand the importance of recycling and reusing the waste material that is available to them. They also conducted an awareness webinar on "Innovation in Sustainability and Waste Management" for Zero Waste Week, during September 1-5, 2021
- Launch of "Energy and Climate - Keep UPP (Understand, Pledge & Progress)" program with tagline "million pledges for billion hopes" was held on April 22, 2021 on the occasion of Earth Day celebration Organizer:

Prof. Chetan Singh Solanki, Department of Energy Science and Engineering & Founder of the Energy Swaraj Foundation. Chief Guest: Hon. Minister of Education, Govt. of India Shri Ramesh Pokhriyal <https://youtube.com/c/SolarNewsKnowledge>

- The Environmental Science and Engineering Department (ESED) organized a 2-day symposium (online) on 'Emerging Contaminants Fate, Transport & Remediation Aspects' during February 21-22, 2022.
- The Environmental Science and Engineering Department (ESED) had organised two Faculty Development Workshops (online mode) titled 'An Overview of Recent Advances in Water and Wastewater Treatment Technologies' and 'Application of Nanotechnology in Water and Wastewater Treatment' during January 10-11 and January 13-14, 2022 respectively.
- The Public Health Office on the campus also carried out an awareness drive of cleanliness and waste recycling.

Vigilance Awareness Week: To observe Vigilance Awareness Week from October 26 to November 1, 2021, IIT Bombay staff took a pledge to promote probity in public life and to achieve a corruption-free society on October 26, 2021, in the main building of the campus. IIT Bombay staff pledged to foster a culture of honesty and integrity and to remain committed to good corporate governance-based transparency, accountability and fairness. The theme of the Vigilance Awareness Week this year was 'Independent India @75 Self Reliance With Integrity'. The Vigilance Cell of IIT Bombay had also organized essay writing competitions for the campus community on the topic 'Independent India@75: Way Forward'.

National Education Day: IIT Bombay commemorated the birth anniversary of India's first education minister of independent India, Maulana Abul Kalam Azad by observing National Education Day (Rashtriya Shiksha

Diwas). The Institute had organised the National Education Day programme (online) on November 11, 2021, where the IIT Bombay Research Excellence Awards 2020 were conferred on faculty member awardees. Dr. R.A. Mashelkar, a recipient of prestigious awards such as Padma Shri, Padma Bhushan, Padma Vibhushan, Shanti Swarup Bhatnagar Prize for Science and Technology and a member of numerous scientific bodies and committees, was the Chief Guest on the occasion. Dean (R&D) Prof. Milind Atrey presented the Research Excellence Awards to the awardees.

Constitution Day: As part of 'Azadi ka Amrit Mahotsav', India celebrated Constitution Day on November 26, 2021. The Hon'ble President of India led the celebrations from the Central Hall of Parliament. IIT Bombay Director Prof. Subhasis Chaudhuri also participated along with faculty, staff and students in reading the Preamble to commemorate the Constitution Day.

Marathi Bhasha Samvardhan Pandharwada: Institute celebrated Marathi Bhasha Samvardhan Pandharwada (Marathi Language Conservation Fortnight) during January 14-28, 2022 by organising a handwriting competition and a cultural programme, virtually. The objective of the celebration was to preserve and practise Marathi language. IIT Bombay community came together and participated in good numbers to celebrate the occasion.

National Science Day: IIT Bombay celebrated the National Science Day (online) on February 28, 2022 to commemorate the discovery of the 'Raman Effect' by Sir C.V. Raman. For this discovery, Sir Raman was awarded the Nobel Prize in Physics in 1930. As part of this celebration, the Institute organised a lecture on "Can capturing CO2 accelerate India's efforts to net-zero emissions?" by Prof. Vikram Vishal, Department of Earth Sciences for the IIT Bombay community on February 28, 2022.

73rd Republic Day: IIT Bombay celebrated the 73rd Republic Day on January 26, 2022, following the COVID-19 rules and guidelines, with a minimum number of attendees



maintaining social distance. The celebration began with the unfurling of the National Flag by the Institute's Director Prof. Subhasis Chaudhuri at the Institute's Gymkhana ground. IIT Bombay security staff and NCC gave a salute to the National Flag.

International Women's Day: The Gender Cell of the Institute organised two events on the occasion of International Women's Day and as part of Azadi ka Amrit Mahotsav. The first event was a screening of the film 'Picture a Scientist' on March 4, 2022. This documentary film chronicles the journey of three women scientists as they discuss their careers, the barriers they faced and their efforts to make science more diverse, equitable and inclusive. The screening was followed by a live discussion facilitated by faculty members in the Institute. Several students enthusiastically participated in the discussion. The second event was held online on March 9, 2022. Director of IIT Bombay Prof. Subhasis Chaudhuri appreciated the efforts and initiatives of the Gender Cell to enhance gender inclusion and sensitization. The Director also announced the launch of a mandatory online training program 'Gender in Workplace' for all employees at IIT Bombay.

Matribhasha Diwas: Indian Institute of Technology Bombay celebrated Matribhasha Diwas (Mother Language Day) on February 21, 2021 (online) to celebrate the linguistic diversity of our country. As part of the celebrations, cultural programmes were organized in online mode. The objective of the celebration was to promote various languages and create awareness of linguistic and cultural traditions amongst Institute community members. The students, faculty and staff and their family members participated with great zeal and enthusiasm. They presented wonderful performances.

Institute Lecture/ Colloquium:

Prof. Pankaj Jalote, Distinguished Professor and Founding Director at Indraprastha Institute of Information Technology (IIIT) New Delhi, delivered an Institute lecture (online) titled "Building Research Universities", at Institute lecture on April 15, 2021.

Prof. Arvind Panagariya, Professor of Economics, and Jagdish Bhagwati Professor of Indian Political Economy at Columbia University, delivered an Institute lecture (online) titled "Indian Economy in the Post-Covid World" on September 01, 2021.

Dr. Ariel Rubinstein, Professor of Economics, New York University and Tel Aviv University, delivered an Institute lecture (online) titled 'A typology of players: between instinctive and contemplative' on December 9, 2021.

Dr. Colin Gonsalves, a Senior Advocate, Supreme Court, and Founder, Human Rights Law Network (HRLN), delivered an Institute lecture (online) titled "Constitution Lecture" on January 22, 2022.

Prof. Dilip Mookherjee, Professor of Economics, Boston University, delivered an Institute lecture (online) titled "Reassessing Decentralization" on March 9, 2022.

Conferences:

IIT Bombay Hosts BRICS NU Conference 2021: IIT Bombay - The National Coordinator, organized a three-day BRICS NU World Conference 2021 on 'Electric Mobility' during the visit of the Chairmanship of BRICS NU (Brazil, Russia, India, China, South Africa – Network University) to India during June 16-18, 2021. The virtual conference had 20 distinguished speakers from leading universities of BRICS countries, who shared and exchanged their experiences on all aspects of Electric Vehicle Technologies.

SciPy India 2021: Free and Open Source Software for Education (FOSSEE), IIT Bombay organized SciPy India 2021 (Online) during January 21-22, 2022. The SciPy India conference is aimed at providing opportunities to spread the use of the Python programming language in the Scientific Computing community in India. It provided a unique opportunity to interact with the "Who's who" of the Python for Scientific Computing fraternity and learn, understand, participate and contribute to Scientific Computing using Python. The

online conference objective was to combine education, engineering and science with computing through the medium of Python. The conference featured a number of workshops and talks by invited speakers. Mr. Anand Chitipothu, Software Consultant and Trainer and Mr. Praveen Patil, a physics teacher and FOSS enthusiast were the keynote and invited speakers respectively at the conference.

Workshops:

Workshop on Emotional Wellness: Bandhu, a Student Wellness Centre, IIT Bombay initiative organized an online workshop on January 22, 2022 by Mr. Nelson Moses – Mental Health Advocate and Suicide Prevention Expert, to understand how we can be mindful of our emotions and have a look at practical activities that can help heal through the difficult times.

Workshop on stochastic models: The Office of Dean (Alumni and Corporate Relations) hosted a small workshop on stochastic models to coincide with the visit of Professor Bruce Hajek, the N.R. Kamath Distinguished Chair in the Department of Electrical Engineering, IIT Bombay. Mr. Amit Apte (IISER Pune) was the speaker of the workshop titled “An Introduction to Data Assimilation¹” held on March 02, 2022.

Online symposium: ‘Russian Indian Network (RIN) of Institution of Higher Education’ The Office of Dean (International Relations) organised online symposium ‘Russian Indian Network (RIN) of Institution of Higher Education on Energy Technologies’ on October 20, 2021.

IIT Bombay and University of Peradeniya (UOP) Joint Research Workshop: IIT Bombay, India jointly with the University of Peradeniya (UOP), Sri Lanka had organised online workshop on December 13, 2021. The workshop was organised by the Industrial Engineering and Operations Research, IIT Bombay.

Workshops organised by FOSSEE (Project), IIT Bombay:

A 3-day workshop on Python was organised by FOSSEE project (NMEICT, Ministry of Education, Government of India), IIT Bombay during October 28-30, 2021.

A 2-day workshop ‘OpenFoam’ was organised by FOSSEE project (NMEICT, Ministry of Education, Government of India), IIT Bombay during November 13-14, 2021.

A Pilot Workshop on OpenPLC with LDmicro by FOSSEE project (NMEICT, Ministry of Education, Government of India), IIT Bombay on December 2021



FACILITIES

INFRASTRUCTURE DEVELOPMENT

During 2021-22, three major infrastructure projects namely construction of IIT Bombay Research Park, Hostel No. 17, and the construction of 'Rahul Bajaj Technology Innovation Centre (RBTIC)' - a combined building for Society for Innovation and Entrepreneurship (SINE), Industrial Research and Consultancy Centre (IRCC) and IDC School of Design were completed. The construction of Type 'B' housing 78 flats (Building No. B-25) is nearing completion.

During this year, the new guest house called Padmavihar Guest House and Department of Energy and Environment building have been certified as '4-STAR' and '3-STAR' by the Green Rating For Integrated Habitat Assessment (GRIHA) - an initiative of Ministry of New and Renewable Energy of Government of India, respectively.

Some of the building projects that would be constructed in the near future such as 'Hostel No. 19 for 1115 students', 'Hostel No. 4 for 1200 students', 'Annexe to Department of Humanities and Social Sciences Building', 'Desai Sethi School of Entrepreneurship' and 'Student Activity Centre' are in various stages of planning and design.

Some of the building projects in the pipeline that are administratively approved and selection of architects is in process include: new Academic Building AB1 and AB2, 78 Flats of type B, 78 flats of type IIB and Central Animal Facility.

In keeping the campus surroundings clean and hygienic, spitting is banned in the campus.

CENTRAL LIBRARY

The Central Library, IIT Bombay, housed in a huge 3-storey building having central air-conditioned facilities with state-of-the-art amenities provides a vibrant ambience to the students, faculty, staff, alumni and corporate/member users for study, research and access to library resources. The efficient and courteous staff backs the services of the library. It holds a vast collection of books, back volume of journals, monographs, standards, reports, thesis/dissertation and current journals/ magazines etc., in the varied areas of engineering, sciences, technology, humanities and social sciences both in print and electronic format. The institutional repository of IIT Bombay publications attracts large number of users from around the world throughout the year.

Around 12,000 users used the library collection during the year. The institutional repository of IIT Bombay has 30,695 publications. During this year, 520 Master's degree dissertations, 405 PhD theses, and 135 Dual Degrees dissertations were submitted online.

The Central Library continues to provide access to more than 28,343 e-journals and e-resources and has added about 788 volumes including books, theses, reports, standards, pamphlets, and other reading materials during the year. It also acquired 259 e-books during the year. All the library collection can be accessed through online-public access catalogue. This year Central Library also helped the students to check 10,765 articles, report submissions in Turnitin during the year.

The Central Library also renders user-services like reference, information literacy, document delivery services, book lending, arranging

materials from other libraries through inter-library-loan, providing the book bank facility for IIT Bombay students belonging to economically and socially weaker sections of the society and organizing the user awareness programmes to enhance their awareness about library resources, services and activities. The library allows users to self check-out books as well as renew borrowed books online. It facilitates inter-library-loan facilities of books and other informational documents for its members as and when required. It also provides internship facilities to Library Science graduates. It handled over 31,690 circulation transactions of books and other documents for its members during the year. Central Library also offers services to industry and corporate, IIT Bombay alumni and engineering (educational) institutions, professional members and has helped around 2025 users/ research scholars to check 10425 documents in Turnitin during the year.

During this year, majority of digital resources were made available online and all bonafide Institute users were given remote access to the Digital Library. The Central Library uses open source software to manage library resources and services such as Wordpress for Library Portal, Koha for Library Automation, Omeka for Institute Archive Management, Dspace for institutional repository, and VIVO for faculty management system etc. During COVID-19 pandemic, the library remained open, mostly to safeguard the library's collection and technology. Within limited period physical space was also made available to users by following COVID 19 protocols. The library staff provided outstanding user service beyond office hours and working days. During the year, the library hosted author talks and user awareness sessions online to support users. Best practices of the Central Library ensured the maintenance of all library resources were in best condition and provided uninterrupted access to its rich knowledge resources.

COMPUTER CENTRE

The Computer Centre continues to provide improved, efficient and effective computational network infrastructural facilities and services to the IIT Bombay user community during the difficult times of the COVID-19 pandemic. The academic activities including the conduct of admission tests for new students, regular classes via online sessions and final course examinations were possible using the internet facilities through various web-conferencing platforms like Cisco's WebEx, Zoom, Google Meet, Microsoft Teams etc. These were provisioned and integrated with the (Light Weight Directory Access Protocol (LDAP) using a single sign-on (SSO) having Two-Factor Authentication (2FA) by the Centre. The 'IITB-SSO' app for Android and iOS provides smooth, secure, and quick access to various applications integrated with the IITB-LDAP. Continued from last year, the online course-registration for all students including new students was provisioned over the internet so that the students could complete the course registration from their respective homes at their native place over the internet. The open VPN (Virtual Private Network) services could enable students an easy access to the various institutional computing facilities.

On March 2, 2022, **Prof. Prabhu Ramachandran**, Department of Aerospace Engineering took charge as the Head of Computer Centre from Prof. Sharad Bhartiya, Department of Chemical Engineering.

Network and Connectivity

The Centre manages the campus network and is responsible for the availability of intra-campus connectivity of ~25000 wired nodes spread over all the departments, hostels, residential complexes, various entry/ exit gates on the campus boundary and internet connectivity of the Institute with the outside world. In addition,



wireless access points providing wi-fi access at various departments and other key locations on campus were managed through the IITB-LDAP authentication via a radius server. The following activities were undertaken during the year:

- The total Internet bandwidth was maintained for the campus community at 10 Gbps from NKN and 5 Gbps from Reliance Jio respectively
- The interned bandwidth from the above two ISPs was managed with BGP (Border Gateway Protocol) routing using appropriate router switches
- Four Class C IPv4 address ranges acquired from APNIC provide internet access to Institute's website and services
- Separate password for the users at the residences for web access was managed so that the employees do not have to share their passwords with their families
- Transport Layer Security (TLS) was procured via digital certificate from DigiCert
- The field support team for network infrastructure provided prompt responses in restoring the reported failures of network issues to enable smooth conduct of online classes and meetings during the hour of the need.

The Centre operates a network of non-academic areas, hostels, and residential areas. Few external wi-fi access points have been deployed on campus to cover common areas in students' hostels. Access through IITB-Wireless for IIT Bombay users, IITB-Guest for guests of IIT Bombay and EduRoam for visitors affiliated with EduRoam partners was managed with these wi-fi access points. The computer network set up by the Computer Centre enables the Electric Maintenance Division to monitor the Power Distribution Systems, check the status of various Lifts, functioning of UPS Systems, etc. in the Institute. The Telephone Exchange also runs about 1000 IP telephones (Voice over IP) using the computer network of the Institute. The Centre largely deploys open-source software for its service offerings.

National Knowledge Network: IIT Bombay continued to be a member of the National Knowledge Network (NKN) during the year. This multi-gigabit network initiative started by the National Informatics Centre (NIC) is being used by the Centre for Distance Engineering Education Programme (CDEEP) to conduct distance education programmes.

Grid Computing Facility GARUDA: The grid computing facility GARUDA is also supported

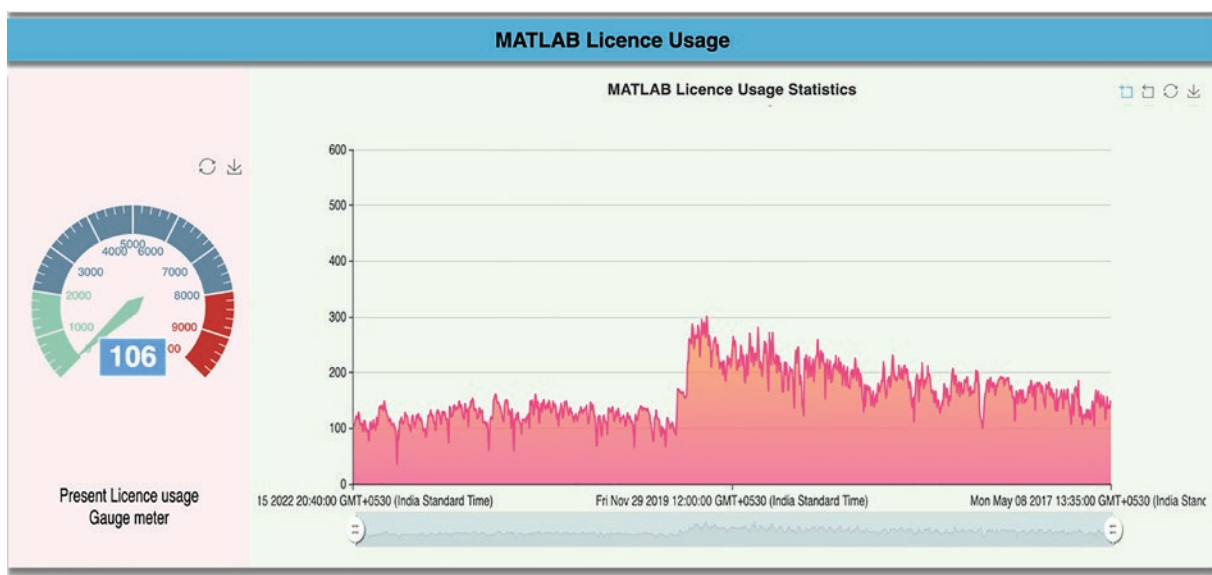


Figure 1: Concurrent network license usage statistics for software Matlab

by the Computer Centre allowing the users of the Institute to access the available resources on the National Grid.

Hardware/ Software Infrastructure: All service offerings at the Computer Centre are based on Open Source Software Systems. The Computer Centre has registered IIT Bombay as an official mirror for various versions of Linux operating systems on its anonymous FTP server (<ftp://ftp.iitb.ac.in>) which is available to the user community at large. To support the ERP resources of the Institute, the ERP is housed in the Computer Centre's Data Centre (DC). The Centre staff is involved in the management of the ERP hardware.

The Institute continues to be a member of Microsoft Azure for education software licensing programme. These licenses allow the user community to use most of the Microsoft software products in a non-production environment. Volume licenses of the latest Microsoft Office Professional (with 100 activations) have been acquired to meet critical needs of the Institute. License (2000 activations) of AVG anti-virus software has been in operation. The Institute Software Committee solicits, specifies and negotiates the purchase of useful commercially available licensed software for the IIT Bombay Academic community. Software packages meant for scientific and technical computations such as Ansys, Matlab, Labview, OriginLab, Cisco's WebEx and Zoom for video conferencing facility, etc. which are available through appropriate license schemes are procured, upgraded and administered by Computer Centre.

Currently floating network licenses of appropriate number of the packages like Ansys, Abaqus, Autocad, Comsol, Maple, Mathematica, SPSS, etc are also maintained at the Computer Centre. These facilities are as per the requirement of the students, faculty, scientists, and staff in the Institute. The Centre also maintains and analyses the software license usages so that an optimum number of licenses could be made available to the users. As an example the concurrent floating network license usage for the software Matlab is shown in Figure 1:

Apart from this, the online Matlab portal available through the campus-wide licenses purchased from Mathworks registers around 9160+ users. These users have downloaded a licensed copy of the software for their own computer to accomplish the academic and research needs. As a step towards a paperless office and fast response in terms of searching information among the members of the respective meetings, the Institute has started using digital meetings for its important high-level conferences. This facility has enabled the members and experts of the meetings to electronically participate over the web to review and finalize the proceedings of the conference.

The Computer Centre hosts the required server and software needed for this facility. The Computer Centre encourages and has implemented the use of Open Source Software Systems for Office Automation in about 775 PCs deployed in the various administrative sections of the Institute. Additionally, 30 desktop PCs with Microsoft Windows operating systems (under appropriate Volume Licensing scheme), necessary antivirus software and other essential software as per requirement are also used for various administrative activities. During the year 2021-22, the Centre carried out replacements of 30 nos. of i3 and 7 nos. of i5 all-in-one desktop computer, 11 nos. of Laptops, 26 nos. of printers, and 50 nos. of monitors for computers with new ones. The use of Open Source Operating Systems and Software has eliminated to a great extent the menace of the spread of computer virus and thus has optimised the IT support overheads required for network management and PC maintenance.

Word processing tools, facilities and support:

The Computer Centre provides support for Open Source Operating Systems with word processing applications (namely OpenOffice.org, LibreOffice) capable of handling various Indian languages especially Hindi for the preparation of multilingual (bilingual) documents. The documents prepared in OpenOffice.org/ LibreOffice (available for Windows as well as



SpaceTime-2 HPC (Cray Systems)

Mac OS) can be saved in files compatible (edit/save) with MS Office.

User Awareness Sessions: At appropriate intervals and as per requirements Computer Centre conducts a two-hour training session on the usefulness of the applications under the Open Source Operating Systems for Office Automation and also appraises users about the IT Infrastructure facilities provided by the Computer Centre for the administrative staff of the Institute.

IP CCTV Surveillance activity of the Institute: The Computer Centre continues to play a secondary role by providing technical support to install and run the IP based Security Surveillance Systems having 284 IP cameras and storage for the Security Section. The Computer Centre has acquired, installed, and manages 16 nos. IP CCTV surveillance system that vigils critical locations of the Computer Centre building. Few offices of the departments like Computer Science and Engineering, Application Software Centre, Centre for Formal Design and Verification are housed in the Computer Centre.

High Performance Computing (HPC) Facility: In its continued efforts for providing

excellent infrastructure for cutting-edge research and because of the growing demand for a world-class supercomputing facility at IIT Bombay, the Centre has in operation a CRAY (recently HPE-CRAY) system for High-Performance Computing. This system is known as “SpaceTime-2” with 216 CPU (2x Intel Xeon 6148) only nodes and 64 CPU + GPU (Intel Broadwell + Nvidia P100) nodes, 1000 TeraByte parallel file system as storage. It’s 1003 TFLOPS Total Peak Performance has enhanced the computing capabilities in various areas of modeling and simulation. The system is operational for the past four years and serving 1200+ users from different departments. During the COVID-19 pandemic, an incredible surge in the usage of the system was observed as it was the only research facility available and accessible remotely.

In addition, a cluster consisting of 49 node of HPE Apollo 6000 server with a theoretical peak of 45 TF (each server has 2 X Intel Xeon 2680 v3 processors and 128 GB of RAM) and a 100 TB of parallel file system as storage and known as SpaceTime-X, continue to provide computing facilities for more than 50 users from different scientific research groups.

The Computer Centre runs a help-desk for all users as a part of its day-to-day activities. A total of 6 students enrolled for the MTech program in the Department of Computer Science and Engineering and the Department of Electrical Engineering actively work for the various facilities run by the Computer Centre.

The all-in-one desktop computer (120 nos.), data projection systems in the Bits and Bytes Lab for user access, bookings for the conduct of various courses, examinations, Institute-events is maintained by the Computer Centre. The bookings for the use of the Labs and the Conference Room can be done online from the website of the Computer Centre.

CENTRE FOR DISTANCE ENGINEERING EDUCATION PROGRAMME

The Centre for Distance Engineering Education Programme (CDEEP) continued its functioning as a support unit to various 'outreach' activities of the Institute.

During the year 2021-22, CDEEP recorded 26 courses, covering eight disciplines at IIT Bombay. During the year, CDEEP provided three semester-long courses content to National Programme on Technology Enhanced Learning (NPTEL) which are offered as Massive Open Online Course (MOOC). The Centre has an archive of 371 full semester-long courses. The viewership (enrolled) of courses through web stood at 5246 for 55 active courses. The Centre continues to offer (recorded) current semester courses with certification showing grades by the course faculty to distant participants as individuals or as a group.

The Centre has successfully done live-streaming of important Institute events such as Annual Convocation, Foundation day, which were watched by more than 12960 viewers. The Centre also covered many events like Institute Colloquia, talks by distinguished speakers, Orientation program, Matribhasha Divas, Alumni Day to name a few. These events have got a viewership of around 100,000.

During the second and third waves of COVID-19 pandemic and the lockdown, CDEEP offered its services in hybrid mode to create video courses for the current semester and shared it with IIT Bombay students. A detailed documentation for "making course videos", "sharing videos with students" and "different distance learning tools for online student interaction" were/ is made available on CDEEP website.





DEPARTMENTS/ CENTRES/ SCHOOLS AND INTERDISCIPLINARY GROUPS

Science & Engineering Departments:

The engineering departments at IIT Bombay offer undergraduate and postgraduate programmes leading to BTech, BS, MTech and PhD degrees. The five-year Dual Degree programme pioneered by the Institute in 1996 offers a BTech degree in a basic discipline and an MTech degree with specialization in a field on its completion. This programme is now offered by all engineering departments. The science departments at IIT Bombay were set up to provide basic grounding in science and mathematics to engineering students. However, apart from providing core courses in undergraduate programmes, these departments also offer postgraduate courses which lead either to MSc or PhD. Following are the science and engineering departments at IIT Bombay:

- Aerospace Engineering
- Biosciences and Bioengineering
- Chemical Engineering
- Chemistry
- Civil Engineering
- Computer Science and Engineering
- Earth Sciences
- Electrical Engineering
- Energy Science and Engineering
- Environmental Science and Engineering
- Mathematics
- Mechanical Engineering
- Metallurgical Engineering and Materials Science
- Physics

Arts and Humanities Department:

The Art and Humanities Department at IIT Bombay was set up to familiarize the students of Science and Technology studies with the broader social, cultural, economic, ethical and humane concerns underlying social change. The advanced courses offered at the postgraduate level aim at cultivating critical thinking and enhancing the analytical capabilities of students engaged

exclusively with the study of these concerns. These departments offer under graduate and postgraduate courses which lead to BDes, and BTech (Minor), MSc, MPhil, MDes and PhD.

- Humanities and Social Sciences

Schools:

- **IDC School of Design (IDC-SoD):** The school offers an excellent environment for academics, research and applications in the field of design. The School interacts with industries and institutions for promotion and awareness of design
- **Shailesh J. Mehta School of Management (SJMSOM):** The School offers postgraduate programmes in new, emerging areas and aim to expand the scope of the academic programmes in the Institute.
- **Desai Sethi School of Entrepreneurship (DSSE):** The School offers several courses and labs relevant to innovation and entrepreneurship.

Centres offering academic degrees:

Some of the Centres and Interdisciplinary groups offer postgraduate programmes and reflect the Institute's multi-disciplinary approach and emphasis on staying with leading-edge technologies in its academic approaches.

- Centre of Studies in Resources Engineering (CSRE)
- Centre for Technology Alternatives for Rural Areas (CTARA)
- Centre for Urban Sciences and Engineering (C-USE)
- Centre for Research in Nanotechnology and Science (CRNTS)
- Ashank Desai Centre for Policy Studies

Interdisciplinary Groups:

- Climate Studies

- Education Technology
- Industrial Engineering and Operations Research
- Systems and Control Engineering

Centres providing research and support facilities:

These Centres host a large number of sophisticated equipments and advanced facilities for carrying out R&D activities at IIT Bombay. Following are the research facilities at IIT Bombay:

- Application Software Centre (ASC)
- Biomedical Engineering and Technology Incubation Centre (BETiC)
- Centre for Aerospace Systems Design and Engineering (CASDE)
- Computer Centre (CC)
- Centre for Computational Engineering and Science (CCES)
- Centre for Distance Engineering and Education Programme (CDEEP)
- Centre for Excellence in Nanoelectronics
- Centre of Excellence in Oil, Gas and Energy (CoE-OGE)
- Centre of Excellence in Steel Technology (CEST)
- Centre for Formal Design and Verification of Software (CFDVS)
- Centre for Machine Intelligence and Data Science (C-MInDS)
- Centre of Propulsion Technology (CoPT)
- Forbes Marshall Energy Efficiency Laboratory
- Geospatial Information Science and Engineering
- IITB-Monash Research Academy
- Koita Centre for Digital Health (KCDH)
- National Centre for Aerospace Innovation and Research (NCAIR)
- National Centre of Excellence in Technology for Internal Security (NCETIS)
- National Centre for Mathematics (NCM)
- National Centre for Photovoltaic Research and Education (NCPRE)
- National Mission on Education Through Information & Communication Technology (NME-ICT)
- National Solar Thermal Research, Testing & Simulation Facility
- Parimal and Pramod Chaudhari Centre for Learning and Teaching (PPCCLT)
- Sophisticated Analytical Instrument Facility (SAIF)
- Tata Centre for Technology and Design (TCTD)
- Technocraft Centre for Applied Artificial Intelligence (TCAAI)
- Tata Teleservices - IIT Bombay Centre of Excellence in Telecommunication
- Wadhwani Research Centre for Bioengineering (WRCB)
- Water Innovation Centre: Technology, Research and Education (WICTRE)
- National Centre of Excellence in Carbon Capture and Utilization (NcoE-CCE)
- Centre for Quantum Information, Science and Technology (CquIST)
- Sunita Sanghi Centre For Aging And Neurodegenerative Diseases

Department of Aerospace Engineering

The Department was established during 1966-67 as the Department of Aeronautical Engineering and was later renamed as the Department of Aerospace Engineering in 1992. Four faculty members from Department have been recognized as Top 2% Scientists of the world as per a document published in 2021 by Stanford University, USA. The subject-wise ranking of top 2% scientists (with their ranks) from world (all fields) include:



1. Prof. Sudarshan Kumar, HOD Rank- 3262
2. Prof. Shripad P. Mahulikar, Professor Rank- 1732
3. Prof. Niranjana K. Naik, Emeritus Professor Rank- 1160
4. Prof. Rameshchandra P. Shimpi, Retired Professor Rank- 3768

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	30
No. of Post-Doc Fellows	10

Academic Programmes: The Department runs strong undergraduate and graduate programmes in Aerospace Engineering and carries out basic and applied research as well as continuing education activities in various sub-disciplines of Aerospace Engineering such as aerodynamics, propulsion, structures, dynamics, control and design. The academic programmes focus mainly on science and engineering/ technology of flight vehicles and their sub-systems. The academic courses cover fundamentals of fluid dynamics, propulsion, structural mechanics, vehicle dynamics, control and guidance etc., as well as applications of these fundamentals to the analysis and design of aerospace vehicles. The academic programmes include the four-year BTech degree programme, five-year Dual Degree programme, two-year MTech programme and the PhD programme. The Department has MTech and PhD students from armed forces, HAL, ISRO, DRDO and various other government and private agencies through full-time, part-time sponsored to Aerospace Engineering. The Department strives for a balance of academics, research and technology development, coupled with education beyond the classroom and co-curricular activities.

Total no. of students on-roll: 672		
Programmes Offered	Student Intake	Degrees Awarded
BTech	77	52
DD (BTech+MTech)	-	07
MTech	69	58

PhD	19	11
DD (MTech+PhD)	-	02
PGDIIT	-	01
IDDDP	-	02

R&D Activities: The Department has extensive experimental and computational facilities that support its research and teaching activities. Among these are:

- a) Aerodynamic lab houses wind tunnels, laser doppler velocity meter (LDV), anechoic chamber
- b) Instrumentation lab has experimental setups for control education, in addition to sensors, actuators and other accessories as part of mechatronics related facilities
- c) Structures lab has facilities for composite fabrication, testing, apart from experimental set-ups for demonstrating static and dynamic aspects of structures
- d) Propulsion lab houses axial flow compressor research test rig, low speed low turbulence wind tunnel, diffuser test rig centrifugal blower and motor control unit for air delivery
- e) Mini-Aerial Vehicles (MAV) lab has facilities for building and flying unmanned aircraft models, hardware in loop simulation for MAVs. The Department has powerful serial and parallel computers which provide computational resources for sophisticated flow simulation tasks like in computational fluid dynamics and computational electromagnetics

During the year 2021-22, the Department has supported many students' technical activities like Mars Rover, Student Satellite, Autonomous Underwater Vehicle, Unmanned Air Vehicle etc. The Department has carried out sponsored and consultancy projects for government organizations like ISRO, DRDO, DRDL etc. as well as for private agencies.

Projects	Sponsored Projects	Consultancy Projects
New	05	10
Ongoing	23	16
Completed	08	09

Notable activities in the Department:

Development of low-cost oxygen concentrators

: Oxygen is not only essential for living organisms to live, but also required for industrial purposes. Oxygen is naturally produced by plant life. The purity of oxygen available in the Earth's atmosphere is around 20%. For medical and industrial purposes, the oxygen with high purity is required in large quantities. Different cryogenic and non-cryogenic methods have been adopted to produce it. Cryogenic methods require advanced infrastructure for production, storage and transportation. Also, for small-scale requirements, the production is inefficient.

Multi-specialty hospitals currently have the infrastructure to support these facilities, but people in towns and villages have difficulty accessing them. Also, it is seen that the cases of Chronic Obstructive Pulmonary Disease (COPD) have increased drastically over the past decade, one of the primary reasons being an increase in air pollution. Therefore, there is a need to build an oxygen concentrator with a purity of $90 \pm 3\%$ at different flow rates. A low-cost oxygen concentrator was prototyped that works on a modified rapid pressure swing adsorption (RPSA) cycle. An oxygen-rich air stream with an oxygen purity of $91 \pm 3\%$ at a flow rate of 5LPM was obtained. An oxygen concentrator uses atmospheric air. The air stream is passed through various filters to remove impurities, moisture and oil. Further nitrogen is adsorbed using LiX-based zeolite. It is known that air contains 78% nitrogen and 21% oxygen. With the removal of nitrogen, the major gas left in the stream is oxygen. The purity of oxygen depends on the inlet



Low-cost oxygen concentrators



air pressure. Also, the adsorption of nitrogen using zeolites is a pressure-based process, so a back-pressure regulator was used for efficient adsorption of nitrogen. The developed product was further handed over to Omnilife Systems Private Limited for full-scale manufacturing. The project was developed by Prof. Sudarshan Kumar, Head of the Department.

During 2021-22, the Department continued to be actively engaged in teaching, research and other professional activities, e.g. workshops, seminars, industry interactions, projects, professional development course modules etc. A few of them were: SciPy India 2021 (online), Design of Indoor Remotely Controlled Airships (DIRCA2022), SPINN- an interpretable sparse NN architecture for PDEs, AICTE-ATAL online workshops on Physics based learning of forward and inverse problems and Introduction to Topology Optimization. The students have also been engaged in national and international competitions as participants/ organizers.

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	-	-	43	56

Department of Biosciences and Bioengineering

The Department of Biosciences and Bioengineering comprises two broad areas representing Biotechnology and Biomedical Engineering. The Department aims to create an ambience for the efficacious pursuit of scholarly activity in research and education and endeavors to produce the leaders of tomorrow in this field.

Academic Programmes: The academic programme currently consists of MSc Biotechnology programme, MTech in Biomedical Engineering programme and a PhD programme. All these programmes are well-regarded nation-wide.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	31
No. of Post-Doc Fellows	28

Total no. of students on-roll: 329

Programmes Offered	Student Intake	Degrees Awarded
MSc	33	21
MTech	25	21
PhD	27	27
DD (MSc+PhD)	-	04

R&D Activities: Research in the Department encompasses both basic as well as applied biological sciences and bioengineering topics. A high-level of research output is ensured by the research infrastructure in the Department that has been built up assiduously over the years. Miscellaneous cutting-edge facilities such as MASSFIITB (Mass Spectrometry facility), 3-D Laser Lithography, Atomic Force Microscopy (AFM), BSL-2 facility and Fluorescence-Activated Cell Sorting (FACS) housed at the Department have been proved to be extremely beneficial.

Extensive interactions with various groups in Electrical Engineering, Chemical Engineering, Aerospace Engineering, Computer Science, Mechanical Engineering, Material Sciences, Physics, Chemistry and Mathematics make the departmental research activities truly interdisciplinary.

New Facilities were setup recently viz. Next Generation Sequencing Facility, Upright Confocal Laser Scanning Microscope (Zeiss LSM 900), Analytical Ultra Centrifuge, Size Exclusion Chromatography Multi Angle light scattering, Isothermal Titration Calorimetry etc.

Projects	Sponsored Projects	Consultancy Projects
New	25	12
Ongoing	76	14
Completed	30	03

Several webinars/ symposiums/ workshops were organized, including Flow Cytometry Cell Sorting, Data Analysis & Advance Applications, Basic Biology Summer Camp-2021, Science communication workshop, DST workshop-PAWS 2021, CEP-Proteomics Capsule Course, Translational Research in Medicine (TRIM) - Prof. Rinti Banerjee Memorial Conference, CEP course on Proteomics.

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	03	06	07	130

Department of Chemical Engineering

The Department of Chemical Engineering at IIT Bombay started in 1958. Today, the Department is recognized as a leading Department in India, primarily because of its strong academic programmes at both undergraduate and postgraduate levels, research output, industrial collaborations and diverse range of research areas.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	52
No. of Post-Doc Fellows	19

Academic Programmes: The academic programmes offered by the Department are BTech (4-Year), MTech (2-Year), Dual Degree (5-Year) and PhD programme (5-Year). A number of postdoctoral fellows, eminent adjunct faculty and distinguished visiting professors add value to the research and teaching activities of the Department. A novel course was introduced for both undergraduate and postgraduate students, which exposes them to open ended problems posed by the industry. Elective course help

students to become aware of the problems faced by the chemical industry and based on these issues, students work to provide possible solutions.

Total no. of students on-roll: 992

Programmes Offered	Student Intake	Degrees Awarded
BTech	159	110
DD (BTech+MTech)	-	02
MTech	70	32
PhD	42	23
DD (MTech+PhD)	-	02
MS by Research	-	01

R&D Activities: The Department has a new lab that focuses on energy storage and conversion systems, specifically focusing on the capacity fade mechanism of Li-ion batteries by proper characterization of the transport and kinetic resistances. It will provide a platform for research students to explore and investigate modern energy storage systems. In 2021, the Department acquired several instruments, including the Capillary Rheometer, DSC and TGA Thermal Analysis, and Cryo HRTEM for soft nanomaterials microstructure analysis.



Image from the Biological Systems Engineering Lab



Projects	Sponsored Projects	Consultancy Projects
New	17	20
Ongoing	68	51
Completed	16	04

A Chemical Engineering Tinkerer's Laboratory is established with funds provided by the industry. A space of about 1000 sq. ft. has been earmarked for this lab and would provide a platform for the students to conduct curiosity-driven and innovative experiments.

Publicity/ Outreach Activities:

AZeotropy 2021, the annual event of the Department, was organized by the undergraduate students. This event aims to promote interaction between students, industry and academia. The event saw participation from 200+ colleges, 50+ industrialists in the field and an average footfall of 11000.

Research Scholars Symposium 2021: This symposium was held with the objective to provide a platform for the PhD students in the Department to share their research work with peers and interact and network with eminent personnel from both industry and academia. The research scholars participated actively in poster presentations, oral presentations and 3-minute thesis talks. Two panel discussions to educate students about the available career prospects in academia and industry were held. Several eminent researchers from various backgrounds participated in the event.

Two panel discussions were held during 2021, both of which were anchored by the alumni of the Department. The themes of the discussions were: i) the pharmaceutical industry; and ii) climate and energy. More than a hundred people, including current students, alumni and faculty, participated in these discussions.

Several workshops were organized during the year 2021-22 by the Department, including "Introduction to electrochemistry/ electrochemical techniques for testing and standards" and "Electrochemical energy storage, basic of batteries and terminologies" by Prof. Bharat Kumar Suthar.

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	-	05	20	155

Department of Chemistry

The Department of Chemistry at IIT Bombay is one of the premier research and teaching hubs for chemical and chemistry-driven interdisciplinary sciences in India. The Department is well-equipped to perform cutting-edge research, not only by virtue of central instrumental facilities of Institute and Department, but also because of facilities built by individual faculty members. Teaching and research are synergistic to each other in the Department. Faculty members engage extensively in outreach activities across the country. The Department Faculties are strongly supported by a large number of motivated and talented young students. The year 2021-22 witnessed many webinars and symposium and prestigious awards brought to the Department by the hard work of faculty and students alike.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	65
No. of Post-Doc Fellows	66

Academic Programmes: The Department offers five academic modules including Masters in Chemistry (2-Year), BS in Chemistry (4-Year), (BS+ MSc) dual degree, Integrated (MSc+PhD) and PhD programmes. The General Chemistry programme of the Department harbors two theory and two laboratory courses in the core curriculum of the first year BTech programme.

Total no. of students on-roll: 648

Programmes Offered	Students Intake	Degrees Awarded
BS (4-Year)	39	23
MSc (2-year)	57	46
DD (MSc + PhD)	-	05
DD (BS + MSc)	-	04
PhD	66	38

R&D Activities: Research problems of basic, applied and interdisciplinary nature are actively pursued in the Department through sponsored and industrial research projects. Major thrust areas of research include Biophysical Chemistry, Coordination Chemistry, Bio-inorganic Chemistry, Organometallic Chemistry, Bio-organic Chemistry, Chemical Biology, Theoretical Systems Biology, Membrane Biology, Chemistry of Natural Products, Synthetic Organic Chemistry, Photochemistry and Spectroscopy, Polymer Chemistry, Thermodynamics, Electrochemistry, Solid state Chemistry and Physics, Catalysis and Theoretical Chemistry.

Projects	Sponsored Projects	Consultancy Projects
New	28	05
Ongoing	84	19
Completed	26	06

During the year 2021-22, the Department organized several workshops, including Chemdraw ELN online workshop, “FnCas9 Editor Linked Uniform Detection Assay (FELUDA)”, “From CO₂ activation to catalytic reduction: a metal-free approach”, “Versatile chemistry of tricyclic 1,4-diphosphinines”, “Cholesterol and GPCR Function: A Molecular Sensor for Cholesterol in the Serotonin1A Receptor”, In House Symposium 2021 and SIPS-2022 - Student Indian Peptide Symposium 2022 (Virtual Symposium).

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	-	09	-	260

Department of Civil Engineering

The Department of Civil Engineering has been a part of IIT Bombay since its inception in 1958. Over the years, the Department has grown tremendously and is now recognized as one of the best and major engineering departments in the country and ranked high in the world for Civil Engineering. It has developed strong links with the building and construction industry and academia, both at national and international levels. With its multifaceted faculty, it provides technical advisory support through various R&D projects and consultancy to infrastructural industry, academic and research institutions. Eight faculty members of the Civil Engineering Department are featured in Top 2% Scientists of the world as per a document published in 2021 by Stanford University, USA.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	56
No. of Post-Doc Fellows	26

Academic Programmes: The Department runs BTech, MTech and PhD programmes with its additional Dual Degree programmes (BTech+MTech) and (MTech+PhD) in Civil Engineering. The Department also hosts Postdoctoral Fellows in various specializations, sponsored by the Institute, sponsored research projects and other agencies.

Total no. of students on-roll: 1064

Programmes Offered	Students Intake	Degrees Awarded
BTech	173	86
MTech	95	69
DD (BTech+MTech)	-	05
DD (MTech+PhD)	-	05
PhD	46	29
MS by Research	-	03



R&D Activities: The Department has a strong focus in the research areas of Structural Engineering, Geotechnical Engineering, Water Resources Engineering, Transportation Systems Engineering, Remote Sensing, Ocean Engineering and Construction Technology and Management. The Department is actively involved in basic and applied research and boasts world-class laboratories. It also offers consultancy and provides high-quality technical advisory support.

Projects	Sponsored Projects	Consultancy Projects
New	18	489
Ongoing	50	686
Completed	14	252

Student Achievements:

A team of 11 BTech students won the Earthquake Engineering Research Institute's (USA) Seismic Design Award 2021, the first time an Indian team won the award. For more details visit <https://www.eeriitb.com/>.

The 14th edition of Aakaar, the annual fest of the Civil Engineering Department, IIT Bombay, was held during March 25-27, 2022. The fest witnessed several student competitions, events, workshops and a research symposium conducted online. For more details visit (<https://aakaariitb.in/>).

Other Highlights:

- The commencement of “Kanitkar Merit Awards” in the year 2021 by generous contributions from alumnus Mr. Jayant Kanitkar (BTech/ Civil Engineering/ 1977)
- Mr. Pankaj Jagtap (BTech/ Civil Engineering/ 1995) instituted a new Chair named “Anantrao Jagtap Chair in Construction Management” in memory of his father in the year 2021.
- The Department function of the 59th Annual Convocation 2021 was celebrated on August 8, 2021, in presence of the Chief Guest, former Director of IIT Gandhinagar and Padma Shri Prof. Sudhir K. Jain



The Department celebrated Alumni Day on December 26, 2021, with the Silver Jubilee batch of 1996



The Department faculty members continue to receive Institute-level and Department-level excellence in Teaching Awards. The Department celebrated the Best Teachers' Award event with the awardees of 2021

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	02	36	85	258

Department of Computer Science and Engineering

The Department of Computer Science and Engineering is the largest Department amongst CSE departments of Institutes in India, renowned for its research and academic programmes. The alumni body of the Department comprises well-known leading researchers across the globe, including entrepreneurs, experts, successful engineers and impactful policymakers.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	49
No. of Post-Doc Fellows	03

Academic Programmes: The Department offers Bachelor of Technology (BTech), Master of Technology (MTech) and Doctor of Philosophy (PhD).

Total no. of students on-roll: 1041

Programmes Offered	Students Intake	Degrees Awarded
BTech	176	124
MTech	90	88
PhD	12	09
MS by Research	21	02
DD (BTech + MTech)	-	01
DD (MTech + PhD)	-	01

R&D Activities: The research and teaching in the Department spans a wide spectrum of areas including algorithms, artificial intelligence, compilers, combinatorial optimization, computer vision, data mining, embedded systems, formal methods, functional programming, graphics, databases, image processing and analysis, machine learning, medical image computing, mobile computing, natural language processing, object-oriented systems, parallel and distributed processing, programming languages, reinforcement learning, query processing and optimization, real-time systems, security, speech



processing, software engineering, systems, theoretical computer science, wireless and sensor networks and verification.

Projects	Sponsored Projects	Consultancy Projects
New	22	11
Ongoing	68	28
Completed	17	06

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	-	-	146	54

Outreach/ Publicity Activities

During the year 2021-22, the Department has conducted various workshops, including MOOC on Software Foundation Course (Online), Training on Introduction to Embedded System and Robotics (Online), Technical Session on Internet of Things, Technical Session on Research Communication, Technical Session on Digital VLSI and FPGA, Technical Session on Software Foundation (Online), Model Based Robot Design, 6th Indian SAT+ SMT Winter School (virtual event over Zoom).

Student Achievements:

- PhD candidate Vatsala Sharma guided by Prof. Suyash Awate received Best Paper Award at the IEEE International Symposium on Biomedical Imaging (ISBI) 2022 Conference. Her paper titled “*Semi-Supervised Deep Expectation-Maximization for Low-Dose PET-CT*”, was co-authored with Ansh Khurana and Sriram Yenamandra.
- Dr. Vrunda Dave (a PhD student of Prof. S. Krishna) was selected as a co-recipient of the Honorable Mention for ACM India Doctoral Dissertation Award (DDA) 2022.
- Viswanath P. Sudarshan (a PhD candidate guided by Prof. Suyash Awate) received the Naik and Rastogi Award for Excellence in Ph.D. Research for 2019-2021.
- PhD student Diptesh Kanojia under Prof.

Pushpak Bhattacharyya won the Best Paper Awards (long papers) at the 16th conference of the European Chapter of the Association for Computational Linguistics (EACL 2021).

- ‘JalTantra’, a system developed at IIT Bombay has won the ‘Triennial IFORS Prize for OR in Development’ 2020 awarded by the International Federation of Operational Research Societies at the 22nd IFORS Conference held virtually from Seoul, South Korea. The submission titled ‘*JalTantra: Impacting the practice of rural water network design in India*’ was made by Nikhil Hooda, Prof. Om Damani (Computer Science and Engineering) and Prof. Ashutosh Mahajan (Department of Industrial Engineering and Operations Research).

Department of Earth Sciences

Academic programmes in Earth Sciences began when a section in the Department of Civil Engineering was established in 1959. As this educational programme flourished, the team grew to become a separate Department of Earth Sciences in 1982 and has been able to leave its mark as one of the major academic units contributing to the field of Earth Sciences. The Department of Earth Sciences strives to be a centre of excellence in teaching and research in the Earth Sciences. It has been working towards this goal by hiring the best faculty to create sophisticated analytical and experimental laboratories and periodically restructuring the courses to incorporate emerging areas of Earth Sciences in the syllabus. The Department aims to establish links with various institutes within India and abroad that are addressing similar challenges. The Department’s mission is to be a globalized institution that would enable interactions among researchers, offer educational programmes, encourage faculty and student exchanges and help country grow. The Department is interdisciplinary in nature and hosts multifaceted faculty, engaged in high-quality teaching and research.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	25
No. of Post-Doc Fellows	08

Academic Programmes: The Department offers Masters and PhD programmes. Over the last twenty-four years, more than 1700 students have graduated from the Department. The Department is recognized as one of the best departments in the country in terms of teaching, research and placements.

Total no. of students on-roll: 330

Programmes Offered	Students Intake	Degrees Awarded
MSc (2-Year)	57	48
MTech	42	19
PhD	22	11
PGDIIT	-	05

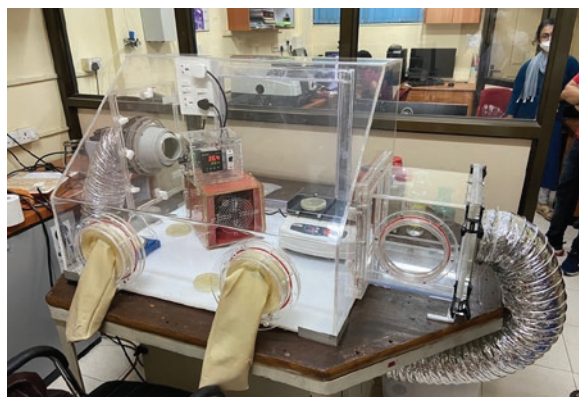
R&D Activities: The Department is actively involved in basic and applied research and consultancy and provides high-quality technical advisory support through various R&D projects and consultancy to multiple organizations. The Department supports well-equipped laboratories that aids in teaching and research activities. The new research facilities set up are as follows:

New Research Lab:

Ultraclean geochemistry lab with three laminar air flow benches of Class 100 in a lab of Class 10000 and 3000 CFM air handling unit.

New Research Equipments:

1. Quadrupole Inductively Coupled Plasma – Mass Spectrometer



*Make: Thermo Fischer, Germany
| Model: iCAP-RQ*

2. Microwave digester



*Make: CEM Corporation, USA
Model: MARS 6 iWave*

3. EPS700 Resistivity meter for measuring Archie's parameters used in the calculation of saturations in reservoirs.

4. Leica FLEXACAM C1 Camera with LAS software (and other accessories) was installed with the existing Leica DM2700P Petrological microscope housed in the Fluid Inclusion and Raman Lab

5. JAW CRUSHER machine (Insmart systems) for size reduction of rock samples was procured and installed in the sample preparation Lab

Projects	Sponsored Projects	Consultancy Projects
New	03	05
Ongoing	27	18
Completed	03	35

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	05	13	12	81

Department of Electrical Engineering

Since its inception in 1958, the Department of Electrical Engineering has been active in teaching



and research. The Department's undergraduate programme is known to be one of the best engineering undergraduate programmes of the country. Currently, the Department has more than 1300 students.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	77
No. of Post-Doc Fellows	25

Academic Programmes: Initially the Department began with three programmes namely, Bachelor of Technology (BTech), Master of Technology (MTech) and Doctor of Philosophy (PhD). Since 1996, the Department has been offering a five-year Dual Degree (BTech+MTech). Presently, the Department has started admitting Dual Degree (DD) students post-JEE without a pre-assigned specialization.

Since 2019, under the revised curriculum, the Department of Electrical Engineering offers six MTech specializations as Communication Engineering (EE1), Control & Computing (EE2), Power Electronics & Power Systems (EE3), Electronic Systems (EE5), Integrated Circuit & Systems (EE6) and Solid State Devices (EE7).

Total no. of students on-roll: 1608		
Programmes Offered	Students Intake	Degrees Awarded
BTech	100	71
DD (BTech +MTech)	91	65
MTech	176	138
DD (MTech + PhD)	-	11
PhD	45	47
MS by Research	-	02
PGDIIT	-	01
IDDDP	-	01

R&D Activities: The Department is equipped with state-of-the-art experimental and computational facilities for undertaking research

and development and consultancy activities in various fields such as Center for Excellence in Nanoelectronics, National Center for Photovoltaic Research and Education, Telecom Center of Excellence to name a few. Research collaborators include researchers from several national and international universities and research organizations. The Department plays a major role in driving country's technology roadmap in Electronics sector. The Department has a strong collaboration with industry since past two decades and a number of laboratories have been established through such collaborations.

Recently, the Department has received funding from the Maker Bhavan Foundation to setup two new classrooms. One of them is the Collaborative Classroom which facilitates active learning strategies and the other is the Experiential Learning Laboratory which facilitates hands-on learning in courses.

Projects	Sponsored Projects	Consultancy Projects
New	23	23
Ongoing	118	51
Completed	42	13

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	01	02	126	186

Department of Energy Science and Engineering

The Department of Energy Science and Engineering, established in 1981 as an interdisciplinary group, is a unique blend of science and engineering faculty working on developing sustainable energy systems and solutions for the future.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	25
No. of Post-Doc Fellows	28

Academic Programmes: The Department offers several academic programmes that include the (BTech+MTech) dual degree programme through JEE, the (MSc+PhD) dual degree programme through JAM, MTech programme in Energy Systems Engineering, PhD programme and a minor in Energy Engineering programme.

Total no. of students on-roll: 482

Programmes Offered	Students Intake	Degrees Awarded
DD (BTech+MTech)	47	24
MTech	30	22
PhD	28	13
DD (MSc +PhD)	20	05
MSc	-	06
BTech	-	01
MS by Research	-	01
PGDIIT	-	04

R&D Activities: The Department's research areas include renewables (solar PV and thermal, wind and biomass), thermal and electrochemical storage systems, power systems and power electronics, energy integration and energy efficiency and nuclear energy. Some of the major ongoing initiatives are the National Centre for Photovoltaic Research and Education (NCPRE), the Indo-UK Clean Energy Research Centre, the DST-IIT Bombay Energy Storage Platform on Hydrogen and the interdisciplinary Centre of Excellence in Oil, Gas and Energy with support from the Indian public sector companies (IOCL, ONGC, HPCL, BPCL, GAIL, OIL and EIL), Sustainable Energy Storage suitable for Microgrid (SENSUM) funded by DST, Development of Compressed Hydrogen -Fuel Cell Integrated System Suitable for Light Duty Vehicles.

Projects	Sponsored Projects	Consultancy Projects
New	09	10
Ongoing	38	19
Completed	09	01

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	-	03	34	178

Environmental Science and Engineering Department

The Environmental Science and Engineering Department (ESED) was established in 1985 as a Centre and got the status of "Department" in February 2019. The graduates of this Department have career opportunities as engineers and scientists in the field of Environmental Quality and Pollution Control. This programme offers course work and research opportunities leading to masters and doctoral degrees and ultimately enable our graduates to contribute to the solution of current and future environmental problems. The Department offers a minor in Environmental Science and Engineering for undergraduate students from other departments in IIT Bombay. ESED also offers an Institute core course "Environmental Studies: Science and Engineering" to all undergraduate students and (MSc+PhD) students. Besides, the Department offers several elective courses for sensitizing students across all disciplines towards the urgent need.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	16
No. of Post-Doc Fellows	07

Academic Programmes: ESED offers four academic programmes with a strong focus in teaching and research. The Department's main goal is to train students to conduct innovative research and development for the society. Graduate research projects combine careful fundamental study with recognition of the practical and technological importance of the research. In 2018, the ESED started (BTech+MTech) programme.



Total no. of students on-roll: 262

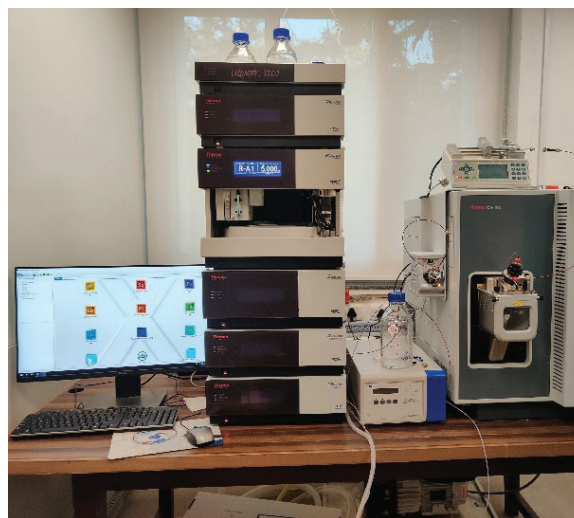
Programmes Offered	Students Intake	Degrees Awarded
DD (BTech + MTech)	44	-
MTech	22	21
PhD	16	04
MSc (2-Year)	-	05
DD (MSc+PhD)	11	02
DD (MTech + PhD)	-	01
MS by Research	-	01

R&D Activities: The ongoing research activities of the Department are focused towards addressing the priority areas (local and global) set by major national agencies like the Ministry of Education (MoE), Central Pollution Control Board (CPCB), State Pollution Control Board (SPCB), Ministry of New and Renewable Energy (MNRE), Department of Biotechnology (DBT), Ministry of Environment, Forest and Climate Change (MoEF), Council of Scientific and Industrial Research (CSIR), Department of Science and Technology (DST).

The research activities of ESED are supported by excellent experimental and computational facilities, along with competent and dedicated technical staff and high-quality students. The Department offers wide professional expertise and actively pursues sponsored research, consultancy and technical services. ESED is also very active in manpower development and regularly organises tailor-made workshops and training programmes. The Department has established strong links with leading industries, institutions and national/ international agencies.

Projects	Sponsored Projects	Consultancy Projects
New	02	15
Ongoing	25	23
Completed	04	09

A major equipment ‘UHPLC-MS/MS’ was purchased and installed in 2020-21. This system combines High Performance Liquid Chromatography (HPLC), an analytical separation technique with mass spectroscopy, a powerful analysis and detection technique. It is installed in the Instrument Lab of ESED.



Procured One ‘Ion Chromatograph (Metrhom Model 925 ECO IC)’ with an auto sampler

Student Achievement:

Najmul Haque Barbhuiya (Ph.D., Environmental Nanotechnology Lab (Enano Lab), Environmental Science and Engineering Department, IIT Bombay) received Best Paper Award for his paper titled “*Laser-Induced Graphene-Based Electroconductive Filters and Composites Membranes for the Removal of Pharmaceutical Compounds*” at the Sixth International Conference on Sustainable Energy and Environmental Challenges (VI SEEC) organized by the International Society for Energy, Environment and Sustainability (ISEES) held during December 27-29, 2021.

Publications:

	Books Edited	Chapters in Books	Papers in Conference	Papers in Journals
Total	02	29	02	65

Joint Symposium on Food Sustainability

The Environmental Science and Engineering Department had organized a joint symposium

(online) in collaboration with the Faculty of Land and Food Systems, University of British Columbia, Canada and sponsored by Shastri Indo-Canadian Institute titled “*Sustainable Developments in Local Land and Food Systems: Socioeconomic, Technological, and Environmental Aspects*” on March 22, 2022.

Department of Mathematics

The Department of Mathematics conducts basic, applied and interdisciplinary research in varied areas of Mathematics, including Algebra and Number Theory, Analysis, Geometry and Topology, Combinatorics and Theoretical Computer Science, Partial Differential Equations and Numerical Analysis and Probability and Statistics.

The year witnessed excellent contributions and achievements of faculty and students in research; interaction with industry and noted national and international institutes, universities and organisations; and extended educational activities beyond the departmental academic programmes.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	51
No. of Post-Doc Fellows	23

Academic Programmes: The Department offers Masters Programme- one in Mathematics [MSc (MA)] and other in Applied Statistics and Informatics [MSc (ASI)], an integrated MSc programme, (MSc+PhD) dual degree programme and also a PhD programme. The Department launched the ‘Bachelor of Science (BS) in Mathematics’ during the academic year 2018-19. The curriculum also includes basic science courses and incorporates elective courses from the science, engineering and humanities disciplines allowing considerable flexibility and academic freedom. There

are minor programmes for undergraduates offered in both Mathematics and Statistics, an integrated MSc programme in addition to the core undergraduate curriculum.

The Department is also involved in teaching Mathematics-related courses in the BTech programme of the Institute.

Total no. of students on-roll: 312

Programmes Offered	Students Intake	Degrees Awarded
MSc (MA)	36	26
MSc (ASI)	39	31
PhD	15	07
BS	23	-
MPhil	-	01

R&D Activities: The Department has contributed to research on contemporary fundamental areas and has collaborated with industry and R&D departments in India and abroad. Following its tradition, besides the areas of fundamental importance, it has further contributed to interdisciplinary research focusing on the applied and developmental side.

Projects	Sponsored Projects	Consultancy Projects
New	03	-
Ongoing	23	-
Completed	08	01

Several conferences and workshops were held by the Department, including “Mumbai-Pune Number Theory Seminar 2021” (online), “Recent Trends in Mathematics International Conference”, “International Conference on Discrete Groups, Geometry and Arithmetic” - a virtual event in honour of M. S. Raghunathan’s 80th birthday, the 4th BRICS Mathematics



Conference and the SPARC workshop on “Adaptive Finite Element Methods”.

The Department also organised various seminars during the year 2021-22, some of which include Rees-like algebras, Hibi rings and the Ehrhart rings of chain polytopes - Part 1, Asymptotic behavior of Integer Programming and the stability of the Castelnuovo-Mumford regularity, Layered resolutions and Cohen-Macaulay approximation, Homological duality in representation theory, Some Questions on bounds of Betti Numbers of Numerical Semigroup Rings, Cut and related polytopes in commutative algebra and Modular representations of Algebraic groups.

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	-	02	05	51

Department of Mechanical Engineering

The Department of Mechanical Engineering is one of the largest departments of IIT Bombay. Currently, the total student strength of the department is over 1600, with more than 250 being doctoral students.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	63
No. of Post-Doc Fellows	30

Academic Programmes: The Department offers undergraduate BTech degrees and has a postgraduate programme awarding MTech and PhD degrees. The postgraduate programme offers specializations in the areas of thermal and fluid engineering, design engineering and manufacturing engineering. Dual degrees, which confer a combined BTech + MTech and

MTech + PhD, are options which students can avail to accelerate their career advancement. Currently, students can pursue PG minor in any specialization i.e. Thermal, Design and Manufacturing. Supervised Learning Projects (SLP, ME315) has been introduced in the Department to take up more industry-oriented internship/ projects so that interest in core subjects increases for students.

Total no. of students on-roll: 1527

Programmes Offered	Students Intake	Degrees Awarded
BTech	177	115
DD (BTech+MTech)	25	32
MTech	107	67
PhD	57	23
DD (MTech+ PhD)	-	03
IDDDP	-	01
PGDIIT	-	06

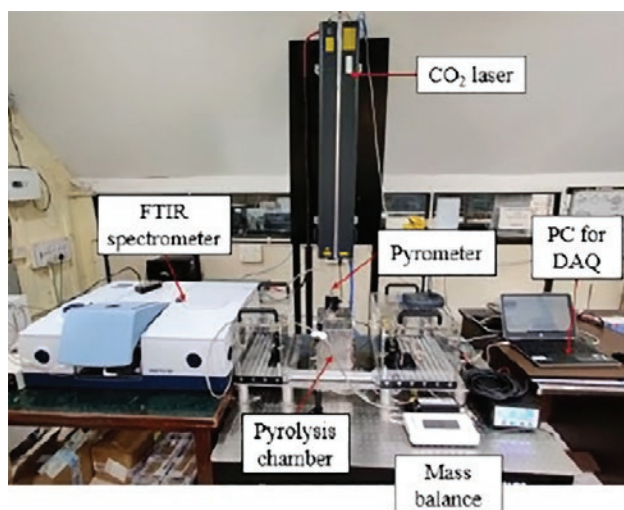
R&D Activities: The Department continues to evolve in teaching and research activities, keeping up with times, in largely interdisciplinary manner. While much of today’s research in Mechanical Engineering is of interdisciplinary, the research work of the faculty members of the Department is categorized into three broad streams: Thermal and Fluids Engineering, Design Engineering, and Manufacturing Engineering.

The Department has procured new equipments viz. Lab-scale Production line set up, two Open Controller CNC machines and several other state-of-the-art equipment.

Projects	Sponsored Projects	Consultancy Projects
New	25	21
Ongoing	88	60
Completed	22	09

One of the key research work carried out during April 2021 to Mar 2022 is as below:

Fast pyrolysis work: Even though solid propellants are used widely in rockets, missiles and space launch vehicles, the knowledge about their combustion behaviour is insufficient. Till today we are unable to predict the combustion of solid propellant in full detail. The design of solid rocket motors uses experimental interpolation and extrapolation of curve fitted data. To avoid the expensive and time-consuming experiments for each set of combinations of pressure and temperature, a theoretical model is required which can predict the combustion properties of any given solid propellant. In order to achieve the actual combustion sensor, the pyrolyser is developed which is capable of heating a sample at $\sim 40,000$ °C/s and measuring the mass of the sample simultaneously. The schematic of the setup is shown in figure 1.



Experimental setup of Laser pyrolyser

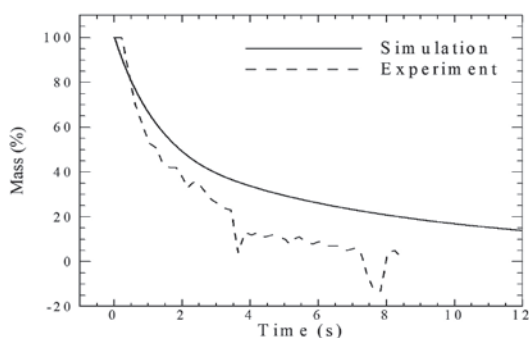
Slow pyrolysis work: Slow pyrolysis is mainly used to predict shelf life of samples where heating rates of 5-200 K/min are used. Thermogravimetric analysis (TGA) combined with Fourier Transfer Infrared (FTIR) spectroscopy and mass spectroscopy (MS) are used to conduct thermal analysis to predict the lifetime of an energetic material. The experimental setup is shown in Figure 2. Calculated differential thermal analysis (c-DTA) and calculated-differential scanning calorimeter (c-DSC) are also conducted using the TGA. These are used to predict heat loss behaviour (endothermic or exothermic) and the heat loss value of the sample during decomposition. Research has been carried out mainly on ammonium perchlorate (AP), hydroxyl-terminated poly butadiene (HTPB) and nitro-HTPB etc.



Thermogravimetric analysis (TGA), Fourier transfer infrared spectroscopy (FTIR), mass spectroscopy (MS) setup



Development of the condensed phase reaction mechanisms: Chemical processes can be described by detailed chemical kinetic mechanisms (DCKMs) consisting of several hundred or even thousands of reaction steps. Such reaction mechanisms are used in many fields of science and technology. The DCKMs are to be constructed based on quantum chemical computations. Currently, work is being carried out to develop the condensed phase DCKM for ammonium perchlorate (NH_4ClO_4). The research includes finding new reactions by locating the precise transition states and simulating the DCKM. The experimental data generated by experimental fast pyrolysis such as mass loss profiles and species evolution profiles are used to validate the DCKMs. Figure 3 shows the comparison of the mass loss profile between the laser pyrolysis experiment and simulation results at 450 °C.



Comparison of mass (%) variation with time

Student Achievements:

- Mr. Love Kush Tak has received prestigious INAE Innovative Student Project Award 2021
- Mr. Shubham Lohiya and Mr. Shravan Devendra Godse have received Narotam Sekhsaria Foundation's UG Engineering Scholarship

During the year 2021-22, the Department organized various workshops, including Medical Device Hackathon (eMEDHA) in virtual mode, Static and Dynamic Characterization of Micro-

components, and a conference '4th World Congress on Micro and Nano manufacturing'.

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	02	10	>150	320

Department of Metallurgical Engineering and Materials Science

The Department of Metallurgical Engineering and Materials Science (MEMS) seeks to create an exciting, diverse, collaborative and supportive environment that advances in the science and engineering of materials by developing fundamental understanding, adopting frontier technologies, providing education and enabling technological innovations. The Department's mission lies in creating a vibrant and nurturing educational environment and preparing students with a broad outlook; performing world-class, cutting-edge research and striving for excellence in the relevant areas of material science and engineering. The Department continues to excel in a wide variety of areas, ranging from classical metallurgy, especially steel which is of great importance to the country, to non-metallic materials in various forms and dimensional scales for applications ranging from advanced structural components to electronic, optical, sensing, health-care and energy harvesting/conversion/ storage devices during the pandemic situation.

The Department's annual output, which includes more than 200 publications in peer-reviewed international journals (including in highly rated journals like *Acta Materialia*, *J Mater Chem A* etc.), allows it to compete with any other metallurgy-materials departments in the world.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	49
No. of Post-Doc Fellows	35

Academic Programmes: There has been a steady increase in the intake of PhD students. The student quality makes IIT Bombay MEMS one of the leading departments in the country. The Department also continues to design and offer new courses pertinent to the cutting-edge areas. The Department has also been offering MTech in Steel Technology for personnel from steel industries which has been very effective in enhancing the technical capabilities of manpower in major steel industries.

Total no. of students on-roll: 1001

Programmes Offered	Students Intake	Degrees Awarded
BTech	125	82
MTech	67	66
DD (BTech + MTech)	20	23
PhD	29	14
IDDDP	-	01
PGDIIT	-	01

Some of the PhD students of the Department have been successful in receiving highly-renowned international level awards like the excellence in research (such as the 2020 Carbon Journal Prize for 'An outstanding Ph.D. thesis in carbon materials science and technology').

The unique strength of the IIT Bombay MEMS Department lies in its ability to balance teaching and research, traditional and emerging materials and applied and basic research. The Department strives for excellence in manpower development.

The Department has also been offering MTech in Steel Technology for personnel from steel industries which has been very effective in enhancing the technical capabilities of manpower in major steel industries. The classical teaching combined with short-term courses (continuing education and quality improvement programmes,

special training programmes like GIAN and SERB Schools, etc.) has generated an excellent pool of highly motivated and competent manpower for the country.

R&D Activities: There has been a significant contribution of the focused research programmes. These include programmes under CoEST (Centre for Excellence in Steel Technology: funded by Ministry of Steel), providing a platform for critical research collaborations for Indian Steel Industry), several technological products and a wide range of sponsored research projects.

Another relatively new collaborative Centre funded by the Department of Science and Technology this year is the Water Innovation Centre: Technology, Research and Education (WICTRE), which focuses on very important areas, especially considering the present need of our country.

Projects	Sponsored Projects	Consultancy Projects
New	20	05
Ongoing	52	47
Completed	18	05

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	01	-	05	198

Department of Physics

The Department of Physics at IIT Bombay started functioning in 1959. It has a tradition of vibrant teaching and offers many research topics. It remains one of the most preferred destinations for students at all levels. The faculty members of the Department are playing a leading role in establishing a Centre for Quantum Computing at IIT Bombay. An important role of this Centre is to offer an IDDDP programme in quantum computing.



Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	53
No. of Post-Doc Fellows	45

Academic Programmes: The Department offers a four-year BTech in Engineering Physics, a two-year MSc in Physics and a PhD programme.

Total no. of students on-roll: 538

Programmes Offered	Students Intake	Degrees Awarded
BTech	60	37
DD (BTech + MTech)	-	05
MSc	53	45
DD (MSc+PhD)	-	03
PhD	25	10
IDDDP	-	01

R&D Activities: The Department has five major research groups namely Condensed Matter Physics, High Energy Physics, Soft Matter Biophysics-Non-linear Dynamics - Statistical Physics, Optics - Photonics - Spectroscopy and Astrophysics - Cosmology - Gravity. The Department has many high-end computational, materials preparation and characterization facilities for common use, in addition to a workshop. In addition to the present facilities, the Department is in the line of setting up “Electron Beam Lithography Central Facility” as part of the Institute of Eminence initiative. The members of the Department continue to participate in Mega Science projects of the country, such as LIGO, Indigo (gravitational wave detectors), ASTROSAT (X-ray, UV and optical studies from satellite), INO (India-based Neutrino Observatory) and ALICE (Heavy Ion experiment at CERN, Geneva).

Projects	Sponsored Projects	Consultancy Projects
New	13	01
Ongoing	47	02
Completed	12	-

The Department organized several workshops during the year 2021-22, notably among them was IIT Bombay-Hiroshima workshop on High Energy Physics, where the work done on Neutrino Physics and Cosmology in the past year was reviewed. The workshop was led by Prof. S. Uma Sankar and Prof. Urjit A. Yajnik.

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	01	02	29	158

Department of Humanities and Social Sciences

The Department of Humanities and Social Sciences (HSS) houses the disciplines of Economics, English Literature, Linguistics, Philosophy, Psychology, Sociology, CISTS (Sanskrit) and History. The Department is in the line of expanding by incorporating other disciplines like Political Science in the near future.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	51
No. of Post-Doc Fellows	09

Academic Programmes: The Department offers a Bachelor of Science in Economics (4-Year), a MA-PhD programme in Philosophy, an MPhil in Planning and Development (2-Year) and a PhD programme in all of disciplines currently constituting it. At present, 112 students are enrolled in the BS programme in Economics and the first batch of students graduated in 2021 and got excellent placements. The PhD programme of the Department has been running since 1973 and the MPhil programme was initiated in 1993 but is being officially closed down and the last batch will graduate in June 2023. From autumn semester of 2022, the Department has launched MA by Research programme in Sociology/ Language, Literature and Performance Studies/ Human Sciences. The Department offers a number of

core and elective courses for the BTech, MTech and the MBA programmes of the Institute.

Total no. of students on-roll: 483		
Programmes Offered	Students Intake	Degrees Awarded
MPhil	15	12
PhD	43	18
DD (MA + PhD) (in Philosophy)	10	-
BS (Economics)	35	26
DD (MPhil + PhD)	-	01

The Department, apart from the production and dissemination of its disciplinary concerns, also plays a unique and distinctive role within the vision of the Institute, which seeks to promote a holistic science and technology education. The inclusion of the study of the Humanities and other Social and Behavioural sciences ensures that our quest within the frontiers of the science and technology takes place in an informed manner and attends to humanitarian and social concerns.

Apart from the facilities made available to all students at the Institute-level and at the Department-level, the students also have access to the resources available in the Department's Library, Computer Labs and the newly established Econometrics Lab. The Department also has psychology laboratories.

R&D Activities: The Department faculties are involved in a number of research projects independently, in collaboration with faculty members from other Departments of IIT Bombay and as part of international research networks and partnerships. Faculty members and student researchers of the Department conduct research in several cutting-edge areas and emerging sub disciplines as well as trans-disciplinary themes such as computational linguistics, climate studies, organizational justice, digital media, innovation, gender and environmental change.

Projects	Sponsored Projects	Consultancy Projects
New	02	02
Ongoing	15	10
Completed	04	-

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	-	12	02	22

IDC School of Design

IDC School of Design (IDCSoD) at IIT Bombay offers an excellent environment for academics, research and applications in the field of design. The School interacts with industries and institutions for promotion and awareness of design. These are in the form of seminars, short-term courses and workshops. In the area of design practice, IDCSoD offers professional design consultancy and advisory services to industries and other organizations. The potential for innovation at IDCSoD lies fundamentally in terms of solving real-world problems.

IDC School of Design envisions a holistic design education that shapes the students into responsible contributors to society. It enables them to identify significant contemporary problems, inculcate critical thinking, critique conventional solutions and challenge the status quo to arrive at creative solutions through collaborative team efforts at different levels of society and influencing policymaking that lead to innovations.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	56
No. of Post-Doc Fellows	-

Academic Programmes: The IDC School of Design at IIT Bombay has a well-established Master of Design degree (MDes) programme in Industrial Design, Communication Design, Animation Design, Interaction Design,



Mobility and Vehicle Design and minor courses, as well as a PhD programme in Design. From the year 2015 onwards, IDCSoD has started a four-year, eight-semester Bachelor of Design (BDes) programme and (BDes+MDes) dual degree is a five-year, ten-semester course, which is available only at the end of the third year. Both these programmes are credit-based and thus offer the flexibility to progress at one's own pace.

Total no. of students on-roll: 394

Programmes Offered	Students Intake	Degrees Awarded
BDes	37	17
MDes	71	63
PhD	08	02
DD (BDes + MDes)	-	09

	Sponsored Projects	Consultancy Projects
New	-	06
Ongoing	13	12
Completed	04	04

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	01	-	02	-

Highlights:

LETS (Learn English Through Stories), which had been running at IDC School of Design since 2015, funded by the Tata Centre for Technology and Design at IIT Bombay, was translated into a Section-8 company (not-for-profit) in July 2021, with the intent of taking this model of teaching and learning out into the world. The LeTS (Learn Through Stories) Foundation is the first faculty-led Section-8 company to come out of IIT Bombay in all its years. Prof. Alka Hingorani is the PI of the project and is now one of the Directors of the Foundation. She is accompanied by Prof. Arti Kalro of the Shailesh J. Mehta School

of Management, who is both co-PI and another Director of the Foundation.

Shailesh J. Mehta School of Management

Today, Shailesh J. Mehta School of Management (SJMSOM) has occupied its distinct place across the globe as an Institute of Excellence in Management, Education and Research. The year 2021-22 was marked by further strengthening and consolidation of the academic programmes of the School.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	44
No. of Post-Doc Fellows	01

Academic Programmes: The School of Management offers Doctoral Programme (PhD) in Management, 2-year full-time Master of Business Administration (MBA), BTech (Minor) in management, Executive MBA (E-MBA) joint degree by Shailesh J. Mehta School of Management, IIT Bombay and Olin Business School, Washington University in St. Louis USA, certificate programmes, short and long duration in-house and open management development programmes for the corporate executives/ professionals of all areas.

New elective courses introduced during the academic year 2021-22

- Markets and Treasury – Functional Architecture and Processing
- Empirical Issues in Financial Markets
- Theory of Finance

Total no. of students on-roll: 326

Programmes Offered	Students Intake	Degrees Awarded
MBA	114	110
PhD	23	08
E-MBA	35	04

R&D Activities: Faculty members of the School are engaged in many research/ consultancy projects in all areas of management. Apart from focusing on research in the functional areas of management, faculty members are also involved in applied research related to rural development, climate change and other interdisciplinary areas. Setting up of Behavioural Lab at SJMSOM with well-equipped facility is an important milestone of the year. The lab enhances research on human behaviour in decision-making in various management areas.

Projects	Sponsored Projects	Consultancy Projects
New	03	02
Ongoing	04	05
Completed	02	-

Student Achievements:

Bhaskar Chhimwal, a postdoctoral student (SJMSOM) along with co-authors Prof. Piyush Pandey and Prof. Varadraj Bapat, Shailesh J. Mehta School of Management, have won the Best Paper: Student Category award at the 8th International Conference on Business Analytics and Intelligence (ICBAI) organized by Operational Research Society of India Bangalore Chapter (ORSI-BC), Department of Management Studies, IISc, Bangalore and Analytics Society of India (ASI), IIM, Bangalore during December 20–22, 2021 for their paper titled *"Prediction of InvestmentFlow and Investment Decision of Various Investors: Artificial Neural Network Approach."*

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	03	06	26	42

Desai Sethi School of Entrepreneurship

In 2010, IIT Bombay envisioned a dedicated centre to offer courses on innovation and

entrepreneurship with the relevant content, context and contacts to aspiring students. This vision took shape in 2014 when an alumnus of IIT Bombay, Mr. Bharat Desai and his wife Neerja Sethi donated one million dollars to start the Centre. The Centre got the status of School recently.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	08
No. of Post-Doc Fellows	-

Academic Programmes: The Desai Sethi School of Entrepreneurship (DSSE) offers several courses and labs relevant to innovation and entrepreneurship. These are open to undergraduate as well as postgraduate (Masters and PhD) students of the Institute. Students who complete a minimum of 30 credits receive an additional degree of BTech (Minor) in Entrepreneurship.

The school runs a Proof-of-Concept lab located on the ground floor of IDC School of Design. It houses hand tools and craft materials suitable for fabricating proof-of-concept of novel products. These courses and labs are complemented by experiential learning in various aspects of product innovation and business lifecycle through structured mentoring programmes offered by DSSE. These include IDEAS (Innovation, Development and Entrepreneurship with Alumni Support) and WiE (Women in Entrepreneurship).

DSSE organizes various programmes related to innovation and entrepreneurship bootcamps and training in association with government, academic and industry partners like the India Innovation Growth Programme with the Ministry of Science and Technology. The School has symbiotic relationships with student-managed bodies like E-Cell and STAB along



with the Institute's business incubator SINE. The School partners with several partner institutes (such as NUS Singapore TUB Germany) and organizations (such as Asian Universities Alliance) for exchange visits of faculty and students and collaborative training programmes related to innovation and entrepreneurship. DSSE conducts executive education programmes for working professionals to update their knowledge and skillset in critical aspects of innovation and entrepreneurship. The School also offers dedicated programmes for teachers, innovation/ incubation managers and administrators from academic institutes to learn about entrepreneurship courses and programmes and implement them in their institutions.

R&D Activities: DSSE is collaborating with Rajiv Gandhi Science and Technology Commission (RGSTC), Government of Maharashtra, for a pilot project to review the projects supported by them in the last ten years and guide selected investigators in commercializing their technologies. The pilot project will shortlist promising (commercially viable) projects, share the best practices in technology package preparation and connect interested teams to potential licensing partners.

Projects	Sponsored Projects	Consultancy Projects
New	-	-
Ongoing	01	-
Completed	-	-

Other Highlights:

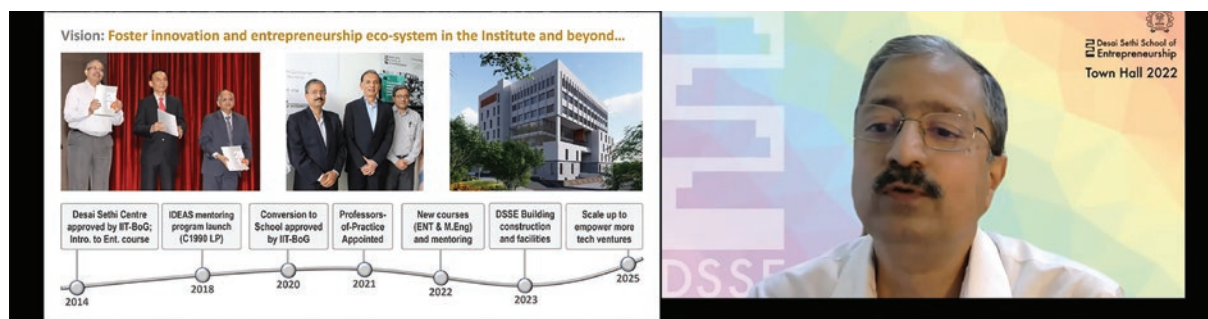
DSSE felicitated the mentors, many of them were Institute alumni, who guided aspiring student teams in planning technology venture, to recognize their invaluable contribution.

- In collaboration with TU Braunschweig Germany, DSSE co-organised a virtual

international entrepreneurship summer school for international participants, in September 2021.

- Prof. Devdip Purkayastha (Professor of Practice, IIT Bombay) was invited as the Co-ordinator of the entrepreneurship programme as part of the Ladakh initiative, following a visit by IIT Directors to Ladakh and a presentation to the Hon'ble Lt. Governor of Ladakh in September 2021.
- DSSE, Professor-in-Charge and the faculty members participated in the invited talks at HDFC Ergo-IIT Bombay Innovation Centre, IIT Hyderabad; Nadathur S Raghavan Centre for Entrepreneurial Learning (NSRCEL) Indian Institute of Management Bangalore (IIMB), Madras; CII Panel discussion.
- The Entrepreneurship Minor programme was revamped by clubbing half-semester courses into two new courses – 'Managing Innovation and IP for Entrepreneurs' and 'Marketing and Finance for Entrepreneurs' and these were offered from Autumn 2021.
- Prof. P. Kumaresan and his team created and distributed over 2000 DIY (Do-It-Yourself) masks during the COVID lockdown.
- A new building for the School has been planned to house design, DIY labs, prototyping and manufacturing facilities as well as student teams, co-working teams, faculty and officers. It will help educate, mentor and support aspiring technology entrepreneurs.
- Mr. Bharat Desai, Distinguished Alumnus of the Institute addressed the students enrolled in different entrepreneurship courses in a joint session in August 2021.

- Other eminent speakers invited for guest lectures included Mr. K. Mahalingam, TSM Group; Mr. Rahul Jain, Co-Founder of Epigamia; Mr. Shantanu Rastogi, MD, General Atlantic; Mr. Gajanan Gandhe, Country Head – DANA India and Mr. Rajesh Dighde, Senior Director Engineering, Microsoft.
- Mr. Salil Donde, Distinguished Alumnus and CEO, Ventiv Technology took sessions on Blockchain. He also supported the content development for a course for the online Masters of Engineering (M.Eng) programme in innovation and entrepreneurship.



Prof. B. Ravi, Institute Chair Professor, Department of Mechanical Engineering, sharing DSSE School Update during the DSSE Town Hall 2022



Clockwise: Prof. Devdip Purkayastha, Dr. Raj Hirwani, Prof. Parag Bhargava and Dr. Ajay Sethi during a panel discussion on 'How to identify and nurture deep tech ventures/ founders?' held on January 29, 2022



Centre of Studies in Resources Engineering

Established in 1976, the Centre of Studies in Resources Engineering (CSRE) is an academic unit of IIT Bombay, noted for its research in the areas of machine learning, synthetic aperture radar and hyperspectral image analysis, GPS applications, high-performance computing, geospatial IoT, mineral exploration, agro-informatics, cryosphere, water resources and hydrology and so on. The Centre's work has been presented in some of the best-known journals and in several prestigious conferences.

The Centre has a global reach with international collaborations in the fields of microwave remote sensing, geology and mineral resources and data sciences in agriculture. The Centre has developed excellent infrastructure in terms of state-of-the-art software, hardware, image datasets and platforms (for example UAV with Hyperspectral camera).

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	12
No. of Post-Doc Fellows	01

Academic Programmes: The Centre offers MTech, PhD programmes and Minor programme in Geoinformatics and Natural Resources. A new course, "Planetary Sciences: Earth and Beyond" (GNR649) was introduced in 2021-22. The Doctoral programme at the Centre aims to develop highly qualified and trained manpower that is needed for the effective utilization of contemporary technologies as applied to Natural Resources and related areas.

Total no. of students on-roll: 115

Programmes Offered	Students Intake	Degrees Awarded
MTech	24	24
PhD	10	04

R&D Activities: The Centre has been actively working on many research and development activities through projects covering geoinformatics and applications to earth systems. The major fields of research include optical and microwave remote sensing; geo-computation and GIS; satellite image processing and analysis; IoT; photogrammetry, GNSS & GPS; oceanography and marine science, atmospheric studies; agroinformatics and precision agriculture; water resource; climate change modelling; snow, glaciers and ice studies; natural hazards and disaster management; forestry and ecology; infrastructure planning; geology and mineral exploration; planetary sciences; surveying and geodesy; urban development and town planning. In addition, the Centre is also engaged in various consultancy services in the area of geoinformatics and its applications to natural resources exploration and management.

Projects	Sponsored Projects	Consultancy Projects
New	01	03
Ongoing	18	16
Completed	-	02

During the year 2021-22, the Centre conducted various webinars, including 'Data Driven Agriculture and Natural Resource Management – Opportunities and Challenges' emphasizing the importance of applications of data science to agriculture and 'MinProXT' highlighting the applications of GIS-based mathematical models to mineral exploration targeting.

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	01	03	42	62

Centre for Technology Alternatives for Rural Areas

The Centre for Technology Alternatives for Rural Areas (CTARA) was established at IIT Bombay

in 1985 with a vision to develop appropriate technology solutions through field works for the informal sector.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	12
No. of Post-Doc Fellows	03

Academic Programmes: The Centre offers an MTech programme in Technology and Development with a focus on training development sector professionals and a PhD programme. It also offers Technology and Development Supervised Learning (TDSL).

A new one-year “Masters in Development Practice” programme on the guidelines of Master in Engineering (M. Eng.) programme is developed, to be launched in the year 2022, which will target professionally equipped young development practitioners, with field experience, by building their academic and analytical abilities enabling them to become efficient practice-professionals in the development sector.

A new 6-credit course was introduced under TD 610 on design of bamboo structures. The course helps in developing a systematic approach toward understanding the material and developing the ability to design various structural elements and structures with bamboo and its composites.

Total no. of students on-roll: 139		
Programmes Offered	Students Intake	Degrees Awarded
MTech	26	22
PhD	13	06

CTARA has carved out a space where the issues related to the rural areas are comprehended through its unique course outline which are

studied through hands on practical insight of on-ground problems by working with the farmers as well as stakeholders and then attempting to address them through their Masters’ project.

R&D Activities:

The key research works during the year 2021-22 were as follows:

- sustainable water, agriculture and rural development using a transdisciplinary research approach
- innovative and contemporary techniques of breastfeeding which improves weight gain in babies
- an integrated research-cum-demonstration and dissemination approach got initiated for taking bamboo construction technology from lab to land through direct stakeholder engagement to provide training, entrepreneurship and livelihood to farmers along with technology development
- development of a comprehensive framework for mapping current utilization practices of underutilized crops and generate possible alternative solutions for value addition in selected regions of Maharashtra, Madhya Pradesh and Gujarat, along with technologies to address post-harvest issues in agriculture
- policy performance in the last mile of delivery in sectors like electricity distribution, municipality, government schools of remote areas, drinking water in villages and non-metro towns, frontline workers and citizen’s compliance during COVID-19, marketing channels for farmers and livelihood challenges of migrant female construction workers
- development and scale up of a framework for water and energy usage in agriculture to estimate energy infrastructure for irrigation, under an MoU with PoCRA (Project on

Climate Resilient Agriculture), a World Bank funded project implemented by the Department of Agriculture, Maharashtra and IIT Bombay

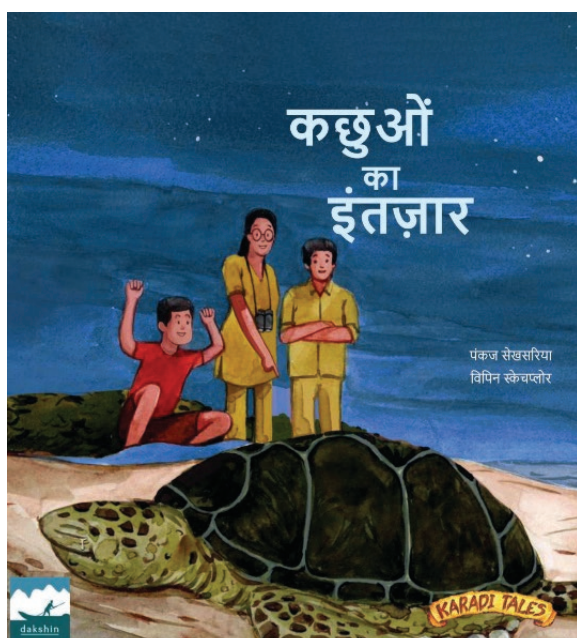
Under Rural Technology Action Group (RuTAG), the key works were:

- dissemination of natural fibre water tanks for rural areas
- signing of MoU between IIT Bombay and African-Asian Rural Development Organization (AARDO) for collaboration in knowledge partnership and to act as a forum for exchange of views and ideas for rural development

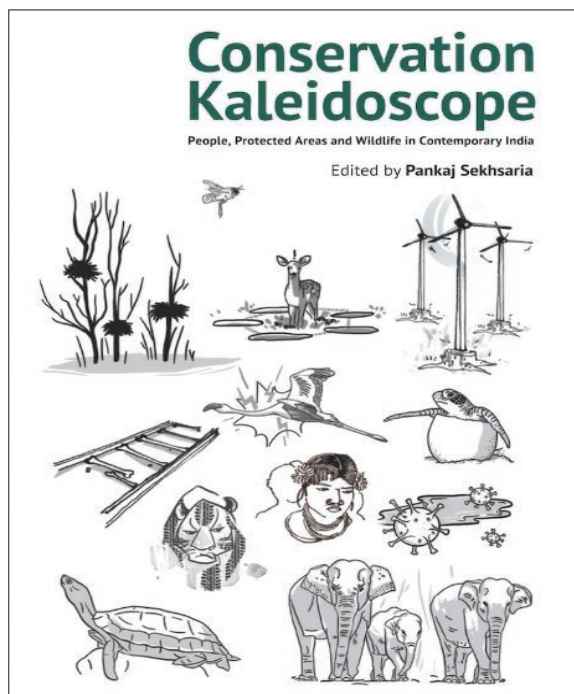
Projects	Sponsored Projects	Consultancy Projects
New	13	01
Ongoing	20	07
Completed	08	03

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	02	09	06	33



Cover page of book by Prof. Pankaj Sekhsaria



Cover page of book by Prof. Pankaj Sekhsaria

The Centre organized various training programmes, workshops and seminars, including:

- Food and nutrition security in a post-pandemic world
- Field workshop on PRA in Mamnoli village near Murbad
- Interaction with civil servant
- Webinar series on bamboo
- Maternal Infant Young Child Nutrition (MIYCF)
- AICTE-IIT Bombay Mapathon
- Freshwater ecosystem conservation and management through stakeholders engagement in drought prone areas of Maharashtra
- Freshwater ecosystem conservation and management in drought prone areas of Maharashtra (Darewadi, Sangamner Subdistrict, Ahmednagar District, Maharashtra)

- Paani Foundation's approach to supply and demand side management of water through collective action

Student Achievements:

CTARA students took part and won prizes and awards at various Institute-level, national as well as international competitions spanning across various genres, including sports, cultural, literary, innovation, technical and academic.

- Ms. Himali Mhatre won the third prize for best paper, titled "*Building Community Capabilities in Pandemic Response Role of Mental Models held by Lay People of Phenomena related to COVID-19*" and "*Family Preparedness for Disaster Risk Reduction by Engaging Local Governance and Communities in Bihar*" in the General Category at the 5th World Congress on Disaster Management, New Delhi.
- Mr. Harshit Agarwal won the 'Dekho Apna Desh' Quiz-Episode 03 organized by Ministry of Tourism, GoI under "Azadi ka Amrit Mahotsav".
- Ms. Meeta Gupta won a merit prize in the Indian National Science Academy (INSA)-Science and Engineering Research Board (SERB) Essay 2022.

Centre for Formal Design and Verification of Software

The Centre for Formal Design and Verification of Software (CFDVS) has established itself as a national R&D Centre in the area of formal verification of high-integrity software and hardware. Although the initial focus of the Centre was on design and verification of software, it was quickly realized that the scope of activities needed to be expanded to include both software and hardware systems, in order to provide a comprehensive approach to design

and verification of safety-critical systems. Safety-Critical systems include computer-based control systems used in nuclear reactors, space, avionics, process control and robotics. Failures in such systems due to software or hardware bugs can be catastrophic both financially and in human terms. Verification of safety-critical system was the primary inspiration behind Department of Atomic Energy's (DAE) establishing the Centre for Formal Design and Verification of Software (CFDVS) through Board of Research in Nuclear Sciences (BRNS) and in collaboration with IIT Bombay and Tata Institute of Fundamental Research (TIFR) in 1999. The Centre has contributed to several R&D programmes in formal verification and has taken up sponsored industrial projects from various government organizations like VSSC, ADA, DRDL and DRDO and also from high-profile private organizations like Intel, Microsoft Research, Texas Instruments, General Motors, Tata Consultancy Services etc. CFDVS has benefited DAE in terms of research and development of advanced formal verification tools.

The laboratories are equipped with a number of personal computers, high-end servers, HPC data center and workstations. The current software resources include a number of public domain tools for formal specification and verification, advanced static analysis, dynamic analysis and testing tools (test-beds), modeling languages and related environments for real-time software supporting simulations and verification, hazard analysis tools and CASE tools and general programming environments. During the past 23 years, tools and techniques developed at CFDVS have been applied successfully to small and medium-sized problems, both from the academia and industry. This has demonstrated the Centre's ability to handle the technological challenges involved in addressing complex problems at the small to medium scale. CFDVS is currently focusing on automated techniques for larger real-life systems and to make the



resulting technologies available to the end-user community in India. This can reap significant benefits in verification projects undertaken at DAE, ISRO, DRDO.

Ongoing Project:

- An abstraction-refinement based Translation Validator for GCC Compiler

Centre for Urban Science and Engineering

The Centre for Urban Science and Engineering (C-USE) was set up in 2013 with the focus to improve the urban quality of life. Though in its nascent stage, the Centre has been able to leave its mark as one of the major academic units contributing to the emerging field of urban science and engineering. The Centre aims to combine science and technology with sustainable, equitable and human-friendly design to deliver innovative and holistic services to improve the quality of life of the rapidly urbanizing population in the developing world.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	06
No. of Post-Doc Fellows	01

Academic Programmes: The Centre currently offers Master of Technology and PhD programmes. The Centre is interdisciplinary in nature and hosts multifaceted faculty (core and associated faculty).

Total no. of students on-roll: 41

Programmes Offered	Students Intake	Degrees Awarded
MTech	05	04
PhD	05	04

R&D Activities: The Centre is actively involved in basic and applied research and consultancy and provides high-quality technical advisory

support through various R&D projects and consultancy to various organizations. The research activities of the Centre focus on new products and solutions related to housing, transport, water management, energy efficiency, urban informatics, health, governance, urban poverty and citizen science, while mitigating the effects of natural disasters and climate change. The Centre aims to establish links with various institutes in India and other countries that are addressing urban challenges.

The urban studio has been upgraded to handle hybrid mode of teaching; this will enhance students to engage field activities more efficiently. The Centre has attracted significant amount of sponsored research funding from government and private agencies. The research activities of the Centre focus on understanding urban issues and work towards new products and solutions related to housing, transport, water management, energy efficiency, urban informatics, health, governance, urban poverty and citizen science while mitigating the effects of natural disasters and climate change.

Projects	Sponsored Project	Consultancy Projects
New	-	01
Ongoing	08	03
Completed	01	01

Outreach/ Publicity Activities:

The Centre disseminates knowledge gained from its high-quality research through training programmes and interacts with world-renowned personalities through workshops and conferences. During the year 2021-22, the Centre organized several workshops, including 'Low-cost interventions for improving water supply systems in India', 'Design and optimization of water supply system using JalTantra', 'Working with City Energy Analyst (CEA)', 'Implication

of electricity metering in India – Dissemination workshop of the project “What’s in a meter?”. The Centre also conducted two quality improvement and continuing education programmes for academicians and field engineers. The students and faculties have won prestigious national and international awards and recognitions and continue to bring laurels to the Institute.

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	01	04	07	11

Centre for Research in Nanotechnology and Science

IIT Bombay is one of the leading institutions in the country for research in the field of Nanoscience and Nanotechnology. The Centre for Research in Nanotechnology and Science (CRNTS) was formed in the year 2005 through a generous grant from the Department of Science and Technology (DST), Government of India. This Centre engages in interdisciplinary research in Nanoscience and Nanotechnology. The associated faculty members in CRNTS are faculty members in various academic units in IIT Bombay.

The broad research areas at CRNTS include Nanomaterials; Nanosensors; Nanoelectronics; Nanobiotechnology and Nanomanufacturing. Some current research topics include: Micromechanical theory for explaining the colloidal aggregation phenomenon; Nanoparticles and nanocomposites for removal of organic pollutants and heavy metals from water; Nanostructures for Environmental Biosensors; Ecotoxicological studies on nanomaterials; 3D printing for development of flexible electronic devices and sensors; Polymer composite membranes for water-oil separation; Investigation of damage mechanisms in nanocomposites using experiments and multi-

scale modelling; and Structure-property correlations of additively manufactured nano-concrete.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	-
No. of Post-Doc Fellows	01

Academic Programmes:

Total no. of students on-roll: 110

Programmes Offered	Students Intake	Degrees Awarded
PhD	14	09

R&D Activities: The Centre hosts Sophisticated Analytical Instrument Facility (SAIF), which houses a variety of major analytical instruments operated. SAIF-IIT Bombay funded by DST serves as an academic, research and scientific service provider and facilitator. Various additional advanced instrumentation facilities have been set up in CRNTS to meet the advanced instrumentation need for IIT Bombay researchers across various academic units. SAIF/CRNTS also supports various interdisciplinary academic and research activities by conducting workshops, webinars and training programmes.

A wide range of analytical techniques for chemical analysis and material testing and characterization including qualitative and quantitative elemental analysis, molecular analysis, structure determination, surface topographic studies and physical, optical and electrical characterization of materials are available in SAIF and CRNTS. Around 2523 students and scientists from academic institutes, national labs and industries utilized the SAIF and CRNTS facilities at IIT Bombay for analyzing 21,741 samples during the financial year 2021-22, despite the lockdown and various restrictions imposed by the Covid -19 pandemic.



New facility installed: The Dual Beam (Focused electron and Ion beam Microscope facility)

Model Helios 5 UC worth Rs. 6 crores has recently been installed in SAIF/ CRNTS through funding provided by the Department of Science & Technology (DST). This facility is a combination of Electron and Ion Beam Microscopy, where an electron beam intersects the ion beam at 52° just above the sample surface, producing instantaneous SEM imaging of the surface milled by FIB. The FIB-SEM technique combines precise, high-resolution imaging with chemical analysis capabilities. It offers a broad product portfolio and advanced automation capabilities for a range of applications, including transmission electron microscopy (TEM) sample preparation, subsurface, and 3D characterization, nano-prototyping, and in situ experimentation.



Helios 5 Dual Beam (Focused electron and Ion Beam Microscope facility) at SAIF/ CRNTS

Projects	Sponsored Project	Consultancy Projects
New	-	03
Ongoing	02	02
Completed	-	03

During the year 2021-22, the Centre organized various webinars, including Electron Energy Loss Spectroscopy (EELS): Principles, instrumentation technique and illustrative examples presented by



*Visit of Kendriya Vidhyalaya, IIT Powai school children under the DST-STUTI programme organized in collaboration with Institute of Chemical Technology, Mumbai.
This event was organized as a part of "Azadi Ka Amrit Mahotsav"*

Dr. Raul Arenal, ARAID Senior researcher and CNRS researcher- Instituto de Nanociencia y Materiales de Aragón (INMA) and Small Angle X -Ray Scattering (SAXS): A Versatile Tool presented by the scientists in Xenocs from various countries.



Team from Military Institute of Technology (MILIT – Armed Forces Training), Girinagar, Pune visit SAIF/ CRNTS, IIT Bombay

Ashank Desai Centre for Policy Studies

The Centre was set up in 2016 to provide a fillip to the study of Public Policy. It was renamed in 2021 as Ashank Desai Centre for Policy Studies (ADCPS). The Centre's vision is to become a centre of excellence that facilitates evidence-informed and inclusive public policy. During the year, the Centre worked on its mandate of creating robust academic space for core policy research as well as policy research in various sectoral areas.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	07
No. of Post-Doc Fellows	02

Academic Programmes: CPS offers a Doctoral programme and Master's programme in Public Policy.

Total no. of students on-roll: 95

Programmes Offered	Students Intake	Degrees Awarded
PhD	10	-
MPP	13	07

The first Policy Dialogue of ADCPS, an online event was held on the topic of 'Examining Platforms, Data and Infrastructure'. Prof. Eben Moglen (Columbia University) delivered a talk on "The state, social platforms and the Citizen: Negotiating Democratic Rights", a panel discussion and presentation by Justin Sherman (Duke University) on "Data Brokering: Precarity of Data Supply Chain Models". The dialogue was well-received by both internal and external audiences of IIT Bombay.

Projects	Sponsored Projects	Consultancy Projects
New	01	-
Ongoing	04	03
Completed	01	-

During 2021-22, many policy-relevant seminars and conferences were organised including:

1. Gendered Citizenship - Understanding Gendered Violence in Democratic India
2. In Pursuit of Usable Knowledge - Policy Analysis as Deliberative Practice
3. Plural Ideas of Justice: Stories, Narratives and Experiences from India
4. Deep Dive on Mental Models
5. Breaking the Technological Ice - Artificial Intelligence and Policy
6. From the Gita to Google: Policy Challenges and Solutions for an Age of Global Crises
7. Inequalities, Public Policy and the State: Role of Civil Society
8. Blue Infrastructures: Natural History, Political Ecology and Urban Development
9. The Broken Chain of Accountability
10. Enabling Advocacy and Change Through Documentaries
11. Looking Out, Looking Within - Manufactured Consent, State-making and the Margins
12. Mechanisms of Misinformation in Vernacular Mainstream Media
13. Out of Time: The Queer Politics of Postcoloniality
14. Long Lives are for the Rich - Why is there such extreme inequality between older people? How can we analyze this?
15. Towards safe drinking water and clean cooking for all
16. Policy Analysis for a Functioning Democracy
17. Influencing Public Policy
18. Public-private Partnerships in Data Literacy Policies: The DataLEADS Story
19. The Art of Conjuring Alternate Realities: How Information Warfare Shapes Your World
20. The Social Platform Infrastructure
21. Practitioner's perspective of public policy research, advocacy and consulting space in India



Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	-	07	11	-

Educational Technology

The Interdisciplinary Programme in Educational Technology (IDP-ET) started in the Institute in 2010-11. The IDP-ET conducts research in areas of pedagogies and tools for technology-enhanced learning. In addition to the Institute courses in PhD and MTech programmes, the IDP-ET organizes short-term courses and MOOCs on effective teaching-learning with emerging technologies and educational research methods through CEP, NPTEL and IITBombayX. The faculty members, post-doctoral research scholars and PhD students of the IDP-ET play a significant role in the organization of international conferences, carrying out government and industry sponsored projects and providing consultancy.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	07
No. of Post-Doc Fellows	02

Academic Programmes: The Group offers a PhD and MTech programme in Educational Technology. The IDP-ET continues to offer core courses and electives in various topics in educational technology. These courses have had enrolment from BTech, MTech and PhD students in other academic programmes within the Institute. The following new courses were added to the curriculum in 2021-22:

- Educational App Design
- Educational Neuroscience

Total no. of students on-roll: 56

Programmes Offered	Students Intake	Degrees Awarded
PhD	09	03
MTech	08	05

R&D Activities: Several R&D activities were conducted keeping in mind the main research areas of the IDP-ET that comprised of Technology-enhanced learning of disciplinary practices (TELeAD), Educational data analytics ((EDA) and Emerge.

Projects	Sponsored Projects	Consultancy Projects
New	02	01
Ongoing	05	01
Completed	05	01

Major highlights:

- **EdTech Tulna Launch:** Created by the IDP in Educational Technology in partnership with the Central Square Foundation, the EdtechTulna provides evidence-led quality standards for EdTech products to guide decision making. The initiative was launched on November 26, 2021.
- **EdTech Society:** Faculty and alumni of EdTech Department, registered a new society to improve instruction and learning through the use of educational technologies in India. This society will provide a public forum for linking research and best practices in educational technology to improve instruction and learning within India and internationally.
- **EdTech Video Podcast:** The EdTech Department started a new YouTube video interview podcast series, “Talk Brainy to Me!” and “My Take on EdTech,” to get diverse viewpoints from experts in various fields to discuss their experiences and perspectives on topics related to education, technology and neuroscience.

Faculty, post-doctoral research scientists and PhD research scholars participate as reviewers for following journals:

- ACM Transactions on Computing Education (ToCE)
- IEEE Transactions on Education (ToE)

- ACM Transactions on Multimedia Computing Communications and Applications (TOMM)
- Educational Technology, Research & Development (ETR&D)
- International Journal of Distance Education Technologies (IJDET)
- Research and Practice in TEL (RPTEL)
- Interactive Learning Environments (ILE)
- Journal of Computers in Education (JCE)
- Cognitive Research: Principles and Implications
- IEEE Transactions on Learning Technology (TLT)
- Journal of the Learning Sciences (JLS)
- International program committee member for various conferences: Artificial Intelligence in Education (AIED 2019)
- International Conference on Computers in Education (ICCE 2018)
- International Conference on Computational Thinking Education 2017 (CTE 2018)
- International Conference on Advanced Learning Technology (ICALT 2019)

Other Highlights:

The Group held various CEP and Faculty Professional Development programmes in the year 2021-22, including:

- Pedagogy for digital learning environments - a CEP training course for about 30-35 faculty participants of NABARD (Bank) during November 27-28, 2021 and December 4, 2021
- “Online Teaching”, a one-week workshop for Kotak Education Foundation (KEF) teacher trainers, Mumbai during June 09-14, 2021
- “Use of ICT for Effective Teaching-Learning” at FDP on “Utilization of ICT tools and virtual lab platform for E-content development”, Amity Institute of Pharmacy, Amity University Uttar Pradesh, Lucknow on July 10 and 24, 2021
- “Effective Use of ICT for Conducting Live Interactions” at Navy Children School, Mumbai on May 04, 2021

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	-	01	18	03

Industrial Engineering and Operations Research

Industrial Engineering and Operations Research (IEOR) was established as one of the first interdisciplinary programmes in IIT Bombay in the year 1976.

IEOR has a depth and breadth of capability that makes the programme unique in the country. The discipline offers a blend of theory, modelling and application, drawing from traditional as well as modern areas of operations research, together with a systems view derived from long-standing principles of industrial engineering. IEOB contributes significantly to achieving the goals through various activities such as offering academic programmes, conducting continuing education programmes (CEP) and carrying out research projects of different types. IEOB has a very vibrant alumni group.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	11
No. of Post-Doc Fellows	02

Academic Programmes: IEOB offers PhD, MTech, (MSc + PhD) dual degree programmes and Interdisciplinary Dual Degree Programme (IDDDP) with average intakes of 8, 33, 11 and 1 respectively. IEOB offers a UG Minor. IEOB offers a range of courses in the areas of optimization, stochastic models, simulation, statistics, machine learning, artificial intelligence, deep learning, supply chain, logistics, operations, service systems etc. The IEOB curriculum also includes computational labs that train students on various modelling and software tools that can help implement operations research theory and algorithms to solve practical problems.



Total no. of students on-roll: 144

Programmes Offered	Students Intake	Degrees Awarded
PhD	08	04
DD (MSc +PhD)	14	02
MTech	31	20
MSc (2-Year)	-	11
PGDIIT	-	03
DD (MTech +PhD)	-	01

R&D Activities: The core areas of research include theoretical and computational optimisation, convex optimisation, probabilistic and stochastic models, data analytics, machine learning, reinforcement learning, deep learning, Markov decision processes, queueing theory, simulation modelling and analysis, system dynamics methodology, optimal control, game theory and networks, mathematical finance, logistics and transportation, railway operations and supply chain analysis. Faculty members served as referees for several journals and international conferences. IEOR has hosted several visitors from academia and industry in the year. Faculty members visited various universities to pursue joint research.

Projects	Sponsored Projects	Consultancy Projects
New	04	-
Ongoing	06	01
Completed	05	01

Outreach/ Publicity Activities:

- The Department of IEOR celebrated the first virtual IEOR Day on April 10, 2021.

Many eminent international personalities were part of the event. The participants shared their experience and ideas on the theme “*The pandemic: Living through and Looking beyond*” in the form of guest talks. The event was inaugurated by Mr. Sharad Saraf, Chairman and Managing Director, Technocraft Industries and Member of the Board of Governors of IIT Bombay.

- The research paper, co-authored by Prof. Ashutosh Mahajan, ‘*Minotaur: a mixed-integer nonlinear optimization toolkit*’, has been awarded the ‘2021 Best Paper Award’ by the editorial board of *Mathematical Programming Computation Journal*.
- Two research scholars Mr. Pranav Vinod Machingal and Ms. Kritika Karwasra have been awarded the prestigious PMRF fellowship starting from Autumn Semester 2021-22.
- Dr. Arun Verma, a PhD student, received COMSNETS’ Best Ph.D. Thesis award for his thesis titled ‘*Sequential Decision Problems with Weak Feedback*’. The coveted award carried a cash prize of INR 75000.

During the year 2021-22, the Department conducted various conferences and webinars, including ‘The pandemic: Living through and Looking beyond’, ‘Classification, Consistency of Convex Loss Functions and Label Noise Robustness’ and ‘Equilibrium points and Equilibrium sets of some queues’.



Participants during the first virtual IEOR Day held on April 10, 2021

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	01	-	18	29

Systems and Control Engineering

The Systems and Control Group, formed in 1977, is a unique interdisciplinary programme in the country that offers postgraduate education in the broad area of Systems and Control.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	16
No. of Post-Doc Fellows	03

Academic Programmes:

Total no. of students on-roll: 100

Programmes Offered	Students Intake	Degrees Awarded
MTech	20	11
DD (MTech+ PhD)	-	01
PhD	06	03

R&D Activities: The research focus of the core group is in the areas of nonlinear control, robotics, path-planning, embedded control, coordination of autonomous vehicles, multi-agent systems, sliding mode control and applications, fractional-order modelling and control, optimization and optimization-based control, stochastic processes, game theory, stochastic control, optimization, economics, information theory and combinatorial coding theory, control theory, NMR spectroscopy, nonlinear and geometric control, quantum information and control. In addition, research in the areas of process control, identification, behavioural theory, matrix computation and automotive control are being pursued by the associate faculty members.

The experimental lab at Systems and Control is geared towards introducing students to hardware and software that implement control theories learnt as part of coursework. A variety of setups based on mechanical, electrical and chemical

principles are made available to the students for this purpose. As part of core coursework, all Masters' students are expected to understand modelling, communication, sensor calibration and control of hardware to accomplish different control objectives.

Projects	Sponsored Projects	Consultancy Projects
New	02	02
Ongoing	17	05
Completed	04	-

During the year 2021-22, the Department held various workshops, including 'Building Indo US Collaborations' by Prof. Leena Vachhani, PiC, Technology Innovation Hub (TIH) and Prof. Arpita Sinha, ExeCom member, TIH. The workshop was organised by the Indo-U.S. Science and Technology Forum (IUSSTF) in collaboration with National Science Foundation (NSF) and six TIHs in India with the intention of encouraging new collaborations with India and US researchers.

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	-	-	16	26

Climate Studies

The Interdisciplinary Programme in Climate Studies (IDPCS) started at the Indian Institute of Technology Bombay in January 2012. IDPCS is the first interdisciplinary group in India to offer doctoral programmes addressing research-related to climate change. Faculty from various departments across IIT Bombay are associated with IDPCS, who increasingly apply a depth of expertise in their fields to address the complexity of climate change. They apply their expertise to interdisciplinary problems related to climate that cross traditional academic boundaries. Their contributions include the traditional core climate and environmental sciences, interdisciplinary



technology development, climate economics and social sciences.

Total no. of faculty (Assistant/ Associate/ Full Professors/ Adjunct/ {Visiting-teaching faculty})	02
No. of Post-Doc Fellows	03

Academic Programmes: The doctoral curriculum in the IDP in Climate Studies includes core courses in two broad tracks of climate science and climate policy, supplemented by elective courses on a broad range of theoretical and practical topics. Recently new course was introduced: CM 611 Introduction to Ocean Atmosphere Dynamics. In Autumn 2022, IDPCS has started the Interdisciplinary Dual Degree Programme (IDDDP) in Climate Science and Policy for IIT Bombay undergraduate students. Teaching assistantships are available to doctoral students. IDPCS provides Visiting Fellowships to Indian and international experts in the field to give lecture series on special topics and to engage in collaborative work.

Total no. of students on-roll: 83

Programmes Offered	Students Intake	Degrees Awarded
PhD	10	02

R&D Activities: Ongoing research at IDPCS cuts across the domains of climate science, vulnerability and adaptation and mitigation and policy. Investigations address improvement of model physics related to clouds, ocean mixing, aerosol processes, climate change detection and attribution, climate change impacts on cities and communities, adaptation and mitigation responses and the assessment of climate change policies and mechanisms. Research efforts are being propelled not only towards statistical downscaling but also in understanding the feedback from regional perturbations to synoptic scale circulations. Focus is being continued on regional factors - land use land cover change, dynamic vegetation, turbulent transport processes and regional aerosol emissions - to

understand their feedback. Aerosol influences on high temperature extremes over India, aerosol-cloud interaction vis-à-vis cloud radiative forcing in the Indian region and aerosol influence on altering frequency, intensity and duration of rainfall extremes are being studied. Social vulnerability and risk to hydro-climatic extremes are being mapped for entire India. A risk index has been developed for coastal districts of India for understanding vulnerability and recovery of marine fishing population from extreme climatic events, by combining biophysical stresses, such as cyclones, storm surge and tides and socio-economic contributors, such as lack of infrastructure, technology, finance, social nets and space. Integrated and composite vulnerability of coastal areas to climate change determined by exposure, physical, social, environmental and economic factors, or processes factors such as sea level rise, coastal erosion and acidification, along with environmental degradation, ecosystem loss, and pollution on coastal communities and habitats are being assessed. A socio-ecological systems perspective is being designed to integrate pollution impacts, climate change related risks and hazards and anthropogenic environmental degradation to yield a contextual vulnerability assessment that can impact local level policy and decision making. Also, the positive /negative impacts of climate and environmental policies on coastal vulnerability are being assessed. “Transformation” theory, conceptualization and operationalization of “emergent groups” for flood risk governance and integration of climate change uncertainties into adaptation strategies, constitute the three key innovations that are being used to convert climate change knowledge into local level adaptation and policy for flood risk mitigation. Detection, attribution analysis and modelling of hydroclimatic extremes are being studied. Dynamics of equatorial Indian Ocean are being studied using Modular Ocean Model. Decision support systems are being

developed for studying technology options for sectors contributing to climate change by including technology attributes related to cost, life cycle impacts, technology readiness level and social acceptability. Dynamic models are being developed to study technology adaptation to address climate change. Long-term goals of IDPCS include the creation of a pool of multi-disciplinary climate researchers to serve the growing national need for climate change professionals. In the near future, IDPCS is expected to emerge as an important knowledge and information resource to support national and state action responding to climate change.

A PhD Students' Research Lab has been set up in the Transit building with 8 sitting spaces and 8 high-end computers for modelling and simulation work for climate research.

Publications:

	Books Published	Chapters in Books	Papers in Conference	Papers in Journals
Total	-	04	-	45

Outreach/ Publicity Activities

- The 8th annual summer school (e-school 2021) on Climate Science & Policy was conducted online during August 16-27, 2021 owing to the pandemic and was coordinated by IDPCS associated faculty Prof. Pradip Kalbar and Prof. Swatantra Pratap Singh. The 8th e-school achieved an overwhelmingly positive response with 1000+ registrations from different countries and organizations. Dr. Akhilesh Gupta (Scientist H and Senior Adviser, Policy Coordination and Programme Management Division, Department of Science & Technology, Govt. of India) was the Chief Guest at the e-School inaugural session. He spoke about the future prospects of students interested in climate studies. The video of the inaugural session can be viewed at <https://youtu.be/tA-YuAcsHxY>. The lecture themes covered were Climate Impact, Climate Vulnerability and Assessment, Adaptation, Mitigation and Policy. The entire set of e-School lectures can be viewed on the IDPCS YouTube Channel playlist: <https://youtube.com/playlist?list=PLe3JAJokdvn-HQVJjbSkIBW8EigeGPX09->
- **India-UK-Japan Workshop on 'Climate Resilience':** A joint workshop was organized by IDPCS and The Institution of Mechanical Engineers (IMechE UK, Japan and India) on invitation by IDPCS Former Convener Prof. D. Parthasarathy and Prof. Milind Atrey, Dean (Research and Development), IIT Bombay on September 25, 2021. The workshop launched an initiative to bring together academia, industry and government to enhance climate resilience and addressed three key climate change challenges which need urgent technical, policy, governance and socio-economic solutions: a) Residential and Workplace Cooling b) Urban and Rural Flood Risks c) Sea Level Rise in coastal zones. The workshop can be viewed at <https://youtube.com/playlist?list=PLe3JAJokdvnFnP-lTh-75FNucv6PhH4E64>
- Coordinated by IDPCS associated faculty Prof. RAAJ Ramsankaran, the weekly climate seminars hosted by IDPCS pre-pandemic, restarted in October 2021 as a series of **e-Seminars** featuring renowned climate scientists. The seminar series was envisaged as weekly/ fortnightly one-hour lectures on a variety of topics relevant to climate studies. This included technical topics like climate perturbation and extremes, atmospheric and cloud dynamics, energy and climate and broader topics on technology assessment, climate change policies and mechanisms, science communication to policymakers and laymen and research ethics. Before the pandemic, the audience used to include predominantly IDPCS



students and teachers, as well as the greater IIT Bombay community but the e-Seminars for 2021 were broadcast live for all on the IDPCS YouTube channel: <https://youtube.com/playlist?list=PLe3JAJokdvnEeP6gEVW4pT-pok0SFqpnRG>

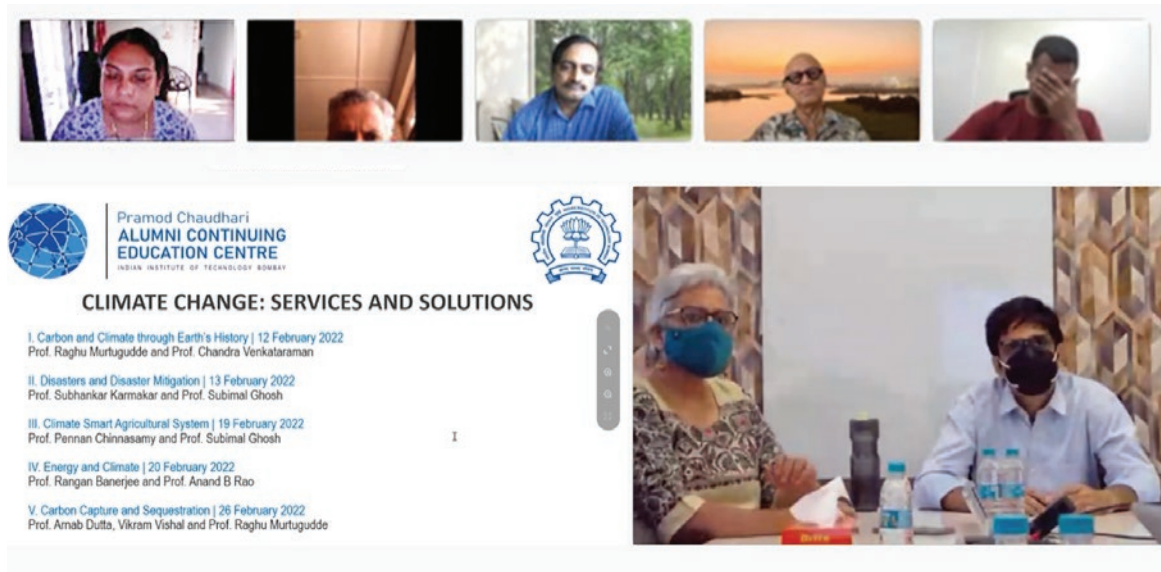
- IIT Bombay completed the first Alumni Continuing Education Programme organized by the Pramod Chaudhari Alumni Continuing Education Centre (PCACEC) and coordinated by Prof. Subimal Ghosh and Prof. Raghu Murtugudde. The course titled “Climate Change: Services & Solutions” was designed by the faculty from IIT Bombay Climate Studies and was attended by alumni of graduating batches in the years from 1969 to 2020, participating from across the globe and representing diverse backgrounds such as academia, research and industry. This interactive course received excellent feedback for its high-level of engagement, insight sharing and collaborative style. In addition, the programme gave its participants an opportunity to renew and strengthen their connection

and engagement with the Institute. The topics in the programme included 1. Carbon and Climate through Earth’s History 2. Disasters and Disaster Mitigation 3. Climate Smart Agricultural System 4. Energy and Climate and 5. Carbon Capture and Sequestration

- A panel discussion on the Inter-Disciplinary Dual Degree Program (IDDDP) in Climate Science & Policy for IIT Bombay BTech students was held on March 30, 2022 and was moderated by Prof. Vishal Dixit. Eminent panelists invited for the panel discussion were Prof. Raghu Murtugudde, Visiting Professor, Interdisciplinary Programme in Climate Studies, IIT Bombay; Dr. Rajul Patkar, Co-Founder and CEO, Proximal Soilsens Technologies; Mr. Mitavachan Hiremath, Co-Founder and CEO, SusPoT – Center for Sustainability Bengaluru; Mr. Divyansh Chug, PhD student, Department of Atmospheric Sciences, University of Illinois, Urbana Champaign. The full discussion video can be found at IDPCS YouTube Channel <https://youtu.be/rh-ixtLpiy0>



Participating Faculty, Dean (Alumni and Corporate Relations) Prof. Ravindra Gudi along with Dean (ACR) Office Staff during the Alumni Continuing Education Programme



Former and Current Convener of IDPCS Prof. Chandra Venkataraman and Prof. Subimal Ghosh during the inaugural session of Alumni Continuing Education Programme



Prof. Ravi Gudi, Dean (Alumni and Corporate Relations) speaking at the inaugural session of Alumni Continuing Education Programme



PUBLICATIONS

The number of publications by faculty members of IIT Bombay are steadily increasing. From 1697 papers published in national and international journals during the year 2017-18, the total number of papers published in 2021-22 has increased by

726 papers in mere five years, taking the total number of papers published to 2423. Similar trends can be observed for the papers presented and chapters in books published authored by the Institute's faculty, in the graph given below:



Year	Papers in Journals	Papers in Conferences	Books	Chapters in Books
2017-18	1697	894	11	83
2018-19	2024	1225	21	89
2019-20	2308	1090	29	131
2020-21	2461	1030	18	107
2021-22	2423	812	24	163

ORGANIZATION



Chairman, Board of Governors
Dr. Pawan Goenka
(from 27.10.2020)



Prof. Subhasis Chaudhuri
Director



Prof. S. Sudarshan
Dy. Director (Academic &
Infrastructural Affairs)



Prof. P.M. Mujumdar
Dy. Director
(Finance & External Affairs)
(Up to 09.11.2021)



Prof. K.V.K. Rao
Dy. Director
(Finance & External Affairs)
(From 10.11.2021)



Prof. Milind Atray
Dean
(Research & Development)



Prof. Amitava De
Dean
(Academic Programmes)
(Up to 31.05.2021)



Prof. Avinash Mahajan
Dean
(Academic Programmes)
(From 30.06.2021)



Prof. Suhas Joshi
Dean
(Alumni & Corporate Relations)
(Up to 01.02.2022)



Prof. Ravindra Gudi
Dean
(Alumni & Corporate Relations)
(From 02.02.2022)



Prof. B.V.S. Viswanadham
Dean (Infrastructure Planning
& Support)
(Up to 01.02.2022)



Prof. Tom V. Mathew
Dean (Infrastructure Planning
& Support)
(From 02.02.2022)



Prof. Tapanendu Kundu
Dean
(Students Affairs)



Prof. Amit Agrawal
Dean (International Relations)



Prof. K.P. Kaliappan
Dean (Faculty Affairs)
(Up to 06.05.2021)



Prof. Neela Natraj
Dean (Faculty Affairs)
(From 07.05.2021)



Prof. S. V. Kulkarni
Dean (Administrative Affairs)



Dr. R. Premkumar
Registrar
(Up to 30.11.2021)



Mr. Ganesh K. Bhorkade
Offg. Registrar
(From 01.11.2021)



IIT COUNCIL

The Minister In-charge of Technical Education in the Central Government	1	Shri Dharmendra Pradhan (from 08.07.2021) Shri Ramesh Pokhriyal 'Nishank' (up to 07.07.2021) Hon'ble Minister of Human Resource Development, Government of India, Shastri Bhavan, New Delhi – 110 001	Chairperson
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Chairman of Each Institute (Ex-officio)

Chairman of Each Institute (Ex-officio) Kharagpur	2	Shri Sanjiv Goenka, Chairperson, BoG, IIT Kharagpur (Chairman, RP-Sanjiv Goenka Group Pvt. Ltd., Kolkata)	Member
Bombay	3	Dr. Pawan Goenka, Chairperson, Board of Governors, IIT Bombay Mumbai-400076 MD and CEO, Mahindra & Mahindra, Mahindra Towers, GM Bhosale Marg, Worli, Mumbai	Member
Madras	4	Dr. Pawan Goenka, Chairperson, BoG, IIT Madras, Chennai – 600 036 MD and CEO, Mahindra & Mahindra, Mahindra Towers GM Bhosale Marg, Worli, Mumbai	Member
Kanpur	5	Dr. K. Radhakrishnan Chairperson, BoG, IIT Kanpur, Kanpur – 208 016.(Former Chairperson, Space Commission/ Secretary, Dept. of Space and former Chairman, ISRO)	Member
Delhi	6	Dr. R. Chidambaram Chairperson, Board of Governors, IIT Delhi (Former PSA to the Government of India, DAE-Homi Bhabha Chair Professor Bhabha Atomic Research Centre, Trombay, Mumbai- 400085) New Delhi – 110 016	Member
Guwahati	7	Dr. Rajiv I. Modi, Chairperson, Board of Governors, IIT Guwahati, Guwahati – 781 039	Member
Roorkee	8	Shri. B. V. R. Mohan Reddy Chairperson, BoG, IIT Roorkee Roorkee – 247 667	Member

Bhubaneswar	9	Dr. Rajendra Prasad Singh, Chairperson, Board of Governors, (Former Chairman & Managing Director, Power Grid Corporation and Independent Director, Azure Power Global Ltd.) IIT Bhubaneswar, Bhubaneswar (Odisha)	Member
Gandhinagar	10	Shri. Sanjiv Goenka Chairperson, Board of Governors, Indian Institute of Technology Gandhinagar, Gujrat	Member
Hyderabad	11	Dr. B. V. R. Mohan Reddy Chairperson, BoG, IIT Hyderabad. (A.P.) (Chairman and Managing Director, Infotech Enterprises Ltd. Plot No. 11, Software Unit Layout, Infocity, Madhapur, Hyderabad – 500081)	Member
Jodhpur	12	Dr. R. Chidambaram, Chairperson, BoG, IIT Jodhpur, Jodhpur. (Rajasthan) (Former PSA to the Government of India, DAE-Homi Bhabha Chair Professor Bhabha Atomic Research Centre, Trombay, Mumbai- 400085)	Member
Indore	13	Prof. D. B. Phatak Chairperson, BoG, IIT Indore, Indore (M.P.)	Member
Mandi	14	Prof. Prem Vrat, Chairperson, BoG, IIT Mandi, Mandi (H.P.) (Retired Professor of IIT Delhi) & Founder Director, IIT Roorkee, New Delhi)	Member
Patna	15	Mr. Anand Deshpande, Chairperson, Board of Governors, Indian Institute of Technology Patna (Bihar) (Founder, Chairman & Managing Director, Presistent Systems Inc. Pune)	Member
Ropar	16	Dr. K. Radhakrishnan Chairperson, Board of Governors, Indian Institute of Technology Ropar (Punjab)	Member
Varanasi	17	Dr. Kota Harinarayana, Chairperson, Board of Governors, Indian Institute of Technology (BHU), Banaras Hindu University, Varanasi -221 005 (U.P) (Former Scientist DRDO & Former Vice Chancellor, Hyderabad University, Bengaluru (Karnataka))	Member



IIT (ISM) Dhanbad	18	Prof. Prem Vrat, Chairperson, Board of Governors, IIT (ISM) Dhanbad (Retired Professor of IIT Delhi) & Founder Director, IIT Roorkee, New Delhi)	Member
IIT Dharwad	19	Shri Vinayak Chatterjee, Chairperson, Board of Governors, IIT Dharwad (Co-Founder & Chairperson Feedback Infra Services Pvt. Ltd.)	Member
IIT Palakkad	20	Shri Ramesh Venkateswaran Chairperson, Board of Governors, Palakkad (Visiting Faculty, Indian Institute of Management (IIM), Bengaluru)	Member
IIT Jammu	21	Shri Sharad Kumar Saraf Chairperson, Board of Governors, IIT Jammu (Chairman and Managing Director, Technocraft Group of Industries, Mumbai)	Member
IIT Bhilai	22	Shri Krishnamurthi Venkataramanan Chairperson, Board of Governors, IIT Bhilai (Former Managing Director and CEO, Larsen and Toubro Limited (L&T Ltd.))	Member
IIT Goa	23	Secretary (HE), MoE, Department of Higher Education, Chairperson, Board of Governors, IIT Goa	Member
IIT Tirupati	24	Secretary (HE), MoE, Department of Higher Education, Chairperson, Board of Governors, IIT Tirupati	Member

Director of Each Institute (Ex-officio)

Kharagpur	25	Prof. V. K. Tewari Director, IIT Kharagpur, Kharagpur – 721 302	Member
Bombay	26	Prof. Subhasis Chaudhuri Director, IIT Bombay, Mumbai – 400 076	Member
Madras	27	Prof. V. Kamakoti (from 17.01.2022), Prof. Bhaskar Ramamurthi (upto 16.01.2022), Director, IIT Madras, Chennai – 600 036.	Member
Kanpur	28	Prof. Abhay Karandikar, Director, IIT Kanpur, Kanpur – 208 016	Member
Delhi	29	Prof. Rangan Banerjee (from 16.02.2022), Prof. V. Ramgopal Rao (upto 15.02.2022), Director, IIT Delhi, Hauz Khas, New Delhi – 110 016	Member

Guwahati	30	Prof. T. G. Sitharam, Director, IIT Guwahati, Guwahati – 781 039	Member
Roorkee	31	Prof. Ajit Kumar Chaturvedi, Director, IIT Roorkee, Roorkee – 247 667	Member
Bhubaneswar	32	Prof. V.K. Tiwari (from 02.04.2022), Prof. R.V. Raja Kumar (upto 31.03.2022), Director, IIT Bhubaneswar, Samantapuri (Rear side of Hotel Swosti Plaza), Jaydev Vihar, Bhubaneswar – 751 013, Odisha.	Member
Gandhinagar	33	Prof. Amit Prashant (from 04.01.2022), Prof. Sudhir K. Jain (upto 03.01.2022) Director, IIT Gandhinagar, Vishwakarma Govt. Engineering College (VGEC) Campus, Chandkheda, Visat-Gandhinagar Highway, Ahmedabad-382424.	Member
Hyderabad	34	Prof B. S. Murty, Director, IIT Hyderabad, Ordnance Factory Estate, Yeddumailaram – 502205, Andhra Pradesh	Member
Jodhpur	35	Prof. Santanu Chaudhury Director, IIT Jodhpur, IIT Rajasthan Camp Office Jodhpur – 342 011	Member
Indore	36	Prof. Suhas Joshi (from 31.01.2022), Prof. Nilesh Kumar Jain (upto 30.01.2022), Director, IIT Indore, Institute of Engineering and Technology, DAVV Campus, Khandwa Road, Indore -452 017.	Member
Mandi	37	Prof. Laxmidhar Behra (from 19.01.2022), Prof. Ajit Kumar Chaturvedi (upto 18.01.2022) Director, IIT Mandi, PWD Rest House, 2nd Floor, Near Bus Stand, Mandi – 175 001. (Himachal Pradesh)	Member
Patna	38	Prof. T.N. Singh (from 10.09.2021) Prof. Pushpak Bhattacharyya, (up to 09.09.2021) Director, IIT Patna, Govt. Polytechnic, Pataliputra's Colony, Patna – 800 013	Member
Ropar	39	Prof. Rajeev Ahuja, Director, IIT Ropar, Nangal Road, Rupnagar, Punjab – 140 001	Member
Varanasi	40	Prof. Pramod Kumar Jain Director, Indian Institute of Technology (BHU), Varanasi – 221005 (UP)	Member



Dhanbad	41	Prof. Rajiv Shekhar, Director, Indian Institute of Technology (IIT) (ISM), Dhanbad, Jharkhand– 826004	Member
Tirupati	42	Prof. K.N. Satyanarayana, Director, Indian Institute of Technology Tirupati, Andhra Pradesh– 517506	Member
Palakkad	43	Prof. P. B. Sunil Kumar, Director, IIT Palakkad, Kerala 678557	Member
Goa	44	Prof. B. K. Mishra Director, IIT Goa, Goa, 403401	Member
Bhilai	45	Prof. Rajat Moona Director, IIT Bhilai, Chhattisgarh 492015	Member
Dharwad	46	Prof. Seshu Pasumarth Director, IIT Dharwad, Karnataka 580011	Member
Jammu	47	Prof. Manoj Singh Gaur Director, IIT Jammu, Jammu & Kashmir 181 221	Member
Chairman, University Grants Commission (Ex-officio)	48	Prof. M. Jagadesh Kumar (from 01.02.2022) Prof. Dharendra Pal Singh (upto 31.01.2022) Chairman, University Grants Commission, Bahadurshah Zafar Marg, New Delhi – 110 002.	Member
Director-General, Council of Scientific & Industrial Research (Ex-officio)	49	Dr. S. C. Mande, Director General (DG) of Council of Scientific & Industrial, Research (CSIR), Government of India, Anusandhan Bhawan, 2, Rafi Marg, New Delhi – 110 001	Member
Chairman of the Council of the Indian Institute of Science, Bangalore (Ex-officio)	50	Dr. P. Rama Rao, Chairman, Governing Council of IISc. Bengaluru, (and Former Vice Chancellor, University of Hyderabad, Balapur, Hyderabad 50005) Indian Institute of Science Campus, Bengaluru – 560 012	Member
Director of the Indian Institute of Science, Bangalore (Ex-officio)	51	Prof. Govindan Rangarajan, Director, Indian Institute of Science, Bangalore – 560 012	Member
To represent the Ministry concerned with Technical Education (Nominee of the Central Government)	52	Dr. Rakesh Ranjan, Additional Secretary (TE), Ministry of Education, Department of Higher Education, 118-C Shastri Bhawan, New Delhi -110015	Member
To represent the Ministry of Finance	53	Secretary (Expenditure), Ministry of Finance, Department of Expenditure, North Block, New Delhi – 110 001	Member

To represent any other Ministry	54	Secretary, Department of Information Technology, Electronics Niketan, CGO Complex, Lodhi Road, New Delhi – 110003	Member
Nominee of the Visitor Council for Technical Education (AICTE)	55	Prof. Anil D. Sahasrabudhe, Chairman, All India Council for Technical Education (AICTE), 7th Floor, Chanderlok Building, Janpath, New Delhi – 110 001	Member
Nominees of the Visitor (minimum three) (maximum five)	56	Prof. Avinash Kumar Agarwal, Department of Mechanical Engineering, IIT Kanpur, Kanpur, Uttar Pradesh	Member
	57	Prof. Shreepad Karmalkar, Professor, Department of Electrical Engineering, IIT Madras, Chennai – 600 036	Member
	58	Shri S. N. Subrahmanyam, CEO and MD Larsen & Toubro Limited.	Member
	59	Shri S. Somanath, Chairman, ISRO, and Secretary, Department of Space.	Member
	60	Dr. Shekhar C. Mande, Former Secretary, DSIR & Director General, CSIR, New Delhi	Member
Three Members of Parliament (Two from Lok Sabha) (One from Rajya Sabha)	61	Mr. Kunar Hembram, Hon'ble Member of Parliament (Lok Sabha), Vill. Kanyadoba, P. O. and P. S. Jhargram, Distt. Jhargram – 721507, West Bengal.	Member
	62	Mr. Lavu Sri Krishna Devarayalu, Hon'ble Member of Parliament (Lok Sabha), 10, Western Court Annexel, New Delhi - 110001	Member
	63	Shri Prabhat Jha, Hon'ble Member of Parliament (Rajya Sabha), C-501, Swaran Jayanthi Sadan, Dr. Bishamber Dass Marg (Near R.M.L), New Delhi-110001	Member
	64	Shri K. Sanjay Murthy, Secretary (Higher Education), & the current Chairperson, BoG of two IITs at Tirupati, and Goa, Ministry of Education, Department of Higher Education, Shastri Bhawan, New Delhi.	Member
	65	Ms. Darshana M. Dabral, Joint Secretary & Financial Advisor (JS&FA) Ministry of Education, Department of Higher Education, New Delhi.	Member



Members of the Board of Governors

Nominated by Visitor	Dr. Pawan Goenka, MD and CEO, Mahindra & Mahindra, Mahindra Towers GM Bhosale Marg, Worli, Mumbai	Chairman
Ex-officio	Prof. Subhasis Chaudhuri, Director, IIT Bombay, Powai, Mumbai – 400 076	Member
Council Nominees (Four)	Dr. Rakesh Ranjan, Additional Secretary, Ministry of Education (TE), 118-C, Shastri Bhawan, New Delhi - 110015	Member
	Mr. Sharad Kumar Saraf, Chairman & Managing Director, Technocraft Industries (India) Ltd., Technocraft Group, Bombay, Technocraft House, A-25, MIDC, Marol Industrial Area, Road No. 3, Opposite ESIC Hospital, Andheri (East) Mumbai – 400 093	Member
	Prof. Aniruddha B. Pandit, U.G.C. Professor, Department of Chemical Engineering, Institute of Chemical Technology Bombay, Matunga, Mumbai - 400019	Member
	Prof. Pares K. Joshi, Room 106 NIUS Building, Homi Bhabha Centre for Science Education, TIFR, V.N. Purav Marg, Mankhurd, Mumbai -400088	Member

State Government Nominees (Two)

MAHARASHTRA State Nominee	Mr. Vikas Rastogi, IAS Principal Secretary, Secretary, Higher & Technical Education Government of Maharashtra, Mantralaya, Mumbai – 400 032	Member
DADRA & NAGAR HAVELI State Nominee	Shri Praful K. Patel Administrator, U.T. of Daman & Diu and Dadra & Nagar Haveli, Silvasa - 396 230	Member
Senate Nominee	Prof. Virendra Sethi (from. 01.01.2022) Prof. P.V. Balaji (upto 31.12.2021) Environmental Science & Engineering Department IIT Bombay, Mumbai 400 076	Member
Senate Nominee	Prof. Narayan Rangaraj (from 01.01.2022) Prof. S. C. Patwardhan (upto 31.12.2021) Industrial Engineering and Operations Research (IEOR), IIT Bombay, Mumbai - 400 076.	Member
Ex-officio	Mr. Ganesh Bhorkade (from 01.12.2021), Dr. R. Premkumar (upto 30.11.2021) Officiating Registrar, IIT Bombay Powai, Mumbai – 400 076	Secretary

Members of the Finance Committee

Dr. Pawan Goenka, [MD and CEO, Mahindra & Mahindra, Mahindra Towers GM Bhosale Marg, Worli, Mumbai.]	Chairman
Prof. Subhasis Chaudhuri Director, IIT Bombay, Powai, Mumbai – 400 076	Member (Ex-officio)
Dr. Rakesh Ranjan, Additional Secretary, Ministry of Education (TE), Department of Higher Education, Government of India, Shastri Bhavan, New Delhi – 110 015	Member
Mr. Sandeep Asthana (from 11.05.2021) Mr. V. B. Aras (upto 10.05.2021) B2-1101, Mahindra Eminente, Near Patkar College, S. V. Road, Goregaon (West) Mumbai – 400 062.	Member
Ms. Darshana M. Dabral, Joint Secretary & Financial Advisor, Ministry of Education, Department of Higher Education, Technical Section-1, Government of India, Shastri Bhavan, New Delhi – 110 015	Member
Prof. K. V. K. Rao (from 10.11.2021) Prof. P. M. Mujumdar (upto 09.11.2021) Dy. Director (Finance and External Affairs), IIT Bombay, Powai, Mumbai – 400 076.	Member
Mr. Ganesh Bhorkade (from 01.12.2021), Dr. R. Premkumar (upto 30.11.2021) Officiating Registrar, IIT Bombay Powai, Mumbai – 400 076	Secretary (Ex-officio)



Members of the Building and Works Committee

Prof. Subhasis Chaudhuri Director, IIT Bombay, Powai, Mumbai – 400 076	Chairman
Superintending Engineer, Office of the Supdt. Engineer, Mumbai Central Circle-1, CPWD, 5th Floor, Pratishtha Bhavan, 101 MK Road, Mumbai – 400 020	Member
Superintending Engineer, Mumbai (P.W.D) Circle 25 Murzban Road, Fort, Mumbai – 400 001	Member
Mr. K. Srinivas, Head, Architectural & Civil Engg. Division, BARC, North Site, Trombay, Mumbai – 400 085	Member
Ms. Uma Adusumilli Chief, Planning Division Mumbai Metropolitan Region Development Authority (MMRDA) 6th Floor, MMRDA New Building, Bandra Kurla Complex, Mumbai – 400051	Member
Prof. Tom Mathew (from 01.01.2022) Prof. B.V.S. Viswanadham (upto 31.12.2021) Dean (Infrastructure Planning and Support), IIT Bombay, Powai, Mumbai – 400 076.	Member
Mr. Ganesh Bhorkade (from 01.12.2021), Dr. R. Premkumar (upto 30.11.2021) Officiating Registrar, IIT Bombay Powai, Mumbai – 400 076	Member-Secretary (Ex-officio)

Heads of Departments

1. Prof. Sudarshan Kumar
Department of Aerospace Engineering
2. Prof. Rohit Srivastava
Department of Biosciences & Bioengineering
3. Prof. Madhu Vinjamur
Department of Chemical Engineering
4. Prof. M. Ravikant (from 06.06.2021)
Prof. Anindya Datta (upto 05.06.2021)
Department of Chemistry
5. Prof. Deepankar Choudhury
Department of Civil Engineering
6. Prof. Umesh Bellur
Department of Computer Science & Engineering
7. Prof. Santanu Banerjee
Department of Earth Sciences
8. Prof. Kishor Chatterjee
Department of Electrical Engineering
9. Prof. Suneet Singh (from 18.06.2021)
Prof. Ragan Banerjee (upto 17.06.2021)
Department of Energy Science and Engineering
10. Prof. Subhankar Karmakar (from 01.06.2021)
Prof. Suparna Mukherji (upto 31.05.2021)
Environmental Science and Engineering Department
11. Prof. Kushal Deb
Department of Humanities & Social Sciences
12. Prof. U. K. Anandavardhanan (from 30.12.2021)
Prof. K. Suresh Kumar (upto 27.12.2021)
Department of Mathematics
13. Prof. Sreedhara Sheshadri
Department of Mechanical Engineering
14. Prof. N.N. Vishwanathan (from 14.02.2022)
Prof. K. Narasimhan (Upto 13.02.2022)
Department of Metallurgical Engineering and Materials Science
15. Prof. S. Umashankar
Department of Physics

Heads of Centres

1. Prof. Suparna Mukherji (from 06.01.2022)
Prof. Anil Kottantharayil (upto 05.01.2022)
Centre for Research in Nanotechnology and Science & SAIF
2. Prof. Alok Porwal
Centre of Studies in Resources Engineering
3. Prof. G. Sivakumar
Centre for Formal Design and Verification of Software
4. Prof. Anand B. Rao
Centre for Technology Alternatives in Rural Areas
5. Prof. Virendra Sethi (from 02.11.2021)
Prof. K. V. Krishna Rao (upto 01.11.2021)
Center for Urban Science & Engineering
6. Prof. Shishir K. Jha
Ashank Desai Centre for Policy Studies

Heads of Schools

1. Prof. Phani Tetali
IDC School of Design
2. Prof. S. Narayan Rao
Shailesh J. Mehta School of Management
3. Prof. B. Ravi
Desai Sethi School of Entrepreneurship

Convenors of Interdisciplinary Programmes

1. Prof. Jayendran Venkateswaran
Industrial Engineering & Operations Research
2. Prof. Debasish Chatterjee (from 24.06.2021)
Prof. B. Bandyopadhyay (upto 23.06.2021)
Systems & Control Engineering
3. Prof. Sridhar Iyer
Education Technology
4. Prof. Subimal Ghosh
Climate Studies



Centres providing research and support facilities:

1. Prof. P. Sunthar
Application Software Centre (ASC)
2. Prof. B. Ravi
Biomedical Engineering and Technology Incubation Centre (BETiC)
3. Prof. Sudarshan Kumar
Centre for Aerospace Systems Design and Engineering
4. Prof. Prabhu Ramachandran
(from 02.03. 2022)
Prof. Sharad Bhartiya (upto 28.02.2022)
Computer Centre
5. Prof. Y. M. Desai
Centre for Computational Engineering & Science (CCES)
6. Prof. Siddhartha Ghosh (from 13.07.2022)
Prof. Sridhar Iyer (upto 12.07.2022)
Centre for Distance Engineering Education Programme
7. Prof. Swaroop Ganguly
Centre for Excellence in Nanoelectronics
8. Prof. Shireesh B. Kedare
Centre of Excellence in Oil, Gas and Energy (CoE-OGE)
9. Prof. K. Narasimhan
Centre of Excellence in Steel Technology (CEST)
10. Prof. Sunita Sarawagi
Centre for Machine Intelligence and Data Science (C-MinDS)
11. Prof. Debasis Chakraborty
Centre of Propulsion Technology (CoPT)
12. Prof. Manaswita Bose
Forbes Marshall Energy Efficiency Laboratory
13. Prof. Milind Sohoni
Geospatial Information Science and Engineering
14. Prof. Pushpak Bhattacharya
IITB-Monash Research Academy
15. Prof. Ganesh Ramakrishnan
Koita Centre for Digital Health (KCDH)
16. Prof. Ramesh Singh
National Centre for Aerospace Innovation and Research (NCAIR)
17. Prof. B. G. Fernandes
National Centre of Excellence in Technology for Internal Security (NCETIS)
18. Prof. R. Balasubramanian
National Centre for Mathematics (NCM)
19. Prof. Suryanarayana Doolla
National Centre for Photovoltaic Research and Education (NCPRE)
20. Prof. Kannan Moudgalya
National Mission on Education Through Information & Communication Technology (NME-ICT)
21. Prof. J. K. Nayak (Retd.)
National Solar Thermal Research, Testing & Simulation Facility
22. Prof. Sahana Murthy
Parimal and Pramod Chaudhari Centre for Learning and Teaching (PPCCLT)
23. Prof. Santosh Naronha
Tata Centre for Technology and Design (TCTD)
24. Prof. Manjesh Hanawal
Technocraft Centre for Applied Artificial Intelligence (TCAAI)
25. Prof. Prasanna Chaporkar
Tata Teleservices- IIT Bombay Centre of Excellence in Telecommunication
26. Prof. Debjani Paul
Wadhwani Research Centre for Bioengineering (WRCB)
27. Prof. Shobha Shukla
Water Innovation Centre: Technology, Research and Education (WICTRE)
28. Prof. Siddhartha Ghosh
Continuing Education and Quality Improvement Program (CEP/ QIP)
29. Prof. Vikram Vishal
National Centre of Excellence in Carbon Capture and Utilization (NcoE-CCE)
30. Prof. Suddhasatta Mahapatra
Centre for Quantum Information, Science and Technology (CquIST)
31. Prof. Samir K. Maji
Sunita Sanghi Centre For Aging And Neurodegenerative Diseases

SUMMARY OF ACCOUNTS

CONSOLIDATED ACCOUNTS: BALANCE SHEET AS ON 31/03/2022

(Amount in Rupees)

Particulars	Schedule	Current Year 2021-2022	Previous Year 2020-21
SOURCES OF FUNDS			
CORPUS / CAPITAL FUND	1	3,03,75,14,848	3,34,91,01,548
DESIGNATED / EARMARKED / ENDOWMENT FUNDS	2	11,10,02,15,269	9,66,32,55,603
CURRENT LIABILITIES AND PROVISIONS	3	25,59,96,66,321	24,04,61,20,850
TOTAL (A)		39,73,73,96,438	37,05,84,78,001
APPLICATION OF FUNDS			
FIXED ASSETS			
TANGIBLE ASSETS	4	4,77,41,38,055	4,60,83,30,464
INTANGIBLE ASSETS	4	26,70,48,809	19,90,22,978
CAPITAL WORKS-IN-PROGRESS	4	12,70,64,49,132	12,20,57,95,811
INVESTMENTS FROM EARMARKED/ ENDOWMENT FUNDS	5	3,27,92,95,132	2,46,02,83,330
INVESTMENTS OTHERS	6	2,03,00,00,000	2,75,00,00,000
CURRENT ASSETS	7	14,24,63,72,163	12,26,11,61,782
LOANS, ADVANCES AND DEPOSITS	8	2,43,40,93,147	2,57,38,83,636
TOTAL (B)		39,73,73,96,438	37,05,84,78,001
SIGNIFICANT ACCOUNTING POLICIES	24		



INCOME & EXPENDITURE FOR THE YEAR ENDED 31/03/2022

(Amount in Rupees)

Particulars	Schedule	Current Year 2021-2022	Previous Year 2020-2021
INCOME			
Academic Receipts	9	96,35,90,656	1,01,29,66,009
Grants/ Subsidies (Irrevocable Grants Received)	10	6,87,16,42,929	6,27,99,17,403
Income From Investments	11	88,44,32,322	88,13,97,611
Interest Earned	12	1,11,16,029	93,45,146
Other Income	13	57,60,29,130	42,45,82,277
Prior Period Income	14	1,22,522	5,17,769
Total (A)		9,30,69,33,588	8,60,87,26,215
EXPENDITURE			
Staff Payments and Benefits (Establishment Expenses)	15	6,39,15,92,893	5,45,99,53,513
Academic Expenses	16	1,09,25,69,281	1,09,52,61,162
Administrative And General Expenses	17	1,28,21,84,606	98,37,24,035
Transportation Expenses	18	49,28,760	38,43,655
Repairs & Maintenance	19	37,34,24,622	22,62,25,044
Finance Costs	20	9,05,47,269	11,07,26,935
Other Expenses (Write-Off)	21	1,04,26,012	8,12,436
Prior Period Expenses	22	73,09,667	66,94,268
Depreciation	4	89,86,84,705	79,70,05,342
Total (B)		10,15,16,67,815	8,68,42,46,391
Balance Being Excess of Income Over Expenditure (A-B)		-84,47,34,227	-7,55,20,176
Adjusted from Capital Fund (Depreciation)		89,86,84,705	79,70,05,342
Adjusted from Capital Fund (Write-Off)		1,04,26,012	8,12,436
Transfer to HEFA		41,00,00,000	41,00,00,000
Transfer to Capital Fund (3 -C)		35,04,60,413	54,25,66,925
Transfer to General Reserve - Main Account		-1,12,01,81,960	-69,75,99,707
Transfer to IRCC Fund		25,53,53,813	29,55,79,682
Transfer to General Reserve - Donation Account		16,87,44,224	17,17,50,703
Balance Being Surplus/ (Deficit) Carried to Corpus/ Capital Fund		-1,12,01,81,960	-69,75,99,707
Significant Accounting Policies	23		
Contingent Liabilities and Notes On Accounts	24		

Note: Value of Rs. 1,12,01,81,960/- is arrived at after adding deficit of Rs. 3,77,021/- (recurring) and Rs. 1,11,98,04,939/- actuarial value provision in r/o Leave Encashment, Gratuity and Pension.

RECEIPT AND PAYMENTS FOR THE PERIOD FROM 01/04/2021 TO 31/03/2022

(Amount in Rupees)

RECEIPTS	Amount In Rs.	PAYMENTS	Amount In Rs.
I. Opening Balances		I. Expenses	
a) Cash Balances	1,51,151	a) Establishment Expenses	4,07,12,91,200
b) Bank Balances		b) Academic Expenses	91,31,81,276
In Current accounts & Savings accounts	1,14,78,50,906	c) Administrative Expenses	82,02,05,907
	0	d) Transportation Expenses	49,31,086
	0	e) Repairs & Maintenance	35,91,77,237
		f) Prior Period Expenses	0
II. Grants Received		II. Payments against Earmarked/ Endowment Funds	3,19,349
a) From Government of India	8,04,96,53,191		
b) Grant in aid due in 2020-2021 received in 2021-2022	0		
c) From State Government	0		
d) From Other sources (details)	0		
III. Academic Receipts		III. Payments against Sponsored Projects/ Schemes	1,13,93,89,036
a) Fee from Students	69,12,96,148		
b) Other Receipts from Students	11,39,00,804		
c) All India Entrance Examination Receipts	18,19,76,411		
IV. Receipts against Earmarked/ Endowment Funds	2,37,15,497	IV. Payments against Sponsored Fellowships/ Scholarships	31,77,88,592
V. Receipts against Sponsored projects/ Schemes	2,46,22,18,246	V. Investments and Deposits made	
		a) Out of Earmarked/ Endowments Funds	0
		b) Out of own funds (Investments - Others)	0
VI. Receipts against sponsored Fellowships/ Scholarships	21,16,54,106	VI. Term deposits with Scheduled Banks	29,42,66,01,433
VII. Income on investments from		VII. Expenditure on Fixed Assets and Capital Works -in-Progress	
a) Earmarked/ Endowment Funds	0	a) Fixed Assets	86,03,64,141
b) Other investments	0	b) Capital Works-in-Progress	27,46,39,021



RECEIPTS	Amount In Rs.	PAYMENTS	Amount In Rs.
VIII. Interest received on		VIII. Other Payments including statutory payments	2,33,93,54,320
a) Bank Deposits	86,32,39,032		
b) Loans and Advances	0		
c) Savings Bank Accounts	0		
d) Accrued Interest	0		
IX. Investments encashed	26,81,70,76,842	IX. Refunds of Grants	0
X. Term Deposits with Scheduled Banks encashed	0	X. Deposits and Advances	
		a) Advances account	38,78,81,142
		b) Refundable Deposits	10,39,53,205
		c) Recoverable Deposits	40,80,000
XI. Other income (including Prior Period income)		XI. Other Payments	
a) Continuing Education Programme	10,80,05,524	a) Grants from other organisations	22,66,96,392
b) Miscellaneous Receipts	17,07,48,833	b) Sundry Creditors	17,39,29,419
c) Guest House receipts	3,14,96,257	c) Loan-Inter Department	10,00,00,000
		d) Surplus transfer to Endowment	0
		e) Other Payments -main account	33,19,12,378
		f) Other Payments -IRCC account	2,05,72,41,067
		g) Other Payments -Donation account	38,67,41,764
XII. Deposits and Advances		XII. Closing balances	
a) Advances account	1,53,44,172	a) Cash in hand	2,97,915
b) Refundable account	11,47,18,913	b) Bank balances	68,06,20,673
c) Recoverable Deposits	0	In Current Accounts & Savings Accounts	
XIII. Miscellaneous receipts including Statutory receipts	44,97,39,929		
a) Other Adjustable Accounts	13,25,61,856		
XIV. Any Other Receipts			
a) Grants from other Organisations	1,03,54,97,534		
b) Sundry Debtors	70,47,59,066		
c) Loan-Inter Department	0		
d) Other Receipts - Main account	4,44,180		
e) Other Receipts - IRCC account	1,65,45,47,952		
TOTAL	44,98,05,96,553	TOTAL	44,98,05,96,553

NOTES

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