# DEPARTMENT Handbook



### CHEMICAL ENGINEERING IIT BOMBAY



### 2020-21

## Disclaimer

Though the ISCP (Institute Student Companion Program) has taken care while compiling the handbook, neither the council nor the Institute can be held responsible for errors/inadequacies that may inadvertently creep in. This handbook cannot be used as a basis for making a claim on facilities/concessions/interpretation of rules/statues or the like. If there is some critical information to which the reader of this handbook refers, it is with his or her own responsibility that it is put to use, with cross verification if need be.



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# About The Institute

Established in 1958, the second of its kind, IIT Bombay was the first to be set up with foreign assistance. In 1961 Parliament decreed the IITs as 'Institutes of National Importance'. Since then, IITB has grown from strength to strength to emerge as one of the top technical universities in the world.

The institute is recognised worldwide as a leader in the field of engineering education and research. Reputed for the outstanding calibre of students graduating from its undergraduate and postgraduate programmes, the institute attracts the best students from the country for its bachelor's, master's and doctoral programmes. Research and academic programmes at IIT Bombay are driven by an outstanding faculty, many of whom are reputed for their research contributions internationally. IIT Bombay also builds links with peer universities and institutes, both at the national and the international levels, to enhance research and enrich its educational programmes. The alumni have distinguished themselves through their achievements in and contributions to industry, academics, research, business, government and social domains. The institute continues to work closely with the alumni to enhance its activities through interactions in academic and research programmes as well as to mobilise financial support.

Located in Powai, one of the northern suburbs of Mumbai, the residents of the institute reap the advantage of being in the busy financial capital of India, while at the same time enjoying the serenity of a campus known for its natural beauty. A fully residential institute, all its students are accommodated in its 15 hostels with inhouse dining; the campus also provides excellent amenities for sports and other recreational facilities.

# About The Department

Established in 1958 with assistance from the Soviet Union under UNESCO aid scheme, the Department of Chemical Engineering is recognized as a leading department in India primarily because of its strong academic programme, large faculty strength and diverse range of research areas. The Department offers various academic programmes like B.Tech. (Duration 4 years), M.Tech (Duration 2 years), 5 year Dual Degree and Ph.D. program. Several faculty members of the Department also actively participate in teaching and research activities of various interdisciplinary programmes of the Institute.

The good experimental and computational facilities are highlights of the department which are usually funded through the Ministry of Human Resources Development, and research projects from Government Agencies and Industry. The Department has good interaction with Industry and provides service by way of consultancy projects and continuing education courses in many of areas.

# Message from HOD

Dear Students,

I wish to extend a very warm welcome to the new M. Tech. (Chemical) students of the 2020 batch. The department of chemical engineering at IIT Bombay has always been the most preferred destination for the bright and young minds of the country aspiring to do research, and I wish to congratulate all of you for being selected for your higher studies here with us.

The recent changes in the chemical engineering eco-system both in the industrial manufacturing & research as well as in academia, has spurred a significant need for highly qualified manpower at various levels. All of you have therefore made a right decision to pursue an advanced degree in chemical engineering at IIT Bombay.

The M-Tech program at IITB has a substantial research component that will help you get exposure to performing independent research. The Department of Chemical Engineering at IITB is at the forefront of contemporary as well as emerging research areas such as Soft Matter, Bio-systems Engineering, Catalysis and Reaction Engineering. Process Engineering, Molecular Simulations, and Thermodynamics, Energy and Environment. The students will get an opportunity to take advanced courses and perform research in these areas..

The environment at IITB also offers you several exciting opportunities for co-curricular activities in addition to your academic curriculum and research. I hope you will take all the opportunities available on the campus during your two years of stay to grow both academically and in other co-curricular areas.

I would like to once again extend a warm welcome to all of you to the department. We, the faculty and the staff, in the department, wish you all the very best in your program and looking forward to exciting and engaging times with all of you.



Madhu Vinjamur (Headofthe Department)

### Message From Faculty Advisors

Dear Students,

A Hearty Congratulation to you on making it to IIT Bombay. We wish to extend a very warm welcome to the Department of Chemical Engineering. Your department is known for its cutting-edge research and unique teaching methods.

We are your Faculty Advisors (FacAd) and will be happy to help in all kinds of academic decisions with respect to curriculum, courses, project, withdrawal from semester on medical advice etc. Please do not hesitate to contact us on any academic related issues or anything else that you may feel necessary to share.

Prof Abhijit Majumdar



**Prof Ratul Das Gupta** 

Finally, once again, congratulations and welcome to one of the most prestigious institutes of our country. Make your stay exciting, fulfilling, interactive and rewarding by utilizing all the resources available around.



### Message from ISCP Team

#### Dear New Entrants,

These are tough times, but you are not alone.

We welcome you to one of the most prestigious institutes in the nation. Congratulations on having achieved this incredible feat. You are about to become the part of a culture that will leave its traces within you for a long long time even if it begins 'untraditionally'. You will be the ones witnessing the first term to happen completely online in the history of IIT Bombay. It might feel overwhelming, and for all the right reasons we must say. There will be several things you might be worried about, from coping up with the academics in online mode to missing out on things. However, as we said, "You are not alone".

Institute Student Companion Programme (ISCP) is a student body with the primary objective of building a relationship of trust and comfort between the final year students and the incoming students of the PG programmes. We are here to help you in getting familiar with the ways of IIT-B, which is even more important in these times. The scope of these is not limited just to academics. Various online events are and will be organized by the cultural, technical, and sports clubs in IITB like Code in Quarantine, Fitness challenges, Dance Challenges, etc. Managing these along with online lectures might seem daunting at first and hence, to help you with a world of problems including these, we assign to you a Student Companion.

The Student Companions are self-motivated volunteers who will genuinely help you in low and high tides as an act of giving back what they received from the programme. You can look up to the team for any and all form of support, any information before venturing out into an unknown domain be it academics or extracurricular activities. You can reach out to us for any issue regarding the curriculum, facilities provided, your physical, social or mental health, and last but certainly not the least reach out just to have a chat with us because that is what we are for, for you.

The Covid-19 Pandemic has affected us all. For now, due to health concerns, this prevents your arrival into the beautiful lush-green campus of IIT-B, getting tangled in the hostel activities, participating in events, and many more things but the most important thing is that the campus and the buildings do not define IIT-B. It's you. You define the culture, the activities, you represent IIT-B to the world, and you make IIT-B what IIT-B is. So, knowing that time flies at IITB, we strongly suggest participating in things that happen online other than attending lectures, make memories, reach out to us for any queries, and relax with the comfort of your home. At least till we get an opportunity to welcome you into the campus. Let's be safe, let's be optimistic and let's keep our learning spirits high.

Looking forward to getting to know you. Giving out some motivation for these difficult times, we end with a quote by Albus Dumbledore:

**Overall Coordinators** 

ISCP (2020-2021)

iscp@iitb.ac.in

"Happiness can be found, even in the darkest of times, if one only remembers to turn on the light".

Stay Safe!



Aakrit Anshuman Phone - 8904059856 aakritanshuman1@gmail.com

Satyam Rathore Phone - 7389102399 er.satyamrathore@gmail.com



### Message from PG Academic Council



Dear Freshmen,

Congratulations to all freshmen for making it to one of the premier institutes of the country. Despite the stiff competition, you all managed to come out with flying colours. So on behalf of the PG students of IIT Bombay it is my honour to welcome you all here.

So now all of you are a part of IIT Bombay PG community or "PG JUNTA" as we call them. The institute has a wide range of facilities and services to offer to all its students. This will not only ensure a fruitful educational experience but also promote overall skill development. In the institute there are several student run bodies, that focus on development of skills, sports and extracurricular activities such as music, dance, drama etc. Along with academics we urge you all to explore and make the most of the excellent facilities that the institute has to offer.

As the Institute Master's Representative, my entire team and I aim to address your grievances and help you to the best of our abilities. This time since the first semester for you all is going to be online, you might have a lot of queries in your mind. Please feel free to contact us any time. Our council PGAC is one that is for the PG students, of the PG students and most importantly by the PG students. So whenever you face a problem, we are always there to help you out. Supporting the students in their academic endeavour is also our foremost priority and we will try to improve the IITB experience in all the ways we can. On this note, I once again welcome you all to IIT Bombay, hoping to welcome you all back in the campus as soon as situation gets better, and wishing you every success in your future endeavours.

Institute Masters Representative (2020-2021 Post Graduate Academic Council imr@iitb.ac.in



Sohini Das Gupta



## Message From Department Coordinator

#### Hello Everyone! Congratulations!

It gives me immense pleasure to welcome you to our department.

It might feel little different for all the right reasons thinking about how these online mode for academics gonna work. But don't worry, we are there to help you in every possible way that we can. You are about to become part of a system that will keep on making you guys proud for a long time. For the time being health and safety concerns will prevent you from enjoying the beautiful campus. But most importantly just remember one thing, you guys define the future of IITB. It is all about us here. Atleast till the time we get an opportunity to welcome you guys to the campus, lets be safe and healthy.

Chemical Engineering Department has been one of the prominent departments in the Institute right from its establishment. The technological resources available and the lab facilities are one of its kind in the country. Apart from these, what makes our department stand out from the rest is our professors who are widely known for their research contributions in their respective fields. We have got professors working in wide range of fields starting from molecular simulations to process control and reaction engineering. Whether you want to work on the field of cancer therapy or want to be a simulation geek looking into molecular level thermodynamics or an expert working in CFD, we have got it all covered.

Well this isn't all. The list is endless. So, you have not just secured an admission in the best institute in the country but you are going to experience a whole new life in "The City of Dreams". The more you explore the deeper you will fall in love with this place and the institute.

With prevailing conditions we are not sure when we could meet, Still hope things will get really wonderful by no time and have a wonderful 2 years in Mumbai. For the time being I strongly suggest participating in things that happen online other than attending lectures, make memories, reach out to us for any queries, and relax with the comfort of your home.

So, get ready for the roller coaster ride! Don't worry! The ISCP team will always be by your side to make your ride smoother and memorable.

We're going to do everything not as seniors but as friends to keep you moving. Good Luck Guys and Be Safe.



PRANAV K VASU Dept. Coordinator, ISCP 2020-2021 Phone: : 7736278191

# Meet Chemical ISCP Team 2020-2021

#### **Department Coordinator**



Pranav K Vasu pranavkvasu1994@gmail.com 7736278191

#### **Student Companions**



Seera Vijaya Shalini shalini.seera@gmail.com \$7907219372



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Richa Katare katarerics95@gmail.com 7389352424



Ijas Ahmed ijaspp96@gmail.com \$ 9747725015



Twinkle Jaiswal twinklej653@gmail.com § 9079158442



Sunita Jha sunitajha229@gmail.com 9007528828

# Faculty Members and Their Areas of Research

Our renowned panel of faculties form the backbone of our department. Their motivation and guidance have always helped students excel in their academics. Their achievements are the result of their hardwork and dedication. Their kind and generous approach creates a positive environment that persuades the students to aim higher and work harder.

Number of core faculties : 44 Number of adjunct faculties: 4





#### Name

#### **Prof. Sharad Bhartiya**

Room :Che Dept 311 Email : <u>bhartiya@che.iitb.ac.in</u> Ph: +91 (22) 2576 7225

#### **Prof. Mani bhushan** Room :Che Dept 311

Email:<u>mbhushan@che.iitb.ac.in</u> Ph:+91 (22) 25767214

#### **Prof. Abhijit Cahtterjee** Room : CAD Centre

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#### **Prof. Jhumpa Adhikari** Room: Che Dept 241

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#### Prof. Rajdhip B

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#### **Prof. Jayesh bellare**

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#### Prof. Abhijit Majumdar

Room: : :Che Dept 136 Email : <u>abhijithm@che.iitb.ac.in</u> Phone: +91-(22)-2576 7237



#### **Research Interests**

Optimal operation of simulated moving beds; Operation and control of fuel cells

> Sensor network design and audit Constrained state estimation

Reaction engg and catalysis, Thermodynamics and molecular simulations,

Thermodynamics, Statistical Mechanics, molecular simulations

Nanoparticles, Water treatment, Drug Delivery, Modeling and Simulation

Nanotechnology, Electron Microscopy, Healthcare, Medical devices

Cell Mechanics, Microfluidics,Soft Mechanics, Biomass







#### Name

**Prof. Swati Bhattacharya** Room: 2, CESE-DESE **E** Email: swaticb@iitb.ac.in



#### **Research Interests**

Investigation of protein dynamics and mechanismfor application in genomics, kinetics of DNAtranslocation

Prof. Anurag Mehra Room : Chem dept 222 E mail: :<u>mehra@che.iitb.ac.in</u> Ph:+91 (22) 2576 7217

Prof. Sarika Mehra Room : Che Dept 112 Email: <u>sarika@che.iitb.ac.in</u> Phone: +91(22)25767221

Prof. Ateeque Malani

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Prof. Ranjan K Malik

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### Prof. Kannan M M

Room :Che dept 311 Email <u>kannan@iitb.ac.in</u> Phone: +91 (22) 2576 7213

**Prof. Hemant Nnavati** Room: Che Dept 242 Email: <u>hnanavati@che.iitb.ac.in</u> Phone: +91 (22) 2576 7215





Genomics and system Biology,Computational Biology

Computattional Material Science, Wetting and Super-Hydrophobicity, Sythesis of Porous Materials, Interfacial and confined Fluids

Process simulation and Optimization, Energy Analysis and Process Integration, seperation Process and Process Intensification,

Similation environment and Simulation Methodologies,Control system design,Affordable labs and Virtual labs,open source software

> Polymer Physics and Multiscale modelling,Bio-resourced and Biodegradable Polymer Systems



#### Name

#### **Prof Santosh B Noronha**

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#### **Prof. Raochish Taokar** Room: Che Dept. 123

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#### **Research Interests**

**Bioprocess** Development, Biosysytems Modelling and Data Analysis.Healthnet engineering, Education Technology

Electrohydrodynamics, Biomembranes, vesicles and capsules

#### **Prof. Mahesh T**

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#### **Prof Mukta Tripathy** Room: Che Dept. 222 Ph: +91 (22) 25767204

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#### Prof. Chandra Venkatraman Che Dept. 321

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#### **Prof. K V Venkatesh**

Room: Che Dept. 136 Ph: +91 (22) 25767223 Email :venks@che.iitb.ac.in

### **Prof Madhu Vinjamur** Room: Che Dept. HOD Office

Ph: +91 (22) 25767218, Email: madhu@che.iitb.ac.in



Fluid Mechanics, Colloids & Interfaces, Biophysics

Soft Matter Systems; Polymer Nanocomposites; Self-Assembly

Aerosol physics, chemistry and optics; simulations of air-quality and climate change; energy-emissions modelling;

: Bio-systems Engineering; Systems and Synthetic Biology; Metabolic Engineering; Modelling of Metabolic Diseases

> Drug Delivery; Aerogels; Supercritical Carbon Dioxide; Micronization





#### Name

#### Prof. Ratul Das Gupta

Room: Che Dept 122 Email: <u>dasgupta.ratul@gmail.com</u> Ph: +91 (22) 2576 7235



#### **Research Interests**

Interfacial Flows; Waves in Fluids and their Stability; Mechanical Response of Amorphous Materials

#### Prof. Partha Sarathy Goswami

Room : Che Dept 151 Email: <u>psg@che.iitb.ac.in</u> Ph: +91 (22) 2576 7230

#### Prof. Ravindra Gudi

Room: CAD Centre 243 Email: <u>ravigudi@che.iitb.ac.in</u> Ph: +91 (22) 2576 7231

#### Prof Venkat Gundabala

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#### **Prof. Sameer Jadhav**

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#### Prof. Sujit S jogwar

Room : 100, CAD center Email: jogwar@che.iitb.ac.in Ph:+91(22)25767244

#### Prof. Arindam Sarkar

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: Process Systems Engineering; Process Performance and energy Audit; Optimization and Control; Green Engineering

: Microfluidics; Waterbased Coatings; Electrohydrodynamics; Micro and Nano Particles

Cell Mechanics; Microfluidics; Liposomes; DrugDelivery

Control, Design and Scheduling of Energy-integrated Process Systems; Integrated Design and Control of Divided Wall Columns

Fuel cells, electrochemistry, electrocatalysis, nanomaterials





#### Name

#### **Prof. Jyoti Seth**

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#### **Prof. Yogendra Shastri**

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#### **Prof. Sachin C Patwardhan**

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#### **Prof Sandip Roy**

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#### **Prof. Supreet Saini**

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#### **Prof. Devang V Khakhar**

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Email: sanjaym@che.iitb.ac.in Ph:+91 (22) 2576 7246





#### **Research Interests**

Soft Matter, Rheology, Suspensions, Bio-refining

Bioenergy, Sustainability, Optimization, **Supply Chain** 

> Predictive Control, Fault **Diagnosis and Fault Tolerant** Control, Nonlinear Bayesian State Estimation

: Risk-based Process Safety Management, Cultural Aspects of **Process Safety** 

Microbial evolution, dynamics of biological systems, bacterial pathogenesis

Flow and Mixing of Powders; Polymers; Liposomes

**Reaction Engineering and** Catalysis; Process Intensification; Coal and **Biomass** 







#### Name

#### **Prof. P Sunthar**

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#### **Prof. Ganesh Viswanathan**

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#### **Prof. Parmod Wangikar**

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#### **Prof Jason Picardo**

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#### **Prof. Guruswamy Kumaraswamy**

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#### Prof. Arun S Moharir

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#### **Prof. Vinay Juvekar** Room : New PG Lab annex Email: vaj@che.iitb.ac.in



Vesicles for drug delivery, Computerised evaluation systems

**Research Interests** 

Systems Biology; Signal Transduction; Stochastic Dynamics; Reactorr Engineering

> Algal Biofuel; Metabolic Engineering; Enzyme Engineering; Biotransformation

Mucus Dynamics, Glacier: Flow instabilities, Dusty turbulence, Pattern formation in multi-scale systems

:Structure and water transport through block copolymers with a hydrophilic block, Crystallization induced structure development

Adsorptive Separations, generic simulation models for liquid phase SMB, reactor modelling and simulation

Interfacial Engineering; Electrochemical Engineering; Conducting Polymers; Reaction Engineering







#### Name

**Prof. Bhartkumar Suthar** Room: CheDept. 321 Ph: +91 (22) 25767243 Email bharat.k.suthar@iitb.ac.in



#### **Research Interests**

Li-Ion battery, fuel cells, mathematical modelling and Numerical Simulation, EIS

**Prof. A K Suresh** Room: CAD Centre 220 Ph: 91(22)25767240

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### Adjunct Faculty Members

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Email: mm@che.iitb.ac.in

**Prof. V M Naik** Room: Chem Dept 145 Ph: P: +91 (22) 2576 7210 Email: : <u>vm.naik.in@gmail.com</u>

Prof. Y S Mayya Room : Che Dept 321 Email :<u>ysmayya@iitb.ac.in</u> P: +91 (22) 2576 7228



Basic and detailed engineering design of process and utility system; Process equipment design; Energy systems

Thermodynamics of Fluid Phase Equilibria, Extraction and Processing with Supercritical Fluids,

Soft-matter & Interfacial Engineering,

Energy & Renewable Resources, Foods & Specialty Chemicals

Modeling Aerosol nucleation and growth, Radiation Physics



# Research Lab and Equipment

OF FECHAL

LAB	EQUIPMENT	LAB	EQUIPMENT	
	Autotitrator		Advanced Inverted Fluorescent	
	Refractometer Bio Molecular		Microscope: Nikon Eclipse TE 2000-S	
	Multi-purpose Distillation Unit	Engineering	Table-top Refrigerated Centrifuge	
	Gas Liquid Absorption Setup		Carbon Dioxide Incubator	
	CSTR Setup	- 	Molecular Modelling Software	
Automation Lab	TOMLAB Software	Cellulose Laborato	ry Silicon Graphics Fuel Workstation	
			HP Z400 Workstation	
	Plug Flow Reactor Setup		Intel P4 Server	
	Barometer			
	UV Spectrophotometer	CAD Laboratory	GAMS/ BARON	
	Matlab Software	11.4	Micro Annular Gear Pump	
	BenchTop 3star Conductivity/ Resistivity/ TDS/	Membrane	GPC Pump	
	Salinity/ Temperature Meter		Syringe Pump with Static Mixing Unit	
LAB	EQUIPMENT	LAB	EQUIPMENT	
	Table-top Refrigerated Centrifuge		Mini Extruder (Avanti Polar Lipids Inc.)	
	Elisa Reader		ninar Airflow Workstation	
	Real-time PCR Machine		vital Shaker	
	Orbital Refrigerated Shaking Incubator		odular Compact Rheometer	
	Vacuum Centrifugal Concentrator		Sieve Shaker	
Bio System	PCR Machine	Fluid Mechanics	Surface Profile Measuring System	
Dio System	r on Machine		Argon Ion Laser System	
Engineering	Refrigerated Centrifuge		Micro Fluidic Cell Plate	
	Biosafety Cabinet		Inverted Fluorescent Microscope, Olympus IX71	
	Rotary Incubator Shaker		Milli Q Water System	
	Gas Chromatography Mass Spectrometer			
			Handheld Analyzer 2250	
	NanoPhotometer TM UV/Vis Spectrophotometer		REGLO-Z Digital Gear Pump with LED Display	

LAB	EQUIPMENT	LAB	EQUIPMENT
Biochemical Engineering	Deep Freezer Hybridization Chamber Refrigerated Centrifuge and Micro-centrifuge Refrigerator (-86°) Table-top Refrigerated Centrifuge Real-time PCR Machine DNA SpeedVac Micro-array Scanner Gel Documentation System - Image Resolution Package Thermoscientific Model Biocane 20 LV2 Multi Detection Reader - Spectra Max	Organic Process	Surface Charge Analyzer   Stopped Flow Mixer   Membrane Test Cell   COMSOL Multiphysics 3.5 Software   Stereo Zoom Microscope   Bipotentiostat   Goniometer: GBX Digidrop (Contact Angle Meter)   Static Mercury Drop Electrode   Gas Chromatography Mass Spectrometer DSQ II   Dynamic Surface Tensiometer   Quartz Crystal Microbalance   Microtitration Calorimeter 4200   TPDRO 1100

LAB	EQUIPMENT
	Syringe Pump
	Electrostatic Classifier
	Condensation Particle Counter, Model 3775, TSI
	Air-jet Atomizer, Model 3076, TSI
Particle and Aerosol	Cascade Impactor, MOUDI, Model no. 110
	High Pressure Liquid Chromatography, Perkin- Elmer S-200
	Grimm's Aerosol Laser Particle Spectrometer Model 1.108
	Cyclone Separator
	Hand-held Condensation Particle Counter Model 3007
Engineering Handbook	



LAB	EQUIPMENT			
	Digital Storage Oscilloscope			
	Digital Multimeter			
	HSA 4052 High Speed Bipolar Amplifier & WF			
	1973 Multi Function Generator			
	Stereozoom Microscope (Nikon)			
	Stereozoom Microscope			
Soft Fluids	Function Generator			
Technology	Spin Coater (Photo Resist Spinner)			
	High Speed Camera			
	Dynamic Light Scattering (DLS)			
	Vacuum Dessicators, Weighing Balance, Oven			
	Inverted Microscope, Nikon Eclipse TE-2000U			
	Constant Temperature Circulator - JULABO			
	Homogeniser			
	Gas Pynomatic ATC			
	Mercury Porosimeter			

LAB	EQUIPMENT	
	Gas Chromatography	
	NI Hardware	
	Gel Documentation System	
Protein Engineering	UV Double Beam Spectrophotometer	
	Bench-top pH Meter	
	Deep Freezer	
	Bio-Reactor, Bio-engineering Company Switzerland	
	Sorption/Desorption Apparatus	
<b>Reaction Engineering</b>	Peristaltic Pump	
	Calorimeter	
	High Pressure Liquid Chromatography	
	Gas Chromatography	
	Small Angle X-Ray Scattering System	
Silicate Engineering	Atomic Force Microscope System	
Polymer		
Thermodynamic		
Heat Transfer		

Forfurther information, visit http://www.che.iitb.ac.in/online/research/research-laboratories

Chemical Engineering Handbook 2020-21

# • KNOW YOUR SENIORS

NAME	GUIDE	PROJECT		
Panthagada Anil Kumar	Prof. Supreet Saini	Evolutionary dynamics of microbial population		
Jayant Chandrashekhar Pimpalkar	Prof. Sarika Mehra	Application of machine learning algo. to bioprocess data		
	Prof. Ganesh A	ML approach for analysis of spatiotemporal patterms in		
	Viswanathan	packed bed reactor		
	Prof. Santosh Noronha	Modelling of haemodialysis		
Prakshita Agrawal	Prof. Jayesh Bellare	Hollow fibre mass exchanger		
Anuradha Pakkurthi	Prof. K. V Venkatesh	Modelling alcohol metabolism in liver		
Ijas Ahammed P P	Prof. Swati Bhattacharya	Molecular simulations of sourcing a protein		
Ravi Ranjan	Prof. Venkat Gundabala	Water based nanocomposite materials		
Krishna Agrawal	Prof. Sameer Jadhav	Design of element for microfluidic networks		
Jagat Singh	Prof. Devang V Khakhar	Flow simulation in a air jet mill		
Pranav K Vasu	Prof. Partha Sarathi Goswami	Bubble turbulence in vertical riser using PIV.		
Shubham Ishwar Sonkusare	Prof. Yogendra Shastri	Dynamic optimisatin based design of circular economy		
Siddharth Sagar	Prof. Sandip Roy	Challenges of risk governance for an emergent economy		
Manish Sehoal	Prof. Mahesh S Tirumkudulu	Impedance based microfluid dvice for blood cell counting		
Pallav Jain	Prof. Bharatkumar Suthar	Modelling and simulation of impedence		
· · · · · · · · · · · · · · · · · · ·	Prof. Rochish Madhukar Thaokar	Electro coalescence of droplets in electric fields		
Ashwin Amalaruban M	Prof. Jyoti Seth	Hydrodynamics of fractal aggregrates		
Vinayak Agrawal	Prof. Mani Bhushan	Use of neural networks for state estimation		
Preetsinh Dharmendrasinh Suratia	Prof. Sharad Bhartiya	Batch pulp digester modeling validation		

# KNOW YOUR SENIORS

NAME	GUIDE	PROJECT		
Kumar Shubham	Prof. Abhijit Chatterjee	Investigation into novel lithium ion battery and materials		
Mohammed Arshak Junais Kv Prof. Jhumpa Adhikari		Molecular simulation study of solvent extraction of natural products		
Monu	Prof. Akkihebbal K Suresh	Decoupling extents of composition change in reacting systems: Reaction variants and invariants		
Manish	Prof. Chandra Venkataraman	Aerosol synthesis using faraday wave generator		
Richa Katare	Prof. Ravindra D Gudi	Advances in systems engineering using big data analytics and machine leaning		
Tapendra Kumar Sanel	Prof. Sujit S Jogwar	Data driving heat exchanger network		
Shivam Gupta	Prof. Sachin C Patwardhan	Collaborative control using distributive state estimation and predictive control		
Twinkle Jaiswal	Prof. Sanjay M Mahajani	Process development and process intensification		
Parth Manubhai Patel	Prof. Arindam Sarkar	Electrochemical reduction of CO2		
Aman Garg	Prof. Madhu Vinjamur	Mathematical modelling of fuel cell based on energy plant		
Ketan Ramesh Teppalwar	Prof. Jason R. Picardo	Reduced order modelling of nonlinear reactor separator dynamics		
Ram Kaistha	Prof. P Sunthar	ML based Pressure Drop Prediction in Laminar Flow through Non-Uniform Cross-section Pipes		
Sunita Jha	Prof. Sachin C Patwardhan	Development of multivariable self embedded predictive controller		
Javheri Pravin Narayan	Prof. Sanjay M Mahajani	Process simulation of advanced reactors		
Seera Vijaya Shalini	Prof. Sanjay M Mahajani	Chemical reclamation of waste sand from foundries		
Satya Prakash Singh	Prof. Rajdip Bandopadhyay	Design a sensor for detection of Arsenic in water		
Anandita Paul	Prof. Sujit S Jogwar	Production of hydrogen from refinery H2S streams		
Haridarshan Khemabhai Patel	Prof. Jayesh Bellare	Moist membrane technology for biogas up gradation		
Akash Sunilrao Shinde	Prof. Sanjay M Mahajani	Engineering of Diels Alder reactions		

# Semester Wise Subjects

Sem 1			
CL 601	Advanced Transport Phenomena	6	С
CL 602	Mathematical and Statistical Methods in Chemical Engineering	6	С
CL 605	Advanced Reaction Engineering	6	С
CL 701	<b>Computational Methods in Chemical Engineering</b>	8	С
CL 702	Lecture Series	2	N
8			
Sem 2			
	Elec Dept	6	С
CL 610	Core (Experimental Methods)	6	С
	Elec Dept	6	С
CL 694	Seminar	4	С
CL 704	Lecture Series	2	N
	Elec Dept	6	С
CL 792	Communication Skills -II	4	N
HS 791	Communication Skills -I	2	N

Sem 3			
CL 797	Stage I	46	С
	Insti Elec	6	С
Sem 4			
CL 798	Stage II	44	С
			19 20
Total		156	C + 10N

- Among the five courses displayed in the sem 1, a option is available to drop one of them and do the same back in 3<sup>rd</sup> semester, but for taking few other courses in the next semester or while choosing projects they might be prerequisites.
- A total of three Department Electives and one Institute Elective need to be done during 2<sup>nd</sup>-4<sup>th</sup>

semesters based on your convenience.

- Stage 1 evaluation of project generally takes place in the month of September and stage 2 in the month of June.
- Information regarding running courses is available in : <u>https://portal.iitb.ac.in/asc/Courses</u>
- Insti Electives vary every year few of the insti electives available last year were Philosophy,

movie-making, Psychology etc.

M.Tech, projects are generally floated in the month of November and a month will be given for choosing the guide and project, the project allotment is done on the basis of your CGPA in first semester. So a good CGPA will land you in the project of your choice.

### Credit Structure

In general, 1 hour of theory course carries 2 credits while 1 hour in a laboratory course carries 1 credit. Therefore, a 6 credit theory course will run for 3 hours a week while an 8 credit theory course will run for 4 hours a week.

The institute follows a Continuous Evaluation System with considerable freedom being given to the course instructor in deciding the pattern of evaluation. However, a typical theory course will have a mid-semester examination, one or two quizzes and an end-semester examination. The total marks received at the end of semester is converted to a letter grade, based on the relative (and some times absolute) performance of the student. The grades are on a scale of 10 with the grade AA being the best and FF and FR being fail grades. Each letter grade has a grade point associated with it, as follows –

Grades	AA	AB	BB	BC	CC	CD	DD	FF	FR
Points	10	9	8	7	6	5	4	(0) Fail Grade, eligible for a re- examination	(0) Fail Grade, must repeat the course

Other grades like P (Passed), NP (Not Passed), Au (Audit Course) do not have any grade points associated with them.

The performance of a student in a particular semester is measured by Semester Performance Index (SPI), which is a weighted average of the grades secured in all the courses taken in a semester and scaled to a maximum 10. For instance, suppose a student is registered for one 8 credit course, four 6 credit courses, and one 4 credit course during the semester, i.e. a total of 36 credits. If he/she secures AB, BB, BC, CC, AA, CD respectively in these courses, the SPI is calculated as:

In a very similar manner a Cumulative Performance Index (CPI) of a student is calculated, taking into account the performance in all courses taken by a student up to the semester for which the result is last available.

### $SPI = [(9 \times 8) + (8 \times 6) + (7 \times 6) + (6 \times 6) + (10 \times 6) + (5 \times 4)]/36 = (278/36) = 7.72$

# **PLACEMENT INFORMATION**

#### **Placements at a Glance**

Along with its worldwide recognition as a leader in the field of research and education in engineering and science, IIT Bombay is also famous for its placement. Around 300 companies visited the campus, hiring 421 M.Tech students out of 575 (total registered) in the year 2019-20. The Placement Office (nodal point for placements at IITB) or the Placement Cell (a body of student representatives) sends invitations to companies/organizations along with relevant information to conduct campus interviews for their requirements.



## **PLACEMENT INFORMATION**

#### **Placements Timeline:**

The placement session starts from July, 1 to June, 30. But the main process starts from August onwards. There are many preparatory activities organized by placement office at institute as well as department level to help you do well for your placements. These activities includes resume making sessions, quizzes, mock interviews, coding tests, buddy talks, etc. The recruitment and interviews starts from 1st December and goes till 15th December in the 1st phase.



# **Departmental Placement Statistics**

Some of the major companies which visit our department for our M.Tech students are :

Exxon Mobil, Air Liquide Pvt.Ltd, Aditya Birla Science and Technology Pvt. Ltd, IOCL R&D, Petrofac Engineering and Technology, Jay Chemicals, Murata manufacturing colltd, General Mills, TCS R&D, Tata Steel R&D, Technip, Applied Materials Limited, Neogen Chemicals Limited etc..



For detailed info on placements visit: Placement@iitb.ac.in/blog

# **Message From Our Seniors**



Vrushali Gardare Company Coordinator Placed at NFIL



Suryadip BhattachAarjee Placed at TCS R&D Hello juniors.. the placement days are the most tensed days at IITB but also once you sail through it you will cherish that time, So I will just share few points and experiences which helped me or are important according to me.

- Start working on your resume from June or July itself of your placement season.. it takes time to recollect all the things and put those things in a way to attract the recruiter.
- Maintain a decent CPI, don't neglect your phase 1 of MTP and work sincerely. It will hugely impact your grades.
- Start working on your aptitude skills. Almost every company taking a test has an aptitude section, so it's better that you start early.
- For some people it's just that they want a job and some are sure on what profiles they want. The 2nd one is good but even if you are not in the 2nd category atleast know what you don't want, it will help you in filtering out options and prepare accordingly.
- Initially when the JAF signing started, I used to apply to almost all companies open for us despite knowing that I don't have the skill sets they are looking for. I recommend you all to apply wisely and if it's going to hamper your confidence then I advise not to do this.
  - And yes most importantly, stay positive in tough times like rejections and you can take a break, talk to the people who will motivate you and then get back to your preparation with a positive mind.

Hey juniors! I can assure you that the placement days in IITB in December will be the most hectic and tiring days in all of your 2 years. Just a few short points which might help in making those days a tad bit easier!

- Machine learning is not a necessity to get placed. If you know, well and good. If you don't, well do not trouble yourself and waste your time learning the basics. Remember, you'll be competing with people who have done that thing through their entire career. Better to stick to your strengths. Which brings me to...
- Focus on your Project. If there is a key to a successful M.Tech, this is it. Read the job description carefully and find out how your project can be applicable or is relevant for your job in that company.
- In all probability, JAF signing will be unlimited through Phase I. But be careful not to sign too many unnecessary JAFs in companies, where your chance is low. It will create pressure on you as you'll have a packed schedule (for example, you might have 3 interviews in a day from morning till late night). Also rejection will lower your confidence.

I think these are the most general tips that should be applicable to most of you. Remember, times have changed drastically from last year so please keep yourself updated by gathering latest info.

### **DEPARTMENT ACTIVITIES**

### CHEMICAL ENGINEERING ASSOCIATION (ChEA)

The Chemical Engineering Association (ChEA), established in 1965, looks back with pride with an enviable record of annual seminar organized on a diverse range of Hot Topics of current interest to the chemical engineering community. The records become even more enviable when considered in the context of the fact that such Seminars are organized almost entirely by students with a remarkably keen participation and generous support from ChEA Team. It's an association of the Alumni, Faculty, Students and Staff of the Chemical Engineering Department.

### AZEOTROPY

AZeotropy is an annual 2-day Chemical Engineering Symposium organized by students of Chemical Engineering Department, IIT Bombay. It aims to manifest the very spirit of Chemical Engineering in young students from all corners of India, encouraging a participation of 300+ colleges. It involves a blend of Chemical Engineering based competitions, lectures, panel discussions, exhibitions, workshops and many fun-withlearning events.



https://www.che.iitb.a c.in/chea/2k19/index.p hp



https://azeotropy.org/

### RESEARCH SCHOLARS SYMPOSIUM(RSS)

Academia and industrial sectors interact with each other as their activities are complementary in nature. Indian industries are now mostly focusing on R&D activities. RSS was started in February 2006, with a vision to provide this synergistic dimension to the research being conducted by PhD students of the Chemical Engineering Department and showcase their work to the industrial Delegates. This annual event is solely organized by PhD students of the department under the supervision of Chemical Engineering Association (ChEA), IIT Bombay.



https://www.che.iitb.ac.in/rss/

### TATA CENTRE AT IITB

#### **About Tata Centre**

TCTD, IITB has been established to design technology solutions that can take on the unmet needs of resource-constrained communities, within India and across the world. Using an end to end innovation approach, TCTD, IITB acts as a virtual center with research and academic components and draws faculty members and graduate students from various units across IIT Bombay.

# Tata Centre

Technology and Design, IIT BOMBAY

#### **Academic Program**

The Centre enrolls and sponsors Master's students and PhD scholars every year as Tata Fellows. These Fellows selected through a written test by the Centre are trained to work on socially relevant challenges, and become future leaders in engineering, business, and design and invent technologies and system solutions that serve human needs in resourceconstrained communities.



http://www.tatacentre.iitb.ac.in/

### **GENERAL APPROACH FOR A TATA PROJECT**



To solve the social challenges in a holistic way, the research component involves:

- Understanding the problem
- Reviewing of existing solutions
- Designing novel solutions with an optimal combination of performance and cost
- Taking the solutions to the society through various scale up mechanisms



For more information click on : <u>http://www.tatacentre.iitb.ac.in/</u>

### MAJOR EVENTS AT TATA CENTRE

#### The Tata Fellows' Yatra

Tata Fellows and a few faculty and staff have visited certain field settings, to be able to relate to the community living experience. The Tata Fellows have seen how social enterprises can scale-up using technology, operational efficiencies, and work at maximum social impact. The organization's led by these social leaders range from community interventions to scales spanning several states in India. Places visited so far include Madurai, Hubballi, Goa, Bangalore and Pune.

#### **Symposium**

The annual conclave in January every year, hosted by TCTD, IITB, rolls out with different themes. The event brings together stakeholders who can help drive social innovations ahead, for better impact. TCTD Symposium 2020 took place with 'Take Ideas to Scale'. With panel discussions, guest speakers and poster and prototype presentations planned, the objective was to bring together an ecosystem of partners for better user connect to developed technologies.


### **Course on Wheels (CoW)**



Course on wheels is a novel pedagogical activity at the Department of Chemical engineering, IIT Bombay to provide an improved experiential connect to the students, with the applications of what they learn in the classrooms. It is one of those initiatives aimed at bridging the gap between industry and academia in India. The course has been running for four years now. CoW started its journey in the academic year 2016-17.

The course runs for more than three weeks in which students go on an educational tour and travel a distance of about 2000 km in the Western Chemical Belt of India. Various sectors of chemical industry are covered. These include oil and gas, power, intermediate and base chemicals, fertilizers, inorganic chemicals, pharmaceuticals, agrochemicals, dyes, flavours and fragrances. Students go through a preparatory course before the visits, and faculty members are actively involved in this training. Some of them travel with the students, conduct lectures and examinations while on wheels. A typical plant visit includes, briefing by senior executives from the company on techno-commercial aspects of their business, processes practised at the workplace, and the associated technologies used. Students get an opportunity to see the equipment and accessories from a close distance and hear the experience of the practising chemical engineers and operators.

It is recognized as a 6-credit elective course (CL 608) in the curriculum. Apart from the written exam, students are asked to prepare a report on each company they visit, and do a simulation project of one of the processes that they come across.



## **IITB CULTURALS**

## PG-CULT

PG-cult is an annual cultural fest organized by the post graduate community of IIT Bombay.

Its first edition was in 2008. PG cult is conducted in 2 phases:

- Phase 1 (Individual Performances): After the month of October
- Phase 2(Group Performances): In the month of March

## **CULTURAL CLUBS**

- The campus savors all forms of art in different clubs that are an integrated team of not just dexterous artists but also enthusiastic amateurs.
- At IIT Bombay we undertake a variety of cultural activities, whicl are broadly classified under 11 genres – Dance, Dramatics, Film and Media(F&M), Literary Arts, Music, Photography and Fine Arts(PFA), Speaking, Indian Languages, Lifestyle, Design and Classical & Folk Arts.



**EVENTS :** Dance, Music, Dramatics, Fine arts, Literary arts, Speaking arts, Design, Photography, Film and Media

### **IITB SPORTS**

For the love of sports, IIT has a diversified and most inclusive environment. From world class facilities and courts of 14 different sports like basketball, tennis, cricket, squash etc to the equipment required for each of them everything is provided in the campus itself.

Various camps are organized in the winter and summer, where professional mentors will incarnate the sportsmen inside you. IITB offers its student facilities of an international level with fully-furnished courts and high-quality equipment's:

AQUATICS	ATHLETICS	BOARD GAMES	BASKETBALL
FOOTBALL	HOCKEY	SQUASH	TABLE TENNIS
VOLLEYBALL	WEIGHTLIFTING	ADVENTURE SPORTS	BADMINTON
LAWN TENNIS	КНО КНО	DARK KNIGHT (CHESS)	CRICKET

Besides every hostel has a dedicated volleyball, badminton and various other courts.

Various other institute level competitions are organized like PGGC, Hostel GC, AAVHAN.



### **STUDENT WELLNESS CENTRE (SWC)**

#### **About SWC**

After securing admission at the Institute you may feel that a lot of parameters around you are different. You would have more responsibilities to handle at the academic level. Take heart, you will not be the only one. There are a few issues that almost everyone in the Institute faces initially like academic concerns, social (family and peer) pressure etc, leading to feelings of loneliness, low confidence, anxiety, stress, anger and sadness, to name a few.

To help you refrain from losing focus and being unhappy, these Counselors will encourage you to approach us for any problem that you are facing- be it academic, emotional, social or financial- without hesitation.

- In case you wish to talk to a counselor over phone, kindly contact on the given numbers during the below-mentioned timings:
- Timings: 11 am to 1 pm and 4 pm to 6 pm
- Ms. Lavina Lewis: 9769340435



"When we talk our feelings, it becomes less upsetting."

### **GENDER CELL**

#### **About Gender Cell:**

IIT Bombay's Women's Cell has been in existence since 2002. With the enactment of the Institute's policy on sexual harassment, the Cell has been renamed the Gender Cell (GC). In recognition of the Institute's belief that its employees and students have a right to be treated with dignity and respect, the Cell works proactively towards developing a safe and secure environment for employees, and to ensure that all students may gain their education without fear of prejudice, gender bias, hostility or sexual harassment. The IIT Bombay Gender Cell (GC) inquires into complaints of sexual harassment through its Internal Complaints Committee (GC-ICC)

#### **Office Hours:**

- Monday & Thursday: 10.00 am to 12.00 pm
- Tuesday, Wednesday & Friday : 3.00 pm to 5.00 pm



http://www.gendercell.iitb.ac.in/

# Useful Information's

Attendance: Attendance for regular classes is generally taken by the concerned professor during lecture hours, either by biometrics or on paper. Attendance for TAship is to be given for every working day biometrically.

Webmail : An official email ID will be provided to everyone having initials as roll number followed by iitb.ac.in. All the communication from the institute and department is done through this mail ID (also known as webmail). For checking Webmail box visit <u>https://webmail.iitb.ac.in/</u>

TA work: TA duty will begin immediately after joining the course. The faculty advisor will appoint TA duty to all the M.Tech entrants. Once allocated, the students should report to the respective TA supervisor immediately for the assigned work.

Leave Taking: For taking a leave, leave application should be submitted to office one week before its commencement. Permission is needed from the TA Guide or faculty advisor. Total official leaves for TAs are 15 days in a year.

Key Permission: Key permission is required to use any lab or class-room after office hours. Keys can be issued from the security office..

Gymkhana: Gymkhana is an organization to foster and develop all student activities in the institute. Please visit <u>https://gymkhana.iitb.ac.in/</u> for more details.

Application Software Centre (asc) – Administration: ASC is the main interactive website for all the administrative requirements of a student. It includes payment of fees, registration and de-registration from courses, checking grades awarded in subjects, brief contents of all the subjects being offered, timetable and a lot more information. For more information, please visit thttp://asc.iitb.ac.in/

Moodle – Academics: This website provides academic interaction between students and faculty for all courses enrolled by a student. One can download study materials/ books/ notes uploaded by a professor/ TA and students can also submit their projects. For more information, please visit <a href="http://moodle.iitb.ac.in">http://moodle.iitb.ac.in</a>

Library: The website for the central library offers a search engine for books available in the library. One can check the number of books issued at any given time, renew them and "queue" up for any book already drawn by some other individual. For more information, please visit <u>http://www.library.iitb.ac.in/</u>

### <u>USEFUL LINKS & APPS</u>

## <u>LINKS</u>

- Chemical Engineering website : <u>https://www.che.iitb.ac.in/online/</u>
- ISCP website : <u>https://gymkhana.iitb.ac.in/~scp/scp/i</u> <u>ndex.html</u>
- All student activities : https://gymkhana.iitb.ac.in/
- Grading policy : <u>https://gymkhana.iitb.ac.in/~scp/scp/</u> <u>pdfs/grading.pdf</u>
- Student wellness centre :
   <a href="http://www.iitb.ac.in/swc/en/contact-us">http://www.iitb.ac.in/swc/en/contact-us</a>
- Gender cell :
   <u>http://www.gendercell.iitb.ac.in/</u>
- Software by IITB : <u>http://ftp.iitb.ac.in/</u>

## <u>APPS</u>

- InstiApp : Info about events, placement blog, map of the institute and mess menu are uploaded in it.
- **m-indicator : H**elp **you to** navigate through **entire** Mumbai **with ease.**
- Yulu byk : Rental cycle app used commute easily in the campus.
- My byk : Rental cycle app used commute easily in the campus.

#### **EMERGENCY CONTACTS**

Ambulance	022-2576 (1101/1110)
Hospital	022-2576 (7051)
Main Gate	022-2576(1123)
Y Point Gate	022-2576(1121)
Security	022-2576 (1100)
Quick response team	9167398598/99,
(QRT)	9833337979,

9833338989

## • INSTITUTE MAP



# • INSTITUTE MAP

#### SEARCH BY GROUPS AND SERIAL NUMBERS

-	SEA
Academic, Non academic a	nd Lab's
Aerospace Engg	D51
Bio-diesel Lab	B4 4
Bio-science & Bio-energy 1.	
Bio-science & Bio-energy 2.	
Bio-science & Bio-energy 3.	
Central Library	
Central Library	
CESE	
Chemical, Chemistry	
Civil Engg.	
Computer Science & Engg	
Computer Science Dept	
Construction Div.	
CSRE	
Cummins Engine Research	
facility	
Earth Science	
Electrical Engg.	
Electrical Engg. Annex	
Ele. Maintenance Dept	
Energy Systems Lab	
Estate Stores	
Heat Pump Lab	
Heat Transfer Lab	
Heavy Structure Lab	
Hostel 1	
Hostel 2	
Hostel 3	
Hostel 4	
Hostel 5	
Hostel 6	
Hostel 8	
Hostel 9.	
Hostel 10 Girls' Hostel	
Hostel 11 Girls' Hostel	
Hostel 12	
Hostel 13	
Hostel 14	
Humanities and	
Social Sciences (HSS)	D4 40
Hydraulics Lab	
Hydraulics Lab (new)	
	NOTE CONTRACTOR
IC Engine Lab	
IDC	

Inter-disciplinary Prog. in S	systems
and Control Engg.	
IRCC	C345
KReSIT Building	D3 <b>18</b>
Lecture Hall Complex-1	
Lecture Hall Complex-2	
Machine Tool Lab	C5 49
Main Building	
Mathematics	
Mechanical Engg.	
Medical Store	
Metallurgical Engg	
Micro Fluidics Lab	
NanoTech. & Science	
Research Centre (ACRE)	B4
NASA	
ONGC Research Centre	
OrthoCad Lab	
The second se	and a second
Physics	
Power House	
Printing Press	C568
SAC	B369
SAMEER	A4 <b>70</b>
SEMT Lab	
SITAC	
Solar Lab	B4 <b>75</b>
SOM	C345
Sophisticated Analysis	
Instrument Facility (SAIF)	
Steam Power Lab	
Stores and Estate office	C581
Thermal Hydraulic Test	
Facility	B587
UG Lab/S2 Bay	C588
Residential	
Ananta	
Director's Bungalow	E324
DRDO	
Guest House/ Jalvihar	
Guest House/ Vanvihar	
Staff Hostel	
Tansa House (Proj. Staff)	
Vihar House	
White House	F291

BERS		
Auditoriums and Halls		
Convocation Hall		
G Gaitonde Lecture Hall	C4	
Lecture Hall Complex-1		
Lecture Hall Complex-2	D4	48
PC Saxena Auditorium (LT)	C4	64
Seminar Hall		
Victor Menezes CC	C4	89
Food		
Brewberry Cafe	B2	9
Gulmohar Restaurant	D3	
Nestle Cafe (Coffee Shack)	C3	61
Staff Canteen	C3	77
Banks and ATMs		
ATM - Canara Bank	B1	ATM
ATM - Canara Bank	D3	ATM
ATM - State Bank	B2	ATM
Canara Bank	D3	10
State Bank	F3	
School		
Campus School	E4	11
Central School	E5	13
Kendriya Vidyalaya (KV)	E5	13
Activities and Sports		
Badminton Court	B2	.3
SAC	B3	
Staff Club	D3	
Swimming Pool	B3	82
Swimming Pool (new)	B2	83
Tennis Court		
Others and Medical		
Boat House	D1	8
Lake Side Gate	F1	
Hospital	C3	
Main Gate		
Market Gate		
Medical Store		
NCC Office		
Post Office		
Sarovar Udyan		
Temple (Padmavati Devi)		
T		
Map Design		
Shishir Bhagade. IDC, IITB		

misini briagaac. ibc, inc

Project Guide Prof. Mandar Rane. IDC, IITB

#### DEPARTMENT REPRESENTATIVES



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### Welcome to the Chemical Family

" If everyone is moving forward together then success takes care of itself" ~Henry Ford

