

A vertical image of a space shuttle launch is centered on the page. The shuttle is at the top, pointing upwards, with a large plume of white smoke and fire trailing behind it. The background is a dark, gradient sky. The text is overlaid on a white horizontal band that passes through the middle of the shuttle's plume.

**Department of Aerospace Engineering**  
**Department Handbook**  
**Batch 2020-2022**



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# 1. About Department

Established in 1966-67 as the Department of Aeronautical Engineering, the department was renamed as the Department of Aerospace Engineering in 1992. The department runs strong undergraduate and graduate programs in aerospace engineering, and carries out research in several areas of aeronautical and aerospace sciences.

The Aerospace Department, IIT Bombay seeks to establish traditions which will foster creativity and growth of excellence. The Department cherishes the hope that its graduates will be the leaders of tomorrow. Their education is patterned with this in view. Besides making available facilities for higher education, training and research in various fields of engineering and technology, the Institute contributes to the industrial development and economic growth of the country by preparing a cadre of engineers and scientists, who provide both man power and support R&D work for industries.

The department maintains close links with the aerospace and defense industry and undertakes sponsored research, consultancy, and continuing education programs in diverse areas. The faculty has contributed towards national programs like the LCA, IGMDP, GSLV, in various capacities, with spin-off benefits to other fields such as bio-medical engineering. The department has a wide range of experimental facilities such as subsonic and supersonic wind tunnels, water tunnel, stability tunnel, LDV and hot wires, analog and hydraulic simulation rigs, rotor dynamics and engine test rigs, Instron for structural testing, Autoclave for composites fabrication, instrumented drop weight impact test apparatus, and an aero-modelling lab, besides extensive computational facilities with excellent network connectivity.

The department aims to provide students with a cordial atmosphere and an opportunity to acquire a multi-disciplinary perspective to engineering problems. The department runs academic programs for the degrees of Bachelor of Technology (B.Tech), Master of Technology (M.Tech), Dual Degree (B.Tech and M.Tech) and Doctor of Philosophy (Ph.D.). Four broad area of specialization are offered: Aerodynamics, Dynamics & Control, Propulsion, Structures.





## 2. Welcome Message from HOD

Dear Students,

I welcome you all to the Aerospace Engineering Department, IIT Bombay. Our department is considered among the top Aerospace Engineering Departments in our country. This recognition has come out of the efforts of students, faculty, and staff over the past 50 years.

The Department is actively involved in basic and applied research and high quality technical advisory support through various R&D projects to multiple aerospace companies and organization in the country. We hope the exposure to these activities during your studies will prepare you to contribute to the nation after you graduate from our institute. To this purpose, we aim to provide you the best possible facilities and an excellent learning environment.

Prof. Y. Chandrasekhar and Prof. Dhwanil Shukla will be your Faculty Advisors who will advise you on all academic matters. You may receive an email from them soon in this regard. You will also hear from your senior students who may provide their perspective on the Masters programme, course work etc. I would advise you to contact your Faculty Advisors and senior students without hesitation to resolve your queries.


This year, due to the pandemic situation, we will have a different mode of interaction initially. Formal instruction for the first semester will be in an online-mode that does not require you to be physically present in our institute campus. We all hope that the situation improves soon, enabling you to enter our campus and take the full benefit of what we call, the IIT system.


On behalf of the entire department, I once again extend you all a hearty welcome and wish you the best for your studies.



**Sudarshan Kumar**

Professor and Head of the Department  
Department of Aerospace Engineering  
IIT Bombay  
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### 3. Welcome Message by Associate Dean R&D



Dear Students,

Congratulations on your success and a warm welcome to the department of Aerospace Engineering! I am sure you are aware that IIT Bombay is at the forefront of academics as well as research. In the year 2019-20, about 344 sponsored and 705 consultancy projects amounting to approximately Rs. 320 Cr., were undertaken at IIT Bombay. A large number of patents and publications are borne out of these projects. Even during the current pandemic period, there are several ongoing projects that are relevant to mitigating Covid-19 related issues, are being undertaken at IIT Bombay.


Several technologies developed at IIT Bombay have been licensed to industries and have been deployed in the market. Aerospace Engineering department has been and continues to be a very active department engaged in cutting edge research in various aerospace and allied areas. Some of the projects taken up by the department are of national importance as well. I am sure that during your course at IIT Bombay, you will have an opportunity to explore the wonderful work being carried out in the department as well as in the Institute. You may also have an opportunity to be a part of these interesting and challenging research activities. On behalf of the office of the Dean (Research and Development), I wish you all a fruitful and memorable stay at IIT Bombay.

You can find more information on the R&D activities at IIT Bombay here:  
<http://rnd.iitb.ac.in>

Best regards,



**A. M. Pradeep**  
Associate Dean R& D  
Department of Aerospace Engineering  
IIT Bombay,  
Powai, Mumbai 400076.



## 4. Welcome Note from Faculty Advisors

Dear Students,

Congratulations and welcome to the Department of Aerospace Engineering. I am Prof. Chandra Sekher Yerramalli one of the faculty advisors and Prof. Dhwanil Shukla is the other faculty advisor. We will serve as your primary point of contact, to discuss academic and nonacademic matters, related to your program until your graduation.

We are here to help you succeed in your academic program through advice/suggestions. We will keep track of your progress and suggest corrective actions whenever required. All your academic and administrative communications with the institute such as approval of course registrations will be routed through us until you are assigned a supervisor. It is important that you respond to our calls and communications promptly and keep us in the loop on all academic matters. Please do not hesitate to reach out to us for any help or guidance.

The most effective means of communication with us would be through email. While emailing please copy both of us. You are also welcome to call us on our phones in case of any urgent situation. All of us here at IIT Bombay are trying our best to ensure that your academic journey does not suffer due to the ongoing pandemic. Wish you all an enriching experience in the Aerospace Engineering department and at IIT Bombay.

Best Wishes,

Faculty Advisors



**Prof. Chandra Sekher Yerramalli**

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## 5. Welcome Message from ISCP

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. You will become a part of a culture where people want to perfect their craft and thus work day in and day out at it. 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 IIT-B 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 IIT-B, 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:

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

Stay Safe !

Overall Coordinators,  
Institute Student Companion Programme (2020-21)  
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## 6. Welcome Message from PGAC

Dear Freshmen,

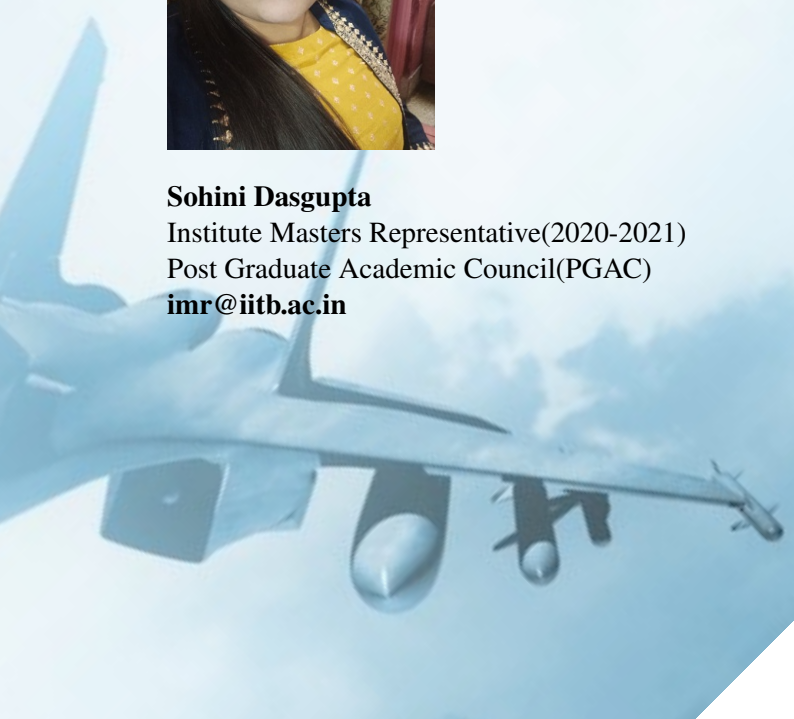
Congratulations to all freshmen for making it to one of the premier institutes of the country. Despite the stiff competition, you all managed to come out with flying colours. So on behalf of the PG students of IIT Bombay it is my honour to welcome you all here.

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 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.



**Sohini Dasgupta**  
Institute Masters Representative(2020-2021)  
Post Graduate Academic Council(PGAC)  
[imr@iitb.ac.in](mailto:imr@iitb.ac.in)





## 7. Welcome Note from Alumni

Dear all,

A hearty welcome to the Department of Aerospace Engineering, IIT Bombay. I would like to congratulate and welcome you all for proving something in you and earn your place in this premier institute. Yes, you have earned it because it is the fruit of your intense hard work and dedication. From now you are going to embark upon a new journey, which not only will enrich you, but also provide you vast learning experiences and opportunities, so much so, that you may feel the need to prove something in you on everyday basis and finally that something will persist to grow every day.

We have one of the best and highly talented faculty in our dept. and you should try to learn from them as much as you can. Beauty of this institute lies in its flexibility as you are not bounded by limitations of departments, they are merely for convenience in administration. You may definitely take other dept. courses which you think will help you in the learning / placements. But make sure, you must finish the departmental academic requirements in parallel. Labs in our department are equipped with resources which are required to learn the concepts and invent new things. Learn practically and always seek for application of your learning in real life scenarios. At least I can say "Don't learn the theory, learn the concept, and always be thirsty for knowledge". Your assignments and project will provide you vast experiences which will help you in placements.

Not only technical, IITB gives you opportunity to develop yourselves in other areas like sports, dancing, photography, painting, acting, poetry, yoga etc., and you must try those. I still remember in my first year we won the trophy of PG-CULT for our department and that was another milestone we achieved in our life. Enjoy every moment of your life at IITB as much as you can.

Collaboration is a key to success and you must follow it. Inculcate a habit of helping your batch mates in every way, be it, learning and explaining the concepts (definitely not copying your assignments), learning new skills for placement preparation. I want you to remember just one thing in your life that "you may not go too far if you walk alone, walk together and the arduous journey of many miles will be a short and pleasant trip". Help each other and you will definitely be a better person on becoming the alumni of this prestigious institution.

I wish you all, good luck and may god bless you with the strength to tackle all the problems in the world. May you will live a happy life and always cherish these two years.



**Vishnu Pratap Patel**  
M.Tech (Batch: 2017-19)  
Scientist D (DRDL, Hyderabad)

## 8. Welcome Note from DC

Dear juniors,

First of all I want to congratulate all of you for making it to IIT Bombay, one of the most renowned institutes in India and also would like to welcome you to our new Aerospace family. Here at IIT Bombay, ISCP (which is very unique of its own) is an individual student body, where the main motivation is to help and guide you in this beautiful campus both in academic and non-academic related matters to make your journey smoother and a memorable one. For the next two years we will be like your big brothers/sisters and will try to make it a happy family, by overcoming every hurdle together.

You must be well aware that the whole world is going through a tough time and IIT Bombay is not an exception of it. The current situation has affected the campus life badly and you also might be very doubtful about your first term and all. Here in IIT Bombay, All the authorities and student bodies are trying their best to provide you as much facilities as possible, to make your life much easier. Before you kick off your new journey, you need to learn a few things. Hence, we have made this departmental handbook for you. I hope it will be quite handfull for you as your first semester will be on online mode. Please try go through it once, and then if you do not understand anything we are always here to help you. And the last but not the least, just remember one thing, tough times won't last forever. I hope we will meet very soon, till then stay safe and take care.

Warm Regards,



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## 9. About Department

### Department Facilities

## Aerodynamics

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#### Prof. Avijit Chatterjee

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#### Prof. J.C. Mandal

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#### Prof. V. Menezes

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#### Prof. Vineeth Nair

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**Prof. R.K. Pant**

**Research Areas :** Design and development of Lighter-than-Air-Systems, Aircraft Conceptual Design, Air Transportation, Evolutionary Optimization

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**Prof. Prabhu Ramachandran**

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**Prof. Aniruddha Sinha**

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# Dynamics And Control

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**Prof. Hemendra Arya**

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**Prof. Ashok Joshi**

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**Prof. Shashi Ranjan Kumar**

**Research Areas :** Guidance and Control, Cooperative Active Aircraft Protection, Cooperative Terminal Constrained Guidance, Consensus and Formation Control of Multi-Agent Systems, Cooperative Control, Collision Avoidance, and Path Planning of UAVs.

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**Prof. Arnab Maitly**

**Research Areas :** Guidance, navigation and control of aerospace vehicles, Optimal control for online trajectory optimization and nonlinear systems, Adaptive control of uncertain systems, Distributed/decentralized control and estimation, Fault tolerant control and estimation, fault detection and diagnosis, Aerospace engine modeling and control, Formation flying and swarm of aerial vehicles, Nonlinear and robust flight guidance and control.

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# Propulsion

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**Prof. A.M. Pradeep**

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**Prof. Kowsik Bodi**

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**Prof. Debasis Chakraborty**

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**Prof. Hrishikesh Gadgil**

**Research Areas** Propulsion, Atomization and Sprays, Combustion, Interfacial Instabilities, Computation of High Enthalpy flows with real gas effects, Effect of Acoustic Forcing on the characteristics of Liquid Fuel Atomizers for Aero Engines, Atomization Techniques for Alternative Fuels in IC Engines.

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**Prof. Sudarshan Kumar**

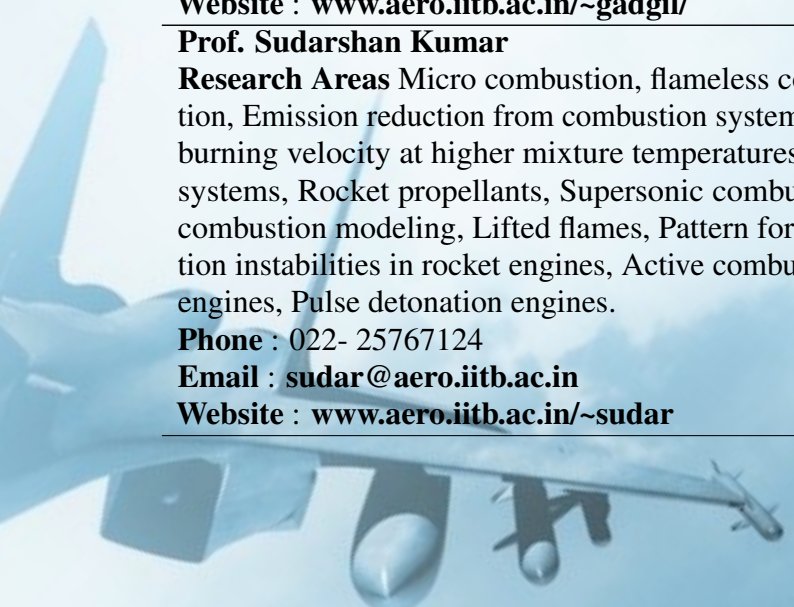
**Research Areas** Micro combustion, flameless combustion, MILD combustion, Emission reduction from combustion systems, Measurement of laminar burning velocity at higher mixture temperatures, Modeling of combustion systems, Rocket propellants, Supersonic combustion modeling, Turbulent combustion modeling, Lifted flames, Pattern formation of flames, Combustion instabilities in rocket engines, Active combustion control in gas turbine engines, Pulse detonation engines.

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**Prof. Shripad P. Mahulikar**

**Research Areas** Aerothermal Studies - Hypersonic Vehicle, Aerothermodynamics, Aircraft Stealth Technology, Heat Transfer, Infrared Signatures of Aircraft Helicopters, Jet Propulsion, Microchannel Cooling of Gas Turbine Blades, Non-Equilibrium Thermodynamics

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**Prof. Krishnendu Sinha**

**Research Areas** Hypersonic and high-enthalpy flows, turbulence modelling in high-speed flows, computational fluid dynamics, high-performance computing, intake aerodynamics for Scramjet engines, re-entry capsule flow physics.

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# Structures

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**Prof. Abhijit Gogulapati**

**Research Areas :** Aeroelasticity, Aerothermoelasticity, Reduced Order Modeling, Optimization.

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**Prof. P.J. Guruprasad**

**Research Areas :** Damage characteristics in flex-beam like structures for hinge-less and bearing-less helicopter rotor blades, Size effects in crystalline materials, Fatigue in metals and metallic alloys, Development of novel shape memory composite for morphing applications.

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**Prof. Krishnendu Haldar**

**Research Areas :** Nonlinear continuum mechanics, Modeling of multi-field interactions with matter in continuum scale, Active materials and smart structures, Phase transformation (Magnetic Shape Memory Alloys), Soft material (Magneto Active Polymers), Liquid crystals, Biomechanics, Computational mechanics.

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**Prof. Susmita Naskar**

**Research Areas** Uncertainty quantification, Machine learning, composite materials; computational electromagnetic, Surrogate modeling; solid-shell formulation for adaptive materials; Finite elements, meshfree/particle methods, dynamics of flexible structures, Dynamic Deformation of Materials, Crystal Plasticity, High-Temperature Deformation of Materials, optimization, and control.

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**Prof. Amuthan A. Ramabathiran**

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**Website** : [www.amuthanar.com/](http://www.amuthanar.com/)



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**Prof. Chandra Sekher Yerramalli**

**Research Areas** Failure modeling, damage analysis of composite materials with application to aerospace and renewable energy, battery storage technologies.

**Phone** : 022- 25767104

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**Department Staff Members**

Name	Specialisation	Phone	Email
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Adjunct Faculty			
Prof. G.R. Shevare	Aerodynamics	022-25767112	<a href="mailto:shevare@aero.iitb.ac.in">shevare@aero.iitb.ac.in</a>
Prof. Ganapathi Bhat	Aerodynamics		<a href="mailto:gghat.@aero.iitb.ac.in">gghat.@aero.iitb.ac.in</a>
Prof. S.D. Sharma	Aerodynamics	022-25767123	<a href="mailto:sds@aero.iitb.ac.in">sds@aero.iitb.ac.in</a>
Visiting Faculty			
Prof. Harshad Khadilkar	Dynamics & Control		<a href="mailto:harshadk@iitb.ac.in">harshadk@iitb.ac.in</a>
Prof. B.N. Raghunandan	Propulsion		<a href="mailto:raghubn@aero.iitb.ac.in">raghubn@aero.iitb.ac.in</a>
Prof. Bhupendra Khandelwal	Propulsion		<a href="mailto:bhupendra.khandelwal@aero.iitb.ac.in">bhupendra.khandelwal@aero.iitb.ac.in</a>

**Department Office Staff**

Name	Designation	Email
Mr. Omesh K Sharma	Jr. Administrative Assistant	<a href="mailto:omesh@aero.iitb.ac.in">omesh@aero.iitb.ac.in</a>
Ms. Akanksha Ipte	Temporary Office Supporting Staff	<a href="mailto:akanksha.ipite2010@gmail.com">akanksha.ipite2010@gmail.com</a>
Mr. Sanjeev Shibe	Temporary Office Supporting Staff	<a href="mailto:sanjeevshibe2918@gmail.com">sanjeevshibe2918@gmail.com</a>
Mr. Vinay Narasimhan	System Administrator	<a href="mailto:vinay@aero.iitb.ac.in">vinay@aero.iitb.ac.in</a>
Mr. Dilip Gangad	Multi-skilled Asst.	<a href="mailto:dilip@aero.iitb.ac.in">dilip@aero.iitb.ac.in</a>
Mr. Vishal Karnekar	Administrative Superintendent	<a href="mailto:vishal@aero.iitb.ac.in">vishal@aero.iitb.ac.in</a>
Mr. Sunil Bandsode	Sr. Draughtsman	<a href="mailto:bandsode@aero.iitb.ac.in">bandsode@aero.iitb.ac.in</a>

## **Department Lab Facilities**

### **Aerodynamics Lab**

**Location** : Aero-Annex Basement

**Faculty In-Charge** : Aerodynamics Faculty

The lab is used for conducting experiments for both UG and PG students, having many experimental facilities such as wind-tunnels, 2D planar jet equipment etc. Allows students to get a hands-on experience on the various aspects such as flow past cylinder/airfoil, boundary layer development etc. taught in the theory courses in Aerodynamics.

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### **Control and Instrumentation**

**Location** : Aero-Annex Ground Floor

**Faculty In-Charge** : Prof. Arnab Maity

This lab is used for conducting courses for both UG and PG students. The practical applications of concepts regarding control theory and various types of sensors used in many modern devices are demonstrated. Some of the setups include inverted pendulum, gyroscope, GPS and other sensors.

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### **Aircraft Propulsion Lab**

**Location** : Aero Main Building Ground Floor

**Faculty In-charge** : Propulsion Faculty

Practical course is organised in this lab for both UG and PG students. Various aspects of propulsion systems and the various components under different operating conditions are studied. Experimental facilities related to heat-transfer, turbomachinery and nozzle performance are available. Even a miniature gas turbine engine setup is present.

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### **Structures Lab**

**Location** : Aero Main Building Ground Floor

**Faculty In-charge** : Structures Faculty

Experiments related to measuring material properties and composite manufacturing are conducted as part of both UG and PG laboratory courses. Variety of setups such as Izod Impact Tester, Universal Testing Machine, Shear Centre determination and Laser Doppler Vibrometer are used for the various experiments.

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### **Cardio-Vascular Lab**

**Location** : Aero-Annex Ground Floor

**Faculty In-charge** : Prof. S.D. Sharma

The lab focuses on research regarding cardiovascular flow dynamics. Flow dynamics on the Fontan model and flow through mechanical heart valves (MHVs) are the prime research areas currently being studied.

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### **Hypersonic CFD Lab**

**Location** : Aero-Annex Ground Floor

**Faculty In-Charge** : Prof. Krishnendu Sinha

This is primarily a PhD laboratory, with the research group carrying out theoretical analysis and numerical modelling of fundamental phenomenon observed in high-speed flows. Shock-boundary

layer interaction, Shock-Turbulence interaction and Re-entry flow are some of the research topics currently being examined by the group.

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### **High Speed Aerodynamics Lab**

**Location :** Aero-Annex Ground Floor

**Faculty In-Charge :** Prof. Vineeth Nair

This lab carries out research in high-speed flows as well as aero-acoustic problems. Interaction of compressible turbulence with shock/detonation waves and its mathematical analysis and analysing intermittent sound sources in reacting and non-reacting flow-fields are some of the active research topics being studied by the research group.

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### **Miniature Aerial Vehicle (MAV) Lab**

**Location :** Beside Aero-Annex

**Faculty In-Chagre :** Prof. Hemendra Arya

This lab focusses on deep understanding and hardware development of miniature and micro aerial vehicles. Understanding the in-depth working, effect of wing shape and development of drones and autonomous aerial vehicles are the major research interests.

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### **Turbo-machinery Research Laboratory**

**Location :** Beside Aero Main Building

**Faculty In-Charge :** Prof. A.M. Pradeep

This lab has facilities to conduct cascade tests, low-speed axial compressor experiments and a low speed low turbulence wind tunnel amongst others. Studies related to compressor tip-leakage flows, contra-rotating fan studies and tandem bladed compressor with inlet flow distortion are some of the active research topics of the group.

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### **Lighter-than-Air (LTA) Systems Laboratory**

**Location :** Aero Main Building Ground Floor

**Faculty In-Charge :** Prof. R.S. Pant

This lab focuses on research related to balloons and airships with many funded projects related to design, testing and fabrication of LTA systems. In flight span extension and inflatable wings for UAV applications as well as Multi-disciplinary design optimisation studies are some of the active research interests of the research group.

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### **Combustion Research Laboratory**

**Location :** Aero Main Building Ground Floor

**Faculty In-Charge :** Prof. Sudarshan Kumar

In this lab where a lot of research on combustion theory and techniques take place. Studies to better understand the combustion process and develop new techniques for more efficient and environment friendly combustion. Flame-less combustion, combustion instabilities and power generation from micro combustors are some of the active research topics.

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### **Shock Tunnel Lab**

**Location :** Aero Main Building Ground Floor

**Faculty In-Charge :** Prof. Viren Menezes

The lab is equipped with a shock tunnel capable of simulating free stream Mach number of 8, with the facility to test hypersonic models smaller than 100mm dia. Forces, moments and surface heat transfer rates on hypersonic re-entry models can be tested as well as the design and testing of blast mitigation

and thermal protection systems.

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### **High Velocity Impact Testing Lab**

**Location :** Aero Main Building Ground Floor

**Faculty In-Charge :** Prof. C.S. Yerramalli

The lab facilities include tension, compression and torsion Hopkinson Bars and ballistics guns which are used for testing high strength armour and ballistics materials. It also develops strength strain rate dependent models from the Hopkinson setup data.

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- **Lab Staff Members**

Name	Designation	Email
Mr. Jitendra Kumar	Jr. Mechanic	<a href="mailto:jitendrkr@iitb.ac.in">jitendrkr@iitb.ac.in</a>
Ms. Swapnali Bhandare	Technical Superintendent	<a href="mailto:swapnali@aero.iitb.ac.in">swapnali@aero.iitb.ac.in</a>
Mr. Abhishek Pednekar	Technical Superintendent	<a href="mailto:abhishek@aero.iitb.ac.in">abhishek@aero.iitb.ac.in</a>
Mr. Rajesh Gadekar	Asst. Technical Officer	<a href="mailto:1000007@iitb.ac.in">1000007@iitb.ac.in</a>

## Department Facilities

- **Department Library :**

It is an exclusive library of the Department containing a good collection of books and journals catering to the needs of the students, faculty as well as research scholars. It is located within the department office and remains open from 10 AM to 4 PM. Any member of the department can request for a book to be included in the department library collection and if found relevant the council will try to get it added.

- **Department Study Room :**

The Aero-Annex Lecture Hall (ALH) present on the ground floor (closer to the infinity corridor side) of the Aero-Annex building is used as a study hall exclusively for students of the Aerospace Department. The timings of the hall are from 10 AM to 3 AM.

- **3D Printing Facility :**

Exclusive 3D printing facilities are available for the faculty and students of the Aerospace Department related to official projects. Request for using the facility can be made on the official website:

[www.aero.iitb.ac.in/3dprinter/](http://www.aero.iitb.ac.in/3dprinter/)

- **Image Based Spray Diagnostic Facility (Central Instrumental Research Facility) :**

The facility is used for characterising fuel sprays using laser based optical diagnostics. The system works based on either Particle Image Velocimetry (PIV) technique or the shadowgraph technique. Present in the Combustion Research Laboratory, it is used in investigating combustion phenomenon in flames, burners, propulsion systems and furnaces amongst others. More details can be found on the website:

[rnd.iitb.ac.in/research-facility/image-based-spray-diagnostic-facility](http://rnd.iitb.ac.in/research-facility/image-based-spray-diagnostic-facility)

**Prof. In-Charge :** Prof. Sudarshan Kumar

## Technical Teams and Clubs

1. **IIT Bombay Student Satellite Program :**

The IIT Bombay Student Satellite Program (IITBSSP) is a landmark project taken up by IIT Bombay students. The vision of this program is to make IIT Bombay a respected Centre of Excellence in Satellite and Space Technology in the world. An interdisciplinary team of 50+ students from the institute, across disciplines, are engaged in projects ranging from the design of space systems of various form factors to development of payloads.

**Website :** [www.aero.iitb.ac.in/satlab/](http://www.aero.iitb.ac.in/satlab/)

2. **Rakshak :**

Team Rakshak is an IIT Bombay student initiative to develop a fleet of robust Unmanned Aerial Vehicles (UAVs) to support Search and Rescue Operations (SRO) in the event of disasters (floods, earthquake, landslide). These aircrafts can provide relief measures in disaster-stricken areas, can be used for surveys and mapping of cities and conservation of wildlife with slight modifications.

**Website : [rakshakiitb.github.io/](http://rakshakiitb.github.io/)**

3. **ExoFly :**

Team ExoFly aims to develop a safe, quiet, maneuverable, ultra-compact, near VTOL personal flying device, which is capable of flying 20 miles in one go and carry a single person. **Website : [www.exofly.org/](http://www.exofly.org/)**

4. **Mars Rover Team :**

The IITB Mars Rover project is a student initiative working to gain hands on knowledge about development of all terrain rovers and space biosciences and build a prototype Mars rover capable of extra-terrestrial robotics.

**Website : [iitbmartian.github.io/](http://iitbmartian.github.io/)**

5. **AUV-Autonomous Underwater Vehicle :**

The team works towards participating at AUVSI Robosub Competition, which is held annually in July at San Diego, California. The competition is a platform for students to display their skills in underwater robotics and build a connection with industries working along similar verticals. The competition demands designing and manufacturing of an autonomous underwater vehicle that can perform predefined tasks.

**Website: [www.auv-iitb.org/](http://www.auv-iitb.org/)**

6. **Innovation Cell :**

A design and engineering center that enables students across IIT-Bombay to come together to develop technological innovations and participate in national and international competitions. They compete in Mahindra rise challenge, ASME student design Competition, IARC. **Website : [www.umiciitb.com/](http://www.umiciitb.com/)**

7. **Shunya :**

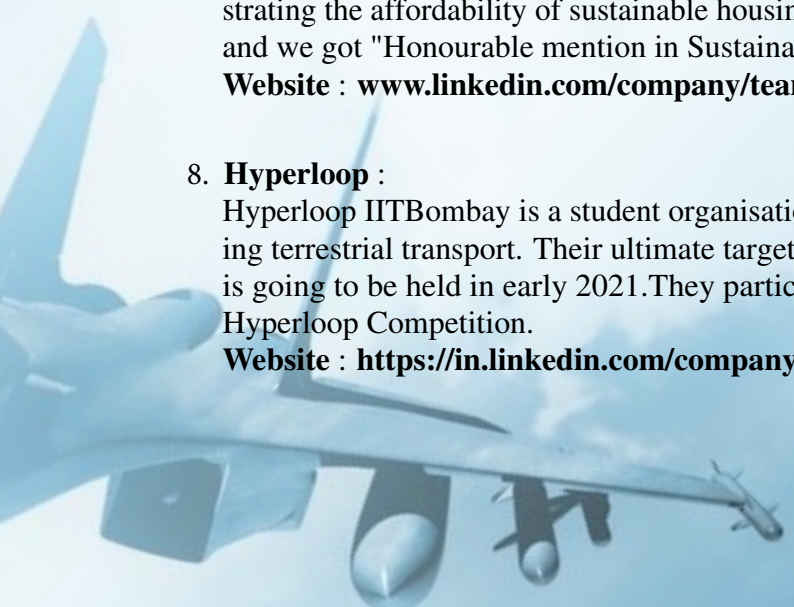
Aiming to build "affordable pre-fabricated net zero solar powered houses" making India's future energy secure. Their mission is to bring about a change in the Indian building industry, by demonstrating the affordability of sustainable housing, They took part in Solar Decathlon Europe, 2014 and we got "Honourable mention in Sustainability".

**Website : [www.linkedin.com/company/teamshunya/about/](http://www.linkedin.com/company/teamshunya/about/)**

8. **Hyperloop :**

Hyperloop IITBombay is a student organisation, built with a goal of reinventing and revolutionizing terrestrial transport. Their ultimate target is the SpaceX Hyperloop Pod Competition, which is going to be held in early 2021. They participate in Inter IIT Engineer's Conclave and Desert Hyperloop Competition.

**Website : <https://in.linkedin.com/company/hyperloop-iitb>**



## 9. Aeromodelling Club :

The Aeromodelling Club of IIT Bombay is one of the premier clubs for technical exploration in the institute .It deals with anything that is capable of flight from drones and planes to rockets and boomerangs. It draws participation from over a thousand students across branches for various events and technical activities.The flagship event of the club for freshmen is the RC Plane Competition which gives students a hands on introduction to flight .

Here students build and fly their first airplanes after learning the fundamentals of flight from club seniors who mentor teams throughout the process. The club has seen success at national level aeromodelling competitions over the years like the Boeing Aeromodelling Challenge and is always open to ideas for interesting projects . Over the years it has seen work done on Ion Propulsion , Bionics for flight , VTOL aircraft and high performance quadcopters . If you find flight fascinating and are excited by challenges the Aeromodelling Club is the place for you.

**Website :** [www.tech-iitb.org/aeromodelling-club/](http://www.tech-iitb.org/aeromodelling-club/)

## Aerospace Centres

- **National Centre for Aerospace Innovation and Research(NCAIR) :**

The National Centre for Aerospace Innovation and Research is a collaborative consortium of the Indian aerospace manufacturing sector providing research and technology to its members with a vision to create a world class aerospace manufacturing ecosystem in India.

The founding partners for the Centre were IIT Bombay, Department of Science and Technology (DST), Boeing, Hindustan Aeronautics Limited (HAL) and National Aerospace Laboratories (NAL). The establishment of such a centre was to serve as a catalyst for collaboration between industry, academia, research and development organisations and the government. It aimed to provide economically viable and sustainable solutions to the Indian aerospace manufacturers by promoting innovation, knowledge creation, entrepreneurship and dissemination of technical understanding.

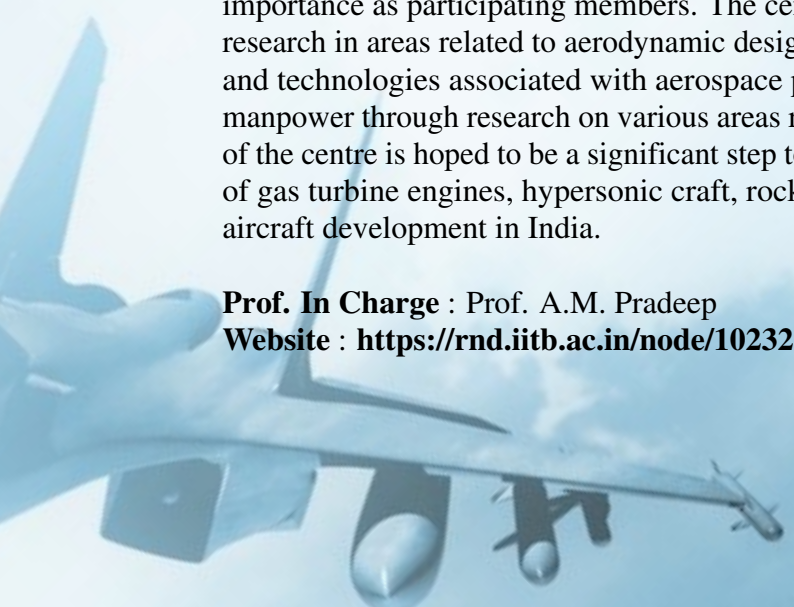
**Website :** <http://ncair.in/>

- **Centre of Propulsion Technology (CoPT) :**

This centre is set up with funding from the Defence Research and Development Organisation (DRDO) funding with IIT Bombay being the host institute and a few other institutes of national importance as participating members. The centre aims at spearheading fundamental and applied research in areas related to aerodynamic design and performance analysis of various components and technologies associated with aerospace propulsion devices. It also tries to develop trained manpower through research on various areas related to propulsion technology. The establishment of the centre is hoped to be a significant step towards achieving self-sufficiency in various aspects of gas turbine engines, hypersonic craft, rocket propulsion technology and futuristic morphing aircraft development in India.

**Prof. In Charge :** Prof. A.M. Pradeep

**Website :** <https://rnd.iitb.ac.in/node/102326>







## 10. Department Activities (19-20)

- **Department freshman orientation**

This event is conducted for the first year UG and PG students so as to give them a brief overview about the department and the council. Last year this event was consisted of two parts:- first one was formal and the other, informal. In first part the students were addressed by AeA council in-charge Prof. R S Pant. This was followed by a talk by one of our alumni Karthik Mahesh, who is currently working at Boeing. In the latter half, informal games were played and inter batch interaction took place. The CR nominations for the new batch also took place during this time.

- **Department Sports Day 1**

In this event students from each batch comes to compete for the best in different sports. This was part 1 of sports day conducted in first semester. The sports in which students competed were Badminton and Table Tennis.

- **Department Traditional Day**

Traditions are the things which bind us with each other, reminds us of what we were. To nourish intra-departmental bonding, the AEA council arranged this event. This informal event was really helpful to enhance Senior-junior interaction and it ended with photoshoot.

- **Department Open Day**

What's Aerospace Department? What facilities does IITB Aero Department have? To satisfy all these doubts, AEA council along with the help of the Department Research Coordinator conducted 'Department Open Day'. Different labs in Aero Department were open for all people. There were lab assistants explaining how all things work around to eager minds. The main purpose of this event was to encourage students to know the department, the research going around there.

- **Department Sports Day 2**

This was Part 2 of Sports Day conducted in second semester. It was interbatch football competition. In this event each batch comes with their teams to complete for the best.

\*The final was cancelled due to closure of college.

- **Department Trip**

Organised by the AEA council, this trip was meant as a fun weekend get-away. The trip started with a boat ride on the Bhandardara lake followed by camping on the lake side. Everyone had a very memorable evening filled with dance & music followed by a bon-fire. Next day early morning the group moved on to trekking towards the highest Peak of Maharashtra- Kalsubai.

- **Department Open House**

Department Open House is organised to promote a dialogue between the current faculty members and the students. This event is attended by all the Professors and interested students as well as student representatives including the AEA council members, DAMP team etc. Various queries of

the students are collected and the common ones are discussed in detail. This exercise bridges the gap between the students and faculties and felicitates interaction.

- **Chandrayaan-2 Screening**

On September 7, 2019; The Indian Space Organization embarked on one of its most ambitious projects, the Chandrayaan-2 which consisted of an orbiter and a rover which was planned to be deployed on the far side of the moon. This historic mission was screened in the Aerospace Department as well as the Annex by the help of the AEA council and the students of SatLab and was attended by more than 100 students who gathered to watch the live stream together.


### Highlights of the department(2019-20)

- Prof. R.K. Pant, Department of Aerospace engineering has been awarded the President of India's prize by Institution of Engineers at the 32<sup>nd</sup> Indian Engineering Congress held in Chennai for his paper titled "Design, Fabrication and Testing of Mooring Masts for remotely controlled indoor and outdoor airships".
- Ph.D scholar Pallavi R. (Roll no. 154010008, Category: Institute TA) successfully defended Ph.D-thesis in record fastest time from Aerospace Department i.e. in 2-yrs 10-months. The field of her PhD research was Irreversible Thermodynamics. PhD-research of candidate resulted in 4 published journal articles so far, with only the student & guide as two authors.
- Ministry of Human Resource Development, Ministry of Defence and Ministry of Civil Aviation announced a student competition naming Aerospace Technologies for the Betterment of the Billion lives (AABB) to exhibit products /concepts / innovative ideas on aerospace technologies at Aero India 2019. Finally selected candidates exhibited their product / concept at the "Student Pavilion" at Aero India 2019. This was the 1st ever Students Pavilion in Aero India.
- Aeromodelling Club in Collaboration with Techfest conducted Boeing National Aeromodelling RC Plane Competition, where participants Build their own RC Plane and compete for the top spots in the final competition in January 2020. For more information: [www.skyfilabs.com/boeing-iit-aeromodelling-competition-2019-20](http://www.skyfilabs.com/boeing-iit-aeromodelling-competition-2019-20)
- Prof. Prabhu Ramachandran of Aerospace Engineering, has been selected for the Kenneth Gonsalves Award 2014, annual award constituted by the Python Software Society of India for recognition of substantial and original community contribution towards Python programming by an Indian.





## 11. Research Opportunities

- Many of the research programs pursued in the department are funded by government agencies such as ARDB and DST, government organizations such as ISRO, DRDO, HAL, BARC and ADA, as well as private industry. While the research and development activities of the department continue to contribute to national aerospace programs, recent years have seen some of the faculty engage in collaborations with research groups at the University of Michigan, University of New South Wales, Georgia Tech, Caltech and RWTH, Aachen. For more info:  
[www.aero.iitb.ac.in/home/research](http://www.aero.iitb.ac.in/home/research)  
For in campus research highlights, please visit:  
[www.iitb.ac.in/en/research-highlights/archive](http://www.iitb.ac.in/en/research-highlights/archive)
  - **IITB Research Park Foundation** is a facilitator bringing together IIT Bombay and industry to expand R&D collaboration. For further details:  
[www.respark.iitb.ac.in](http://www.respark.iitb.ac.in)
  - IIT Bombay has signed MoUs with several universities abroad for student exchange programmes. Students of IITB interested in participating in exchange programs with international universities can do course work and/or project work at an Institution with which IITB has a MoU. There are separate schemes for student exchanges and research work, the details of which are available under list of MoUs here:  
[www.ir.iitb.ac.in/](http://www.ir.iitb.ac.in/)
  - The **IITB-Monash Research Academy** is a major Australian-Indian research collaboration formed between IITB and Monash University. Monash University is Australia's largest university with a global reputation for making an impact and challenging the status quo. The PhD program at IITB-Monash Research Academy allows graduate students from India to work with both IITB and Monash supervisors, as well as industry partners. Spending at least one year in Australia, students graduate with a joint PhD degree from IITB and Monash University, ensuring a truly global experience, setting them up for future career success. For further details, please visit:  
[www.iitbmonash.org/](http://www.iitbmonash.org/)
  - **Tata Centre for Technology and Design (TCTD)** at IIT Bombay was established in 2014 with support from the Tata Trusts. The Tata Centre acts as a virtual centre for teaching and research that draws faculty members and graduate students from various academic units across IITB. The centre focuses on challenges in the areas of Agriculture and Food, Education, Energy, Healthcare, Housing, Water and Waste Management. To know more about different project under Tata centre, please visit:  
[www.tatacentre.iitb.ac.in/](http://www.tatacentre.iitb.ac.in/)
- 

- Aerospace Engineering department at Embry-Riddle Aeronautical University, Daytona Beach, Florida offers Ph.D. program in many research areas like multidisciplinary design and optimization, aeroelasticity, vibration control, impact analysis of composites and ceramics, and additive manufacturing. The chances of getting funding (tuition waver plus research or teaching assistantship) for the PhD program are good here. Dr. Mandar Kulkarni who is a distinguished alumnus of Aerospace department, IITB is a Professor in this university. For more details, please visit:

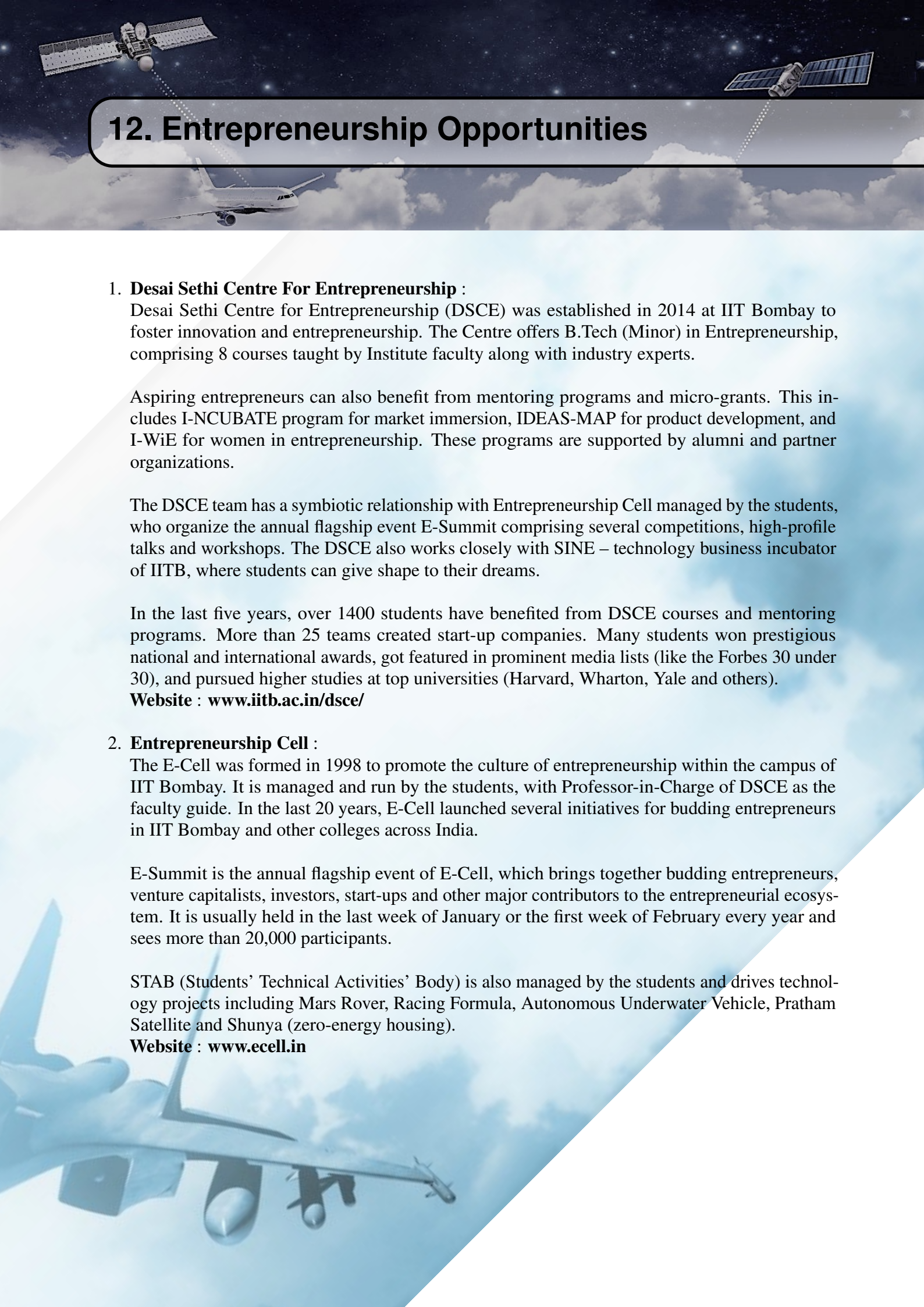
[www.erau.edu/](http://www.erau.edu/)

- University of Central Florida (UCF), Orlando, FL provides opportunity to obtain Ph.D in Aerospace engineering. They provide many financial aid opportunities to Ph.D students. Prof. Subith Vasu is an Associate Professor in this university. His research interests is in the areas of energy science, combustion chemistry, chemical kinetics, and laser diagnostics. For further details:

[www.mae.ucf.edu/mmae/Research/VasuLab/](http://www.mae.ucf.edu/mmae/Research/VasuLab/)  
[www.ucf.edu/](http://www.ucf.edu/)

- Ministry of Human Recourse Development (MHRD, Government of India, launched the **Prime Minister's Research Fellows** (PMRF) program for direct admission to the PhD program at IISc and IITs. This program also gives opportunity to student pursuing or have completed M.Tech/MS by Research at the IISc/IITs/IISERs. More details may be found on the PMRF website at [www.pmrf.in/](http://www.pmrf.in/)





## 12. Entrepreneurship Opportunities

### 1. Desai Sethi Centre For Entrepreneurship :

Desai Sethi Centre for Entrepreneurship (DSCE) was established in 2014 at IIT Bombay to foster innovation and entrepreneurship. The Centre offers B.Tech (Minor) in Entrepreneurship, comprising 8 courses taught by Institute faculty along with industry experts.

Aspiring entrepreneurs can also benefit from mentoring programs and micro-grants. This includes I-NCUBATE program for market immersion, IDEAS-MAP for product development, and I-WiE for women in entrepreneurship. These programs are supported by alumni and partner organizations.

The DSCE team has a symbiotic relationship with Entrepreneurship Cell managed by the students, who organize the annual flagship event E-Summit comprising several competitions, high-profile talks and workshops. The DSCE also works closely with SINE – technology business incubator of IITB, where students can give shape to their dreams.

In the last five years, over 1400 students have benefited from DSCE courses and mentoring programs. More than 25 teams created start-up companies. Many students won prestigious national and international awards, got featured in prominent media lists (like the Forbes 30 under 30), and pursued higher studies at top universities (Harvard, Wharton, Yale and others).

**Website :** [www.iitb.ac.in/dsce/](http://www.iitb.ac.in/dsce/)

### 2. Entrepreneurship Cell :

The E-Cell was formed in 1998 to promote the culture of entrepreneurship within the campus of IIT Bombay. It is managed and run by the students, with Professor-in-Charge of DSCE as the faculty guide. In the last 20 years, E-Cell launched several initiatives for budding entrepreneurs in IIT Bombay and other colleges across India.

E-Summit is the annual flagship event of E-Cell, which brings together budding entrepreneurs, venture capitalists, investors, start-ups and other major contributors to the entrepreneurial ecosystem. It is usually held in the last week of January or the first week of February every year and sees more than 20,000 participants.

STAB (Students' Technical Activities' Body) is also managed by the students and drives technology projects including Mars Rover, Racing Formula, Autonomous Underwater Vehicle, Pratham Satellite and Shunya (zero-energy housing).

**Website :** [www.ecell.in](http://www.ecell.in)

### 3. **Society for Innovation and Entrepreneurship :**

Society for Innovation and Entrepreneurship (SINE), is the technology business incubator of IIT Bombay. It was set up in 2004 with the goal of fostering entrepreneurship and nurturing tech start-ups. The SINE facilitates the conversion of research activity into entrepreneurial ventures, and provides 'start to scale' support.

SINE provides prototyping grants and incubation support to tech startups and also runs accelerator programs in corporate partnership. It has been selected as a Centre of Excellence by Department of Science and Technology, New Delhi with funding support to scale up its activities. It has also received Biotechnology Industry Research Assistance Council support to set up 'BioNEST' Bio-incubator to support the bio-medical startups.

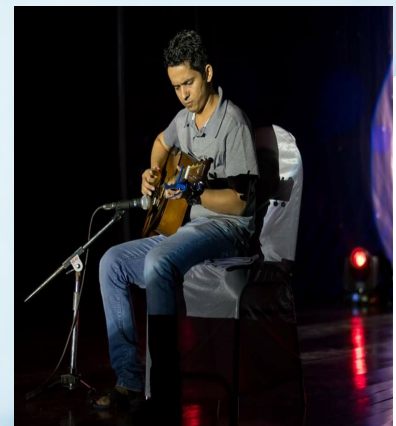
Till date, 150 start-ups have been physically or virtually incubated in SINE, creating over 450 entrepreneurs and generating job opportunities for 3800 people. The SINE incubated companies have collectively raised Rs. 1200 crores for funding their journey.

**Website : [www.sineiitb.org/home](http://www.sineiitb.org/home)**



## 13. Aero PG in Institute Cultural

Every year Aerospace Department is blessed with students having a plethora of talents. From music and dance to theatre and fine arts, Aerospace students actively engage in various cultural events. To keep the cultural atmosphere going, a number of events take place at institute and departmental level. With each year passing by, the participation and enthusiasm of aero students in PG cultural events is on the rise. Our department also created history by winning the first time overall PG Cult trophy in year 2017-18. Aerospace Department participation in the year 2019-20 are as follows: Two Finalists in Mr. & Miss Personality, Singing, Instrumental Music, Dance, Dramatics, Rangoli, T-Shirt Painting, Diya painting, Show Stopper and much more.

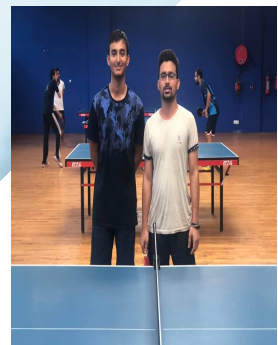


## 14. Aero PG in Institute Sports

IIT Bombay Sports boasts of a rich culture, thriving on immense participation across all departments and the kind of infrastructure most colleges can only dream of. Under its vast umbrella, we have sports at several levels. From Intra-hostel to Inter hostel, Inter department to Intra-department level, in UG level as well as in PG levels and of course, the crowning glory for every sportsperson here at IIT Bombay, the Inter IIT Sports meet. Students from Aerospace department has always been highly enthusiastic in sports. This is a much needed diversion from the rigorous routine of academics, bringing with it promises of an energizing and exhilarating experience. Like every year this year also our department ended up with a good number of participation in PG Sports. Students has shown great enthusiasm towards Badminton, Table Tennis, Lawn Tennis, Squash, Cricket, Football, Athletics etc. And most importantly winning is not everything all the time but spending a great time, showing a good game spirit and making a great memories are all about it that last forever.

The achievements from Aerospace department in last few years are:

- **2019-20** :  
Silver in Badminton, PGGC, Girls category.
- **2018-19** :  
Silver medal in Athletics(1500 m), Boys category.  
Silver medal in Basketball, PGGC, Boys category.  
Bronze medal in Aquatics, 50 m Backstroke, Girls category.







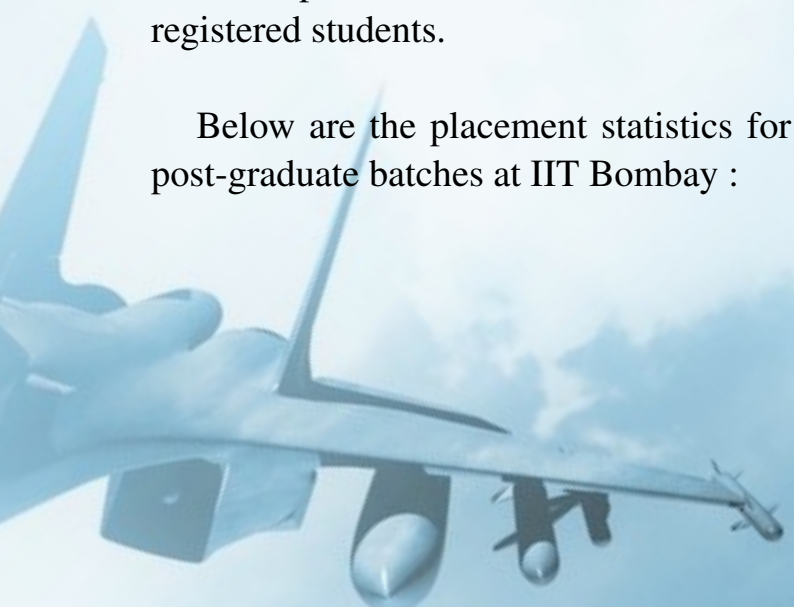
## 15. Placement Statistics

As IIT Bombay being the top tier institute, it has attracted renown industries and R&D sectors for the placement seasons. Every year, placement season starts with a great zeal of enthusiasm with many students procuring placements in the initial days. The results were a combined efforts of all friends who ensured that the motivation in the batch mates remain high throughout the placement process.

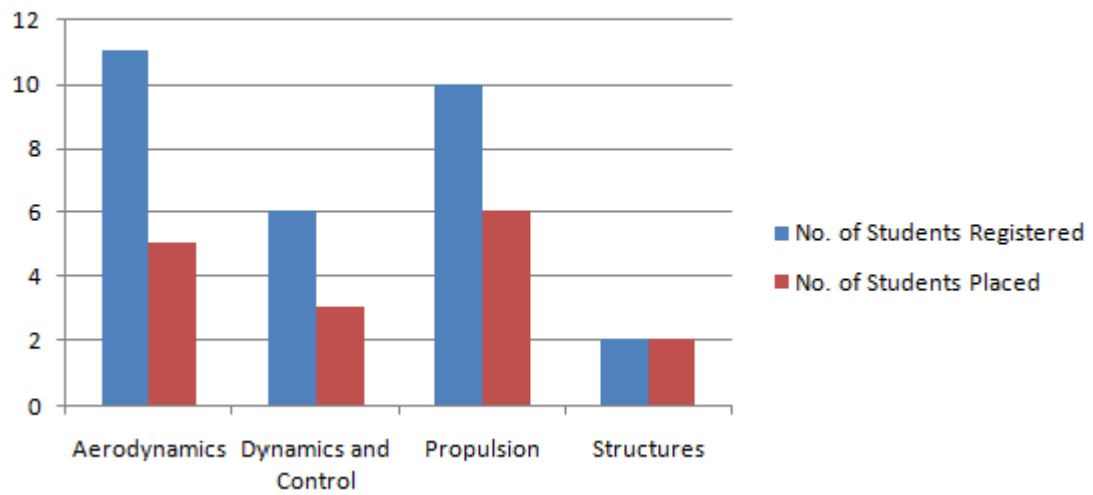
Aerospace has a reputed and glorious past. Most students are placed in firms they like and profiles they prefer. It is a helpful suggestion for the upcoming batch to start thinking and exploring what interests the most. Most of the students get placed by day 5, confirming the job in core companies such as Airbus, Halcon systems, Boeing India, Eaton, Honeywell, GE, TCS and many more, with a decent amount of package offered to the students which are obvious, varies from company to company. There are non-core companies also especially in the field of finance, Data analysis, banking, consulting that visit the campus where most of the UG students show their interest in. Thus, overall We see recruiters coming from a number of sectors- Core, Data science, Finance (Banks), Health Care, Retail, Technology Startups, Information Technology, Automobile/Production, Machine Learning, Supply Chain Management to name a few.

An important observation is made that the students who put in their best efforts during the placements get selected regardless of academic qualifications and experiences. In placement season 2019-20, total of 35 students were placed out of total 40 registered students.

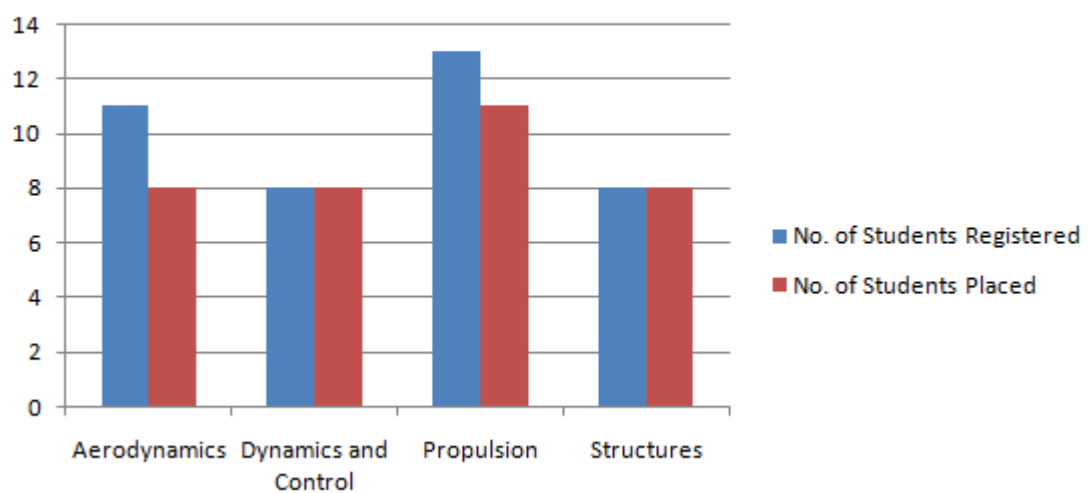
Below are the placement statistics for the previous two Aerospace engineering post-graduate batches at IIT Bombay :



### Placement Stats 2018-19



### Placement Stats 2019-20



**AIRBUS**  
GROUP

Archeron  
GROUP

Bloomenergy®

**BOEING**

 **General  
Mills**

KLA +

**KUKEN**

  
**TATA**  
TATA CONSULTANCY SERVICES

  
**UBISOFT®**

  
Mercedes-Benz

  
innoviti®

  
MINDGATE  
DELIVERING INNOVATION

  
ORMAE

  
**REFLEXYS**  
Unleash the Power of your Store Associates

  
Halcon Systems

 **RADIANT GROUP**  
RADIANT GROUP PVT. LTD.  
RADIANT ENERGY

 **MathWorks®**

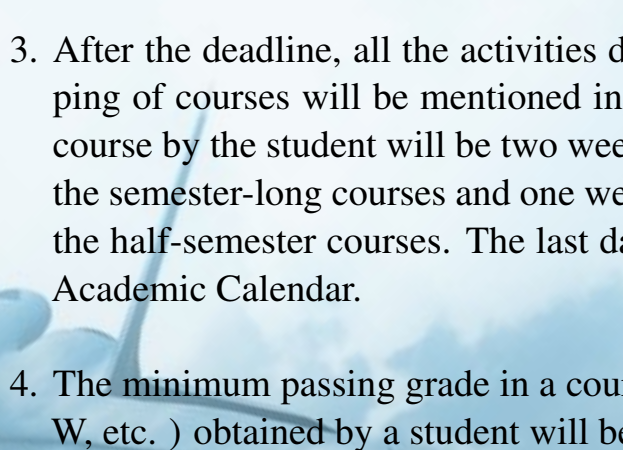


## 16. Academics

### Grading Policy

IIT Bombay follows the grade point system for the calculation of CPI (Cumulative Performance Index). The student is awarded a letter grade in every course taken as per the curriculum. These letter grades indicate a qualitative assessment of the student performance along with the quantitative equivalent (grade point).

Letter grade	Grade Points	Letter Grade	Grade Points
AP	10	FR	0/Fail (Repeat the Course)
AA	10	DX	Fail due to Lack of attendance
AB	9	II	Incomplete
BB	8	DR	Dropped
BC	7	PP	Passed
CC	6	NP	Not Passed
CD	5	AU	Audit
DD	4	W	Withdraw
		FF	0/Fail (Re-exam is permitted)

1. The academic system in IIT Bombay is based on credits. The total minimum credits required for the entire programme usually vary in the range of 156 to 170.
  2. The academic unit provides an opportunity to do course adjustments at the start of every semester to provide a facility for the student to choose his choice among all the available courses and the course dropping window is active for starting few days to drop additional courses after attending few lectures.
  3. After the deadline, all the activities done by students like withdrawn, the dropping of courses will be mentioned in the transcript and date for dropping such course by the student will be two weeks after the mid-semester examination for the semester-long courses and one week after the mid-semester examination for the half-semester courses. The last date for course drop will be included in the Academic Calendar.
  4. The minimum passing grade in a course is DD & all grades (including FR, DX, W, etc. ) obtained by a student will be mentioned in the transcript.
- 

5. The letter grades FF and FR shall be treated as failure grades and II and DR are placeholders. II is awarded temporarily on medical grounds and gets converted to an appropriate grade after the Semester end re-examination. On the other hand, DR indicates that the course has been dropped and it has to be cleared in subsequent semesters.
6. Re-examination may be permitted for a course if he/she obtains FF grade. After such re-examination, if the student passes in that course, he/she will be awarded the maximum grade of DD in that course. If a student does not take or fails in the re-examination, he/she will be awarded the grade FR.
7. Once the student gets fail grade (FR) in 2 or more subjects there is a real possibility that it could lead to the expulsion of a student from the institute.
8. The grade DX in a course is awarded if a student does not maintain the attendance requirement in the Lecture/Tutorial classes. This grade does not count in the SPI/CPI. However, it will be counted as a backlog.
9. The student registered for a course as audit shall be awarded the grade AU if they fulfil the requirement set by the instructor of that course. The difference between taking a course as audit compared to credit is that it helps the student to sit through all lectures without having to commit too much time (in terms of assignments, exams, etc.) to meet the requirements for getting an audit grade ('AU').
10. A student in a PG Programme, where minimum CPI for coursework is 6.0, will be eligible for repeating a course for grade improvement if he/she has a CPI less than 6.0 and has been permitted by PGAPEC to continue in the Programme on Academic Probation. For this, the student has to re-register in the course in a subsequent semester if the course is offered. The student can avail this option only for TWO courses in the entire programme and only ONCE for a specific course.
11. Academic malpractices are severely dealt with. The details about Academic malpractices are available at:

**[www.iitb.ac.in/newacadhome/punishments201521July.pdf](http://www.iitb.ac.in/newacadhome/punishments201521July.pdf)**

## Different Course Tags

One of the most important responsibilities of a new student is to choose subjects. While interest of a student and aptitude are the most important, the following information would help to choose the courses as well:

Subjects for M.Tech can be broadly divided into 4 categories:

- **Core Courses :**

These are the compulsory courses (tagged as 'C') which must be completed within the stipulated duration of the programme.

- **Compulsory Non Graded Courses :**

This comprises of the Communication Skills course which is compulsory but non graded (pass: PP or no pass NP). It consists of two parts—one offered by the department and one by the institute.

- **Department Electives :**

Apart from the compulsory/core courses a student needs to register for department electives (tagged as 'D'). Students will have to choose electives from the list approved by the Department.

- **Institute Elective :**

As per curriculum, students will be required to choose one institute elective (tagged as 'I') from a department other than their own. Students choosing institute elective from the list approved by the Institute will not require any special permission. However a Master's student can choose any Post-graduate level course of sufficient credits in an academic unit other than his/her own, as Institute elective. To choose such courses, prior approval of his/her faculty Advisor and/ or his/ her Dissertation Supervisor, as appropriate, together with that of the Convener, DPGC/ PGC/IDPC of his/her academic unit shall be required. Both Department and Institute electives are a part of the curriculum and will count in CPI calculations.

- **Audit :**

A student, who wants to get exposure to a course without obtaining a grade, may choose to audit the course. The minimum requirement is 80% attendance,

with any additional requirements as set by the instructor such as submission of assignments and minimum performance in some of the in-sem evaluations.

- **Additional Learning :**

Apart from compulsory courses and electives, students have an option of taking a course as "Additional Learning" in addition to the minimum credit requirement. Grades obtained in additional learning tagged courses (denoted by 'T') will not be used for CPI/SPI calculations. There will be one-time option of re-tagging these courses to Department/Institute elective and vice-versa.

- **Use of NPTEL/SWAYAM courses :**

Regular students (students not under Academic Rehabilitation Program (ARP) / Academic Probation) can take maximum 2 NPTEL/SWAYAM courses in place of departmental electives. Students under ARP/Academic Probation can take NEPTL/SWAYAM courses in place of any courses including "Core" courses, after approval from DUGC/DPGC of the parent department towards the partial completion of mandatory academic curriculum. NPTEL/SWAYAM courses can be taken as "Additional Learning" courses subject to not exceeding credit limit (for UG students) and not on Academic Probation (for PG students) based on approval of DUGC/DPGC.

- **M.Tech Seminar :**

M.Tech Students will also have to do a seminar of 4 credits on a suitable topic as decided by the guide. Choice of guide and seminar topic and registration for the same happens in the beginning of the Spring Semester. The seminar involves preparing a report and a presentation on the chosen topic. Although not compulsory, the future Master's project is often related to the topic of the M.Tech seminar.

- **Project :**

The M.Tech project has 2 stages: Stage I and Stage II. Registration for Stage I must be done in the beginning of the Spring Semester along with the seminar. If a student has selected his/her Guide early enough and/ or has decided on the Project topic, it is advisable to consult his/her Guide for choosing electives in line with the future Project.

## 17. Current PhD Topics

- Ph.D. scholar under Prof.Krishnendu Sinha

Name	Arena	Contact Details
Pratik kumar Raje	Turbulence modeling, High-speed compressible flows, CFD, Shock/Turbulence interaction, Multi-jet interaction	<b>pratikraje30@gmail.com</b>
Pranav B. Thakare (2016-present)	Shock/Flame - gas inhomogeneity/turbulence interaction, Compressible turbulence	<b>pranavtaeroiitb@gmail.com</b>
Vemula Jagadish Babu (2014-present)	Three dimensional shock wave boundary layer interactions, shock tubes	<b>jagadishbabu.iitb@gmail.com</b>
Subhajit Roy	Shock Boundary Layer Interactions, Heat-flux modeling	<b>subhajit.roy2491@gmail.com</b>
Harsha Rathi	Shockwave Boundary Layer Interaction, Hypersonic flows, Reactive flows, Turbulence Modelling	<b>harsharathi134@gmail.com</b>

- Ph.D. scholars under Prof. A. M. Pradeep

Name	Arena
Amit Kumar (2016-present)	"Aerodynamics of Tandem Blading in Compressors"
Manas M P (2016-present)	"Tandem Blading in Contra-rotating Axial Fans"
Bharath Harish Seetharaman (2017-present)	"Noise and its control in high speed centrifugal compressors" (External Candidate from Cummins India)

- Ph.D. scholars under Prof.Sudharshan Kumar

Name	Arena
M. Assad Khan	Development of micro injectors
Rohit Kumar	Flame speed measurement of liquid fuels
Akanksha Chaudhry	Combustion Instabilities in solid propellants
Pragya Berwal	Laminar burning velocity measurement
Saurabh Srivastava	Combustion Modeling
Harshal Kolekar	Combustion based micropower generator development
Vijay Shinde	Laminar burning velocity measurement



- Postdoctoral Researcher under Prof.Sudharshan Kumar

Name	Arena
Paramvir Singh	Combustion in IC engines

- Ph.D. scholars under Prof.Krishnendu Haldar

Name	Arena	LinkedIn Contact
Avinash Kumar	Modeling and numerics of magnetic shape memory alloys	<a href="http://www.linkedin.com/in/avinash-kumar-696387133">www.linkedin.com/in/avinash-kumar-696387133</a>
Rahul Jangid	Modeling and numerics of soft biological tissue	<a href="http://www.linkedin.com/in/rahul-jangid-b3502aa4?trk=people-guest_profile-result-card_result-card_full-click">www.linkedin.com/in/rahul-jangid-b3502aa4?trk=people-guest_profile-result-card_result-card_full-click</a>
Arijit Garai	Modeling and numerics of soft magnetic material	
Swapna Gane	Modeling and numerics of FOLED	<a href="http://www.linkedin.com/in/gane-swapna-3a1578114">www.linkedin.com/in/gane-swapna-3a1578114</a>

- Ph.D. scholars under Prof.Amuthan A. Ramabathiran

Name	Arena
Divyesh Mistry	Dislocation Dynamics

- Ph.D. scholars under Prof.Kowsik Bodi

Name	Arena
Vinay Unnikrishnan (2013-present)	VSSC
Sujith R Pillai(2013-present)	VSSC
AnantDiwakar (2015-present)	Modelling and numerical simulation of high temperature reacting flows in re-entry spacecraft
Asish James (2015-present)	URSC
Shekhar Panuganti (2016-present)	LPSC



## 18. Gender Cell

IIT Bombay's Gender Cell is an institutional body which works towards promoting equality, nondiscrimination and gender justice on the campus. It was established as Women's Cell in 2002. With the enactment of the Institute's policy on sexual harassment, the cell has been renamed the Gender Cell (GC).

### Objectives

- Promoting gender amity amongst all the Institute's employees and students, and sensitizing the Institute community on gender issues.
- Observing the law on sexual harassment, through its Internal Complaints Committee and providing guidelines for protection from sexual harassment.
- Inquiring into complaints of sexual harassment within a fixed time frame, and recommending appropriate punitive action against the guilty to the Director.
- Creating an atmosphere of equality, non-discrimination and gender justice.

### Procedure

To initiate a complaint, contact the conveners or any member of the Gender Cell, or contact Dean SA, or security office. You can find these information from the website link given below:

**<http://www.gendercell.iitb.ac.in/en/home/contacts>**

You can also initiate a complaint by sending email to: **[gendercell@iitb.ac.in](mailto:gendercell@iitb.ac.in)**

Please see Gender Cell website for IIT Bombay Policy on the Prevention, Prohibition and Redress of Sexual Harassment in the Workplace and inquiry procedures.

**<http://www.gendercell.iitb.ac.in/>**





## 19. Student Wellness Centre

After securing admission at the Institute, 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. So, if we do not take care of these problems at the right time, this could lead to poor performance both academically and personally.

To help you refrain from losing focus and being unhappy, Student Wellness Centre (SWC) encourage you to approach them for any problem that you are facing - be it academic, emotional, social or financial- without hesitation.

Services provided by SWC are:

- **Individual Counselling:** In a one-on-one meeting with a counsellor, students are helped to explore and express feelings, examine beliefs and ways of thinking about their present situation, reflect on patterns of behavior, and work toward making healthier and happier changes.
- **Psychological Assessment:** In some cases where more precise diagnoses are required, SWC conducts some psychological assessments, where tests are administered by a trained psychometrician.
- **Workshops and Events:** Preventive and positive mental health activities are organized to help inculcate life and productivity skills among students. Workshops are conducted on topics like- time management, stress management, goal management, EQ workshops for upcoming students.

In the current situation where you all must be worried about your upcoming life, the door of SWC is always open for you. There is nothing to be shy about this rather it will make you happy and more confident.

For more information please visit: <http://www.iitb.ac.in/counselling/en>

Also for regular motivation and productivity inputs follow the Facebook page of SWC: <https://www.facebook.com/ICareIITB>

## 20. Student Companions (SCs) (ISCP 2020-21)



**Gunduboina Hariseetharam**  
hariseetharam552@gmail.com  
Contact : (+91) 8897861913  
Aerodynamics



**Ritwick Nandi**  
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Contact : (+91) 9432153511  
Aerodynamics



**Gaurav Kohad**  
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Contact : (+91) 7400317510  
Propulsion



**Probudhho Chatterjee**  
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Propulsion



**Sachin Goel**  
sachingoel611@gmail.com  
Contact : (+91) 9952910611  
Propulsion

## 21. Faces of Aerospace PG (20-21)

### Placement Team

#### Aerospace in Institute Placement Team (2020-2021)



**Milan Chavda**  
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**Rajat Kelgandre**  
Company Coordinator  
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Contact : (+91) 7746963660

#### Department Council (AeA Council)



**Ayush Chomal**  
Department Placement Coordinator  
[ayushchomal1004@gmail.com](mailto:ayushchomal1004@gmail.com)  
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**Probuddho Chatterjee**  
Department Placement Coordinator  
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**Nirav Tank**  
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Contact : (+91) 9898763025



**Sneha Nair**  
Department Cultural Secretary  
[imsnehanair@gmail.com](mailto:imsnehanair@gmail.com)  
Contact : (+91) 9791182375



**Gaurav Kohad**  
Academic Unit Representative for  
Academic Affairs(AURAA)  
[kohadgaurav97@gmail.com](mailto:kohadgaurav97@gmail.com)  
Contact: (+91) 8989733190





## 22. Essential Websites and Applications

### 1. Application Software Centre (ASC) – Administration

**<https://asc.iitb.ac.in/>**

This website is the main interactive website for a student for all of his/ her's administrative requirements. From paying your fees to checking your grades, all can be done on this website. The website also has links to all other websites of the institute. Some of the most important facilities offered by this website are given under:

- Payment of fees
- Registration and de-registration from courses
- Checking previous years' grades awarded in any subject
- Brief contents of any subject being offered
- Own personalized timetable
- Checking of own academic performance (grades)

### 2. Moodle-Academics

**<https://moodle.iitb.ac.in/>**

This website provides academic interaction between students and faculty for all courses enrolled by a student. You can download study material/ books/ notes uploaded by a professor/ TA and also submit projects etc here. The website also offers a interaction platform where you can interact with the Professor/ TAs/ other students on any subject related matter.

### 3. Webmail

**<https://webmail.iitb.ac.in/>**

This is your personalized e-mail in IIT. Every student gets one when you enroll. Along with normal mails, here you also get alerts for registration/ de-registration of courses, fees payment and any broadcast on moodle among others. You have to regularly check (5-6 times a day) GPO to get updated.

### 4. Library

**<https://www.library.iitb.ac.in/opac-search/>**

The website for the central library offers a search engine for books available in the library. You can also check the number of books issued at any given time, renew them and "queue" up for any book already drawn by some other

individual.

5. Aerospace Department Official homepage

**<https://www.aero.iitb.ac.in/home/>**

Our department's website, it has the contact details of all faculty members, staff and students of our department. It also displays the academic research areas of the department.

6. Software center:

**<https://www.cc.iitb.ac.in/>**

7. Free Softwares for students :

**<https://www.cc.iitb.ac.in/page/services-software>**

8. How to setup Wifi in Laptop :

**<https://www.cc.iitb.ac.in/page/n-wired>**

9. Connect GPO (IITB email interface) with G-mail :

**<http://homepages.iitb.ac.in/~yatindestel/docs/GPO%20in%20Gmail.pdf>**

10. Official site of IIT Bombay :

**<http://iitb.ac.in/en/about-iit-bombay>**

11. ISCP :

**<https://gymkhana.iitb.ac.in/~scp/scp/index.html>**

12. student activities :

**<https://gymkhana.iitb.ac.in/>**

13. Sports affairs :

**<https://gymkhana.iitb.ac.in/~sports/>**

14. Hostel affairs :

**<https://gymkhana.iitb.ac.in/~hostels/>**

15. SARC :



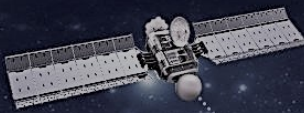
**<http://www.sarc-iitb.org/#>**

16. Buy and Sell :

**<https://www.facebook.com/groups/buysell.iitb/>**







## 23. Important and Emergency Contacts

**Note:** The numbers inside the brackets are extension numbers. If you are calling from a landline inside IIT Bombay, use only the 4 numbers in the brackets.

**Ambulance :** 022 – 2576 (1110)

**Hospital :** 022 – 2576 (7051/1110)

**Main Gate :** 022 – 2576 (1123)

**Y Point Gate :** 022 – 2576 (1121)

**Security :** 022 – 2576 (1100)/ 9167398596

**Quick Response Team :** 9167398598 / 9833337979 / 9833338989

**Police Station(Powai) :** 022 – 25702690

**Seven Hills Hospital :** 022-6767(6767/6766)

**Hiranandani Hospital :** 022-2576(3333/3300)

**Fire Control Room :** 022-23076111



So, We have reached at the end of this handbook. This is just a short guide to help you settle down to the IITB culture. There is a lot more you will learn along the way. Welcome to IITB, welcome to the Aero Matka-Family. It's time now to spread your wings like an eagle soar, for the Aerospace Engineering department at IIT Bombay has opportunities galore.

Also our special thanks to these people for their valuable contribution in making this handbook.



**Joy Patel**  
Events coordinator,  
AeA council



**Aman Malekar**  
Institute Aeromodelling secretary,  
Aeromodelling Club

DESIGNED AND MAINTAINED BY  
AEROSPACE ISCP TEAM 2020-21