



Physics Department

Hand Book 2022-2023

A brief tour of our department ...

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. The funds from UNESCO came as Roubles from the then Soviet Union. 1961 Parliament decreed the IITs as 'Institutes of National Importance'. Since then, IITB has grown from strength strength to emerge as



one of the top technical universities in the world. The institute is recognized 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 mobilize financial support. Over the years, the institute has created a niche for its innovative short-term courses through continuing education and distance education programmes. Members of the faculty of the institute have won many prestigious awards and recognitions, including the Shanti Swaroop Bhatnagar and Padma awards. 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 more than 15 hostels with in-house dining; the campus also provides excellent amenities for sports and other recreational facilities.



About the Department



The physics department at IIT Bombay, established in 1958, is one of the premier places in the country, providing world-class undergraduate and postgraduate education, as well as pursuing research in diverse areas of fundamental and applied physics. The department is one of the few places offering a B.Tech academic degree, through its Engineering Physics programme. This unique course blends the best of contemporary physics and electrical engineering, to create professionals who are equally comfortable with both science and technology.

The department also conducts a B.Tech-M.Tech dual degree programme in Engineering Physics, 2-year M.Sc. programme, and a 4-year dual degree M.Sc. (Physics)-M.Tech. (Material Science) programme, with a specialization in Nanoscience and Technology (offered jointly with the Department of Metallurgical Engineering and Material Science).

Our research spans over condensed matter physics, photonics, nuclear and elementary particle physics, string theory and cosmology. Establishment of state-of-the art experimental and computational facilities have allowed us to venture into emergent interdisciplinary areas like nanotechnology, quantum information processing, nonlinear dynamics, and biophysics. With a vibrant and active Ph.D. programme, in which about 100 research students are currently enrolled, IIT Physics thrives to be one of the leading research institutes of the world.



Message from the Head of Department

At the outset, let me extend my heartiest congratulations to you on successfully qualifying to become a student of IITB. I understand the amount of hard work and dedication that you have put in to achieve this and I am sure that you will continue to put the same effort into achieving greater heights during your stay here. After two years of online classes due to Covid, IITB started holding in person classes from April 2022 onwards and the coming academic year will be fully in person. I urge you to take the full advantage of being on campus and interact closely with both the faculty and your fellow students.

The Physics department of IITB is one of the oldest departments of the institute and one of the most vibrant Physics departments in the country today. For the last few years, our department has been ranked as the number one Physics department in India according to the QS ranking. We have 46 faculty members, about 240 B.Tech. students, 100 M.Sc. students and 150 Ph.D. students.There are about 50 Post-Doctoral fellows, working in different groups. We also have a support staff of about 25 people. We have all the modern teaching laboratories and a well-equipped department library. A computer lab only meant for students is also available for you.

The senior students of our department have set up a very good mentorship program to help the incoming students. Please meet your mentor periodically and discuss with her/him any problems you face. Even if she/he can't solve them, they will be able to point you to a person who can help you.

This booklet also contains the curriculum and the course contents that you have to follow. In the final year there are some core courses which are common to the M.Sc. and B.Tech. but they will be taught separately. Almost all elective courses are common for M.Sc. and B.Tech. and they are taught together. Ph.D. students have to take some of the M.Sc. core or elective courses as indicated later.

The main areas of research in the department are (i) Condensed Matter Physics,



- (ii) Astrophysics/Cosmology/Gravity,
- (iii) High Energy Physics,
- (iv) Photonics and Spectroscopy, and
- (v) Statistical Physics/BioPhysics/Soft Matter Physics/Nonlinear Dynamics.

In almost all these areas, both theoretical as well as experimental research is going on. There is ample scope for you to interact with the faculty members to get involved in the research activities, in addition to your normal academic work. I encourage you to take up such assignments and get more exposure.

Many of our alumni (B.Tech., M.Sc. and Ph.D.) have performed very well in their career and are in leading positions in academia/industry/civil services/corporate sector in India or abroad. With the training that you get here, I am sure you will all be able to rise to such levels of excellence. Please make use of every opportunity and facility that are available in the department and in the institute to achieve this, develop your personality and come out in flying colors.

Let's together meet the new challenges and transform them into opportunities....
With best wishes,

Prof. S. Umasankar



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Faculty Advisor

Faculty Advisor (FacAd) is a professor from our department, who will help you out in making academic decisions. Each semester, the courses that you take will be finalized only with the consent of the FacAd. Changes in the program, such as dropping of courses, withdrawal from a semester on medical advice etc. can only be implemented with the consent of the FacAd. The FacAd might play a limited role in your first year, but as you grow older in the IIT system, you might have to make some tough decisions regarding coursework and programmes in order to choose a career path suitable to your interests and that is where the FacAd will help you. You may also have to seek FacAd's permission to participate in inter-collegiate competitions/Internships etc. The FacAd is an important link between you and your department. Do not hesitate to talk to them regarding any academic issue. The faculty advisor for this year is:

Prof. Soumya Bera



Associate Professor

Department of Physics

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Message from ISCP

Dear new entrants,

Heartfelt congratulations for embarking on one of life's most memorable journeys - the journey of learning at IIT. On the behalf of our prestigious institute of IIT Bombay, team ISCP welcomes you aboard.

Give a pat on your shoulder for having achieved this feat. Your dedication, hard work and perseverance brought you here, and we know that your experience will lead you towards great opportunities. We can guarantee that your time here on this colossal campus will be exciting and knowledgeable. A degree will just be a small portion of what you will be leaving this institute with. You will also leave with beautiful memories of late-night conversations, interesting wing cultures, and crazy birthday parties (oh you are going to miss those!!). You will have the opportunity to mingle in various clubs and societies where individuals strive to become experts in their fields and devote endless hours. As a result, there will be many chances to learn inside and outside the classroom. So entering this new universe in itself presents both exhilaration and potential difficulties. This is where we will help you by providing the tips you need to handle these difficulties and enjoy your time at IIT Bombay.

Now, you should be thinking, what on earth is this ISCP? Institute Student Companion Programme (ISCP) is a student body with the primary objective of building a relationship of trust and comfort between the on-roll students and the incoming students of the PG programmes. We are here to help you get familiar with the ways of IITB, guide you through your ups and downs and make sure that each voice is heard. You will become part of a culture where people want to perfect their craft and thus work day in and day out. Various events are organized by the cultural, technical, and sports clubs in the institute throughout the year. Managing these along with lectures might seem daunting at first, and hence, to help you with a world of problems, including these, we assign you a **student companion**.

The student companions are self-motivated volunteers who will genuinely want to help you in low and high tides as an act of giving back what they received from the programme. You can rely on the team for any advice or information on anything you are venturing out into, whether it be academics or extracurriculars, any issues that you are



facing, any support or requirements that you want to raise as a part of the student community. And at last but undoubtedly not least just for regular interaction because that is all the programme holds at its core. The knowledge and the experience that our student companions have gained with their stay on the campus will help your transition become smooth. From campus tours to classroom lectures, from the grading system to completing the syllabus, from the profile to placements, from *Schezwan Frankie* to curry-pakora, they will be there for you.

We are sure that the last couple of years have been rough for many of you. But as we know that life moves on. So, make sure that you make the best out of your journey at IIT Bombay. Come and contribute to this vast store of knowledge and help it become more vibrant and colorful.

The campus of IIT Bombay awaits your presence; see you there.



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email, email



Welcome Message from IMR

Welcome Freshers!

We all have gone through a lot in these past couple of years, so firstly congratulations to all of you for securing admission in one of the prestigious institutes in the country. IIT Bombay provides best exposure to its students in all the aspects, both academically as well as non academically. The skills you develop here, the interactions you have with people here will stay with you throughout your life. The post graduation demands something additional compared to the under graduation, more time, more effort, more determination and a ton of dedication. For meeting these primary requirements, often we find ourselves in a daunting situation.

In order to make your stay at IIT Bombay convenient, the institute has established the PGAC (Post Graduate Academic Council). Any technical necessity, any placement related assistance, any research queries or any academic grievances, you can always reach out to us. Each department has their own AURAA (Academic Unit Representative of Academic Affairs), whom you can approach directly in case you find any difficulties. Wishing you all a really convenient and productive IIT journey!

Regards,



Mohit Meena
Institute Secretary,
Academic Affairs Master's
Email: imr@iitb.ac.in

Contact no. 8006080474



Welcome message from the Department Coordinator

Dear juniors!!!

Congratulations on this amazing achievement! On behalf of the Department of Physics, I welcome each of you to the most coveted institute in India. Most probably this semester will be offline. This offline semester will be a new experience for all of us after a long time. However, you do not have to worry, as we are with you throughout your journey. Last year, when we were new students at IIT, our mentors were always there to guide us and were always there, whenever we needed help. Now it's our turn to return it. We encourage you to make the most use of your time here. Your college experience will be what you make of it, and your opportunities will only be limited by the limits you set for yourself. As you begin the new journey, take advantage of the various services available to help you reach your full potential. There is a lot of ongoing research work on different topics in our department. I recommend you to take advantage of it and explore different areas to find your interests. Do not hesitate to contact us for any problems or questions.

IIT Bombay offers a variety of programs to help you further your post-graduation and succeed in your career, such as internships/placements and many other innovative workshops on your skills. I encourage you to participate, participate in different activities and participate in a range of opportunities and initiatives of the Institute. Supporting you is central to our mission at ISCP. We are here to guide you while you become the best version of yourself. Don't forget to make it a great year.

I will see you soon.



Madan Kumar

Department Coordinator (2022-23), ISCP



Department ISCP team



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Department Council

The Department Council is a small body of representatives of B.Tech., Dual Degree and MSc students, generally elected by an election every year. This body provides a single point of contact to all the Professors and students for transferring queries, suggestions and complaints both ways. It also represents the department in institute level students' bodies like Students' Academic Council, Placement Cell and SARC. The council aims to help students in every possible manner in their academic issues, department infrastructure and facilities and help in placements and applications for higher studies.

Department Council Member:

- Department General Secretary: He is the overall head of the Department Student's Council. The DGSec represents the opinion of students in all matters pertaining to them and conveys this to relevant authorities and takes actions accordingly. He is an official permanent member of the DUGC (Department Undergraduate Committee) which takes policy decisions pertaining to coursework and academic rules of Engineering Physics B.Tech., Engineering Physics DD. He has key permissions and administrative biometric access to Department Library and Department Computer Lab
- M.Sc. Representative: He is representative of both 1st and 2nd-year M.Sc. students. He is the point of contact for M.Sc. students to DGSec and other council members. He represents M.Sc. students in DPGC ((Department Postgraduate Committee) which takes policy decisions pertaining to coursework and academic rules of M.Sc. physics.
- **SAPD Head:** He is the head of the Students Association of Physics Department (SAPD). The SAPD Head is responsible for conducting non-curricular activities and events like Department Trips, Kurta Day, informal Sessions and many more.
- **Department Placement Coordinators:** He helps in the registration of final year students in Placement Cell, He conveys information regarding placements. They gather and represent the opinion of final year students to the Placement Cell.

Note: Details of Department General Secretary, M.Sc. Representative, SAPD Head and DPC will be announced soon.



Faculty Members

Theoretical Condensed Matter Physics

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To develop advanced theory, algorithms and numerically efficient codes to explain various properties, structure and behavior of materials.

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Many bodies localization, nonequilibrium dynamics, entanglement properties, floquet system

Prof. Gopal Dixit Associate Professor

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Understanding ultrafast physical and chemical processes in nature on attosecond and femtosecond time scales

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Quantum materials are novel effects that arise from either topological properties of the wavefunction or interparticle interactions.

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Condensed matter theory, quantum magnetism, computational approaches



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The theory of the electronic structure of atoms, molecules, clusters, clouds and solids.

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Condensed Matter Physics

Theoretical Quantum Information Theory

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Quantum information theory, quantum control theory, quantum metrology, non-equilibrium statistical mechanics

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Quantum information theory, quantum control theory, quantum metrology, non-equilibrium statistical mechanics

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Quantum Networks, Adiabatic quantum optimisation



Experimental Condensed Matter

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Oxides and other earth abundant compounds for photovoltaic applications

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Active matter, Bio-active materials, Non equilibrium statistical physics

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Professor

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Growth, transport and optical properties of semiconductors, low dimensional semiconductors

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Mesoscopic physics, low temperature transport, semiconductor heterostructures, thin film growth, small scale instrumentation

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Fourier optics and nanophotonics



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Charge carrier transport in organic semiconductors, Transistors (OFETs, VFETs), Diodes, Sensors, Piezoelectric nano-structures, Single crystals, Al and sensors.

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Charge carrier transport in organic semiconductors, Transistors (OFETs, VFETs), Diodes, Sensors, Piezoelectric nano-structures, Single crystals, Al and sensors.

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Magnetic properties of various types of low-dimensional quantum magnets.

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Professor

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Quantum electronics, quantum information and quantum computation

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Condensed Matter Physics



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Magnetic thin films and multilayers; Nanostructured magnetic thin films; Magnetic-Superconductor multilayers

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Soft matter, Nanomaterials, colloids and glassy materials.

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Surface and intersurface Science

Astrophysics, Cosmology and Gravitation

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Astrophysics, Electromagnetic counterparts of gravitational wave source



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Gravitational wave, astrophysics, statistical signal processing

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Gravity and cosmology

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High energy particle physics, dark matter physics, particle astrophysics and cosmology

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Grand unified theories, General Relativity, semi-classical Gravity, Cosmology, Topological methods

Theoretical High Energy Physics

Prof. Asmita Mukherjee

Professor

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Theoretical Particle Physics, QCD, QCD spin physics, Light-cone wave functions, collider phenomenology



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Chern-simons field theory, knot invariants, topological strings and supersymmetric field theories



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Probing beyond the standard model (BSM) physics at high energy colliders like the Large Hadron Collider (LHC) and the planned future e+e- colliders. I study the properties and interactions of the Higgs and the Z and W boson and Top quark physics.

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High energy particle physics, dark matter physics, particle astrophysics and cosmology

Prof. S. Umasankar Professor

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Neutrino Physics and Flavour Physics

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Grand unified theories, General Relativity, semi-classical Gravity, Cosmology, Topological methods



Experimental Nuclear and High Energy Physics

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Nuclear Physics in Medical Imaging, Spectroscopic investigation of nuclei at high angular momentum states

Prof. Sadhana Dash

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Heavy ion collisions, correlations, resonance production, heavy flavor and multiparticle production

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Multiparticle production, fluctuation and heavy flavor in ultra-relativistic heavy-ion collisions.

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Developing particle detectors for high energy physics experiments.

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High Energy Physics



Soft Matter Physics/Non Linear Dynamics

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Driven soft matter, Active matter and Physics of sentiment systems

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Theoretical aspects of nonequilibrium statistical systems.

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Utilizing the tool of statistical mechanics and condensed matter physics to address important questions regarding soft matter

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Multiparticle production, fluctuation and heavy flavor in ultra-relativistic heavy-ion collisions.

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Experimental Nonlinear Dynamics



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Bio-Physics and non-equilibrium statistical Physics

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Active matter, Bio-active materials, Non equilibrium statistical physics

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Soft matter, Nanomaterials, colloids and glassy materials.

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Experimental and theoretical aspects of Nanophotonics and 2D materials.



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Understanding ultrafast physical and chemical processes in nature on attosecond and femtosecond time scales



Photonics

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Experimental exploration of energy transfer and dynamical processes in metal and semiconductor nanostructures.

"If what we are doing is not seen by some people as science fiction, it is probably not transformative enough" -Sergey Brin-



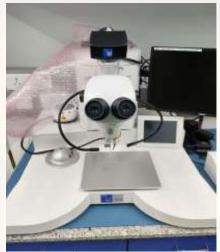
Research Facilities Available

The department of Physics IIT Bombay boasts well equipped laboratories and groups with ongoing research in the fields of High Energy Theory, High Energy Experiments, Condensed Matter Theory, Condensed Matter Experiments, Optics and Photonics, Astronomy, Cosmology and Gravity, Soft Matter, Biophysics and Nonlinear Dynamics. The department provides core central facilities housing several modern instruments necessary for present day research.

- High Resolution X ray diffractometer
- UV-VIS-NIR Spectrophotometer with reflectance accessory and integrating sphere
- Powder XRD machine
- Physical property measurement system/Magnetometer x5
- High Pressure High Temperature (HPHT) furnace
- Atomic Force microscope (Veeco)
- Scanning electron microscope (JEOL)
- UV-visible NIR spectrometer (Perkin Elmer)
- Thermal Evaporator
- Spin coater
- Optical Microscope
- Liquid Helium plant (with recovery system)
- Mask aligner for sample size upto 4 inches
- Rapid Thermal Annealer (upto 750 C)
- Class 10,000 clean-room facility with approx 350 sq ft floor area
- Thermal evaporator with 4-position turret x3 (HindHivac)
- Ultrasonic wire bonder (model TPT HB05)
- He-3 cryostat (base temperature ~250 mK) with 9T superconducting magnet and sample rotation capability (Oxford Instruments)
- Tunable ps source
- 10 fs ti:sapphire laser
- Closed cycle refrigerators ×3 (Janis/ CTI cryogenics)
- Optical components (Lenses, mirrors, polarizers, waveplate, prisms, gratings etc)
- Light sources (Diode lasers with 650 nm wavelength, HeNe laser, lamps, LEDs, etc)
- Detectors (Photo diodes)
- 25 MHz oscilloscope



- Transmission microscope without camera
- Interferometer set-ups
- Low precision PC prototyping + laser engraving head
- 500MHz DSO x 2 for short term loan to research labs
- LPKF high precision PCB prototyping (Model LPKF S63)
- NIR USB Spectrometer
- High power NIR LEDs Thorlabs
- UV-Vis USB spectrometer (Avantes)







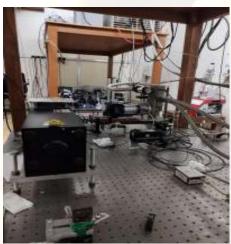
1. Wire Bonder

2. Oscilloscope, Arbitrary wave generator, Vector signal generator, Lock in amplifier, Keithley SMU

3. Hybrid optoelectronic optoelectronic







4. G2 setup and PL setup

5. Rheometers

6. Photoluminesce spectroscopy



Course Structure and Grading Policy

IITs follow a totally different pattern of examination and grading. In the first semester, students have 4 theory courses, 1 lab and one programming course, with a total of 38 credits. In the second semester, students have 5 theory courses and 1 general physics lab, with a total of 35 credits. All courses are compulsory for every student. In the third and fourth semester, students have to take 5 courses (2 compulsory, 2 departmental electives, 1 lab course) along with a master year project in both semesters. The project is not compulsory and to complete the credits one can take a departmental elective in place of it. For every course taken by a student he/she is assigned a grade based on his/her combined performance over the semester in all the assessments in that course. These grades are described by the letters each of which carries a quantitative (numeric) equivalent called the grade point as given below.

AP	10	FF	O Fail (Eligible for one re-exam)
AA	10	FR**	O Fail (Repeat the course)
AB	9	DX***	Fail (Lack of attendance - Repeat the course)
BB	8	11#	Incomplete (On health grounds)
ВС	7	DR	Dropped
CC	6	PP	Passed
CD	5	NP	Not Passed
DD**	4	AU	Audit

^{*}DD Grade Minimum passing grade in a course is DD

The letter grades FF and FR shall be treated as failure grades. FR grade will be awarded in cases where in the opinion of the instructor, the student hasn't had adequate academic exposure to the course and should therefore repeat the course. FR grade may also be awarded in cases of minor malpractice in examinations/assessments.

FF grade will be awarded in case/(s) where the students' performance in the examinations, which is not satisfactory (falls below DD grade). Students are eligible for reexamination, which is conducted as per the Academic Calendar. After reexamination FF grade may get converted to (1) DD grade if she/he passes the reexamination or (2) FR grade if she/he fails in the reexamination.



^{**}FR and FF Grade

***DX Grade

The grade DX in a course is awarded if a student does not maintain the attendance requirement. The DX grades may also be awarded to the students having bad or incomplete in-semester records for non-medical reasons. The DX grade will be declared one week before the semester end exams and is not permitted to take the semester-end examination or re-examination in that course. Such a student has to re-register for the same course.

- **Incomplete Grade (II):** Grade 'II' is awarded if a student has satisfactory in-semester performance but has not appeared for the end-semester examination on medical grounds. 'II' grade will be converted into a performance grade after the re-examination.
- Audit Grade (AU): A student registered for a course as audit shall be awarded the grade on successful completion. If the student does not qualify for the grade AU, it will be assumed that the course has been dropped by that student.
- Dropping of course(s): If any student finds his course load to be too heavy then he can drop one or more of his/her courses within a stipulated time. However, you are required to complete a minimum of 18 credits every semester. In case of electives the students need not to take the same courses, she/he can select any other elective(s) as well. Such courses will appear in the transcripts and final grade card with a 'W' grade (withdrawn grade). These courses will have no impact on SPI/CPI. The last date for course drop will be included in the Academic Calendar.

Grade Improvement:

- 1. 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.
- 2. For Grade improvement, a student has to re-register in the course in a subsequent semester if the course is offered. The grade obtained in the re-registered course will supersede the earlier grade and the same will be reflected in the Semester Grade Card and in the Final Transcript.
- 3. The student can avail this option only for TWO courses in the entire programme and only.
- Attendance: In general, the institute expects 100% attendance. However, due to ill



health or other emergencies, absence up to 20% may be considered on production of documentary proof.

- Audit Courses: After the first semester, a student who wants an exposure to a
 course, without the rigors of obtaining a good grade, may audit a course with the
 permission of the Faculty Advisor. They can audit a maximum of two courses per
 semester. The grade awarded is 'AU' on successfully passing the course.
- Additional Learning: After the first semester, a student with an excellent academic standing may enhance her/his learning experience by registering for one additional course per semester.
- Use of NPTEL/SWAYAM Courses: A student can take a maximum of 12 credits of NPTEL/SWAYAM courses in lieu of departmental / institute elective courses, based on the approval from DPGC. Summer Term: Master students may be allowed to register for courses, over and above the backlog courses, in the summer semester, but under an "Additional Learning (AL)" tag.

A student will be required to **discontinue the program** if:

- 1. At the end of any semester there are two or more FR grades.
- 2. at the end of semester, a student has a CPI less than 6.0 (after Re-examination)

Some Important Terms

Course Credit: Weighted sum of the number of Lecture hours (L), Tutorial hours (T), and Practical hours (P) associated with the course.

Registration: Semester wise enrollment for courses as per the prescribed curriculum. **Semester Credits:** Sum of credits of courses registered by the student in a semester.

Credits Earned: Sum of credits earned by passing a course registered during the semester. Grade: Qualitative assessment of the student's performance in a course indicated by the letters, AP, AA, AB, BB, BC, CC, CD, DD, II, FF, FR, DX, PP or NP Grade. DX or FR indicates that the student has to repeat the course. W indicates course withdrawn.

Grade point: Number equivalent of the letter grades given by 10, 9, 8, 7, 6, 5, 4, corresponding to AP and AA, AB, BB, BC, CC, CD, and DD, respectively. FR, DX carry zero



grade points, PP, and NP do not carry any grade points. II is a placeholder, gets converted to an appropriate grade after semester end reexamination. DR is just a position holder.

Instructor: Member of faculty who teaches courses/labs. Semester Grade Points: The sum of the products of credits and Grade Points for each course registered by a student in a semester.

SPI: Semester Performance Index which is obtained by dividing the Semester Grade Points by the Semester Credits.

Cumulative Credits: Sum of the Semester Credits for all the semesters taken together, wherein the credits of a course is not counted if an alternative course has been taken in lieu of it.

Cumulative Grade Points: Sum of the Semester Grade Points for all the semesters taken together, wherein the credits of a course is not counted if an alternative course has been taken in lieu of it. CPI: Cumulative Performance Index which is obtained by dividing the Cumulative Grade Points by the Cumulative Credits.

Transcript: Consolidated statement of the Academic Performance of a student for all the semesters completed.

"If we knew what it was we were doing, it would not be called research, would it?"

-Albert Einstein-



Internship Details

Name	University	Batch	Email
Sudharsana Prasad G S	Karlsruhe Institute of Technology, Karlsruhe, Germany	2020-2022	<u>email</u>
Harshul Gupta	Karlsruhe Institute of Technology, Karlsruhe, Germany	2020-2022	<u>email</u>
Nishtha Sahni	Karlsruhe Institute of Technology, Karlsruhe, Germany	2020-2022	<u>email</u>
Sarthak De	Weizmann Institute of science, Rehovot, Israel	2021-2023	<u>email</u>
Lakshya Bhardwaj	DAE - Saha Institute of Nuclear Physics, Kolkata	2021-2023	<u>email</u>
Riya Verma	Indian Institute of Astrophysics, Bengaluru	2021-2023	<u>email</u>
Aakash Shandilya	Quanfluence Pvt. Ltd., Bangalore	2021-2023	<u>email</u>
Sahil Meshram	Hyderabad Central University, Hyderabad	2021-2023	<u>email</u>
Prabhat	HRI,Prayagraj	2021-2023	email
DIKSHA GARG	University of Luxembourg, Limpertsberg, Luxembourg	2021-2023	<u>email</u>
Anjali Yadav	Karlsruhe Institute of Technology, Karlsruhe, Germany	2021-2023	<u>email</u>
Akshit aggarwal	Indiana university Bloomington,Bloomington,USA	2021-2023	<u>email</u>
Harsh Chaudhary	Karlsruhe Institute of Technology, Karlsruhe, Germany	2021-2023	<u>email</u>
Sarthak Girdhar	University of Luxembourg, Limpertsberg, Luxembourg	2021-2023	<u>email</u>



Phd Selection

Name	University	Batch	Email
Harshul Gupta	University of Illinois, Chicago, USA	2020-2022	<u>email</u>
Shivangi	University of St. Andrews, Scotland	2020-2022	<u>email</u>
Jeevesh Magnani	University of Massachusetts, Amherst, USA	2020-2022	<u>email</u>
Sohum Kapadia	Clark University ,Worcester Massachusetts, USA	2020-2022	<u>email</u>
Shashank S K	TU Chemnitz, Germany	2020-2022	<u>email</u>
Vaibhav Pachaulee	ARIES, Nainital	2020-2022	<u>email</u>
Rathindra Nath Das	Julius Maximilian university of würzburg, Germany	2019-2021	<u>email</u>

Placement Details

Name	Company	Batch	Email
Murali K	Kotak Mahindra Bank - Business Analyst BYJU'S - Content Developer	2020-2022	<u>email</u>
Shanu Arora	Unacademy	2019-2021	<u>email</u>
Jaideep Lohia	Narayana group education	2018-2020	<u>email</u>
Sandeep Jangir	Dolat - Analyst	2018-2020	<u>email</u>
Siddhi Garg	BYJU'S Education	2018-2020	<u>email</u>



Meet Your Seniors

Name	Place	UG College	Email
Gopal Goyal	Jaipur	S S jain subodh college (university of rajasthan jaipur)	<u>email</u>
Surendra Rathore	Kanpur	HBTU Kanpur	<u>email</u>
Krishna Chaudhary	Prayagraj (UP)	Miranda house (DU)	<u>email</u>
Gaurav Jha	Delhi	Hansraj College (DU)	<u>email</u>
Diksha garg	Yamunanagar (HR)	Miranda house (DU)	<u>email</u>
Naveen kumar	Churu (RJ)	Seth motilal PG college Jhunjhunu , Rajasthan	<u>email</u>
Vishu Saini	Ambala (HR)	Kirori Mal college (DU)	<u>email</u>
Uday Singh	Pilibhit	Motilal Nehru College (University of Delhi)	<u>email</u>
Debabrata Dey	Murshidabad (WB)	Krishnath College	<u>email</u>
Prabhat	DL	St. Stephen's College	<u>email</u>
Sumit Kumar Yadav	Dehradun (UK)	Birla Institute of Technology, Mesra	<u>email</u>
Harsh Kumar Sinha	Patna	Patna Science College	<u>email</u>
Manoj Kumar Singh	Bhind (MP)	Kirori Mal College (DU)	<u>email</u>
Sumit Mandal	West Bengal (WB)	Bankura Christian College	<u>email</u>
Manoj Kumar Singh	Bhind (MP)	Kirori Mal College (DU)	<u>email</u>
Dishant Varshney	Sambhal (UP)	Institute of Engineering & Technology, Lucknow	<u>email</u>
Ravi Singh Adhikari	Nainital (UK)	Swami Shraddhanand college (DU)	<u>email</u>
Subhankar mandali	Jeypore, koraput	Buxi jagabandhu vidyadhar (Auto) college	<u>email</u>
Sanjay Kumar	Sangrur (PB)	Panjab University, Chandigarh	<u>email</u>
Pranav	Delhi	Ramjas College	<u>email</u>
Sankalp Soni	Mahoba(UP)	Banaras Hindu University	<u>email</u>
Antriksh Mundotia	Rajasthan	Hansraj College (DU)	<u>email</u>
Sahil Meshram	Mumbai (MH)	Ramnarain Ruia College, Mumbai	<u>email</u>



				3	36
	Sayantan Mandal	West Bengal(WB)	Jadavpur University	<u>email</u>	
	Riya Verma	Lucknow(UP)	Banaras Hindu University	<u>email</u>	
	Arunendra Kumar Verma	Damoh (MP)	Hindu College (DU)	<u>email</u>	
	Lakshya Bhardwaj	Hamirpur (HP)	Hindu College (DU)	<u>email</u>	
	Anjali yadav	Mahendergarh(HR)	Miranda House	<u>email</u>	
Sahil Madan Kumar		Rohtak(HR)	Pt. N.R.S. college, Rohtak	<u>email</u>	
		Barmer (RJ)	St. Stephen's College (DU)	<u>email</u>	
	Gaurav Lather	Jind(HR)	Deen Dayal Upadhayay (DU)	<u>email</u>	
	Samrat Ash	Kolkata	Narendrapur Ramakrishna Mission Residential College (Autonomous)	<u>email</u>	
	Gourang Singh Padihar	Bhilwara(RJ)	M.L.V College , Bhilwara	<u>email</u>	
	Abhijeet singh	Kanpur(UP)	DAV college	<u>email</u>	
	SUNIL kumar yadav	Jaipur (RJ)	Rajasthan University	<u>email</u>	
	Ankit Kumar	Sikar (RJ)	Hindu College, University of Delhi	<u>email</u>	
	Sarthak De	Purba Bardhaman (WB)	Ramakrishna Mission residential college, Narendrapur	<u>email</u>	
	Harsh Choudhary	Rajasthan	NIT Kurukshetra	<u>email</u>	
	Sarthak	Sonipat (HR)	Hansraj College (DU)	<u>email</u>	
	Aakash Shandilya	Jharkhand	Cochin University of Science and Technology	<u>email</u>	
	Anand Sharma	Kurukshetra (HR)	NIT tiruchirappalli	email	
	Akshit aggarwal	Delhi(DL)	Acharya Narendra Dev college	<u>email</u>	
	Ankit Meena	Alwar (RAJ)	Maharaja's College, Jaipur	<u>email</u>	
1	Naman Kesharwani	Prayagraj(UP)	Allahabad university	<u>email</u>	



IITB sports

The IITB gymkhana is home to a wide range of sports, both indoor and outdoor. The facilities provided to the students to match international standards are one of the best in the country. IIT Bombay sports organizes General Championships, Tournaments, and other fitness camps and activities throughout the year. AAVHAN, IIT Bombay's premier sports festival is a call to all those who live, dream and breathe sports. Inter-IIT is the epitome of all competitive events that any IITian can ever experience. PG General Championship is the interdepartmental championship for the Postgraduates where every PG student gives their best to collect points for their respective departments. It has always been a roll-on with all the departments fighting for the GC trophy. The feeling of victory here is one that you will remember for years to come.

Visit the site here: https://gymkhana.iitb.ac.in/~sports/





Important information you should know

- 1. **LDAP ID:** It is the unique identification of each individual in IIT Bombay. By default the LDAP ID assigned to you will be your roll number and the associated password will be generated after you have come to the institute and the requisite registration processes are completed.
- 2. **Moodle:** It is the website which provides for academic interactions between faculty and students in IIT Bombay. From Moodle, you can download all the course materials uploaded by the Course Instructor for the course you have registered for and also interact with the faculty and it is a forum for academic discussions. **Link:** https://moodle.iitb.ac.in/login/index.php
- 3. **Webmail:** This is your personalized email in IIT B. You will get your Id when you get enrolled in IITB. **Link:** https://webmail.iitb.ac.in
- 4. **ASC:** This is the main website for all your administrative needs. You can pay your fees, register for courses, check syllabi of various courses and also many **other things**. **Link:**https://asc.iitb.ac.in/acadmenu/
- 5. <u>CAMP</u>: The following things will be available in CAMP Website
 - 1. Changing password
 - 2. Changing User ID (only once)
 - 3. Modifying personal details
 - 4. Set / Reset mail auto reply text
 - 5. Set / Reset mail forwarding address
 - 6. Department sys-Ads list
 - 7. Find your User ID from roll number / Employee number

Link: https://www.cc.iitb.ac.in/camp/

6. **Link for External ASC site:** Here you can see your academic records and this site is for document verification also.

Link: https://portal.iitb.ac.in/asc/Login



Link for miscellaneous purposes

- 1. Accessing IITB Internal Sites with VPN https://www.cc.iitb.ac.in/page/services-vpnssh
- 2. Configuring IITB-Wireless in laptop/android/desktop: https://www.cc.iitb.ac.in/page/configurewireless
- 3. Access GPO mail on mobile mail: http://homepages.iitb.ac.in/~yatindestel/docs/GPO%20in%20Gmail.pdf
- 4. Free Licensed Software https://www.cc.iitb.ac.in/page/services-software
- 5. How to forward GPO mail to Gmail http://camp.iitb.ac.in/cgi-bin/index.cgi
- 6. Rules and Regulations for M.Sc. http://www.iitb.ac.in/newacadhome/rulesPG.jsp
- 7. Link for External ASC site https://portal.iitb.ac.in/asc/Login
- 8. Link for Central Library https://www.library.iitb.ac.in/
- 9. Link for Internship Portal http://placements.iitb.ac.in/internship/login.jsp
- 10.Link for placement portal http://placements.iitb.ac.in/placements/login.jsp
- 11. Link for academic calendar http://www.iitb.ac.in/newacadhome/toacadcalender.jsp
- 12.Link for academic timetable http://www.iitb.ac.in/newacadhome/timetable.jsp
- 13.Link for IITB Holiday List http://www.iitb.ac.in/en/about-iit-bombay/iit-bombay-holidays-list



14.Link for circulars http://www.iitb.ac.in/newacadhome/circular.jsp

SOME USEFUL APPS

InstiApp

InstiApp is an Android App that helps you navigate through the IIT Bombay Campus. It is a one stop solution for all the queries above and beyond. An app of the insti, for the insti, and by the insti, it connects all the aspects of one's insti life, weaving around hostels, academics, co-curricular activities and recreation. Download Link:https://play.google.com/store/apps/details?id=app.insti&hl=en_IN

Instimap

InstiMap is a searchable map of the campus, specially designed for first time visitors and new entrants, to find their way around IIT Bombay with ease. It is available on instiApp - an Android App that helps you navigate through the various events on IIT Bombay Campus. is available at: https://insti.app/map

m-Indicator

This app contains the Local Train Timings of Mumbai and also details the local train routes for IIT Bombay. One can also find the various bus routes and the bus numbers on this app. DownloadLink: https://play.google.com/store/apps/details?id=com.mobond.mindicator

OpenVPN Connect App

OpenVPN Connect is the official VPN application for Android developed by OpenVPN, Inc. It is a universal client serving the following OpenVPN products: Access Server – server solution for businesses OpenVPN Compatible Server – solution for self-hosted servers It can be used for connecting with IITB Internal sites using VPN.

DownloadLink: https://play.google.com/store/apps/detailsid=net.openvpn.openvpn&hl=e n IN



MYBYK App

Whether you want to ride a cycle at home or use it to commute within your campus, whenever you need a cycle, find a MYBYK near you. Unlock using your smartphone and pedal your way to a healthy life.

Download Link: https://play.google.com/store/apps/details?id=in.greenpedia.mybyk

• SHIRU CAFE:

Order your free drink in the app. Simply launch the app and tap the drink you would like to order.

DownloadLink: https://play.google.com/store/apps/details?id=jp.co.enrission.shirucafe

"Creativity is seeing the same thing but thinking differently"
-Dr. APT Abdul Kalam-



The Scholarships that You should know and Apply for

- Institute Merit-cum-Means scholarship
- Facilities of free messing (for students from SC/ST category)

For more details, please visit the link below.

FAQs regarding scholarships 22 April 2021.pdf

To apply for these scholarships, visit the internal ASC portal of IITB. Login via your LDAP ID. Then go to the academic option and then select apply for a scholarship option.

http://asc.iitb.ac.in/acadmenu/index.jsp

OTHER SCHOLARSHIP

• **INSPIRE SCHOLARSHIP:** Those who are already recipients of inspire will continue to get that if your marks allow that. The documents that usually have to be submitted in that portal should be duly signed by the registrar.

Note: The MCM/free messing is not approved for the students who are already recipients of any Named Scholarship (e.g.:INSPIRE).

• FINANCIAL AID PROGRAMME: It's called as FAP of IITB i.e., financial aid programme of IITB. Our alumni donate here to help those needy and meritorious students who suffer financially and face too much problem to pay admission related or messing related fees. In this programme, at first you have to apply and followed by, you have to go through an interview round where basically personal information is asked. Depending on the interview, you will be selected.

But an important point to note is that it's not a scholarship rather just a financial aid. The money allotted under this scheme has to be returned back with 0% interest. However, there seems to be no restrictions on when you would have returned it. To register into this programme, you should visit the link below.

https://fap-iitbaa.org/



Reaching IIT Bombay

From Railway Station -

Stations for through trains Coming to Mumbai

Central Railway: CST, Dadar, Kurla, Thane.

Western Railway: Mumbai Central, Dadar, Bandra, Andheri, Borivali.

Those coming by **Central Railway** can take the Central Railway Suburban train and get down at **KanjurMarg** station which is the nearest station from IITB. Please ensure to take only a **slow local train** as the fast ones do not stop at KanjurMarg.

If you come via **Western railway**, you can board a **Western Railway line** suburban train and reach **Dadar**, where you can **change to the central railway line** and board a suburban train to **KanjurMarg**. Once you get down at **KanjurMarg** railway station, come out through the **western- side gate** and take a bus or auto-rickshaw to IIT main gate.

From Airport

Those traveling by air can take **taxis/auto-rickshaws** from the domestic (40-60 min travel time)/international (20-40 min travel time) airport to reach IIT Bombay.



Link to campus map: https://www.insti.app/map



Bandhu

A portal for Emotional support to Students

Bandhu portal was launched on November 1, 2020 by the Director of IIT Bombay Prof. Subhasis Chaudhari, It is a portal designed for IITB students to address their challenges ranging from adjustment to college life, academic stress and mental health. It has Curated Reads, Motivational Alumni Journeys, Expert Podcasts and tools for Self-Exploration. The idea of this portal was initiated by an IITB Alumni Nitesh Tiwari from the batch of 1992 as a part of their silver jubilee reunion in 2017.

You can reach bandhu by clicking https://www.iitb-bandhu.org, It has a long list of articles on topics ranging from Transitioning to college, Academics, Mental Health, Relationships and Knowing yourself better that would help students in many ways. It also provides students an option to share their stories or experience at the "Share your Stories" section. It also has a section of "Seek Help" meant to provide students with proper access for help and guidance for various issues ranging from Bullying and sexual harassment to How to support a friend in distress.

"It is all right to make mistakes; nothing is perfect because with perfection, we would not exist"
-Stephen Hawking-



Student Alumni Relations Cell



Student Alumni Relations Cell (SARC) is a student body run under the guidance of the Dean ACR Office, IIT Bombay. It works with a vision of bringing the alumni and student communities of IITB together to create a synergy of ideas, respect, knowledge and everything that our Institute stands for. Its events and initiatives include:

- Alumnition: Flagship event of Student Alumni Relations Cell
- Student Alumni Meets: SAMs are meets organized in various alumni chapters (cities where they reside) with different motives.
- Phonathon: Telephonic marathons to connect with alumni
- Reunions: The most awaited yearly alumni reunions.
- Institute Valedictory Function: The last event of an IITB student's instillife.
- Core Talks: Department-specific talks from the experts, our own alumni.
- ASMP: Alumni Student Mentorship Programme.
- ILP: Industrial Learning Programme.
- HATS: Hostel Alumni Team Stewardship.
- Alumni Sports Weekend: A fun-filled sports weekend for the alumni and the students.
- ProVachan: Non-core fundae talks by our very own alumni.
- SARCasm: Head scratching online cryptic hunts for the students.
- Institute Yearbook: "Thousand Thoughts. Million Memories. Infinite Feelings."







The language resources and writing cell (LRWC)

The Language Resources and Writing Cell (LRWC) provides inhouse learning services for the improvement of English language skills with monitoring and feedback, as well as diagnostic services (self or other) for assessment of language levels. The LRWC also creates learning resources, organizes workshops or short courses, and trains Teaching Assistants for language related services

Contact details:

Professor Vaijayanthi Sarma
Faculty Member In-charge, LRWC
vsarma@iitb.ac.in
Mr. B. Kore
Senior Language Instructor
Irwcinstructor@iitb.ac.in

ELIT (English Language Improvement Training) Program

This program is aimed at helping students who need help with English. This program not just helps them in improving their proficiency in English language but also bridges the gaps in their academic/social life which may have arisen due to low proficiency in the language. ELIT is a student-run program, where the students are taught by some other students who are well-versed in the language.

Contact details:

Khushi Gosalia | Kshitij Sovanee Cabinet Heads English Learning Program SMP, IIT Bombay

Contact no: +91-8000622433 | +91-9920360735

Email: elp.cabinet.smp@gmail.com

For more details, visit this: https://www.insti.app/org/elp



SC-ST-OBC-Liaison Cell

The Institute strives to maintain a work environment wherein faculty and staff members from different communities can work in a coherent environment. It is the Institutes endeavor to ensure that no kind of caste based discrimination take place at workplace. We have appointed a Liaison Officer who can be contacted in the event of any incident of caste based discrimination.

Particularly as a Liaison Officer is as under.

Dr. S. G. Patil

Email:

022-2576 7051

For more details, visit this https://www.iitb.ac.in/en/about-iit-bombay/sc-st-obc-liaison-cell

The Entrepreneurship Cell

The Entrepreneurship Cell shares the common belief that for India to emerge as a world power, the youth has to break the shackles of prejudices and inertia that has kept them from starting up. Creating an entrepreneurial ecosystem to provide the platform for individuals with creative minds and ideas with potential for substantial business opportunities, is what we strive towards continually.

We enable smooth and efficient interaction between its principal components spanning students, faculty, working professionals, aspiring and existing entrepreneurs, mentors, angel investors and venture capitalists.

Contact: Vishesh Agarwal visheshagarwal@ecell.in

9717369148

Events Head, E-Cell

For more details, please visit https://www.ecell.in/2020/index.php



Student Wellness Center

After securing admission at the Institute and starting your stay here, you may feel that a lot of parameters around you are different. 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. Student Wellness Center provides counseling opportunities for individuals to learn to make better choices, improve interpersonal skills, develop confidence and increase educational effectiveness. Typical concerns you can seek counseling for are:

- Transition and change
- Uncertainty about values and goals
- Academic pressure
- Personal relationships with the special one and with friends
- Family concerns
- Issues of grief and loss
- Stress, depression and anxiety
- Lack of motivation; concentration difficulties

Location: Student Wellness Centre 3rd floor, above Academic section, Main building

Timing: Monday to Friday

Timing: 9.30-5.30

Contact: 022-2576-9070

Contact in Lockdown: Ms. Lavina Lewis

+91 9769340435 (11 am to 1 pm and 4 pm to 6 pm)

Website: http://www.iitb.ac.in/swc/en
For an appointment, visit the website.





Gender Cell

IIT Bombay's Gender Cell is an institutional body that works towards promoting equality, non-discrimination, and gender justice on the campus. It enquires into complaints of sexual harassment through its Internal Complaints Committee (GC-ICC).

The Gender Cell's Internal Complaints Committee enquires into complaints of sexual harassment. Sexual harassment includes any one or more of the following unwelcome acts or behavior:

- Physical contact and advances;
- 2. A demand or request for sexual favors;
- 3. Making sexually colored remarks;
- 4. Sending, displaying or showing of pornographic material in physical form or through any electronic media;
- 5. Any other unwelcome physical, verbal or non-verbal conduct of sexual nature, and
- 6. Any other acts or omissions that are of like nature to the instances above.

Gender Cell frequently organizes training sessions, gender sensitization workshops, and talks related to gender-based issues for faculty, staff, and students. They also organize painting competitions, film screenings, and other cultural events highlighting contributions by women or related to gender issues.

Who can contact Gender Cell for help?

Any student, faculty, staff member, or a service provider who is associated with IITB may contact the Gender Cell. Any woman who comes to IIT Bombay for work-related reasons may also contact the Gender Cell.

Visit the site at https://www.gendercell.iitb.ac.in/
You may write to the gender cell at gendercell@iitb.ac.inand they will get back to you within 48 hours.



Photo Gallery























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