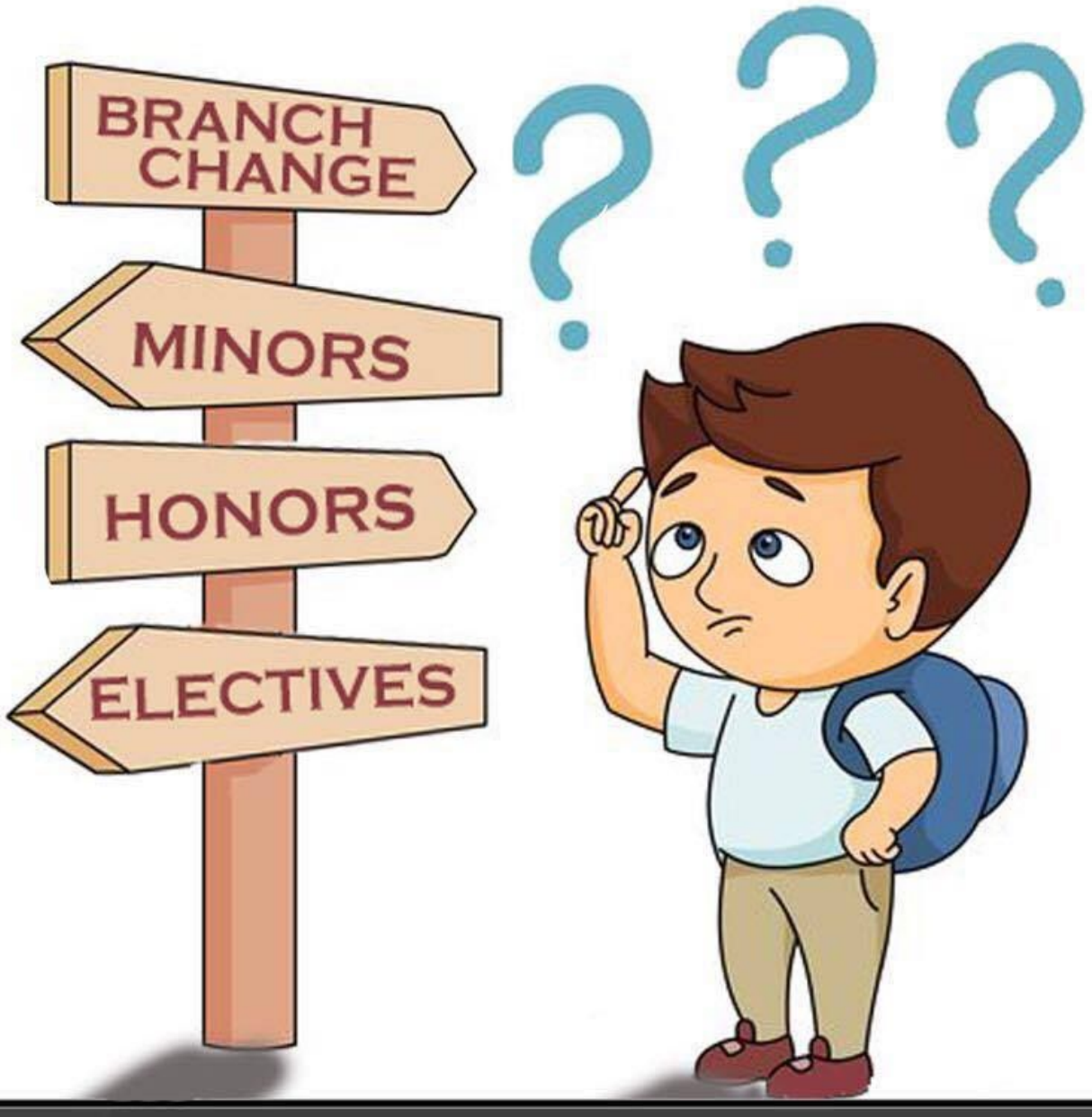
Student Support Services

THE SOPHOMORE BOOKLET

IIT BOMBAY



DISCLAIMER

The information written in the booklet is only meant to be a guideline to the sophomore students. It may happen that the information or rules mentioned in the booklet may face an amendment or change at any time. Please confirm the rules/details from competent authorities before making any decisions.

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A WORD FROM GSAA

Hello Dear Sophomores.

It is so pleasant to see you enter into your second year at IIT Bombay. Hope you had an amazing and a joyful ride through your first year at IITB and a wonderful summer break.

Your first year opened you to new arenas, a new culture and a new environment, things to which you would have become much habitual by now. Undoubtedly you would have realized the vast ocean of opportunities available to you, may it be curricular, co-curricular or extracurricular. And how immensely important it is to balance your academics with your extra currics here at IIT Bombay.

Now, coming into your second year, you will experience a big difference especially in terms of your academics. Your first year curriculum was very rigid, with you completing a defined set of courses. As a sophomore, you will be privileged with much more freedom. Not only do you have the flexibility of choosing your own courses from a vast pool of running courses, you can now delve into opportunities and facilities IITB is much renowned for. The foreign exchange program of the institute (perhaps the best in the country), URA, internship opportunities etc will help you broaden your horizons both academically and intellectually.

This booklet has been designed specifically to brief you of these topics and much more, so that you can have a perspective of what all is available and choose to orient yourselves accordingly. Please read through to learn more and make an informed decision on how you want to direct yourselves. Do remember that unlike your first year there are no ISMP mentors to guide you. So the onus to keeping yourselves well aware rests solely on you.

Lastly, enjoy the sophie year. It's going to be much different than your first year, that is guaranteed. Your new hostel life awaits you. Many of you must have already entered the new, and if I may say, the glamorous world of POR's. However, do not lose track of your academics for the semester is going to become challenging (and full of quizzes :P). Those who had a satisfactory first year academically, keep up the good

effort. Those who did not, believe me, it is not late to start.

Wish you all the very best!
Abhishek Khadiya
General Secretary Academic Affairs

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Completing the first year of studies where students study all the common courses, they move into a world of specialised learning where the semester curriculum is inclined towards department specific courses. While this transition occurs, a plethora of opportunities opens up for the now sophomore students. To name a few will be Semester Exchange, Internship and Undergraduate research but first let's take a look at the Registrations, which the sophomores face for the first time.

REGISTRATION

IIT Bombay follows a specialized credit based semester system, therefore registration at the beginning of each semester (lookout for dates in the Academic Calendar) is mandatory for you till you complete your programme. Without registration, any academic activity (course/seminar/project etc.) that you undergo will not be counted towards the requirements of your degree.

The total credits for the B.Tech. programme for example varies between 252-264 depending on the discipline. This approximately converts itself into about four theory courses and one or two laboratory courses or other activities like seminar,project, etc., every semester. Every student in that discipline undergoes this programme; this minimum content may not have much flexibility.

SEMESTER-WISE REGISTRATION

You can register for the courses you intend to take during a given semester on the basis of the programme for your discipline as given in your curriculum and as per the advice given by your Faculty Advisor. You can check a particular semester's curriculum on ASC in Academic --> All about

courses --> Bulletin Report section. **From third semester onwards, registration is dependent on the academic standing of the student.**

ACADEMIC STANDING

Depending on the overall academic performance of a student till date, especially in the two preceding registered regular semesters (autumn and spring), academic standing of the student is decided. It's categorized as follows:

CATEGORY I

A student who has no backlog courses (failed courses which have not been cleared subsequently or dropped courses), and has a CPI equal to or greater than 8.0, subject to having cleared the total number of credits prescribed up to that semester in his/her discipline.

CATEGORY II

A student who has registered for at least 18 credits in each of the two preceding regular registered semesters and not failed in any course in these two semesters.

CATEGORY III

A student who has not failed in more than one course in the two preceding regular registered semesters, subject to having earned at least 18 credits in each of the semesters.

CATEGORY IV

A student who has failed in more than one course in the two preceding regular registered semesters, but has earned at least 18 credits in each of the semesters.

CATEGORY V

A student who has not earned at least 18 credits in either one of the previous two regular registered semesters.

Only students of standing of Category I, II or III are permitted to register for Normal load. Category IV and Category V students should register for lower credits.

NORMAL LOAD | OVER LOAD

There is a credit limit prescribed for each academic standing, called the normal load. These credit limits are as following:

Category I: 52

Category II: 44

Category III: 44

Category IV: 36

Category V: 24

Any overload over and above this will have to be approved by the Faculty Advisor. Note: Every student however is required to register for a minimum of 18 credits in any semester. To clarify a bit more....

NORMAL LOAD FOR B.TECH AND INTEGRATED MSC.

• In the third semester and later, normal load for a B.Tech. or an Integrated M.Sc. student is defined as the prescribed load for the minimum requirement of the degree for that semester and credits for an additional course (6-8 credits), subject to total credit not exceeding 42 credits (44 credits in case the additional course is of 8 credits), and theory courses not exceeding 6.

• For example, the prescribed credits in semester 3 for a particular discipline may be 33. The normal load for that discipline in the semester is therefore 39-41. This load is calculated by adding the prescribed credits and credits for an additional course (6 or 8 credits). The normal loads for other semesters are to be computed along similar lines. Students with academic standing of Category I, II or III are permitted to take normal load.

• Those with excellent academic standing (Category I) can, in addition, overload themselves to the extent of one theory course equivalent (6 or 8 credits). That is, they can register for two courses in addition to the prescribed load, subject to total credit not exceeding 48 credits (50 credits in case the additional courses are of 8 credits), and theory courses not exceeding 6 in number.

• Students belonging to academic standing I and academic standing II therefore can reasonably aspire to utilize the additional learning opportunities to the fullest extent.

• Category III students should use the additional course permitted to clear the backlog courses if available in the semester. If backlog courses are not available, they can also use the opportunity for additional learning in that semester.

• Students belonging to Category IV and V can only register for reduced load.

NORMAL LOAD FOR DUAL DEGREE

• Dual Degree students are typically prescribed one theory course more than the B.Tech. students every semester towards the mandatory honors and dual degree requirements. Therefore the normal load for these students will be the prescribed load itself.

• So, Category II and III students from the Dual Degree cannot register for

courses towards additional learning.

• Students belonging to Category IV and V can only register for reduced loads.

• Category I students can take one course extra as an overload towards additional learning subject to total credit not exceeding 48 credits (50 credits in case the additional course is of 8 credits), and theory courses not exceeding 6.

REDUCED LOAD FOR ACADEMIC STANDING IV AND V STUDENTS

• B.Tech. and Int.M.Sc. students belonging to Academic Standing IV status can only register for a total of credits equivalent to the prescribed credits for that semester in her/his discipline. (This would normally mean four theory courses and one or two labs. etc.)

• Students belonging to Academic Standing V status can only register for those many credits which are at least one theory course equivalent less than the credits prescribed for that semester in her/his discipline, subject to a minimum of 18 credits. (This normally would mean three theory courses and one or two labs. etc.)

• Dual degree students of Category IV and Category V are advised to register for one and two theory courses respec- tively, less than their prescribed load and as advised by their faculty advisor.

• Students have to register for the backlog courses before registering for other courses, if those courses are available in that semester. However, Faculty Advisor can recommend exceptions to avoid cascading effects due to prerequisites for other courses.

ONLINE REGISTRATION PROCEDURE

• On-line registration process involves filling up of an online Course Registration Form (CRF) (asc.iitb.ac.in) stating the courses and project / seminar etc, that you propose to complete during that semester as per the prescribed curriculum.

• This should be done in consultation with the Faculty Advisor, who finally approves the registration.

• Unless this procedure is completed, your registration will be considered invalid.

• All students without backlogs will be able to do online registration. Students having outstanding dues to the institute or a hostel shall not be permitted to register.

MANUAL REGISTRATION PROCEDURE

• Students' having backlog course(s) is/are required to do manual registration by filling up the Course Registration Form (CRF) available in the Academic Office.

• The student should duly complete the CRF, stating the courses and project / seminar etc. that he/she proposes to complete during that semester as per the prescribed curriculum, in consultation with the Faculty Advisor, get it approved by him/her and then submit the same to the Academic Office within the stipulated date for registration.

Note: Students belonging to Category V and those with four or more backlogs should additionally submit, along with the course registration form, a revised schedule for the succeeding semesters stating how the backlog courses will be cleared, in consultation with the Faculty Advisor.

LATE REGISTRATION

Only for valid reasons, late registration may be permitted till the date specified in the Academic Calendar, on payment of a late registration fee.

Course Adjustment

A students has the freedom of deletion/addition of one more courses (after discussing and taking permission from the Fac-Ad) provided the total credits do not exceed the overload rule or fall below 18 credits by such adjustments. The last date for doing is about 2 weeks after the commencement of the semester.

Dropping of Courses

If a student finds his/her academic load too heavy, even after the date for course adjustment has passed, s/he may drop one or two courses out of the registered ones provided the minimum credits hold, after taking permission from the Fac-Ad. The last date for doing so is 10 days after the end of mid-semester examination.

REGISTRATION FOR ADDITIONAL COURSES

MINORS

Completing 30 credits in the area of your interest in another branch.

• An online interface is made available during preregistrations through external ASC (www.iitb.ac.in/asc) a few days before the commencement of the Academic Year to register for Minor courses.

• The minor courses will be allotted based on CPI (Or any other criteria prescribed by the Faculty Incharge, Prerequisites etc).

HONORS

Completing 24 credits in the area of your interest in your own branch.

• There is no specific registration for Honors.

• You can register for the Honor courses in 'Additional Courses/ Extra Courses' section during core registrations.

• One accumulates the required credits during the course of the programme, and the additional credential is awarded if the criteria set for them are met when the student graduates.

INSTITUTE ELECTIVES

Compulsory credits although the course is of your choice (there are some exceptions, however)

• Registration is done along with the Core registration at the start of the semester on the online interface.

• Students overloading their Semester are required to manually submit the Course Registration Form (CRF) approved by the Faculty Advisor, to the Academic Office

Note: 1XX courses, core dept. courses and many of the SOM, ENT and IDC dept. courses cannot be taken as insti electives. So, it's always better to ask the faculty in charge if the course you wish to register can be tagged as an insti elective or not.

HUMANITIES ELECTIVES

• Pre-registration needs to be done for the courses offered by HSS Dept as Humanities elective or as Institute Electives (Humanities Institute Elective) on the provided interface.

• Courses are allotted on the CPI basis (Or any other criteria prescribed by the Faculty Incharge)

• Once allotted (after pre registration), the HSS course will come on your registration interface on ASC, and you need to register it the way you register for core courses

Note: Humanities Elective and Humanities Institute Elective are not same.

DEPARTMENT ELECTIVES

Compulsory credits through a course of your choice from a pool of courses prescribed by your dept.

• Registration is done along with the Core Registration.

• In case of any discrepancy faculty advisor's approval is to be submitted to the academic office.

ADDITIONAL LEARNING COURSES (ALC)

Your course, your choice. Credits not counted towards degree completion. However, tagging involves ALC's as well – so you might want to take a look at the tagging rules.

• Registration done along with core registrations.

• Subject to approval by the Faculty in charge of the course and the Faculty advisor of the student.

AUDIT COURSES

Wanting just an exposure to a course, without the rigors of obtaining a good grade.

• Registrations are done along with core registrations.

• Restricted to a maximum of **two courses** in the entire period of the

programme.

• Only students in category I and II with CPI > 6.0 are permitted to 'Audit' a course during a regular semesters and summer term.

SIT THROUGH

"Chaaro taraf gyan bat raha hain, jahan se mile lappet lo"

If you are really interested in a particular course but are unable to register for the same due to some constraints (generally happens with popular minor courses). But you are still willing to sit in that course just for knowledge, without any privilege for credits or mention in transcript, then you can ask for the faculty in charge's permission to sit through that course.

WAITLIST

Waitlist for courses with limited seats:

• Academic office maintains an online WAIT LIST for courses which have an enrolment cap. (The maximum enrolment limit for courses may be viewed at ASC > Academic > All about Courses > Courses with Upper Cap post Login)

• Students registering for a course with registration limit are enrolled for the specific course on CPI basis through pre-registration and First Come First Served (FCFS) basis during normal registrations or wait listing. Therefore students registering early, stand a higher chance to get confirmed registration for popular courses.

• If a course enrolment has reached its maximum limit, students are allowed to register conditionally by maintaining a wait list. The 'available/Wait-list' status of courses can be seen at the registration page.

• If a student having confirmed registration DROPS OUT of a course, the vacated seat is offered to the first waitlisted student.

• An email (on GPO) is sent to the concerned student about the availability of the seat. This seat is blocked for the specific student for a period of 12 hours.

• Wait listed students are STRONGLY ADVISED to monitor their waitlist status, and opt out of the wait list and register for alternate courses, 12-24 hours prior to the last course ADD/DROP date.

Note: **SUPER-NUMERIC** (more than the specified number of seats) - seats are purely upon the discretion of the course-instructor. Such seats cannot be 'applied for' online. Students have to approach the course-instructor, obtain his approval on paper, and apply for such registrations through the manual route by submitting the permission letter obtained from the course-instructor at the academic office

FAST-TRACKING OF B.TECH DEGREE

Fast tracking of degrees is the completion of B.Tech degree in 3.5 or in exceptional cases 3 years when a student has completed the required coursework (credit requirements for that particular degree) and wishes to utilize the last semester(s) in some other activities like internship, competitive exam prep, entrepreneurial ventures, etc. Then the student can get a provisional degree and leave the Institute earlier, although the final degree will be awarded at the formal Convocation itself.

The students, who complete their coursework in three-and-a-half-year, will be eligible to sit for the placements in December and start working immediately too once they are placed.

It is worth noting that the accumulation of credits for fast tracking of your degree starts only from the beginning of your sophomore year

Role of Faculty Advisor:

As you may have understood by now, the Faculty Advisor has a very important role to play from second year onwards. While the role of Fac-Ad is limited to a few interactions and providing academic guidance to academically weaker students during the first year, the second year brings into picture a lot of scenarios where you need to have a proper consultation with your respective Fac-Ad regarding registration, course adjustment/dropping, additional courses, overloading and other academic opportunities available to you as a student (besides taking their official permission at various times).

REVIEWS OF SOME MINORS:

Deciding which minor to take is always a confusing task - students often find themselves in a dilemma as to whether they should go for the "so-called-popular" minors or something based on their interest.
To help ease out the confusion, here're some reviews on some specific minors by the seniors who took them:

Mathematics Minor - Sanat Anand

The Mathematics minor contains 5 courses out of which 4 courses are compulsory to complete the minor. It does not really have an extensive application but some of the people who like MA105 and MA108 and who want to develop a taste of rigorous mathematics will surely enjoy this. It will help you develop an intuition in abstract mathematics. Maths minor is about pure mathematics which contains things like real analysis, complex analysis and algebra. The courses are heavy and it really takes up a lot of effort, and one will have to be enthusiastic in order to do match up with the pace of the course.

Statistics Minor - Sivaprasad Sudhir

One would think Statistics as a tool which would help them in data analysis - like, if you go to a finance company then given the data, you will learn how to make certain conclusions based on the data and stuff like that. But statistics minor is way different than that. The courses teach you how to build up machinery and a lot of tools to actually analyse data involving a lot of math. A lot of students dropped statistics minors after the first course just because it was not what they thought it would be and contained some heavy level mathematics. Also it took a lot of time as they were 8 credit courses along with tutorials including a lab course. So it is actually a minor course in which

one has to devote a lot of time for a decent grade. Here, the number of students are only 20 but if you can convince the professors about your interest, he will easily allow you to take up the course.

CS Minor - Sivaprasad Sudhir

CS minor gives overview of various areas in CS. It is related to algorithm, logic, operating systems and networking . All of the courses are 6-credit courses. Out of the 5 courses you have to do 4 of them have to be related to the above topics. Core courses are not very easy to take if you are not CSE students but almost all the professors who are taking institute electives or honors courses are willing to take other department students. Most of the courses run in cs have a lab equivalent which are really necessary for nice understanding of the course which involve pretty heavy assignments.

IDC Minor - Ritwick Chaudhry

I chose this minor because I had a huge interest in animation and I really like it and this being a minor course won't give you much pains because you do not have to care about the grades much it is more about your interest. I could have taken up the statistics minors according the trend that is followed considering your CPI but I don't think that CPI should be a parameter which you should have in mind. This minor is completely chill and a lot of the courses have no endsems or midsems. All you have are the projects and they are very interesting and what more, they even get broadcasted in places, get implemented in real life scenarios. So overall I'd say that this minor is very good.

Mechanical Engg. Minor - Yashraj Gurumukhi

It consists of six courses from the core mechanical courses itself. The basic courses include fluid dynamics, solid dynamics, thermodynamics, manufacturing processes 1, manufacturing processes 2, kinematics and dynamics of machines. These are pretty popular courses and cover the basics you need for mech and also these courses do not go much into details, they just provide an overview. It's a pretty interesting field and a mechanical minor makes a lot of sense if you are really interested in robotics as well.

Electrical Engg. Minor - Vishnu Nair

It gives an outlook as to how electronic devices are made, their working, how to make useful components using them, etc. It also deals with signal processing, circuit physics, microelectronics, VLSI, etc. You need to have some deal of enthu to complete this minor but if you're interested in Electronics and Electrical engg in general, doing this minor is a great value addition.

Physics minor - Vishnu Nair

It is the extension to the things which you have learnt till now i.e. quantum mechanics and statistics, and electrodynamics. Students would have a rough idea about what all lies in this minor on the basis of what they studies in PH 107 and 108. This minor delves into more vibrant courses than what you studied in your freshmen year.

Biosciences minor - Archit Bhatnagar

The first course of the Bio minor is basically about its introduction. So if one wants to see whether they are really interested in biology, Bio minor starts from the very basic and gives an outlook of what all will be covered in this minor. It's not all about memorising stuff. It includes many practical

applications such as the the study of thermodynamics applied in biology. It is mostly based on Chemistry. You should have a liking for inorganic chemistry to complete this minor. It also covers interesting biomedical devices, sensors, etc which relates to bioengineering on whole.

BRANCH CHANGE - TO DO OR NOT TO DO

Branch Change - an opportunity given to the to-be-sophomores is a very important decision in any prospective Branch Change aspirant's life. It has the power to completely change the course of their career and affects numerous other aspects as well. Hence, here are some testimonials by students who changed their branch, and by some who didn't even when they could. These would help you in retrospecting the consequences of the result and how the coming experience is going to be like.

- **Ritwick Chaudhry (EE Dual to CSE B.Tech)**

"My decision to Branch-Change from Electrical Dual to Computer Science was not something I had planned right from the start. I started coding early in the Autumn semester and developed a huge crush on it over the first two sems. I didn't study just because I wanted to BC, but later on, near the end semester exams, I realised that if I'd step on the gas, then I could do it.

For the freshmen, I have some things that I would love to share.

Branch-Change might appear to be a "Leap of Faith" but it is actually a very important decision that needs to be taken after a lot of thinking and taking into consideration all the factors. A word of caution to those interested in BC-ing to CS – if you are a person who wants to be the best in a room, Computer Science is probably going to give you a hard time. But yes, it is a branch which teaches you a lot of lessons and all in all, I feel it was a good decision to change to CSE."

- **Rishi Vanukuru (Civil Sophie)**

"Well to begin with I probably wanted to make the switch to a "better" branch early on in my first semester. I had notions of what each branch offered (albeit very coloured and incomplete ones), and I was of the opinion that I'd be doing what I was interested in, equally well in another one. And back then, reading pieces like this, of people who wanted to change their branch initially but didn't and then went on to say that it was the best thing that happened to them- I always thought that, that was just everyone trying to see the bright side of life. And now I'm here writing this. And yes, I'm glad I didn't switch.

Hypocrite, you may say. But by the end of freshman year, I realised that what I was really interested in didn't fit any branch description. So staying where I was would give me the time to pursue my real interests to a much larger degree- be it spending more time on my Design minor or learning and making music. I really was averse to leaving the friends I'd made in my branch too. And now, a year later, looking around and seeing how things panned out for everyone, I don't think I could have asked for much better."

● Basuhi Ravi (Aero B.Tech to EP B.Tech)

"For a lot of us, JEE-AIR based branch allocation is a shot in the dark. Needless to say, mine missed its mark. I knew I was interested in Physics before, it certainly held more allure than anything else and I think that was reason enough to try again, this time through Change of Branch. And I got it.

Reflecting over my decision a year later, it seems like a very natural thing to have done. Now I love almost all my courses and find them interesting and worth studying for, which I believe justifies any decision pertaining to Academics on my part. Earlier last semester, in a rare moment of acknowledgment of my Change of Branch, I used to get asked why I didn't

choose B.Tech Electrical Engineering, when I could have: to which my reply was usually a noncommittal 'Why would I want to?' and judging from a couple of the five odd Electrical courses EP students have to do to justify the prefix of 'Engineering', my response hasn't changed much over the past two semesters.
Long story short, Branch-Change needn't be another round of shooting in the dark- it helps if you enter a branch you actually would love to be a part of."

● Harshit Sahay (MEMS Thirdie)

"I was never very enthusiastic about changing my branch, primarily because I wanted it to be a decision motivated by genuine interest rather than a CPI-based trade-off. While I managed to get a decent CPI that could have allowed me to switch to a few 'higher' (going by JEE cut-offs) branches, I decided to remain in Meta. The reason was my inclination to explore more that the Insti had to offer, since I was yet to figure out what I wanted to do both in and beyond Insti.
In hindsight, this has turned out to be a good decision. Back at the time of making the decision, I wanted to keep my options open between a non-core profile or a research profile, and staying in Meta helped me do so. I was able to improve my CPI significantly, be involved in extracurricular activities, take up organizational roles and also be involved in research- all of which helped me get a more clear picture of what I want. I realised that I was motivated to study Biology- which meant that I needed to take up several extra courses and spend time on my own figuring things out, and it was also crucial to be able to manage my UG curriculum with it. The comparatively lesser load of Meta helped me immensely in this regard."

● Aakriti Varshney (Aero B.Tech to Mech B.Tech)

"Having followed the herd in the AIR-based choosing of a branch, a change-of-branch was always lurking in the back of my mind in the first year. I was one of those people who did not have a very clear inclination towards a particular branch though, so when the time came to fill the Branch-Change form, talking to seniors from all prospective branches helped me decide.

I guess you could say I was lucky in ending up in Mechanical since I've found a love for most of the courses we have. I'm also realising now that I did have a preference for all things Mechanical over other branches after all. Apart from the curriculum, the general aura and the perspective of people around you towards academic as well as non-academic affairs affects you a lot. That is something I'm grateful to have found in Mechanical. Eventually, to me, it didn't matter that I didn't have a definite liking for a certain branch. It turned out well for me anyway."

● Raunaq Bhirangi (Mech Sophie)

"Choosing a branch was not too hard for me. I had always been enthu for Elec or Mech Engg. And when I saw I could get IITB Mech with my rank, it was a straightforward choice.

When I came in I hadn't thought about a Branch-Change. The thought hadn't even crossed my mind. Preferred branch, preferred institute, I was set. CS 101, though (Yes the same CS 101 which people accuse of killing any enthu for programming they might have had), nurtured in me an inclination towards CSE. This increased with time, and by the end of my first year I was considering CSE as a Branch-Change option.

After giving it sufficient thought however, I felt Computer Science was more of a hobby of sorts, and not something I'd like to pursue as a career, and hence I did not fill the Branch-Change form. A year down the line, I have absolutely no regrets about not changing my branch. I have thoroughly enjoyed the courses in Mech, and a minor in CSE has reaffirmed my ideas of it being more of a hobby and less of a career option."

Source: Insight article on "Branch Change - A Leap of Faith" by Aakriti Varshney, Chirag Chadha, Manasvita Vashisth, Niranjan Thakurdesai, Rishabh Israni, Sagar Sheth
Courtesy :
Shreerang Javadekar, Shreeyesh Menon
Chief Editors
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EQUIVALENT COURSES FOR CLEARING BACKLOGS

For the purpose of clearing backlogs, a list of equivalent courses which can be done has been given below:

Backlog	Equivalent Course
ME 346- Heat Transfer II	CL 246- Heat Transfer
MM 152- Materials & technology	CL 346- Material Science
CE 201- Solid Mechanics	CL 231- Solid Mechanics
CE 201- Solid Mechanics	ME 201- Solid Mechanics
CE 205- Fluid Mechanics	ME 203- Fluid Mechanics
CE 221-Solid Mechanics	ME 201- Solid Mechanics
AE 460-Heat Transfer - Aerospace Applications	ME 346, Heat Transfer II
AE 102-Data Analysis and Interpretation	MM 217-Data Analysis and Interpretation
CL 202-Introduction to Data Analysis	EP 219-Data Analysis and Interpretation
AE 102-Data Analysis and Interpretation	ME 102-Data Analysis and Interpretation
AE 209-Solid Mechanics	ME 201-Solid Mechanics
AE 102-Data Analysis and Interpretation	CS 215-Data Analysis and Interpretation
EN 206-Power Electronics and Machine	EE 222-Electrical Machines and Power Electronics

AE 308-Control Theory	EE 302-Control Systems
ME 346-Heat Transfer II	AE 460-Heat Transfer - Aerospace Applications
MM 203-Mechanics of Materials	EN 211-Mechanics of Materials
EN 201-Basic Electrical Engineering	EE 111-Introduction to Electrical Systems
MA 214-Introduction to Numerical Analysis	CL 244-Introduction to Numerical Analysis
CL 417- Process control [8 credits]	MM 451 [6 credits]- Instrumentation and Process Control Theory

The statistics courses of various departments are: AE 102, CS 215, EE 223, EP 219, ME 102, EN 207, MM 217, and CL 202 (8 credits).

SOME USEFUL NOTES:

- ➔ If you have successfully done the pre registration of a course (Minors/ HSS Electives),then at the time of registration the allotted pre registered course comes under the heading “Pre Registered Courses” on your asc interface, and you need not register for the course again under any other heading say Institute elective, Non Credit Course, Additional course etc.
- ➔ False backlogs - If you are being shown a false backlog, then visit Academic Office and get it resolved (fastest method).
- ➔ Slot clash - Please ask your DGSec to get it changed through the Time Table Coordinator.
- ➔ Missed Pre-registration - Register for the course online and get the override form signed by the course instructor, and submit it to Academic Office.
- ➔ Course not listed - If you get a message on the interface saying that the course is not running this semester even though it is, please check the division (‘M’,’S1’, etc.) in the list of running courses and enter the correct division on the interface while registering for it.
- ➔ Entering the division as ‘M’ will not change your tag to minor (All about courses --> Running Courses) e.g. CE 310 - M, MM 474 - M, CS 101 - D1/D2/D3/D4, etc.
- ➔ Pre-requisites pains - If there are errors, please send a mail to asc.help@iitb.ac.in with a screenshot, if the grade for the pre-requisite course is not out or if you want to take a course without clearing the pre-requisite, please take permission from the course instructor on an application and submit it to Academic Office.

For further information on registrations and related topics you can visit

UG Acads wiki.

BTP | MSP | DDP

In this section, we have tried to give you an overview of final year projects and some related details about them. (The actual guidelines may vary from dept. to dept.). The details provided in this section may not seem relevant to you right now but you may want to revisit these before your project selection.

BTP I

1. Faculty advisors coordinates the BTP activity. The students have to inform their faculty advisor about the application after the permissible 'drop-add' period is over.

2. Faculty advisor then announces a date before which the examination should be completed which will be no later than the last day of the end-semester exam. This announcement is generally made during the mid-sem week. The activity of scheduling the date, time and selection of examiners shall be the responsibility of the guide of the stu- dent.

3. At the end of the conduct of the examination the grade awarded are submitted to the faculty advisor who announced the examination.

4. The faculty advisor through the HOD sends the grades to the academic office. The students who do not make presentations will automatically be given 'II'.

5. In the event that a student does not make the presentation by the scheduled date whatever may be the reason for this, the student gets an automatic extension till the last day of winter break. The highest grade that student can now get is 'BC'.

6. The option of dropping the BTP is given to the student till two weeks from the commencement of classes for the 'January (spring) semester' with the permission of the guide.

BTP II

1. Within one week from the beginning of the classes for the 'January (spring)' semester the student has to inform the concerned faculty advisor that registration has been done for this.

2. The faculty advisor may give 'FR' if item 1 has not been done. The faculty advisor again announces the date before which the final examination must be completed which will be no later than the last day of the end-semester exam.

3. Same as steps 3, 4 of BTP I.

4. In the event that the student does not make the presentation by the scheduled date, whatever may be the reason for this, the student gets an automatic extension of 30 days from the last day of the end-semester examination. The highest grade that the student can now get is 'BC'.

5. In the event that the student does not make the presentation even after the 30 days extension in summer, whatever may be the reason for this, the student gets an automatic extension for another 30 days. The highest grade that the student can now get is 'DD'.

6. After the 60 days extension the student is automatically given the FR grade.

7. Exceptions are entertained by DUGC only for medical reasons.

Project Stage I is primarily for literature survey. Written report should include a comprehensive survey of literature, objectives of the project and proposed methodology. Results and discussion, if any, also have to

be included.

Project Stage II is primarily for results that you got as part of your project work. Written report should include only relevant/pertinent literature and only in brief, objectives of the project and Materials & methods, Results and discussion.

DDP (SIMILAR CASE FOR MSP)

All the faculties of the dept. submit at least two topics. A brief statement on scope of work is recommended. This is meant to help students with the selection. Students are also encouraged to discuss with individual faculty members and know more about the topics.

All faculty members are allotted at least 1 DD student and at most 2 DD students. It is possible that some faculty members will be marked as those who must be allotted exactly 2 DD students each. This information will be shared after allotment of MTP topics which is scheduled before the DDP allotment.

The Allotment is done based on CPI Rank of the eligible Students in the batch. The students are allowed to discuss among themselves and arrive at a consensus. However, this will have to be demonstrated during the formal allotment process scheduled on the first day of instruction.

Evaluation:

1) Evaluation of all the students (of a dept.) is done by a single committee. Guides may suggest inclusion of an additional examiner for evaluation of his/her student, if they feel so.

2) Grading: (marks out of 10) >= 9, AA; >= 8, AB; >= 7, BB; >= 6, BC, etc. 3) Date of oral presentation: as declared in the Time Table / Academic Calendar; roll-number-wise

4) Duration: 15 min presentation, 10 min discussion. Please rehearse, if necessary, but ensure that you complete your presentation within the allocated time.

5) Evaluation scheme: 20% write-up editorial aspect, 20% write-up scientific content, 30% oral presentation, 30% discussion.

Some write-up tips:

1) A Write-up generally contains the following: Title page, letter of acceptance by guide(s), contents, acknowledgements, list of abbreviations, introduction, methods, results and discussion, conclusions, work proposed for Stage II, appendix, references. Results and discussion may be combined into a single section, if necessary.

Very Imp: Write up should be your own and should not be plagiarized from any source.

2) Introduction will include literature survey and objectives of the work. The latter can be a separate section, if so desired.

3) Tables should be numbered sequentially (i.e., in the order in which they appear in the text) and should have a short, descriptive title; footnotes may be included, where necessary. Every Table should have a reference in the text at least once (and vice versa).

4) Figures should also be numbered sequentially and every figure should have an appropriate legend. Figures should be your own; if taking from published literature or from internet, include the citation or the complete URL.

5) While citing references in the text, follow this style:

Single author publication: author's last name, year (do not include initials). Two author publication: last name & last name, year (without

initials). Three or more author publication: first author's last name et al., year.

6) References: Should be listed in alphabetical order. Every reference cited in the text should be in the reference list (and vice versa). The title of the article, the volume number and first and last pages should be cited.

7) Journal titles should be abbreviated, e.g. Sanger, F. & Coulson, A. R. (1975). A rapid method for determining sequences in DNA by the primed synthesis with DNA polymerase. J. Mol. Biol. 94, 441-448.
Articles in books should include the title of the article, the name of the book, editor(s), edition number, first and last page numbers, the name and the location of the publisher; e.g. Hanks, S. K. & Hunter, T. (1995). The eukaryotic protein kinase superfamily. In The Protein Kinase FactsBook: Protein-Serine Kinases (Hardie, G. & Hanks, S., eds), pp. 747, Academic Press, London.

Utmost care should be taken to verify the accuracy of citation of references and sources of figures and tables. Be aware that reproducing text or tables or figures without permission is legally prohibited.

JOURNEY REVIEWS:

Some bit of advice from someone experienced always helps, so we asked a few of your seniors about their journey and a few things that they'd like to tell you...

★ Pulkit Tandon

Embarking on my JEE journey, I always wanted to join IITB and hence needless to say I was very excited to join EE IITB in 2012 majorly based on diverse opportunities that an EE graduate has. Being serious about academics and having studied in Kota, I expected IITB to be a similar cut-throat place but I very soon realized that the rule of the jungle is different here. Though the word 'RG' is very common here, I found that most the students, be it batchmates or seniors, are more than happy to help. Not only this, the major difference which I felt was in the method of teaching. The spoon-feeding was finally over for good and the emphasis was instead on 'how to teach yourself'. I very soon realized that to tame the system, my learning methodologies have to change.

My mentor probably had the best golden words in this regard – "Attendance is the key". Probably I too have laughed at this like you if I wasn't a naïve freshman at that time but time and again this single mantra has kept my academics on line. Trust me, just attending the class is sufficient (not necessary :P) to do sufficiently well in a course (doesn't mean you have to keep your eyes, ears or even mind on while doing this!). Due to lack of space, I will not go on justifying this point but I urge you to take a leap of faith –

especially in your sophomore year when people generally lose enthusiasm in academics.

After freshman years, having tried my hand in lot of extra-curricular activities (where I failed miserably but nonetheless tried!), I mostly kept my focus to academics and research. IITB was a harsh teacher but nonetheless the tough courses, the excruciating labs and the tedious assignments all did their job (Well, depends on how you look at their job!), I may not have understood all the concepts let alone recalling all of them (or even any of them) while writing this piece but they taught me how to work hard and how to get the job done. A wise senior once said to me that you become an engineer at the end of third year; I think she was right, because nobody faces the same problem again in the field but what IITB academics had taught me was to teach myself and how to approach to a solution!

IITB is probably the most flexible of all IITs, where you can choose your path from a multitude of options quite easily. I always liked the academic setting for the flexibility it provides and hence I went for university interns at the end of 1st and 3rd year. I took up a research project under Prof. Rajendran at the end of sophomore year and stayed back in the institute. I couldn't do much research in the summers and ended up wasting most of the time regretting my decision to stay back but in hindsight I think it was one of my wisest decision. I worked on the project for 2 years and learnt to 'Never Give up!' Even though I was confused whether to go for a job or further studies even at the end of 3rd year, my intern at EPFL after junior year kind of sealed the deal. I loved my time there and decided that I should apply to universities (or 'app' as it is fondly called). Though pages can be written on advising how to help, I would particularly like to bring to notice 2 points – first apping requires 3 letters of recommendation (LoR) and a strong LoR is a must for a good app => start working with a professor early and second, one

easy way to distinguish yourself from your peers who are also apping to same places is (naah, it's not grades) publication!
Though primarily involved in acad scene at IIT, I loved spending time outside my room- from playing badminton to learning how to drum. Diverse courses available in EE department at IITB gave me required exposure to choose an area which I like. I had a wonderful time at IITB and I think it prepared me for the hard parts of life, much more than the cakewalks (but honestly, who needs guidance for them :P..)

★ Deep Shah

First of all, congratulations to all you sophomores for successfully completing one revolution around the Sun, while in IIT Bombay. Hope you all had a great first year, academically as well as trying to explore the wide variety of extracurricular activities that this institute has to offer you. I am also confident most of you might be feeling relieved to have finally gotten rid of the Freshie tag. It sure is a wonderful feeling when you realize that you have now stepped up on the ladder and will soon be immediate seniors to a fresh batch of young, enthusiastic freshmen.
I'll start with a short introduction about myself. I am Deep Shah, a final-year Dual Degree student in Metallurgical Engineering and Materials Science department. I was majorly involved with the cultural activities here through the four years.
In my first year, I was introduced to a lot of activities by orientations/clubs activities/seniors which I found interesting and enjoyed being a part of them. I also tried many activities for the very first time in my life. To be honest, I was never really inclined towards technical stuff, so much so that I

did not even participate in XLR8, which generally most freshmen enjoy doing as it is their first exposure to technical side of IIT Bombay. I was not involved with sports either, and was a part of the NSS. But coming to cultural activities, I always found them fascinating and something which I would love to be a part of. I was actively involved in the Lit Club and liked dancing as a hobby, regularly participating in all the dance events. I also liked performing in dramatics events and the PAF.

During my stay at IIT Bombay, I spent a considerable amount of time and effort working as a part of the institute's annual cultural festival – Mood Indigo, first as a Marketing Core Group member and then as the Overall Coordinator. The former gave me an opportunity to work with professionals in high ranking firms, develop on skills like presentations and strategic negotiations, and also an early exposure to corporate life. During the tenure, I enhanced my pressure handling and time management abilities while expanding my communication skills during my interaction with sponsors. As the Overall Coordinator, I had the responsibility of formulating a vision for the fest while managing a team of 22 talented individuals and collaborating with the institute authorities. While motivating my team to bring out the best in them, I gained substantial experience of working with people and honed my team leadership skills.

While academics at IIT Bombay are regarded very highly world over, what really distinguishes our institute is its ability to provide the students opportunities for all-round development. And this is possible because IIT Bombay works on a very solid peer-to-peer system, where students with similar interests can meet and further develop cohesively. While academics and a good academic standing is the single most important thing for a student here and later, the opportunity one gets to develop himself/herself in an extracurricular field of interest, is immense. Be it sports, technical,

cultural, social service or even fashion, you will always find people sharing common interests and enthusiastic to do something for the same. Now I was told to advise you guys something towards the end of this address. Not really sure if am in a place to "advise" you something, but I'd like to share a few points which I feel can help a sophomore in smooth transitioning and reap the better fruits ahead.

1. **Academics**

   No matter what one says, academics will be the most important thing that will happen to you while in IIT Bombay. It is that one thing which stays with you wherever you go after graduation. While it is very helpful if you excel in extracurricular activities as well, but neglecting academics for them is out of option.

2. **It is never too late**

   There is this general belief that once you've scored very less in the first year, there is no chance for you to cope up. I beg to differ. It is very much possible if you are ready to streamline your efforts towards the academics. Those with good CPI need to maintain it throughout, those with not, this is the time (sophomore year) when you can take control of things before you're unable to make much difference later. I won't say much, but will only share a screenshot of one of my friend's asc. Hope you get my point.

Sem	Spi	Cpi	
]	8.67	7.22	27.0
ın	8.15	7.05	26.0
]	7.69	6.91	44.0
ın	7.59	6.7	31.5
]	7.32	6.48	31.0
ın	7.2	6.21	30.0
]	6.0	5.76	33.0
ın	5.53	5.53	34.0

3. **Jack of all trades, Master of One**
   The freshman year is generally believed to be the one in which a student explores various fields of interest. One gets to do what he/she likes or what they would want to try out for a first. But IIT Bombay being a host to practically any genre you can think of, it might become difficult for you to keep doing everything. What I'd recommend is you focus on a couple of activities that you like the most, dig deeper into them and enjoy doing them to the fullest. You'd realize it is better than doing a lot of activities at the same time.
4. **For a First**
   Try out a new activity you always wanted to, but never got a chance. While you are focusing on excelling at something you already like, in the point above, it is also good to give something new a try. It again can be anything – learning a foreign language, picking up a sport, giving a shot to a new art form or maybe something you'd want to do outside your comfort zone.
5. **Interact with Seniors**
   This is one aspect which, I strongly believe, is seeing a diluting effect over the years. Mainly due to the separate hostel system in place in your freshman year. Once into the sophomore year, you'll realize much more how the IITB community thrives on a peer-to-peer network. The seniors here have seen a couple of years more than you guys have, and it surely adds to their experience and maturity.
   Be it academics or any other extracurricular genre, you will always find seniors who are very talented and already excelling in what they do. It is always a plus if you can interact with them whenever you need help, and try to learn a few tricks of the trade from them. Even the seniors would love to help you if you approach them genuinely. But that is if

you do approach them. Build a strong network of people who share interests with you and good relations with them will help you big time, short-term and long-term.

6. **Try to avoid the rat race**

   There is not an iota of doubt that the system can be very competitive at times. From the second year itself, you might see people around you preparing for something which is about to come a couple of years later. A very common practice is doing any kind of internship, just because others are doing and you might miss out on them. But you should realize that most others are doing so just because even they saw someone else doing it. And this domino effect slowly sets off the rat race.

   At least have a thorough look at what the internship has to offer you. If it is of substantial learning value, then it might be understandable. But on the contrary, most sophomores end up doing some sort of internship, in some random company which has very less to offer in terms of learning. It is better to do things you'd like, as you will again get a chance to do internship at the end of next year, when you have much more to offer to the company you'd be working for and thereby, even the learning returns for you would be higher. If you still persist on doing an internship, I'd rather suggest you try for some university intern abroad. The global exposure would be worth it and will be a totally different dimension for you.

7. **The One before the Last One**

   Do what you feel you should be doing. There will definitely be times where you'd be confused as to what to do now, which option to select, what path to take ahead and so on. And to add to it, there will be suggestions and fundae from people around you. 100 different people,

100 different opinions. But what really matters is what you think is right. What actually makes you happy? Just do that. Even if it turns out to be the wrong decision, work hard to make it the right one. Everything else will take care of itself.

8. **Don't leave any regrets behind**
   This is one formula I have personally found very helpful in deciding whether I should be doing something or not. I just ask this to myself – later in my life, would I be regretting not doing this? Would I cry over the fact that I had an opportunity, but couldn't capitalize on it? If the answer is a very strong Yes, just go for it. There is no point having regrets later of not even trying. The worst that can happen to you is you fail. Fail badly. Very badly. Fair enough. At least you would know that you tried and failed. And would not end up regretting wondering what if I had tried?

This is most of what I could think of, at this very moment. But feel free in case you need any kind of help or if you want to discuss anything. Would love to help. Cheers and good luck with the second season!

★ Nihal Singh

I majorly participated in Athletics (running events). I was equally enthusiastic about dancing - I participated in Freshiezza but later couldn't continue due to my commitments for Athletics practice. I also joined the skating club in my first year and continued skating till the end of my sophomore year.

From 3rd year onwards it was just Athletics. In my 4th year I became the overall coordinator of 50th Inter-IIT Sports Meet and got involved in

Organizational work as well. And later in my final year I became the General Secretary of Sports Affairs.

IIT Bombay gives you enough opportunities in any field you are interested in. For sports you have Inter-IIT Sports Meet, which is a great platform for you to showcase your talents, first by practicing for it and later performing in the sports meet.

I never used to participate in Athletics events before coming to IIT. It's actually the concept of mandatory NSO/NSS/NCC here in IITs which pushed me to pursue sports from the beginning. Since I was regular to Athletics practice, I somehow managed to crack Inter-IIT in my first year. Since then I have been attached to athletics throughout my stay and have secured 4 golds, 2 silver and 1 bronze medals in Inter-IIT Sports. It's the opportunities, facilities and coaching in IITB which transformed me from a beginner to the Best Athlete across 16 IITs. It is this attachment with sports and Inter-IIT which motivated me to work for 50th Inter-IIT Sports and thus I took the opportunity and became the Overall Coordinator.

Being the Overall Coordinator I got good grasp of sports organization and I loved the work I did, so I contested for GS Sports the following year and won the election.

To summarize how IIT groomed me - sports here has taught me determination, discipline and made me more confident about myself. If you're a sportsperson of an individual game, you'll understand it better. On the other hand, the organizational roles made me hardworking, enhanced my communication & leadership skills and improved my interpersonal relations.

If I have to describe my life here at IITB, it was great. You make great friends throughout your journey. Today, all the people who are close to me wouldn't

be here if I weren't associated with sports. You learn a lot being involved in such activities and it grooms you as a person. I can see how it has transformed me completely. These were the best 5 years of my life.
For the advice part, I would ask you all to don't restrict yourself, just do things you wish to do and everything will be fine. IIT Bombay gives you enough support both in curricular and extracurricular activities. Don't worry about your academics; if you are very much interested in some extracurricular activities, you will be able to manage it and could excel in both.
I myself did pretty good in academics as well, I received the Undergraduate research award amidst all my commitments. So just don't restrict yourself to one particular aspect (curricular or extracurricular)
Talking about how this part of your life is important for your future, let me start by talking about the placements. So, two things are important for placements, your skills and your accomplishments. The accomplishments and awards you can directly put it in your resume. Skills can be further divided in two parts, one are those skills which you can display through your resume and other skills are those which will help you crack the interview. So my resume helped me to get shortlisted directly for interview for several companies from Day1-Day3. And my accomplishments and being hard working as what finally got me the job. But what matters more is how you transform your personality which helps you in several aspects in future.

★ Karan Gupta

I have always believed in maintaining a good balance between both academics and sports and IIT Bombay exposed me to the best of both. Coping up with the academic pressure was never a problem which gave me time to explore other areas of my interest. I eventually developed interest in swimming, thanks to our excellent coach, Dr Reddy. I thus spent the remaining four years of my life at IIT trying to improve my performance and contributing towards Aquatics as a sport. In my final year, I was also the head of Academic mentorship programme in the Department.

IIT Bombay has played a very instrumental role in grooming me. I did not qualify for the Inter IIT Team in the first year and went on to become the team captain in the final year. I got an opportunity to explore courses from completely different departments and an outstanding foreign research exposure. The professors here are student friendly and always willing to extend help whenever asked for. Undoubtedly I could have never made it to such an esteemed university for masters had it not been for the way my alma mater moulded me.

My advice to you would be to explore the wide sea of opportunities that IIT-B has to offer and pursue one till excellence. This way you will be able to bring out the best in whatever you do. However everything said and done, never compromise with your academic performance as it paves way for a comfortable future.