



Student Handbook  
2020-2021

# Contents

Topic	Page
MESSAGE FROM THE HOD	2
MESSAGE FROM THE FACULTY ADVISORS	3
MESSAGE FROM THE ISCP TEAM	4
MESSAGE FROM THE DEPARTMENT COORDINATORS (ISCP)	5
MESSAGE FROM PG ACADEMIC COUNCIL	6
ABOUT THE INSTITUTE	7
ABOUT THE DEPARTMENT	8
FACULTY @ IEOR	9
IEOR & INDUSTRY	11
LABORATORIES AND RESEARCH FACILITIES	12
IMPORTANT WEBSITES	13
TO HELP US ALL	19
COURSE STRUCTURE & GRADING POLICY	20
PLACEMENT STATISTICS	22
PROJECTS OF STUDENTS	23
EXTRACURRICULARS OF STUDENTS	29
ACTIVITIES IN THE DEPARTMENT	32
IEOR ISCP TEAM 2020-2021	34
TEAMS / ASSOCIATIONS OF IEOR	35
YOUR SENIORS	36

**Disclaimer:** Though the Institute Student Companion Program (ISCP) has taken care in compiling the handbook, neither the council nor the Institute can be held responsible for errors/inadequacies that may have inadvertently crept 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 to, it is with his or her own responsibility that it is put to use, with cross verification if need be.

# MESSAGE FROM THE HOD



Dear students:

I am delighted to welcome each of you to Industrial Engineering and Operations Research (IEOR) at IIT Bombay for your post-graduate studies. The field of IE & OR may be quite new to most of you, and you will be eager to know more.

Let me start there. IE & OR, as a field, studies complex human systems (such as supply chain, transport, healthcare, manufacturing, agriculture, financial services, defense etc.) and the formal structures therein (planning, timetabling, scheduling, queueing, etc), using structured rigorous methods (optimisation, simulation, statistics, probability, game theory, machine learning, etc.). Your post-graduate studies curriculum at IEOR has been carefully designed to provide you with the right mix of tools, techniques, theory and applications. You will be doing compulsory and elective courses to enhance your understanding of the field. The curriculum also involves a significant research component where you will get a chance to do some significant work, under the guidance of faculty experts. All faculty and staff of IEOR are eagerly looking forward to working with you, and providing you with an enriching education. Your experience here will be what you make of it, limited only by the limits you put on yourself.

This new academic year will bring in new challenges, especially with the upcoming semester being Online. We are working hard to provide you with the same quality of education that you have come to expect from us, albeit virtually. It will be a new experience for all of us, which I hope we eventually come to relish. You can turn to your faculty advisors, and informally to your seniors, for any help you may need in settling down.

I wish you all the very best in your endeavours, and would like to thank you for choosing IEOR for doing your post-graduate studies.

Regards,  
Jayendran V.  
Head, IEOR, IIT Bombay

# MESSAGE FROM THE FACULTY ADVISORS



I take immense pleasure in welcoming you all MSc-PhD students to IEOR at IITB, and I believe that you are healthy and safe amidst these tough and crucial times. As a faculty advisor, I would be helping you (along with the senior students) with several aspects through your academic life at IEOR, IITB.

The first and most important point to note is that you will be pursuing your first semester (running during August-December 2020, called Autumn semester) completely in online mode. While online mode gives you the comfort of participating in classes from your home, you might still have many questions about online mode of instruction, online exams, online class participation, internet connectivity issues, interacting with your friends and seniors, and many other matters. We will patiently hear you and will take all necessary efforts to address most of your concerns and doubts. A first step in this regard has been taken by your senior students who have compiled a list of FAQs about this. Please consult the website (<https://www.ieor.iitb.ac.in/node/2211>) to see if your question has been answered. If you need additional clarifications, please feel free to contact me or your seniors.

Another important notable feature is that the MSc-PhD dual degree program at IEOR has undergone a significant change in course structure starting from this academic year 2020-2021 (i.e. your batch onwards). Please be aware of the fact that you would now need to decide whether you wish to continue for a PhD or not, at the end of the third semester itself. Please also familiarize yourself with the new course structure immediately after you join. Of course, I will be contacting you with more details about this later.

Apart from these points, as always, I firmly believe that you will definitely work smart and hard, relish the learning process and shine in your academics, regardless of whether you learn residing at your home or in campus.

I do wish that we all meet in person at the campus very soon.

Welcome you all to IEOR, IITB !

P. Balamurugan.



# MESSAGE FROM THE ISCP TEAM

Dear New Entrants,

These are tough times, but you are not alone.

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

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

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

The COVID -19 pandemic has affected all of us. For now, Health concerns prevent your arrival in our beautiful lush-green IIT-B campus, it also prevents your participation in hostel activities, sports, cultural activities. There are many things here at IIT-B waiting for you, but the most important thing is the campus, and the buildings do not define IIT-B. It’s you. You set the culture, the activities, you represent IIT-B to the world, and you make IIT-B what IIT-B is. So, knowing that time flies at IITB, we strongly suggest participating in things that happen online other than attending lectures, make memories, reach out to us for any queries, and relax with the comfort of your home. At least till we get an opportunity to welcome you into the campus, let’s be safe, let’s be optimistic and let’s keep our learning spirits high.

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

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

Stay Safe!



**AAKRIT ANSHUMAN**

Computer Science and Engineering (CSE)

Overall Co-ordinator, ISCP 2020-2021

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**SATYAM RATHORE**

Biosciences and Bioengineering (BSBE)

Overall Co-ordinator, ISCP 2020-2021

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## MESSAGE FROM THE DEPT. CO-ORDINATORS (ISCP)

Dear New Entrants,

Congratulations on making it to IITB and welcome to the IEOR family.

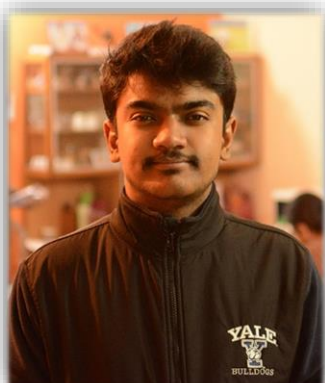
Hope you and your family are in good health. These are real tough times but we are here to help you out with your needs in these starting days at IITB. This year, due to these unavoidable circumstances owing to the pandemic, the journey of your Master's program starts through the online mode. This includes orientation, registration, classes etc. This is indeed unique and also a little bit challenging for all of us. We wish we could meet you in person! Nevertheless, work from home (online mode) is the new common thing worldwide. We must adapt to this as soon as possible. We will have interactive sessions over various online platforms which will be informed to you.

IITB has a rich culture in academics as well as in extracurricular activities like sports, cultural etc. Students of IEOR have a real good reputation of doing well in academics as well as in extracurricular activities. We hope that you guys will help this tradition to only improve and things will only get better in your presence.

Coming to ISCP, we are a students body and we are here to help you out in your early days at IITB. Initially, you will have a lot many doubts and queries regarding courses and many other academic and non-academic matters. But worry not for we are here to clear out all those doubts and help you to the best of our capabilities. We will have meetings regularly over some online platform and we encourage you to contact us in all your needs. Each one of you will have one student companion assigned, please reach out to him first for any problem or queries. In addition, do feel free to reach out to us or any of the council members, any senior student or even anyone from the faculty in our department. We will be glad to help you!

Let us take the opportunity to welcome you once again to the IEOR family. We wish you all the very best for your future journey at IITB and also for the journey that follows after. Hope to see you soon.

Cheers and best wishes.



**SUBHADEEP CHAUDHURI**

Department Coordinator (M.Sc. - Ph.D.)

Institute Student Companion Program (2020-2021)



**SAYAN CHATTERJEE**

Department Coordinator (M.Tech.)

Institute Student Companion Program (2020-2021)

## MESSAGE FROM PG ACADEMIC COUNCIL

Dear Freshmen,

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

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

As the Institute Master’s Representative, my entire team and I aim to address your grievances and help you to the best of our abilities. This time since the first semester for you all is going to be online, you might have a lot of queries in your mind. Please feel free to contact us any time. Our council PGAC is one that is for the PG students, of the PG students and most importantly by the PG students. So, whenever you face a problem, we are always there to help you out.

Supporting the students in their academic endeavour is also our foremost priority and we will try to improve the IITB experience in all the ways we can. On this note, I once again welcome you all to IIT Bombay, hoping to welcome you all back in the campus as soon as situation gets better, and wishing you every success in your future endeavours.



**SOHINI DASGUPTA**

Institute Masters Representative (2020-2021)

Post Graduate Academic Council (PGAC)

✉ [imr@iitb.ac.in](mailto:imr@iitb.ac.in)

# 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. In 1961 Parliament decreed the IITs as 'Institutes of National Importance'. Since then, IITB has grown from strength to strength to emerge as one of the top technical universities in the world.

The institute is recognised worldwide as a leader in the field of engineering education and research. Reputed for the outstanding calibre of students graduating from its undergraduate and postgraduate programmes, the institute attracts the best students from the country for its bachelor's, master's and doctoral programmes. Research and academic programmes at IIT Bombay are driven by an outstanding faculty, many of whom are reputed for their research contributions internationally.

IIT Bombay also builds links with peer universities and institutes, both at the national and the international levels, to enhance research and enrich its educational programmes. The alumni have distinguished themselves through their achievements in and contributions to industry, academics, research, business, government and social domains. The institute continues to work closely with the alumni to enhance its activities through interactions in academic and research programmes as well as to mobilise financial support.

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 15 hostels with in-house dining; the campus also provides excellent amenities for sports and other recreational facilities.



# ABOUT THE DEPARTMENT

Industrial Engineering and Operations Research (IEOR) is an academic discipline concerned with making systems more efficient. Often this goal is achieved through the use of modelling and other computational methods.

Industrial Engineering and Operations Research (IEOR) at IIT Bombay offers research-based M. Tech., Ph.D., and M.Sc.-Ph.D. dual degree programmes, and is actively involved in research (including sponsored projects), consulting and continuing education. The discipline offers a blend of theory, modelling, and application, drawing from traditional as well as modern areas of operations research, together with a system view derived from long-standing principles of industrial engineering. This approach provides a backdrop for technically sound decisions at operational and tactical levels and occasionally at the strategic level, for a variety of organizations.

Established as one of the first interdisciplinary programmes in IIT Bombay, IEOB contributes significantly to achieve the goals of IIT through various activities such as offering academic programmes, conducting continuing education programmes (CEP), carrying out research projects of different types.

The IEOB programme also has steady interaction with a wide spectrum of industries and sectors of the economy and society through participation in conferences, hosting visitors from academia and industries, carrying out sponsored projects and placement of students in different sectors etc.

IEOB graduates work in a variety of research labs and industries, including manufacturing, communications, transportation, banking, pharmaceuticals, finance, travel, semiconductor, and business, sports, health, and information technology.

# FACULTY @ IEOR

## Prof. Jayendran Venkateswaran

**Email:** [jayendran@iitb.ac.in](mailto:jayendran@iitb.ac.in)

**Research Interests:** Modelling, simulation and analysis of complex systems (viz. supply chains).



## Prof. Nandyala Hemachandra



**Email:** [nh@iitb.ac.in](mailto:nh@iitb.ac.in)

**Research Interests:** Operations Research methodologies like Markov decision models, Queueing models, Game theory, etc. Application areas include Communication networks, Supply chains, Financial Engineering, Logistics and Power systems.

## Prof. K.S. Mallikarjuna Rao

**Email:** [mallik.rao@iitb.ac.in](mailto:mallik.rao@iitb.ac.in)

**Research Interests:** Deterministic and Stochastic control, Game Theory, Viscosity Solutions, Markov Decision Processes, Mathematical Finance.



## Prof. Narayan Rangaraj



**Email:** [narayan.rangaraj@iitb.ac.in](mailto:narayan.rangaraj@iitb.ac.in)

**Research Interests:** Railway Operations Management, Optimisation, Logistics and Supply Chain Management, Pricing and Revenue Management.

## Prof. Manjesh Kumar Hanawal

**Email:** [mhanawal@iitb.ac.in](mailto:mhanawal@iitb.ac.in)

**Research Interests:** Communication Networks, Machine Learning, Network Economics.



## Prof. Vishnu Narayanan



**Email:** [vishnu@iitb.ac.in](mailto:vishnu@iitb.ac.in)

**Research Interests:** Mathematical Programming especially Integer Programming, Convex Optimization, Polyhedral Theory.

### Prof. Ashutosh Mahajan

Email: [amahajan@iitb.ac.in](mailto:amahajan@iitb.ac.in)

**Research Interests:** Mixed-Integer Linear and Nonlinear Optimization, Algorithms, Software and Applications of Optimization.



### Prof. Veeraruna Kavitha



Email: [vkavitha@iitb.ac.in](mailto:vkavitha@iitb.ac.in)

**Research Interests:** Stochastic processes, Queuing Theory, Polling systems, Optimal control, Game theory, Stochastic approximation, Wireless communications.

### Prof. P. Balamurugan

Email: [balamurugan.palaniappan@iitb.ac.in](mailto:balamurugan.palaniappan@iitb.ac.in)

**Research Interests:** Theoretical and practical aspects of Machine Learning, Data mining, Optimization for data science, Longitudinal Data Analysis and related application.



### Prof. Siddhartha Sengupta (Adjunct Faculty)



Email: [siddhartha.sengupta@tcs.com](mailto:siddhartha.sengupta@tcs.com)

**Research Interests:** Large scale automated Railway Planning, Transportation Planning, Creating value form ICT, Logistics and supply Chain Management (including Pricing/Revenue Management), Machine Learning and Artificial Intelligence.

### Prof. A. Subash Babu (Adjunct Faculty)

Email: [subash@me.iitb.ac.in](mailto:subash@me.iitb.ac.in)

**Research Interests:** Reconfigurable Manufacturing Systems, Agile Manufacturing Systems, Enterprise and Knowledge management systems, Advanced MRP and Scheduling Systems, Service Engineering.



# IEOR & INDUSTRY

- The department of IEOB has had a 25-year long collaboration with the Indian Railways (IR) with Prof. Narayan Rangaraj having played an instrumental role in establishing this relationship. He has spent a considerable amount of time in this industry by serving as a guest faculty at the Railway Staff College (now National Academy of Indian Railways) in Vadodara where railway officers undergo a formal training, and later at the Indian Railways Institute of Transportation Management, Lucknow.
- “Localization of Solar Energy through Local Assembly, Sale and Usage of 1 Million Solar Urja Lamps (SoUL)”, initiated by Prof. Jayendran Venkateswaran and Prof. Chetan Solanki, IIT Bombay aims to empower populations in underserved communities, through high quality programs that meet their real needs to improve the quality of their lives. IIT Bombay has received a sanction from the Government of India’s Ministry of Finance’s National Clean Energy Fund (NCEF) through the Ministry of New and Renewable Energy (MNRE) for distributing 1 Million solar lamps to several states across India.
- FOSSEE (Free and Open Source Software in Education) is a project that aims at improving the quality of education and comes under the National Mission on Education through Information and Communication Technology (ICT) and is funded by the Ministry of Human Resources and Development, Government of India. Prof. Ashutosh Mahajan contributed to the FOSSEE Optimization Toolbox (FOT) by providing to the users of Scilab, an interface to several open-source solvers like IPOPT, CLP, Symphony, CBC and others to solve different types of optimization problems.
- Timetabling has been an integral part of Prof. Ashutosh Mahajan’s work here at IIT. He works on both exam and regular lecture timetabling. Prof. Ashutosh and his students work along with Prof. Jayendran Venkateswaran and Prof. Narayan Rangaraj in this endeavor.
- The department of IEOB has been collaborating with Mercedes-Benz since 2014 where students under the guidance of Prof. Narayan Rangaraj and Prof. Manjesh Hanawal undertook sponsored projects involving the analysis of the performance of various vehicle components and exploring the field of video analytics.



# LABORATORIES AND RESEARCH FACILITIES

## LIBRARY

The Department library is located at Room No. 301 (Third floor), IEOR Building. Irrespective of its size, it proves to be a valuable resource for IEOR students because a number of IEOR specific books which are not available in the central library and are expensive to buy are available here. Some M.Tech. dissertations are also available in our library, so that students can refer to them and get some ideas about writing a dissertation. The library affairs are handled by the Joint Secretary (Library and Publications). For more information regarding library, go to: [www.ieor.iitb.ac.in](http://www.ieor.iitb.ac.in) → User Login (LDAP ID and Password) → internal → IEOR Library.

## IEOR LAB

The IEOR lab has nine PCs with internet connectivity plus one Wi-Fi router and a few additional LAN ports so that people with laptops can make use of it in the lab. All the PCs have both Windows and Linux operating systems. Also, the PC's are connected to the OPTIMUS server of IEOR where one can login to use the software. Whatever may be the purpose (of course it should be strictly academic), the Lab is at your service 24\*7. All you have to do is get a permission to issue the key from IEOR Office (First Floor of the building) and use the lab any time you want. The lab affairs are handled by the Office Holder, Mr. Abasaheb Molavane.

## PH.D. LAB

The Ph.D. Lab is where the brilliant research minds of IEOR are at work. The Ph.D. students are no less than guides and mentors for the M. Tech. and M.Sc.-Ph.D. students, so never hesitate to drop by and get your doubts cleared by them. This lab has 24 hours internet connectivity through LAN and an additional Wi-Fi router so that personal laptops can be used. The Lab also houses the OPTIMUS and the PASSPOLI servers of IEOR through which softwares like AMPL, Scilab etc. can be accessed. Also Ph.D. lab is well known for its cleanliness, always keep in mind whenever you visit lab, keep your footwear outside the lab.

## OTHER FACILITIES

- Teaching Lab
- Conference Room with interactive projector
- Seminar Room with interactive projector
- Meeting Room with interactive projector
- Solar Urja Lamp (SoUL) Office

# IMPORTANT WEBSITES

## ► IEOB website ( <https://www.ieor.iitb.ac.in/> )

This is the department's website. It has the contact details of all faculty members, staff and students of the department. It also displays the academic research areas of IEOR. We have a student council in our department, abbreviated as IEORSA. Get familiarized with the council members, you will get contact details of everyone on the website under *People* tab. Since this semester is going to be online, get in touch with Joint Secretary (Acad.) for all academic grievances.

Also visit List of courses offer by IEOR under Academics tab.

## ► Application Software Centre (ASC) – Administration ( <https://asc.iitb.ac.in/acadmenu/> )

This website is the main interactive website for a student for all of his/ her administrative requirements. The website also has links to all other websites of the institute. Some of the most important facilities offered by this website are shown:

### ● Running courses

You will get to know about the courses of different departments running in current semester in *Running Courses* tab. Make sure you visit it before course registration date.



Home | Sign out | Site Map  
Search ASC

Running Course Information

Year [ 2019-2020 ], Semester [ 2 - Spring ] [ GO ]  
(eg: academic year 2006 and semester 2 corresponds to spring semester 2007)

Running courses for year 2019-2020 and semester 2

Course Prefix	NAME	Number of distinct courses
AE	Aerospace Engineering	40
BS,BT,BM,BB	Biosciences & Bioengineering	33
CE	Civil Engineering	51
CH	Chemistry	34
CL	Chemical Engineering	32
CM	Climate Studies	2
CS	Computer Science and Engineering	39
EE	Electrical Engineering	65
EN	Energy Science and Engineering	36
ENT	Centre for Entrepreneurship	8
ES	Environmental Science & Engineering	24
ET	Educational Technology	5
GMR,NR	Centre of Studies in Resources Engineering	18
GP	Applied Geophysics	12
GS,GP	Earth Sciences	44
HS	Humanities and Social Sciences	49
ID,DE	Industrial Design	76
IE	Industrial Engineering and Operations Research	15
MA,SI	Mathematics/ASI	47
ME	Mechanical Engineering	59
MG,MGT,MNG,SOM	Shailesh J. Mehta School of Management	38
MM	Metallurgical Engineering and Materials Science	51
MMM	Materials, Manufacturing and Modelling	1
PH	Physics	45
PS	Centre for Policy Studies	10
SC	Systems and Control Engineering	12

## • Status

You will get to know about all the courses you've registered in till now in your curriculum.

Academic Year	Academic Semester	Course Code	Course Name	Course Credits	Tag	Registration Mode
2019	Spring	IE 792	Communication Skills -II	4.0	Core Course	NI
2019	Spring	IE 716	Integer Programming: Th...	6.0	Departmental El...	C
2019	Spring	IE 714	Quantitative Models for Su...	6.0	Departmental El...	C
2019	Spring	IE 709	IEOR for Health Care	6.0		A
2019	Spring	IE 708	Markov Decision Processes	6.0	Departmental El...	C
2019	Spring	IE 694	Seminar	4.0	Core Course	C
2019	Spring	IE 616	Decision Analysis and Ga...	6.0		A
2019	Spring	IE 604	Systems Dynamics Modell...	6.0	Departmental El...	C
2019	Spring	HS 791	Communication Skills -I	2.0	Core Course	NI
2019	Autumn	IE 615	Data Analytics in Operatio...	6.0	Departmental El...	C
2019	Autumn	IE 611	Introduction to Stochastic ...	8.0	Core Course	C
2019	Autumn	IE 601	Optimization Techniques	8.0	Core Course	C
2019	Autumn	IE 507	Modeling & Computation L...	5.0	Core Course	C
2019	Autumn	CS 725	Foundations of Machine L...	6.0	Departmental El...	C

## • Timetable

Once you register for the courses, a timetable will be generated automatically for your current semester.

Time	08:30 09:25	09:30 10:25	09:30 10:55	11:05 12:30	11:35 12:30	14 15:25	15:30 16:55	19 20:25
0.Mon					HS 791 [CONVO - Convocation Auditorium Room ] : Parthasarathy D.	IE 716 [LT 203 - Class Room : LT 203 ] : Avinash Bhardwaj	IE 616 [SMA210 - Class Room - LC 3 ] : Veeraruna Kavitha	IE 714 [LC 001 - Class Room : LC 001 ] : Siddhartha SenGupta
1.Tue	IE 792 [IEOR101 - Class : IEOR011 ] : Siddhartha SenGupta					IE 709 [LT 106 - Class Room : LT 106 ] : Ashutosh Mahajan		
2.Wed				IE 708 [IEOR211 - Class : IEOR211 ] : N. Hernachandra	IE 604 [LH 101 - Class Room : LH 101 ] : Omi P. Damani			

## • Course withdraw

If you want to withdraw a course you registered for at the start of semester, you can do so in *Course Withdraw* section. You need to get permission from faculty advisor for the same.

## ► Moodle-Academics ( <https://moodle.iitb.ac.in/login/index.php> )

This website is designed to get content shared by faculty to student. You can download study material uploaded by a professor from here. Professors upload the assignments here as well. There is also an announcement tab for every subject where professor announces some information related to the course, following which you will get a notification on your Webmail. But when you use announcement tab to send something, it will go to every student registered for the course, hence avoid sending mails from this platform unless necessary.

The screenshot shows the Moodle-Academics interface for the course 'Quantitative Models for Supply Chain Management'. The left sidebar contains a navigation menu with options like Home, Dashboard, Site pages, My courses, and various course-specific links. The main content area displays course announcements, including '714Syllabus Uploaded 13/01/20, 08:05', 'AMPL', 'AMPL Installation instructions', 'Basic tutorial on using AMPLIDE Uploaded 18/01/20, 16:21', 'Midsem', and 'HOMEWORKS'. A calendar view shows dates from 6 January to 12 January, with a specific view for '13 January - 19 January' showing course updates. The right sidebar features 'LATEST ANNOUNCEMENTS' and 'UPCOMING EVENTS'.

## ► Webmail ( <https://webmail.iitb.ac.in/> )

This service enables you to access your mailbox (IIT-B email ID) from anywhere (inside or outside IITB) via the Internet. You will get notifications of various updates via webmail, do check it multiple times a day.

## ► External IIT-B Portal ( <https://portal.iitb.ac.in/asc/Login> )

This is the external page of IIT Bombay which can be accessed from anywhere (inside or outside of IITB). This is the portal which is used for registration of bank account, payments of semester fees, hostel fees, etc. Bank account registration is done only once at the start of first semester. This is important because you will get your stipend in the account that you put in, hence do it very carefully. Along with that, this page also shows summary of your academic performance till date. You will get to know your grades, courses you did, your credits fulfilment etc. as shown.

**Table of Contents**

1. Performance Summary
2. Semester-wise Details
3. Personal Information
4. Convocation Form
5. Alumni Form
6. Convocation Fee. Only FINAL Year Students have to pay it.
7. View/Update bank account details

In case of Project Courses (Stage I and II) : CPI for the course credits and the project credits will be separately calculated and will be shown in the semester grade card, along with the course CPI, Project CPI and overall CPI (Ref : 194th Senate Meeting).  
For further clarification please refer rule book at : <http://www.iitb.ac.in/newacadhome/rules.jsp>

**Academic Performance Summary**

Year	Sem	Spi	Cpi	Sem Credits	Cumulative Credits
2019	Spring				
2019	Autumn				

**Semesterwise Details**

\*This registration is subject to approval(s) from faculty advisor/Course Instructor/Academic office.

**Year/Semester: 2020-21/Project**

Course Code	Course Name	Credits	Tag	Grade	Credit/Audit
IE 797	I Stage Project	48.0	Core course	Not allotted	C

**Year/Semester: 2019-20/Spring**

Course Code	Course Name	Credits	Tag	Grade	Credit/Audit
HS 791	Communication Skills-I	2.0	Core course		N
IE 604	Systems Dynamics Modeling & Analysis	6.0	Department elective		C
IE 616	Decision Analysis and Game Theory	6.0			A
IE 694	Seminar	4.0	Core course		C
IE 708	Manoir Decision Processes	6.0	Department elective		C
IE 709	ICOR for Health Care	6.0			A
IE 714	Quantitative Models for Supply Chain Management	6.0	Department elective		C
IE 716	Integer Programming, Theory and Computations	6.0	Department elective		C
IE 792	Communication Skills-II	4.0	Core course		N

**Year/Semester: 2019-20/Autumn**

Course Code	Course Name	Credits	Tag	Grade	Credit/Audit
CS 725	Foundations of Machine Learning	6.0	Department elective		C
IE 507	Modeling & Computation Lab	5.0	Core course		C
IE 601	Optimization Techniques	8.0	Core course		C
IE 611	Introduction to Stochastic Models	8.0	Core course		C
IE 615	Data Analytics in Operations Research	6.0	Department elective		C



## ► Computer Centre (<https://camp.iitb.ac.in/cgi-bin/index.cgi>)

IIT-B provides students with various Computer Facilities which include Email, Web Browsing, File Storage and Terminal Access. All these are based on your LDAP-ID and password.

But you should be thinking what is this LDAP? Here you go.

### • Details about LDAP:

IITB provides students with various Computer Facilities which include Email, Web Browsing, File Storage and Terminal Access. All these are based on your **LDAP-ID and password**.

*It is suggested to use these facilities responsibly for your and IITB's security.*

Every student/staff will get an LDAP account, when (s)he joins IITB. Using this, (s)he can browse the internet (using this user ID for authentication on IITB proxy server netmon.iitb.ac.in). The user will also get a mail account (userid@iitb.ac.in). The user can also log into the machines in CC user area using the same user ID. NETMON proxy access and user-area login will expire the moment (s)he completes his/her study at IITB. The email address may be retained as a forwarding address to an external address of the user's choice.

The following things will be available in **CAMP Website** (<https://camp.iitb.ac.in/>)

- Changing Password
- Changing User ID (Only Once)
- Modifying Personal Details
- Set / Reset mail Auto Reply Text
- Set / Reset mail Forwarding Address
- Department Sys-Ads List
- Hostel Sys-Ads List
- Find your User ID from Roll number / Employee Number

The following information will be useful to you for accessing LDAP login and password:

### LDAP Details

- Your initial password is your date of birth in ddmmyyyy format. For example, if your birth-date is January 5, 1983 your password will be 05011983.
- If for some reason your initial password does not work, your Department System Admin. will help you fix it.

### Updating LDAP Details

After registration it is recommended that you visit <http://camp.iitb.ac.in/cgi-bin/index.cgi> and do the following:

- Important: Reset your password *immediately*
- Choose a new LDAP ID after a month of your registration. You will be able to send/receive mails at **YOUR\_LDAP\_ID@iitb.ac.in**. You can change your ID only **ONCE**.
- If you forget your LDAP password then contact your respective Department System Admin.

► **Central Library** ( <https://www.library.iitb.ac.in/> )

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

► **CDEEP** ( <https://www.cdeep.iitb.ac.in/vod/vodCloud/login.php> )

CDEEP is the platform where you will get access to video lecture series uploaded by professors in every department in current and previous semesters for certain courses.

View Courses		Courses of Current Semester		
Current Semester		Spring 2020		
Archived Semester				
S.No.	Course Code	Course Name	Department	Instructor
1	BB101	Biology	Biosciences and Bioengineering	Prof. Ambarish Kunwar
2	CE330	Geotechnical Engineering II (View Promo)	Civil Engineering	Prof. D. N. Singh
3	CH408	Molecular Energetics and Dynamics	Chemistry	Prof. Rajarshi Chakrabarti
4	CH442	Molecular Spectroscopy	Chemistry	Prof. Naresh Patwari
5	CST26	Advance Machine Learning	Computer Science and Engineering	Prof. Sunita Sarawagi
6	CS763	Computer Vision	Computer Science and Engineering	Prof. Sharat Chandran
7	EE204	Analog Circuits (View Promo)	Electrical Engineering	Prof. Rajesh H Zele
8	EE719	Mixed Signal VLSI Desgin (View Promo)	Electrical Engineering	Prof. Maryam Shojaei Baghini
9	EE725	Computational Electromagnetics	Electrical Engineering	Prof. S V Kulkarni
10	EE799	Advanced Antennas	Electrical Engineering	Prof. Prof. Jayanta Mukherjee, Prof. Julien Sarazin
11	EN301	Introduction to Renewable Energy Technologies	Energy Science	Prof. Chetan Solanki

**P.S.:** No need to worry about all the nitty-gritties. You will be informed about everything in due course of time. These references are to give you an overview of the facilities that you'll be using most of the time.

# TO HELP US ALL

## ► **Student Wellness Centre** ( <http://www.iitb.ac.in/swc/en> )

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

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

Counselling provides an opportunity for individuals to learn to make better choices, improve interpersonal skills, develop confidence and increase educational effectiveness. In a one-on-one meeting with a counsellor, students are helped to explore and express feelings, examine beliefs and ways of thinking about their present situation, reflect on patterns of behaviour, and work toward making healthier and happier changes.

As Covid forced us to be physical separated and make everything uncertain in the near future, it is understandable for anyone to be feeling stressed. SWC is always there to hear from you.

## ► **Gender Cell** ( <http://www.gendercell.iitb.ac.in/> )

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

# COURSE STRUCTURE & GRADING POLICY

## For M.Tech. Curriculum

IEOR offers M. Tech. Degree in Industrial Engineering and Operations Research. The M.Tech. Program is designed to prepare students for professional careers in the area. The academic program leading to the M.Tech. Program involves course-credit requirements and research work.

Registration of courses NOT on the approved list needs prior approval from the students' faculty advisor. The final course plan of the student has to be approved by the student's faculty advisor.

### SEMESTER-WISE CREDITS DISTRIBUTION FOR M. TECH.

#### SEMESTER-1

Subject code	Course Name	Lecture	Tutorial	Practical	Credit
IE609	Mathematical Optimization Techniques	3	0	0	6
IE621	Probability and Stochastic Processes 1	3	0	0	6
IE503	Operations Analysis	3	0	0	6
IE605	Engineering Statistics	3	1	0	8
IE507	Modeling and Computation Lab	0	1	3	5
---	Elective1	3	0	0	6
Total					37

#### SEMESTER-2

Subject code	Course Name	Lecture	Tutorial	Practical	Credit
IE630	Simulation Modeling and Analysis	3	0	0	6
---	Elective2	3	0	0	6
---	Elective3	3	0	0	6
---	Elective4	3	0	0	6
IE684	IEOR Lab	0	1	3	5
IE694	Seminar	0	0	4	4
HS791 + IE792	Communication Skills	2	0	0	4*
Total					33+4*

For the M.Tech. Degree, the student must do 90 credits (48 + 42) of Research Work, which culminates in an M.Tech. Thesis. Through the research work, the student must exhibit the ability to think independently and make significant contributions to the field of IEOR.



There are two review stages en-route to the completion of the thesis work, with the second being the final open presentation. Typically, the Stage I review presentation is held at the end of the 3rd semester (October); and Stage II final review presentation is held at the end of 4th semester (May-June). The final Thesis defence will include an external examiner from outside IITB and an external chairman from outside IEOR.

## For M.Sc.-Ph.D. Curriculum

The M.Sc.-Ph.D. dual degree in Operations Research is an integrated doctoral programme, for those interested in a research-oriented career. The programme is open for students who have at least 2 years/4 semesters of Mathematics or Statistics as their B.Sc. Honours (Major) subject, and are interested in research in engineering / interdisciplinary areas. The academic programme leading to the M.Sc.-Ph.D. dual degree involves foundation (core) courses, advanced courses and research work (To view list of courses visit website of IEOR-IIT Bombay). The candidate will be awarded both the M.Sc. and Ph.D. degrees simultaneously on successful completion of the entire program. However, a student may opt to leave the program with an M.Sc. degree at the end of 4<sup>th</sup> semester on fulfilment of credit requirements (the department has to be notified by the end of 3<sup>rd</sup> semester).

M.Sc.-Ph.D. coursework includes compulsory & elective courses spread over 4 semesters. First year courses are designed to equip students with concepts & paradigms of engineering and service systems, and provide a strong foundation of the various mathematical & computational models for decision making. Two lab courses (one to learn programming using Python and the other is Modeling and Computation Lab for learning languages like AMPL, Scilab, R etc.) to strengthen computer-based modeling skills are part of the curriculum.

In the second year, students get the option to take multiple elective courses of their choice to specialize over their topic of interest.

Seminar and Project Work are part of the curriculum to expose students to independent reading, writing & presentation of technical ideas in a rigorous manner. As part of Ph.D. requirements, students need to do an IEOR Ph.D. level (8xx level course with at least 6 credits) course and individual projects before starting work on their Ph.D. thesis.

## SEMESTER-WISE CREDITS DISTRIBUTION FOR M.Sc. – Ph.D.

### SEMESTER 1

Subject code	Course Name	Lecture	Tutorial	Practical	Credit
IE501	Optimization Models	2	1	0	6
IE503	Operations Analysis	3	0	0	6
IE507	Modeling and Computation Lab	0	1	3	5
IE509	Computer Programming Lab	0	0	3	3
IE605	Engineering Statistics	3	1	0	8
IE621	Probability and Stochastic processes I	3	0	0	6
HS791+IE792	Communication Skills	2	0	0	4*
Total					34+4*

## SEMESTER 2

Subject code	Course Name	Lecture	Tutorial	Practical	Credit
IE614	Linear Systems	3	0	0	6
IE616	Decision Analysis and Game Theory	3	0	0	6
IE622	Probability and Stochastic processes II	3	0	0	6
IE630	Simulation Modeling and Analysis	3	0	0	6
IE684	IEOR Lab	0	1	3	5
IES601	Seminar	0	0	5	5
---	Elective1	3	0	0	6
Total					40

The minimum credit requirement in total is 161+4\* which should be completed by the end of 4<sup>th</sup> semester.

For course details about the remaining semesters, visit the IEOR website and check for the course structure under Academics → M.Sc.- Ph.D. → Course Work

## Grading Policy

- The academic system in IIT Bombay is based on credits. All students must complete the required credits for obtaining a degree. The grading scheme is as follows:

Letter Grade	Grade Point
AP	10
AA	10
AB	9
BB	8
BC	7
CC	6
CD	5
DD	4
FF	0 Fail (Eligible for Re-Exam)
FR	0 Fail (Repeat the Course)
DX	Fail (Lack of attendance - Repeat the Course)
II	Incomplete (On Health Grounds)
W	Withdrawn
PP	Passed
NP	Not Passed
AU	Audit

# PLACEMENT STATISTICS

The IEOR curricula at IITB is very well structured and prepares you for the best. Being an interdisciplinary course, we get students from a broad spectrum and everyone knows something about something else, jack of various trades!!

We see recruiters coming from a number of sectors - Core Operations Research, Data science, Finance (Banks), Health Care, Retail, Technology Start-ups, Information Technology, Automobile/Production, Machine Learning, Supply Chain Management to name a few.

Owing to the wide range of courses and projects that are being carried out in IEOR, the department has a high number of job offers being offered to the students who apply for placement.

Year	Program	Registered	Total Offers	% Placed	Total % Placed
2019-20	Ph.D.	0	0	0.0	<b>81.82</b>
	Dual Degree (M.Sc. + Ph.D.)	0	0	0.0	
	M. Tech.	16	15	93.75	
	M. Sc.	6	3	50	
2018-19	Ph.D.	0	0	0.0	<b>96.43</b>
	Dual Degree (M.Sc. + Ph.D.)	0	0	0.0	
	M. Tech.	22	21	95.45	
	M. Sc.	6	6	100.0	
2017-18	Ph.D.	0	0	0.0	<b>85.2</b>
	Dual Degree (M.Sc. + Ph.D.)	1	0	0.0	
	M. Tech.	21	21	100.0	
	M. Sc.	5	2	40.0	
2016-17	Ph.D.	0	0	0.0	<b>86.4</b>
	Dual Degree (M.Sc. + Ph.D.)	2	1	50.0	
	M. Tech.	15	14	93.3	
	M. Sc.	5	4	80.0	
2015-16	Ph.D.	1	1	100.0	<b>80.0</b>
	Dual Degree (M.Sc. + Ph.D.)	2	0	0.0	
	M. Tech.	20	18	90.0	
	M. Sc.	2	1	50.0	

**Disclaimer:** The above figures show only the on-campus placement statistics. Many M.Sc. as well as M.Tech. Students opt for Ph.D. from other top universities while Ph.D. students opt for Post-Doctoral research after their Ph.D.

# PROJECTS OF STUDENTS

## M. TECH. 2<sup>ND</sup> YEAR STUDENTS

Name	Roll no	Email ID	Projects / Seminars	
Harshit Pandey	193190001	193190001@iitb.ac.in	MTP	Machine Learning in Supply Chain Operations. Supervisor: Prof. Manjesh Hanawal
			Seminar	Different Types of Algorithms Used for Ranking Scientific Research Papers Supervisor: Prof. Ashutosh Mahajan
			Other	<ul style="list-style-type: none"> <li>Image Captioning using Different Type of Architecture,</li> <li>E-commerce revenue prediction using different Machine Learning techniques,</li> <li>Credit Risk Modeling using Machine Learning.</li> </ul>
Anupam Singh	193190002	anupamsinghj@gmail.com	MTP	Call data record analysis from Telecom Data Supervisor: Prof. Manjesh Hanawal
			Seminar	Optimal Prescriptive Tree Supervisor: Prof. Ashutosh Mahajan
			Other	Compared different method (ML method) to predict whether a person is suffering from diabetes or not.
Alok Kumar Srivastava	193190003	alok.srivastava@iitb.ac.in	MTP	Simulation analysis of effectiveness of policies in managing COVID Supervisor: Prof. Jayendran Venkateswaran
			Seminar	Operation Research in Defence Sector Supervisor: Prof. Ashutosh Mahajan
			Other	<ul style="list-style-type: none"> <li>Diabetic detection using Machine Learning Algorithm,</li> <li>Traffic Control using Markov Decision</li> </ul>
Abhishek Panigrahi	193190004	193190004@iitb.ac.in	MTP	Interpretable Demand Prediction Supervisor: Prof. N. Hemachandra
			Seminar	Predicting supply chain using machine learning: The trade-off between performance and interpretability Supervisor: Prof. Jayendran Venkateswaran
			Other	<ul style="list-style-type: none"> <li>Image Captioning using MS COCO Dataset by using different architectures,</li> <li>Price estimation of Real Estates using different models (Linear Regression, Decision Tree, SVR and Random Forest)</li> <li>Zero-based time table Scheduling of trains for Indian Railways on Golden Quadrilateral Routes.</li> </ul>
Sayam Chatterjee	193190005	193190005@iitb.ac.in	MTP	Machine Learning in Networks Supervisor: Prof. Manjesh Hanawal
			Seminar	Machine Learning Based Demand Forecasting in Supply Chain Supervisor: Prof. Jayendran Venkateswaran



			Other	<ul style="list-style-type: none"> <li>Price estimation of Real Estates using SVR, Decision Tree, Linear Regression and Random Forest.</li> <li>Text Detection and Text Recognition on PAN Cards using YOLOv3 and OCR.</li> <li>Chatbot and Voicebot Preparation using Rasa.</li> </ul>
Nagender Singh	193190006	193190006@iitb.ac.in	MTP	Covid Supervisor: Prof. Siddhartha SenGupta
			Seminar	Application of system dynamics in supply chain management Supervisor: Prof. Jayendran Venkateswaran
			Other	Data visualization and prediction of covid cases using machine learning
Manish Kumar Shukla	193190007	ms143nit@gmail.com	MTP	Simulation Analysis Supply Chain under Disruptions Supervisor: Prof. Jayendran Venkateswaran
			Seminar	Operations Research in Biomass Supply Chain Supervisor: Prof. Manjesh Hanawal
			Other	Train Timetabling
Rahul Khankar	193190008	193190008@iitb.ac.in	MTP	Routing of bus fleet Supervisor: Prof. Ashutosh Mahajan
			Seminar	Appointment System in Hospital Outpatient Departments. Supervisor: Prof. Manjesh Hanawal
			Other	<ul style="list-style-type: none"> <li>Appointment Booking System for Healthcare,</li> <li>Movie Recommender System,</li> <li>Credit Card Fraudulent Detection</li> </ul>
Saurav Pathak	193190009	saurav.pathak@iitb.ac.in	MTP	Deep Learning for Audio Analytics Supervisor: Prof. P. Balamurugan
			Seminar	Medium Term Sales Forecasting in Fashion Retail Supply Chain Supervisor: Prof. Manjesh Hanawal
			Other	<ul style="list-style-type: none"> <li>Clinically accurate chest X-Ray report generation,</li> <li>Image Captioning using MS COCO dataset</li> </ul>
Tushar Pant	193190010	193190010@iitb.ac.in	MTP	Scheduling pick-up and drop vehicles by a logistic firm Supervisor: Prof. N. Hemachandra
			Seminar	Truck Load ability optimization in Supply Chains Supervisor: Prof. K.S. Mallikarjuna Rao
			Other	<ul style="list-style-type: none"> <li>COVID-19 Analysis,</li> <li>Zero- based time table Scheduling of trains of Indian Railways</li> </ul>
Suraj Bharati	193190011	193190011@iitb.ac.in	MTP	Cybersecurity & Network Security Supervisor: Prof. Manjesh Hanawal
			Seminar	Supply Chain Disruptions and Optimal Network Structure in Supply Chain Supervisor: Prof. K.S. Mallikarjuna Rao
			Other	House Price Prediction using Machine Learning Tools.
Luther Immanuel	193190013	193190013@iitb.ac.in	MTP	OR in managing hospitals Supervisor: Prof. Ashutosh Mahajan
			Seminar	The value of commitments when selling to a strategic consumer: A supply chain perspective Supervisor: Prof. K.S. Mallikarjuna Rao
			Other	COVID 19 analysis

Yogesh Nagar	193190014	nagar8yogesh@gmail.com	MTP	Deep learning for NLP Supervisor: Prof. P. Balamurugan
			Seminar	Application of Deep Learning in Medical image analysis Supervisor: Prof. N. Hemachandra
			Other	<ul style="list-style-type: none"> <li>• Movie Recommendation System</li> <li>• Credit Card fraudulent detection</li> </ul>
Shrikant Darekar	193190015	shri.darekar21@gmail.com	MTP	Comparison of nations for effectiveness in responding to COVID pandemic Supervisor: Prof. Siddhartha SenGupta, Prof. K.S. Mallikarjuna Rao
			Seminar	RFID in supply chain management Supervisor: Prof. N. Hemachandra
			Other	Facial emotion recognition
Chinthala Akhil Sai	193190016	chinthalaakhil sai@gmail.com	MTP	ML tools for medical data analysis Supervisor: Prof. P. Balamurugan
			Seminar	ML applications for power system analytics Supervisor: Prof. N. Hemachandra
			Other	Facial Emotion Recognition (course project of Machine learning)
Suraj Suresh Bhondave	193190021	surajsb3@gmail.com	MTP	Rescheduling trains on freight-only networks to minimise energy consumption Supervisor: Prof. Narayan Rangaraj, Dr Siddhartha SenGupta
			Seminar	Automated Action Recognition Using an Accelerometer-Embedded Wristband-Type Activity Tracker Supervisor: Prof. P. Balamurugan
			Other	Exploring new non-homoeomorphic functions as cut generating functions
Robin Ajmera	193190022	robinajmera14@gmail.com	MTP	Robust Time tabling of trains based on actual running data Supervisor: Prof. Narayan Rangaraj, Dr Siddhartha SenGupta
			Seminar	Random Finite Set-Based Anomaly Detection for Safety Monitoring in Construction Sites Supervisor: Prof. P. Balamurugan
			Other	Facial emotion recognition
Rachit Kumar	193190023	193190023@iitb.ac.in	MTP	Comparison of Dimensionality Reduction methods Supervisor: Prof. Siddhartha SenGupta
			Seminar	Multi-Period Liability clearing via Distributed Optimization Supervisor: Prof. Veeraruna Kavitha
			Other	Diabetes Prediction using various methods of Supervised Learning
Kunal Apurva	193190024	kunalapurva@iitb.ac.in	MTP	Neural architecture search Supervisor: Prof. P. Balamurugan
			Seminar	Age of information Supervisor: Prof. Veeraruna Kavitha
			Other	<ul style="list-style-type: none"> <li>• Clinically accurate x- Ray report generation,</li> <li>• predicting sales based on expenditure on different channels of advertisement,</li> <li>• movie recommendation system</li> </ul>

Ritesh Takole	193190025	193190025@iitb.ac.in	MTP	Optimization in Deep Learning Supervisor: Prof. P. Balamurugan jointly with Prof. Vishnu Narayanan
			Seminar	Distributed Bayesian Optimization of Deep Reinforcement Learning Algorithms Supervisor: Prof. Vishnu Narayanan
			Other	Exploratory Data Analysis (EDA), Predictions and Forecasting using Machine Learning Models for COVID - 19 Pandemic in India
Mayur Shende	193190026	193190026@iitb.ac.in	MTP	Federated Learning Supervisor: Prof. N. Hemachandra
			Seminar	Denoising in image classification using Convolutional AutoEncoder Supervisor: Prof. Vishnu Narayanan
			Other	<ul style="list-style-type: none"> <li>Attrition analysis of employees of delivery firms.</li> <li>Review and Rating for the various Mess and Canteens at IITB hostels.</li> <li>EDA, Prediction, and Forecasting for COVID-19 pandemic in India.</li> </ul>
Taposh Kumar Kapuria	193191001	sabita.kapuria@gmail.com	MTP	Inventory and revenue management in supply chain for multiperiod and two customer classes Supervisor: Prof. Narayan Rangaraj
			Seminar	Input-oriented DEA approach to evaluate sustainable purchasing in supply chain Supervisor: Prof. Vishnu Narayanan
Ashish Pandit	193199001	ashishpandit.nsk@rediffmail.com	MTP	Integer Programming and Optimization Supervisor: Prof. Ashutosh Mahajan
			Seminar	Logistics for Health care waste Supervisor: Prof. Siddhartha SenGupta
Tejal Rajendra Topre	19319R002	19319R002@iitb.ac.in	MTP	To be decided
			Seminar	To be decided
Sunil Hari Kahalekar	19319R002	sunil.kahalekar@iitb.ac.in	MTP	To be decided
			Seminar	To be decided

# M.SC. 3<sup>RD</sup> YEAR STUDENTS

Name	Roll no	Email ID	Projects / Seminars	
Ananya Nandy	18i190001	18i190001@iitb.ac.in	Phase 1	Compressed Sensing Supervisor: Prof. N Hemachandra
			Phase 2	Negative Dependence of random variables Supervisor: Prof. K S Mallikarjuna Rao
			Seminar	Bayesian Inference and real-life applications
Shubham Sharma	18i190002	shubhamssharma1166@gmail.com	Phase 1	Volumetric segmentation of 3D images Supervisors: Prof. P Balamurugan and Prof N Hemachandra
			Phase 2	Graph Embeddings Supervisors: Prof. G Ramakrishnan and Prof. M K Hanawal
			Seminar	Algorithms to optimize neural networks
			Other	Weakly Supervised Region Proposal Network and Object Detection, Recurrent Models for Situation Recognition, Online RecSim based recommending system, cancer/anomaly detection using autoencoders
H. Satyam Verma	18i190003	hsatyam.verma@iitb.ac.in	Phase 1	Training an agent in a game using Q-learning and Deep Q-learning Supervisor: Prof. N Hemachandra
			Phase 2	Recommender systems using nested bandits Supervisor: Prof. V Kavitha
			Seminar	Statistics in sports
			Other	Inventory control using MILP
Anand Singh	18i190004	anandsinghchauhan@iitb.ac.in	Phase 1	Convex optimization Supervisor: Prof. N Hemachandra
			Phase 2	Multi-Armed Bandits Supervisor: Prof. N Hemachandra
			Seminar	Regression Analysis
Dasari Jeevan Swaroop	18I190005	jeevanswaroopdasari1@gmail.com	Phase 1	Feature subset selection Supervisor: Prof. N Hemachandra
			Phase 2	Large Scale Optimization Supervisor: Prof. A Mahajan
			Seminar	Time Series Forecasting using hybrid ARIMA and LSTM model
			Other	Distributed Computing approach for route enumeration in large scale VRP

Utkarsh Singh	18i190006	utkarsh_singh1932@iitb.ac.in	Phase 1	Important tasks of Unsupervised learning Supervisor: Prof. N Hemachandra
			Phase 2	AutoML: Neural architecture search for medical image segmentation using DARTS Supervisor: Prof. P Balamurugan
			Seminar	Scheduling using Mixed Integer Programming
			Other	E-commerce revenue prediction using various regression techniques
Anirban Naskar	18i190007	anirbannaskar125@gmail.com	Phase 1	Global value chain and it's crisis Supervisor: Prof. N Hemachandra
			Phase 2	Network Optimization Supervisor: Prof. V Narayanan
			Seminar	A Mathematical Approach to Solve Large Scale Transit Network Problem
Sagnik Das	18i190008	18i190008@iitb.ac.in	Phase 1	Machine learning by advanced statistical techniques Supervisor: Prof. N Hemachandra
			Phase 2	Deep Learning Supervisor: Prof. B Palaniappan
			Seminar	Multivariate Regression
Harshit Raj	18i190009	pandeyharshitraj98@gmail.com	Phase 1	contract design in supply chain managers Supervisor: Prof. N Hemachandra
			Phase 2	Implement Blockchain in supply chain Supervisor: Prof. J Venkateswaran
			Seminar	Bias estimation in ridge regression
Santosh Palaskar	18i190010	santoshpalaskar77@gmail.com	Phase 1	Sustainability in Supply Chain Supervisor: Prof. N Hemachandra
			Phase 2	Adaptive Sliding-Window Based Greedy Algorithm Supervisor: Prof. N Hemachandra
			Seminar	Optimization
Salbani Chakraborty	18i190011	salbanichakraborty12@gmail.com	Phase 1	Prediction of future stock prices using hidden Markov model Supervisor: Prof. N Hemachandra
			Phase 2	Queuing control (using MDP) used in passport office Supervisor: Prof. V Kavitha
			Seminar	Change point detection algorithms and their performance metrics

## EXTRACURRICULARS OF STUDENTS

The students of IEOR are actively involved in extracurricular activities as well. They have participated in Sports Events (called General Championships or GCs), Cultural Events, Volunteering among many others. Here's a glimpse of it

<b>Gold Medals</b>	<b>Chess</b>	Vartika Singh   Shiksha Singhal   Aanchal Panwar	
	<b>Table tennis</b>	Prashant Palkar   Indrajit Saha   Akash Saha   Saptarshi Majumder   Subhadeep Chaudhuri	

Here're a few of the participating teams among many more who put in their best and deserve mention

<b>Participations</b>	Badminton (Girls)	Ananya Nandy   Reena Meena   Chesta Pahuja
	Carrom (Girls)	Aanchal Panwar   Vartika Singh   Shiksha Singhal   Reena Meena
	Basketball (Girls)	Aanchal Panwar   Reena Meena
	Participants in other games	Saptarshi Majumder   Rachit Kumar   Reena Meena   Robin Ajmera   Luther Immanuel   Ankush Singh





These are some of the key achievements of the students of our department

### Achievements

- Player of GC (Girls): **Vartika Singh** (for unbeaten performance in tournament)
- Position in **TOP 10** from 25 departments throughout 16 General Championships
- Aanchal Panwar and Vartika Singh are unbeaten in tournament
- Ananya Nandy : Organizing Secretary (Boys TT)
- Sohan Lal : Organizing Secretary (Badminton Boys and Girls GC)

Lastly, here's our Player of the GC (Girls), Vartika, sharing her experience



Practicing and participating in PGGC are among my memorable times in IIT. For me chess is always a good means of entertainment as well as to have some brain exercise. Playing sports refreshes me and as a bonus it keeps me connected with a lot of people.

- Vartika Singh



For the Culturals, we have had our very own Shubham with his active participation in Dance events of the institute. He skips meals, even Midsems (if possible) to rehearse for his performances. Such is his dedication.

Shubham has been one of the finalists of Freshiezza 2019 in the Dance event and he's also performed for AIDS 2020, the annual dance show organized by IITB's dance club InSync.



And as showstopper, we present to you Reena Meena, that lively person with whom you will love to have a conversation but she'll agree only when there's bhelpuri for her.

Reena has participated in Showstopper 2020, organized by StyleUp, the fashion club of IITB.





## ACTIVITIES IN THE DEPARTMENT

### Fresher's welcome

The Freshers Welcome Party is organised by the senior students every year to welcome the new comers to the IEOR family. The fun filled gathering starts with the professors addressing the newcomers followed by introduction from the freshers. Various short game events are organised usually followed by a photoshoot session.



### Farewell

Every year farewell is given to passing out students by their fellow juniors which is conducted by IEORSA. All IEOR faculty members join in to spend some time with them.

The graduating students introduce themselves briefly, share their experiences in IEOR and on campus, and share their future plans. They are then presented with gifts by the faculty members. The faculty members share their thoughts and bless the outgoing batch with their advice.

### Teacher's Day



*"A teacher affects eternity; one can never tell where his influence stops."*

- Henry Brooks Adams

Students of IEOR Department celebrate Teachers' Day on the 5th of September. Students express their gratitude by presenting each teacher with handmade Greeting Cards.

### Dussehra Celebration

"Dussehra (Dasara) is celebrated on the tenth day after the Navratri festival and it marks the victory of good over evil."

The Festival of Dussehra every year is celebrated at IEOR Department with great enthusiasm. A Puja is organized by the students at the Puja Desk setup on the third floor of the building, followed by refreshments.

### Movie Screening

Besides the everyday hustle around the IIT Bombay campus, for a little mood refreshment, a special event, known as "Movie Screening" is organized at the Teaching Lab of our Department, where students enjoy the evening and get to watch a movie based on peoples' choice.

## Diwali Celebration

The festival of Diwali is celebrated every year at the IEOR Department. The celebration evening begins with Rangoli Making Competition and Diya Painting Competition, followed by a Talent showcase.



There're also serving of refreshments and the celebration continues with games being played. The building is decorated with Lightings, Diyas and Marigold flowers.



## Departmental trip



We saved the best for the last. This is probably the most anticipated one over the entire year. Every year, the students of our department go on a trip over a weekend where it's all fun and laughter for those few days.

This year, we went to Goa for the trip and rest assured, one never fails to make memories for a lifetime.



# IEOR ISCP TEAM 2020-2021



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# YOUR SENIORS



Welcome to IIT-Bombay!