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Table:

Title	Purpose of Equipment	Instrument Class	Facility Access
BenchTop 3star conductivity/Resistivity/TDS/Salinity/Temperature Meter	measurement of conductivity alkalinity and other associated properties with high accuracy	Composition Analysis, Sample Preparation	IITB Users
Advanced inverted fluorescent Microscope: Nikon Eclipse TE 2000-S	Imaging platform to micromanipulate and observe live cells	Microscopy	
Air-jet atomizer Model 3076	TSI Generates nanoparticles of 20-300 nm	Sample Preparation	IITB Users
Air-jet atomizer Model 3076	TSI Generates nanoparticles of 20-300 nm	Sample Preparation	IITB Users
Argon Ion Laser System	Facilitates inspection of semiconductor wafer materials	Microscopy, Rheology	ChE Department Users Only
Atomic force microscope system(Easyscan 2 STM version 1.5)	To get three-dimensional surface profile of the sample	Microscopy, Size Analysis	ChE Department Users Only
Autotitrator	Automated Measurement and Adjustment of Acidity /Basicity of solutions.	Biotechnology, Sample Preparation	ChE Department Users Only
Barometer	Measurement of atmospheric pressure	Rheology	
Bench-top pH meter	Mesurement of pH of the solutions to record the acidity and basicity of solutions	Biotechnology, Sample Preparation	ChE Department Users Only
BIO- REACTOR	Bio engineering Company Switzerland	Biological Reactions	Biotechnology, Reactions ChE Department Users Only

Abstract:The net zero goal by 2050 is a cherished dream of all world economies. In achieving the 49000 TWh of energy by 2050 will have 73% of its…

Prof. Anurag Mehra joined the department as an Assistant Professor in April 1991. After 33 years of continuous service, he has technically retired from the Institute as on 30 Sep 2024. He will…

Abstract:Soft materials functionalized for application-specific mechanical, chemical, and biological properties are ubiquitous in our lives, be it…
Abstract:Understanding the molecular mechanism of any complex biophysical or chemical processes requires tracking of the dynamics on the…
Abstract:
Two fluids separated by an interface add complexity to understanding both the flow field and the interface'…
Abstract :The increasing global resource demand, inefficient resource utilization, and rapid waste disposal have led to grave concerns regarding…
Abstract:
The chemical industry is facing several groundbreaking transformations in the coming decades. These…
Abstract:Binary mixtures of surfactants exhibit fascinating behavior based on the intermolecular interactions between different surfactant classes.…
Nanomedicines provide considerable opportunities to alter the biological behaviour of active pharmaceutical ingredients. A current and growing medical challenge is the…
Abstract:
Many soft matter materials evolve through surface tension driven phase separation. During this process the growth of domains…
Abstract:In this presentation, we will share vignettes of various research projects in our group, the focus of which have primarily been on multicomponent soft…
Abstract:Green Hydrogen mission announced by Government is extremely ambitious. There are incentives for production of green Hydrogen and for installation of…
Abstract:Plants give life to our planet by pulling critical reagents out of the soil from below (water and micronutrients) and out of the atmosphere from above (…
Abstract:In many natural phenomena or industrial applications, heavy particles are transported in complex flows. The flow structures may happen to promote the…
Professor John Hinch is a Distinguished Visiting Professor in Department of Chemical Engineering in IIT Bombay. Prof Hinch would be delivering a series of lectures on…
Bio-sketch:
Dr. S. Shambhawi is a Cambridge India Ramanujan Trust Scholar with a PhD in Chemical Engineering from University of…
ABSTRACTEngineering of molecules for applications in drug discovery, materials design, and effective catalysts require traversal of large molecular design spaces…
Abstract:Filamentous cyanobacteria can show fascinating patterns of self-organization, which however are not well-understood from a physical perspective. We…
Abstract:Model predictive control (MPC) has been broadly used in process industry for tracking pre-determined set points, which are associated with optimal…
Glioblastoma multiforme (GBM) stands as a formidable challenge in the realm of brain cancer, marked by a grim prognosis even in the face of rigorous treatment protocols…
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TA, TAP, and FA topics:Candidates who have been called for an interview are requiredto submit their preferences on the TA/TAP/FA topics. TA/TAP/FA topics are availablehere.

Information regarding filling out the preference form:Read theinformationregarding filling out the preference form.
Online meeting to discuss admission process:An online discussion session will be organized to clarify the queries/issues that the candidates may have on the admission process/topic selection (TA, TAP, FA, etc.)on Saturday, 16-Nov-2024, at 11:30 AM.
ZoomLink:https://zoom.us/j/97205428769?pwd=CV9PzBfNAaqcyoLQq7A8YgxDlvlx8j.1
Submission of preference (TA/TAP/FA topics) form:Candidates need to submit the preference by 25-Nov-2024, 11:59 PM.Linkto submit the preference form.
Submission of project report:You have to email your project report tophd.chemical.iitb@gmail.comon or before 25-Nov-2024. Rename your project report as “RCL____ project.pdf” (e.g. RCL202410292_project.pdf). In the subject of the mail please write your RCL number. Please do not use this email id for any other communication. Here the project report refers to the project you have conducted during fulfilling your qualifying degree. If it was not part of your academic requirement, then type one document declaring that, sign it and send it to us following the above mentioned procedure. If your project is not yet completed, write a brief description on objective, methodology, results obtained till date.
Verification of the documents:An online document verification will be conducted through whatsapp video call on 16th and 17th November 2024, as per the schedule availablehere.
Presentation on the day of interview:Prepare 3-5 slides on your project/thesis/dissertation work. You should present in about five minutes, the objectives of your work, methodology used, key results and conclusions.
Interview:Shortlisted candidates will have to appear for anonline interview(Video Conference mode) through MS Team, Google-meet, etc betweenDecember 4 to 6, 2024.The exact date and time slot of the interview will be uploaded on this web page on 2-Dec-2024.
If you need any additional clarification, email us atphd1.chemical.iitb@gmail.com
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Application process for admissions to PhD program in the Spring, 2024-2025 session has started. Please check theIITB admissions websitefor details. Information regarding the interview process and schedule is available.
Introduction
The Department of Chemical Engineering, IIT Bombay, has a dynamic post-graduate programme with opportunities and strong emphasis on basic and applied research in a wide range of areas including several inter-disciplinary fields. This post-graduate programme includes a large number of PhD scholars who primarily contribute to the research activities of the department. The department recruits PhD scholars twice a year, in sync with our semester system.
Candidates with a Master’s or Bachelor’s degree in Engineering or Technology (ME, MTech, BE, BTech), or a Master’s in Science (MSc) are eligible to apply. Most candidates who apply have Chemical Engineering or Biotechnology background, but the Department invites candidates from other backgrounds, especially in the context of carrying out interdisciplinary research.
For admission to the Ph.D. programme in chemical engineering department minimum requirements are (one of)
Selection for the Ph.D program will be through two-stage procedure.
1.Stage-1: Shortlisting will be done based on academic performance in qualifying examination (for example, BE, BTech, ME, MTech, MSc) and valid score of national level exam as mentioned in thebrochure, wherever applicable. Shortlisted candidates will be informed through the IITB application portal.
2.Stage-2,Interview:Shortlisted candidates from stage-1, will have to appear for anonline interview(Video Conference mode)through WebEx, or Google-meet, etc betweenDecember 4 to 6, 2024.The exact date and time of the interview will be uploaded on this webpage.
Interviews will focus on the following areas.
2.1 Project work: Candidates will be questioned on their projects done in Master’s or Bachelors as per their qualifying degree.
For this, the shortlistedcandidates mustemail their project report tophd.chemical.iitb@gmail.comon or before November 25, 2024. Rename the project report as “RCL_____project.pdf”

(e.g.RCL202410292_project.pdf).When emailing, please write an RCL number. Please do not use this Email-ID for any other communication.
2.2 Courses done: During the interview, candidates would have to mention their preferences of one or two courses they have taken in Bachelor's or Master's program. Candidates will be asked fundamental questions from these courses.
2.3 Research Interest: During the interview, candidates may be asked about the broad areas of research they are interested in. Candidates should be aware of the recent status of research in that area. It is not mandatory that candidates have to pursue research only in that particular area. However, the purpose is to test their awareness and critical thinking skills in an area they are probably interested in. The Interview panel may ask about future objectives and how the doctoral program will help the candidates achieve their goals.
3.Additional information for admission under TA, TAP, and FA categories:
Candidates shortlisted for interview have to submit preferences for the TAP and/or FA topics which will be uploaded on this webpage on November 15, 2024. Even if one is interested in a TA position, providing a preference on a TAP and/or FA topic will improve his/her chances of getting an offer. Candidates having a JRF from CSIR, DBT or other funding agency are only eligible to opt for FA topics.
Candidates shortlisted for interview must submit their topic preferences in the Google form (which will be shared on this webpage) on or before November 25, 2024.
Please visit this webpage frequently for updated information.
Admissions to the PhD program of IIT Bombay can be obtained by qualifying under any of the following categories:
Teaching / Research Assistantship (TA/RA): The best candidates who make it through our selection process are awarded IIT Bombay funded teaching assistantships (TA) or research assistantships (RA).
Teaching Assistantship through Project (TAP):Candidates are offered financial support originating from sponsored projects. These projects have a faculty from the Department as the principal investigator (PI), and selected candidates pursue a PhD (with that PI as thesis supervisor) in the given topic. The projects are typically funded by the Department of Science of Technology (DST), Council of Scientific & Industrial Research (CSIR), Department of Biotechnology (DBT), Department of Atomic Energy (DAE), Indian Space Research Organisation (ISRO), etc. The student is paid scholarships throughout the length of the project; this could vary from 2.5 to 5 years. In cases where the duration is less than five years, IIT Bombay pays the student equivalent salary for the remaining time at IIT Bombay (i.e., up to 5 years).
Govt./Semi Govt. Fellowship Award (FA):Candidates have their own sources of funding via scholarships such as those from CSIR, UGC, DBT, ICMR, or DST-Inspire. After joining a lab in the Department, you will have to activate that scholarship. DST-INSPIRE fellow should check the institute policy as mentioned in point A.6.6 in Admission Brochure for details.
Project Staff (PS):The candidates are already working as Project Staff members at IIT Bombay. Candidate should check the institute policy as mentioned in point A.6.10 in Admission Brochure for details.
External candidates (EX):Candidates sponsored by recognised government and private R & D organisations, such as BARC, DRDO, Reliance Industries, TCS, etc.
College Teacher (CT):For candidates working in Colleges / Educational Institutes.
For more details, refer to the information brochure available on the IITB admission page (https://www.iitb.ac.in/newacadhome/phd.jsp)
The department is involved in a variety of frontier and traditional areas in chemical engineering research. More details and the list of faculty working in various areasare givenhere.
Biological Systems Engineering
Chemical and Electrochemical Reaction Engineering
Fluid and Granular Mechanics
Soft Matter Engineering
Process Systems Engineering
Thermodynamics and molecular simulations
Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

Ordered List:

1. TA, TAP, and FA topics:Candidates who have been called for an interview are requiredto submit their preferences on the TA/TAP/FA topics. TA/TAP/FA topics are availablehere.
2. Information regarding filling out the preference form:Read theinformationregarding filling out the preference form.
3. Online meeting to discuss admission process:An online discussion session will be organized to clarify the queries/issues that the candidates may have on the admission process/topic selection (TA, TAP, FA, etc.)on Saturday, 16-Nov-2024, at 11:30 AM.

Ordered List:

1. Submission of preference (TA/TAP/FA topics) form:Candidates need to submit the preference by 25-Nov-2024, 11:59 PM.Linkto submit the preference form.
2. Submission of project report:You have to email your project report tophd.chemical.iitb@gmail.comon or before 25-Nov-2024. Rename your project report as “RCL____ project.pdf” (e.g. RCL202410292_project.pdf). In the subject of the mail please write your RCL number. Please do not use this email id for any other communication. Here the project report refers to the project you have conducted during fulfilling your qualifying degree. If it was not part of your academic requirement, then type one document declaring that, sign it and send it to us following the above mentioned procedure. If your project is not yet completed, write a brief description on objective, methodology, results obtained till date.
3. Verification of the documents:An online document verification will be conducted through whatsapp video call on 16th and 17th November 2024, as per the schedule availablehere.
4. Presentation on the day of interview:Prepare 3-5 slides on your project/thesis/dissertation work. You should present in about five minutes, the objectives of your work, methodology used, key results and conclusions.
5. Interview:Shortlisted candidates will have to appear for anonline interview(Video Conference mode) through MS Team, Google-meet, etc betweenDecember 4 to 6, 2024.The exact date and time slot of the interview will be uploaded on this web page on 2-Dec-2024.
6. If you need any additional clarification, email us atphd1.chemical.iitb@gmail.com

Ordered List:

1. BE, BTech, ME, MTech or equivalent degree in Chemical Engineering.
2. BE, BTech, ME, MTech or equivalent degree in any branch of Engineering, Technology, and Interdisciplinary areas.
3. MSc in disciplines consistent with the research areas of the department.

Ordered List:

1. Teaching / Research Assistantship (TA/RA): The best candidates who make it through our selection process are awarded IIT Bombay funded teaching assistantships (TA) or research assistantships (RA).

Ordered List:

1. Teaching Assistantship through Project (TAP):Candidates are offered financial support originating from sponsored projects. These projects have a faculty from the Department as the principal investigator (PI), and selected candidates pursue a PhD (with that PI as thesis supervisor) in the given topic. The projects are typically funded by the Department of Science of Technology (DST), Council of Scientific & Industrial Research (CSIR), Department of Biotechnology (DBT), Department of Atomic Energy (DAE), Indian Space Research Organisation (ISRO), etc. The student is paid scholarships throughout the length of the

project; this could vary from 2.5 to 5 years. In cases where the duration is less than five years, IIT Bombay pays the student equivalent salary for the remaining time at IIT Bombay (i.e., up to 5 years).

Ordered List:

1. Govt./Semi Govt. Fellowship Award (FA):Candidates have their own sources of funding via scholarships such as those from CSIR, UGC, DBT, ICMR, or DST-Inspire. After joining a lab in the Department, you will have to activate that scholarship. DST-INSPIRE fellow should check the institute policy as mentioned in point A.6.6 in Admission Brochure for details.

Ordered List:

1. Project Staff (PS):The candidates are already working as Project Staff members at IIT Bombay. Candidate should check the institute policy as mentioned in point A.6.10 in Admission Brochure for details.

Ordered List:

1. External candidates (EX):Candidates sponsored by recognised government and private R & D organisations, such as BARC, DRDO, Reliance Industries, TCS, etc.

Ordered List:

1. College Teacher (CT):For candidates working in Colleges / Educational Institutes.

Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

Table:

Sr. No.	Topics	Date
1	Changing Role of Chemical Engineers: Panel Discussion 1 (Pharma and life sciences)	29/05/2021
2	Changing Role of Chemical Engineers: Panel Discussion 2 (Air Quality)	04/09/2021
3	Changing Role of Chemical Engineers: Panel Discussion 3 (The Evolution and future of energy)	15/01/2022
4	Changing Role of Chemical Engineers: The Future of Med-Tech	21/05/2022
5	Changing Role of Chemical Engineers: Panel Discussion 5 (Circular Economy of Materials)	05/11/2022

Preamble: Students are expected to practice highest ethical and moral standards. In order to maintain the sanctity of these standards, students are expected to sign this declaration after reading and understanding the honour code.The Department reserves the right to amend this code as and when required. Amendments will be brought to the notice of all stakeholders.

Full Name:Roll No:Date:

Signature of the student

Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

Ordered List:

1. “Declaration of Academic Honesty” statement signed by you at the time of joining“I declare that I will adhere to all principles of academic honesty and integrity throughout my stay in the Institute. I will not seek or give unauthorized assistance in tests, quizzes, examinations or assignments. I will not misrepresent, fabricate or falsify any idea/data/fact/source in my project submissions. I understand that any violation of the above will be cause for disciplinary action as per the rules and regulations of the Institute.”
2. In elaboration of the above declaration, the Department has defined the following honor code and the associated penaltiesHonor code for Individual academic activitiesIndividual activities include, but are not limited to course home works, in-class/take home exams, individual course projects, presentations, individual research projects, presentations. A student willwork independently, with utmost sincerity on these activities.not copy/falsify/fabricate information/ideas in any of these activities.not disseminate information gathered/submitted in the course of these activities with a view to facilitate unfair practices.accept sole responsibility for the entire work.Honor code for Group activitiesGroup activities are those conducted by more than one student. These include, but are not limited to in-class/take-home group course projects/lab experiments, data collection, reports, presentations, research projects, research presentations. All members of a group willparticipate in all aspects of the group activity with utmost sincerity.obtain consent of all members of the group with regard to division of work.not copy/falsify/fabricate information/ideas in any aspect of these activities.not disseminate information gathered/submitted towards any of these activities with a view to facilitate unfair practices.accept equal responsibility for all the activities and all information/ideas gathered/submitted towards these activities, in their entirety.Breach of the honor codeBreach of one or more of the above honor codes will be reported to DUGC/DPGC, as appropriate.In considering cases involving copying from other students, whether between individuals (in individual activities) or between groups (in group activities), the information giver and receiver will NOT be distinguished from each other, in terms of the punishment awarded.Copying from reports of previous years, books and journals or plagiarism of any kind will be construed as breach of this code.For group activities, every member of the group will be held equally responsible for the work in its entirety. Claiming ignorance about another group member’s misdemeanor will not be accepted as grounds to escape punishment.Potential consequencesStudent will not be allowed to take up any administrative post such as CR, GSec across the Institute;If the student is found guilty while holding an administrative position, the student will step down;No Objection Certificate (NOC) for any further assignment/internship will be denied.For individual activities:First proved instance of breach, FR grade will be awarded in the respective course.Second proved instance of breach, student will be referred to Disciplinary Action Committee (DAC) with a suitable recommendation such as rustication for a certain period or even expulsion from the Institute.For group activities:DUGC/DPGC will make specific punishment recommendations which will be of the same order of magnitude as that for individual activities.
3. Honor code for Individual academic activitiesIndividual activities include, but are not limited to course home works, in-class/take home exams, individual course projects, presentations, individual research projects, presentations. A student willwork independently, with utmost sincerity on these activities.not copy/falsify/fabricate information/ideas in any of these activities.not disseminate information gathered/submitted in the course of these activities with a view to facilitate unfair practices.accept sole responsibility for the entire work.
4. work independently, with utmost sincerity on these activities.
5. not copy/falsify/fabricate information/ideas in any of these activities.
6. not disseminate information gathered/submitted in the course of these activities with a view to facilitate unfair practices.
7. accept sole responsibility for the entire work.
8. Honor code for Group activitiesGroup activities are those conducted by more than one student. These include, but are not limited to in-class/take-home group course projects/lab experiments, data collection,

reports, presentations, research projects, research presentations. All members of a group willparticipate in all aspects of the group activity with utmost sincerity.obtain consent of all members of the group with regard to division of work.not copy/falsify/fabricate information/ideas in any aspect of these activities.not disseminate information gathered/submitted towards any of these activities with a view to facilitate unfair practices.accept equal responsibility for all the activities and all information/ideas gathered/submitted towards these activities, in their entirety.
9. participate in all aspects of the group activity with utmost sincerity.
10. obtain consent of all members of the group with regard to division of work.
11. not copy/falsify/fabricate information/ideas in any aspect of these activities.
12. not disseminate information gathered/submitted towards any of these activities with a view to facilitate unfair practices.
13. accept equal responsibility for all the activities and all information/ideas gathered/submitted towards these activities, in their entirety.
14. Breach of the honor codeBreach of one or more of the above honor codes will be reported to DUGC/DPGC, as appropriate.In considering cases involving copying from other students, whether between individuals (in individual activities) or between groups (in group activities), the information giver and receiver will NOT be distinguished from each other, in terms of the punishment awarded.Copying from reports of previous years, books and journals or plagiarism of any kind will be construed as breach of this code.For group activities, every member of the group will be held equally responsible for the work in its entirety. Claiming ignorance about another group member’s misdemeanor will not be accepted as grounds to escape punishment.
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17. For group activities, every member of the group will be held equally responsible for the work in its entirety. Claiming ignorance about another group member’s misdemeanor will not be accepted as grounds to escape punishment.
18. Potential consequencesStudent will not be allowed to take up any administrative post such as CR, GSec across the Institute;If the student is found guilty while holding an administrative position, the student will step down;No Objection Certificate (NOC) for any further assignment/internship will be denied.For individual activities:First proved instance of breach, FR grade will be awarded in the respective course.Second proved instance of breach, student will be referred to Disciplinary Action Committee (DAC) with a suitable recommendation such as rustication for a certain period or even expulsion from the Institute.For group activities:DUGC/DPGC will make specific punishment recommendations which will be of the same order of magnitude as that for individual activities.
19. Student will not be allowed to take up any administrative post such as CR, GSec across the Institute;
20. If the student is found guilty while holding an administrative position, the student will step down;
21. No Objection Certificate (NOC) for any further assignment/internship will be denied.
22. For individual activities:First proved instance of breach, FR grade will be awarded in the respective course.Second proved instance of breach, student will be referred to Disciplinary Action Committee (DAC) with a suitable recommendation such as rustication for a certain period or even expulsion from the Institute.
23. First proved instance of breach, FR grade will be awarded in the respective course.
24. Second proved instance of breach, student will be referred to Disciplinary Action Committee (DAC) with a suitable recommendation such as rustication for a certain period or even expulsion from the Institute.
25. For group activities:DUGC/DPGC will make specific punishment recommendations which will be of the same order of magnitude as that for individual activities.
26. DUGC/DPGC will make specific punishment recommendations which will be of the same order of magnitude as that for individual activities.
27. Declaration & Signing of Honor Code:On my honor as a student of the Indian Institute of Technology Bombay, I hereby declare thatI have read and understood the “Declaration of Academic Honesty” I signed at the time of joining.I have read and understood the Department Honor CodeI am aware that if found

guilty of breaching this honor code, I will be penalized as per due process, without any further warning.
28. I have read and understood the “Declaration of Academic Honesty” I signed at the time of joining.
29. I have read and understood the Department Honor Code
30. I am aware that if found guilty of breaching this honor code, I will be penalized as per due process, without any further warning.

Ordered List:

1. Honor code for Individual academic activitiesIndividual activities include, but are not limited to course home works, in-class/take home exams, individual course projects, presentations, individual research projects, presentations. A student willwork independently, with utmost sincerity on these activities.not copy/falsify/fabricate information/ideas in any of these activities.not disseminate information gathered/submitted in the course of these activities with a view to facilitate unfair practices.accept sole responsibility for the entire work.
2. work independently, with utmost sincerity on these activities.
3. not copy/falsify/fabricate information/ideas in any of these activities.
4. not disseminate information gathered/submitted in the course of these activities with a view to facilitate unfair practices.
5. accept sole responsibility for the entire work.
6. Honor code for Group activitiesGroup activities are those conducted by more than one student. These include, but are not limited to in-class/take-home group course projects/lab experiments, data collection, reports, presentations, research projects, research presentations. All members of a group willparticipate in all aspects of the group activity with utmost sincerity.obtain consent of all members of the group with regard to division of work.not copy/falsify/fabricate information/ideas in any aspect of these activities.not disseminate information gathered/submitted towards any of these activities with a view to facilitate unfair practices.accept equal responsibility for all the activities and all information/ideas gathered/submitted towards these activities, in their entirety.
7. participate in all aspects of the group activity with utmost sincerity.
8. obtain consent of all members of the group with regard to division of work.
9. not copy/falsify/fabricate information/ideas in any aspect of these activities.
10. not disseminate information gathered/submitted towards any of these activities with a view to facilitate unfair practices.
11. accept equal responsibility for all the activities and all information/ideas gathered/submitted towards these activities, in their entirety.
12. Breach of the honor codeBreach of one or more of the above honor codes will be reported to DUGC/DPGC, as appropriate.In considering cases involving copying from other students, whether between individuals (in individual activities) or between groups (in group activities), the information giver and receiver will NOT be distinguished from each other, in terms of the punishment awarded.Copying from reports of previous years, books and journals or plagiarism of any kind will be construed as breach of this code.For group activities, every member of the group will be held equally responsible for the work in its entirety. Claiming ignorance about another group member’s misdemeanor will not be accepted as grounds to escape punishment.
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14. Copying from reports of previous years, books and journals or plagiarism of any kind will be construed as breach of this code.
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(DAC) with a suitable recommendation such as rustication for a certain period or even expulsion from the Institute.For group activities:DUGC/DPGC will make specific punishment recommendations which will be of the same order of magnitude as that for individual activities.
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18. If the student is found guilty while holding an administrative position, the student will step down;
19. No Objection Certificate (NOC) for any further assignment/internship will be denied.
20. For individual activities:First proved instance of breach, FR grade will be awarded in the respective course.Second proved instance of breach, student will be referred to Disciplinary Action Committee (DAC) with a suitable recommendation such as rustication for a certain period or even expulsion from the Institute.
21. First proved instance of breach, FR grade will be awarded in the respective course.
22. Second proved instance of breach, student will be referred to Disciplinary Action Committee (DAC) with a suitable recommendation such as rustication for a certain period or even expulsion from the Institute.
23. For group activities:DUGC/DPGC will make specific punishment recommendations which will be of the same order of magnitude as that for individual activities.
24. DUGC/DPGC will make specific punishment recommendations which will be of the same order of magnitude as that for individual activities.

Ordered List:

1. I have read and understood the “Declaration of Academic Honesty” I signed at the time of joining.
2. I have read and understood the Department Honor Code
3. I am aware that if found guilty of breaching this honor code, I will be penalized as per due process, without any further warning.

Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

Table:

Name	Designation	Appointment	Building	Room_no.	Phone Nos.	Email
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Jayesh Bellare	Professor	Core Faculty	Chemical Engineering	131	+91 (22) 2576 7207 (O)	jb@iitb.ac.in
Sharad Bhartiya	Professor	Core Faculty	Chemical Engineering	311	+91 (22) 2576 7225 (O)	bhartiya@che.iitb.ac.in
Swati Bhattacharya	Associate Prof.	Core Faculty	Chemical Engineering	122	+91 (22) 2576 7220 (O)	swaticb@che.iitb.ac.in
Mani Bhushan	Professor	Core Faculty	Chemical Engineering	311	+91 (22) 2576 7214 (O)	mbhushan@che.iitb.ac.in
Abhijit Chatterjee	Professor	Core Faculty	Computer-aided Design Centre (CAD)	2	+91 (22) 2576 7242 (O)	abhijit@che.iitb.ac.in
Sonali Das	Assistant Prof.	Core Faculty	Chemical Engineering	122	+91 (22) 2576 7265 (O)	sonali.das@iitb.ac.in
Ratul Dasgupta	Associate Prof.	Core Faculty	Chemical Engineering	122	+91 (22) 2576 7235 (O)	dasgupta.ratul@iitb.ac.in
Sayantan Dutta	Assistant Prof.	Core Faculty	Computer-aided Design Centre (CAD)	12	022 25767796 (O)	sayantan.dutta@iitb.ac.in
Partha Sarathi Goswami	Associate Prof.	Core Faculty	Chemical Engineering	151	+91 22 2576 7230 (O), +91 (22) 2572 6895 (Fax)	psg@che.iitb.ac.in
Ravindra D Gudi	Professor	Core Faculty	Computer-aided Design Centre (CAD)		+91 (22) 2576 7231 (O)	

ravigudi@che.iitb.ac.in
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Anurag Mehra Professor Core Faculty Chemical Engineering 222 +91 (22) 2576 7217 (O) mehra@iitb.ac.in
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Kannan M Moudgalya Professor Core Faculty Chemical Engineering 311 +91 (22) 2576 7213 (O) kannan@iitb.ac.in
Hemant Nanavati Professor Core Faculty Chemical Engineering 242 +91 (22) 2576 7215(O) hnanavati@che.iitb.ac.in
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Sandip Roy Professor Core Faculty Computer-aided Design Centre (CAD) 10 +91 (22) 2576 7249 (O) sr@iitb.ac.in
Supreet Saini Professor Core Faculty 2nd Floor CESE-DESE 1 +91 22 2576 7216 (O) saini@che.iitb.ac.in
Arindam Sarkar Professor Core Faculty Chemical Engineering 125 +91 (22) 2576 7233 (O)+91 (22) 2572 6895 (Fax) asarkar@che.iitb.ac.in
Jyoti Seth Associate Prof. Core Faculty Chemical Engineering 241 +91 (22) 2576 7226+91 (22) 2572 6895 (Fax) jyoti@che.iitb.ac.in
Yogendra Shastri Professor Core Faculty Chemical Engineering 311 +91 (22) 2576 7203 (O) yshastri@iitb.ac.in
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The Department Library maintains a significant number of books, accessible to the members of the department.
The ChE Library will now be open to all 2-year MTech and PhD students of the ChE Department. Details are as follows (subject to modifications with experience):
The library catalogue of books, issue, return, and acquisition is maintained in a separate server.It is managed by the Integrated Library management System (ILS) calledKoha. Click toEnter Koha Library Interface. Login using your IITB-LDAP credentials to check for issue status. Library staff should usethis interfaceto manage the library.
Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

Ordered List:

1. The timings will be from 9-30 am to 5.30 pm (minus lunch break from 12.45 to 2.15 pm),click here for detailed Time Table. One TA will be sitting in the ChE Library with all the almirah keys.
2. The books will have to be read ONLY inside the ChE Library room...they will not be allowed to be taken out of that room, even for short times.
3. The student will have to hand over his ID card to the TA before he/she takes out any book (the student will need to locate the book and take it out and keep the book back him/herself)
4. As of now, the ChE Library is also being used for meetings. During these times, the ChE Library room will not be available for use for reading.

The awards will be given on 25 August, 2024 as part of the Department Degree Distribution Program.

Naik and Rastogi Excellence in Ph.D. Thesis Awards

Dr. Meghana Munagala (184020011…read more
Students from the Chemical Engineering Department of IIT Bombay won the prestigious Prof. N R Kamath Annual Intercollege Chemical Engineering Quiz, held on 16th March 2024 at DMCE, Mumbai. Eight…read more
What is Course on Wheels (CoW) ?

Course on wheels is a novel pedagogical activity at the Department of Chemical engineering, IIT Bombay

to provide an improved experiential connect to the students,…read more
Prof. Sujit S. Jogwar: The Journey from Industry to Academia

Prof Jogwar shares his profession journey and highlights achievements of the research lab. The interview can be accessed hereread more
read more
What is Course on Wheels (CoW) ?

Course on wheels is a novel pedagogical activity at the Department of Chemical engineering, IIT Bombay to provide an improved experiential connect to the students,…read more
Changing Role of Chemical Engineers' is a series of online panel discussions organized by the alumni of IIT Bombay Chemical Engineering, in collaboration with the department. This series will explore…read more
read more
Research article by Vinay and Akanksha on the extent of antimicrobial resistance due to bacterial efflux pumps published in ACS Infectious Diseasesread more
Article by Vinay and Akanksha on the extent of antimicrobial resistance due to bacterial efflux pumps published in ACS Infectious Diseasesread more
The 4th panel discussion featuring eminent industry leaders and alumni of the chemical engineering department at IITB was held online on Saturday, 21 May 2022. The panel was moderated by Dr Sanat…read more
This is the third panel discussion organized as part of the series: Changing Role of Chemical Engineers. These panel discussions are organized by alumni of the chemical engineering department at IITB…read more
Changing Role of Chemical Engineers' is a series of online panel discussions organized by the alumni of IIT Bombay Chemical Engineering, in collaboration with the department. This series will explore…read more
The department has introduced a new course starting July 2021 titled, Introduction to Chemical Engineering Applications in Industry (CL 681), with a focus on the Pharmaceutical industry. The lectures…read more
'Changing Role of Chemical Engineers' is a series of online panel discussions organized by the alumni of IIT Bombay Chemical Engineering, in collaboration with the department. This series will…read more
Our beloved colleague Prof. Vasudeo Gopal Gurjar, who was retired from our department, passed away in Mumbai on March 04,2021.Friends, students, and well-wishers are invited to share their thoughts…read more
We encourage international students to apply for the IIT Bombay institute TA fellowships for our PhD programs. More details about this can be found at https://www.ir.iitb.ac.in/en/students/…read more
Highlights of recent research work of group Ph.D. students (Abhilasha Maheshwari, Shamik Misra) to develop a realistic framework for planning and scheduling water tanker movement in cities for…read more
Prof. Devang Khakhar has been selected to receive " Shri Om Prakash Bhasin Award 2019" in the field of Engineering, Energy and Aerospaceread more
We are pleased to announce that the Prof. Krithi Ramamritham Award for creative research for the year 2018 is conferred upon Prof. Sujit S. Jogwar, Department of Chemical Engineering, in recognition…read more
Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

Services offered by the Department to the Industry Academia and Society at large.
Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

Supercritical Fluid-based Technologies from IIT Bombay

Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

Various information for current students and faculty.
Committees & Faculty Advisors
Timetables and Allotments
UG/PG Examiners
Department Brochure and Annual Reports
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Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

This document prepared by the Department of Chemical Engineering, Indian Institute of Technology Bombay, is a guide to the desirable practices relating to the protection of personnel health, safety and environment (HSE) which may be adopted and adhered to in connection with all laboratory-based research activities. The objective of this document is to provide all relevant information on safety and environmental disposal practices to the students, technical staff, and other concerned personnel. This is expected to help eliminate or minimize hazards that may be encountered during laboratory activities. It is anticipated that every personnel associated with the Departmental laboratory activities will strive to enhance the practices suggested here so as to ensure that potential health effects due to accidental exposure to the relevant hazards, and environmental impacts due to discharge of chemicals is either eliminated or reduced to acceptable levels as prescribed by regulatory authorities. Adherence to the best laboratory safety practices may not only be mandated, it is also in the best interest of a personnel and

that of his / her co-workers.Committee Members (2022-23): Prof. Sandip Roy (Convener), Prof. Chandra Venkataraman, Prof. Arindam Sarkar

Emergency Contact Numbers
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Table:

Title Video Link
Fire safety : https://www.youtube.com/watch?v=L03Q7flLr4E
Laser safety : https://www.youtube.com/watch?v=el0-Vb8XwCU
Radiation safety : https://www.youtube.com/watch?v=arprZAK5Aj4
Chemical safety : https://www.youtube.com/watch?v=e7PorbRCzZ0
Gas cylinder safety : https://www.youtube.com/watch?v=fKBoEcJm4Kc
Cryogenics safety : https://www.youtube.com/watch?v=3y3PnfeNME4
Bio safety : https://www.youtube.com/watch?v=QD90M8F_DPI
Machine safety : https://www.youtube.com/watch?v=mDp830mCOS8
Electrical safety : https://www.youtube.com/watch?v=_Sv1L2zPE2A

Consult the following links for TA Topics offered by the department grouped by Research Area and by Faculty.Faculty Note: To float a TA topic login and usethis linkto upload a Phd TA topic
Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

Table:

Title Research Area Modified Time
Multiscale CFD simulations of viscoelastic turbulence Computational fluid dynamics 04/09/2024 - 12:04

Table:

Title Research Area Modified Time
Nanoparticle-encapsulated microfibers as vehicles for targeted drug delivery Drug Delivery 04/19/2023 - 12:36

Table:

Title Research Area Modified Time
Microfluidics based generation of biomaterials for 3D tumor modelling Microfluidics 04/19/2023 - 12:35

Table:

Title Research Area Modified Time
A Sugarcane-based Biorefinery: Development of high value nutraceuticals using chromatographic methods Process system engineeringSeparations 04/19/2023 - 12:11

Table:

Title Research Area Modified Time
Pattern formation amid turbulence: how large-scale order survives small-scale chaos Pattern Formation 04/17/2023 - 07:36
Visco-elastic CFD: turbulence at zero Reynolds number Computational fluid dynamics 04/17/2023 - 07:23
Traffic flow dynamics Granular Flow 11/01/2022 - 11:27
Glaciers: Dynamics of melting and flow Climate ChangeComputational Flow Modelling (CFD)Fluid Mechanics and StabilityMathematical modelling 11/01/2022 - 11:17

Table:

Title Research Area Modified Time
Three-dimensional Self Assembly of Graphene Water purificationNanoparticlesgrapheneColloidsPorous MediaRheology 04/16/2023 - 21:03
Simulating the Dynamics of Particulate Networks RheologyElectrohydrodynamicsComputational Flow Modelling (CFD)Modelling 08/04/2020 - 11:01

Table:

Title Research Area Modified Time
Systems dynamics and optimization based design of sustainable transport sector in India Energy, Climate and SustainabilityProcess Systems Engineering 04/15/2023 - 18:54
Optimal transition of petroleum refineries to achieve decarbonization objectives Climate ChangeEnergy IntegrationProcess Systems EngineeringModellingOptimisation 11/07/2022 - 10:58

Table:

Title Research Area Modified Time
A combined computational and experimental investigation of the catalytic hydrogenation of carbon dioxide to ethanol Chemical and Electrochemical Reaction EngineeringCatalysisEnergy, Climate and SustainabilityThermodynamics and molecular simulations 04/15/2023 - 09:33

Table:

Title Research Area Modified Time
Data-driven stabilizing model predictive control of nonlinear systems Process Control 04/14/2023 - 22:41

Table:

Title Research Area Modified Time
Molecular Simulation Study of Natural Products: Separation & Applications Renewable ResourcesSupercritical FluidsMolecular SimulationsOptimisationSeparationsThermodynamics and molecular simulationsThermodynamicsStatistical Themodynamics 04/14/2023 - 20:06

Table:

Title Research Area Modified Time
Chemical sensor development for water contaminants and technology for their removal Water purificationSoftmatter EngineeringSurface ScienceNano-compositesNanoparticlesprocess and product developmentFluid and Granular MechanicsMicrofluidics 04/14/2023 - 18:38
Engineering nanoparticle size and shape: Multiscale modeling, simulation and applications Multiphase ReactionReaction EngineeringSoftmatter EngineeringMolecular SimulationsNanoparticlesFluid and Granular MechanicsMathematical modelling 04/14/2023 - 18:36
Development of polymeric implant for nanoparticle mediated drug delivery in pancreatic cancer Biological Systems EngineeringSoftmatter EngineeringBiomaterialsDrug DeliveryNanoparticlesFluid and Granular MechanicsMicrofluidics 04/14/2023 - 18:34

Table:

Title Research Area Modified Time
Molecular Simulations of HIV-2 protein VpX Computational Biology 04/13/2023 - 10:17
Modeling and Simulations of Sorcin, an oncoprotein associated with multi drug resistant cancers. Computational Biology 04/13/2023 - 10:16

Table:

Title Research Area Modified Time
Optimization and Control approaches for Energy Transition Process Systems Engineering 11/14/2022 - 16:01
Integrating AI & ML approaches in design for operational excellence Process Systems Engineering 11/14/2022 - 16:00

Table:

Title Research Area Modified Time
Topic 1 : Global metabolomics to identify markers for pre-diabetes and severity markers for diabetes. Biological Systems EngineeringBioinformaticsBiomedical engineering/ biotechnology / systems biologyComputational Biology 11/10/2022 - 10:57
Topic 2 : Synthetic biology and metabolic engineering of cyanobacteria (CO_2 to chemicals). Biological Systems EngineeringBioinformaticsComputational BiologySystems BiologyBiochemical Engineering 11/10/2022 - 10:57
Topic 3 : Metabolic engineering of heterotrophic bacteria (Sugar to chemicals). Biological Systems EngineeringBioinformaticsComputational Biology 11/10/2022 - 10:56
Topic 4: Non-stationary 13C-Metabolic flux analysis of cyanobacteria. Biological Systems

EngineeringComputational BiologySystems Biology 11/10/2022 - 10:56

Table:

Title Research Area Modified Time
Understanding the role of Substrate Rheology on breast cancer metastasis Biomaterials 11/07/2022 - 14:48
Understanding the role of Substrate Rheology on Cell Fate Biomaterials 10/27/2021 - 16:24

Table:

Title Research Area Modified Time
Brain Cancer Tumor on Chip Microfluidics 11/07/2022 - 14:47

Table:

Title Research Area Modified Time
The role of edge waves in sand transport into beaches and pattern formation (cusps) Pattern Formation 11/07/2022 - 09:29
LES of wind generated ocean waves, wave breaking and spray formation Computational Flow Modelling (CFD)Fluid Mechanics and StabilityThermodynamicsAerosols 12/08/2020 - 17:52

Table:

Title Research Area Modified Time
Enhanced Diffusion-based Loading of Drugs on Mesoporous Silica from Supercritical Carbon dioxide Supercritical FluidsDrug Delivery 11/06/2022 - 12:11
Drug Delivery using Supercritical Carbon Dioxide-Assisted Impregnation of Biocompatible Polymeric Implants Drug DeliverySupercritical Fluids 12/08/2020 - 12:08

Table:

Title Research Area Modified Time
Rheology and dynamics of dense, turbulent fluid-solid flows Computational Flow Modelling (CFD)Fluid Mechanics and StabilityMathematical modellingGranular FlowTurbulence 11/06/2022 - 08:18

Table:

Title Research Area Modified Time
Integrated design and control of batch heat exchanger networks ModellingOptimisationProcess Control 11/05/2022 - 23:13
Design of robust optimal heat exchanger networks Process Systems Engineeringprocess and product developmentModellingOptimisation 10/29/2021 - 12:42

Distributed control architecture synthesis Process Systems EngineeringData AnalysisProcess Control 10/29/2021 - 12:37
Design aspects of energy-integrated batch distillation Process Systems EngineeringModellingOptimisationProcess Control 10/29/2021 - 12:32

Table:

Title Research Area Modified Time
Controlled Drug Delivery in Osmotic Tablets Drug Delivery 11/05/2022 - 10:23
Biomedical Devices for resource controlled settings Microfluidics 11/05/2022 - 10:22
Film formation and Rupture in Drying Polymer Films Polymer Physics 11/05/2022 - 10:21

Table:

Title Research Area Modified Time
Accurate Molecular Models for Real Polymers (TA/FA) TheoryPolymer PhysicsMathematical modellingStatistical Themodynamics 11/04/2022 - 23:07
Molecular Modeling of Elasticity of Spider Silk and Related Biopolymers (TA / FA) Biomolecular EngineeringTheoryBiomaterialsMicroscopyMolecular SimulationsPolymer PhysicsMathematical modellingStatistical Themodynamics 11/04/2022 - 23:05

Table:

Title Research Area Modified Time
Modeling cell-death Computational BiologySystems BiologyReaction networkState estimationData Analysis 11/04/2022 - 20:21

Table:

Title Research Area Modified Time
Molecular scale understanding of ionic transport and reactions inside a fuel cell and batteries Energy, Climate and SustainabilityRenewable ResourcesMolecular SimulationsIdentificationModellingOptimisationHeat and Mass Transfer 11/04/2022 - 19:35
Electrocatalytic CO2 reduction reaction: Multiscale modelling of transport, catalyst surface evolution, and reaction processes Chemical and Electrochemical Reaction EngineeringEnergy, Climate and SustainabilityClimate ChangeSurface ScienceMolecular SimulationsOptimisationAdsorption 11/04/2022 - 19:21

Table:

Title Research Area Modified Time
Design and synthesis studies of porous/catalytic materials Chemical and Electrochemical Reaction EngineeringSurface ScienceMolecular SimulationsFluid and Granular MechanicsThermodynamics and molecular simulations 11/03/2022 - 19:12
Simulation study of Enhance Oil Recovery Energy, Climate and SustainabilitySurface ScienceMolecular

SimulationsAdsorptionSurfactantsThermodynamics and molecular simulations 11/03/2022 - 19:12
Materials for water purification and desalination Energy, Climate and SustainabilityWater purificationMolecular SimulationsSeparationsThermodynamics and molecular simulations 11/03/2022 - 19:12
Design of nanoporous materials for gas separation Energy, Climate and SustainabilityMolecular SimulationsSeparationsThermodynamics and molecular simulations 11/03/2022 - 19:11

Table:

Title Research Area Modified Time
Modeling effect of climate change on the transport processes in Raindrop formation and Lightning Electrohydrodynamics 11/03/2022 - 17:35

Table:

Title Research Area Modified Time
Optimizing strategies for air pollution mitigation in India: Modelling energy-technology-emission scenarios and impacts Energy, Climate and Sustainability 11/03/2022 - 16:44

Table:

Title Research Area Modified Time
Flow analysis and control in microfluidic networks Computational Flow Modelling (CFD)Computational fluid dynamics 11/03/2022 - 10:20

Table:

Title Research Area Modified Time
Biochemical signaling network for periodic forcing within sperm flagella. Computational BiologySystems Biology 11/03/2022 - 10:19

Table:

Title Research Area Modified Time
Early cancer detection and cancer Treatment using electric fields (Electroporation) Biological Systems Engineering 11/02/2022 - 06:21

Table:

Title Research Area Modified Time
Modeling and Simulation of Li-ion Batteries and Fuel Cells Impedance Response Reaction EngineeringEnergy, Climate and SustainabilityMathematical modellingPorous Media 11/01/2022 - 16:17
Enabling Fast Charging and Safe Operation for Li-ion/Na-ion Battery: Modeling, Simulation and

Optimization Reaction EngineeringEnergy, Climate and SustainabilityProcess Systems EngineeringProcess system engineeringPorous Media 11/01/2022 - 16:17
Battery management system for electric vehicle and drone application Reaction EngineeringEnergy, Climate and SustainabilityState estimationModellingOptimisationPorous Media 11/01/2022 - 16:15
Battery pack design for E-Scooter/Drone/EV applications Reaction EngineeringRenewable ResourcesProcess Systems EngineeringModellingMathematical modellingHeat and Mass TransferPorous Media 11/03/2021 - 00:47

Table:

Title Research Area Modified Time
Upcycling of thermoplastics and microplastic formation Polymer Physics 11/01/2022 - 12:31

Table:

Title Research Area Modified Time
Operationalization of the Principles of Circular Economy in the Indian Process Industry: Challenges and Strategies Energy, Climate and Sustainability 11/23/2021 - 15:16
Integration of Occupational Health and Safety and Sustainability Principles for Development of Technologies and Process Designs Energy, Climate and Sustainability 11/23/2021 - 15:16

Table:

Title Research Area Modified Time
Dual Adaptive and Predictive Control of Nonlinear and Distributed Systems Process Control 11/16/2021 - 09:24
Online Optimizing Control of Nonlinear Processes using Machine Learning Techniques Process Control 11/03/2021 - 14:16

Table:

Title Research Area Modified Time
Modeling autoimmune disorders Systems Biology 11/15/2021 - 10:09
Modeling chronic kidney disease (CVD) for diagnostic and personalized management Systems Biology 11/14/2021 - 13:26

Table:

Title Research Area Modified Time
Combined theory and experimental study of controlled metal (electro)dissolution for water disinfection Chemical and Electrochemical Reaction EngineeringReaction networkCatalysisWater purificationSurface ScienceMolecular Simulations 10/31/2021 - 20:25

Table:

Title Research Area Modified Time
Droplet manipulation inside a microfluidic device for biological applications Microfluidics 10/30/2021 - 15:24

Table:

Title Research Area Modified Time
Open problems in evolutionary biology (experiments and/or theory) AdaptationDivergent selectionEvolutionComputational BiologySystems BiologySympatric speciationSexual reproductionTheory 10/23/2021 - 14:54

Table:

Title Research Area Modified Time
Developing improved CHO host cells for production of monoclonal antibodies Biological Systems Engineering 04/24/2021 - 01:21
Tracking emergence of resistance in Mycobacteria. Biological Systems Engineering 04/23/2021 - 08:16

Table:

Title Research Area Modified Time
Chemical and mechanical reclamation of Foundry sand waste management and reaction engineering 12/13/2020 - 12:41
Process and Product development in Jaggery (non-centrifugal sugars) making process and product development 12/13/2020 - 12:39

Table:

Title Research Area Modified Time
Analysis and optimization of particle grinding in a spiral air jet mill Computational fluid dynamicsGranular Flow 12/13/2020 - 11:07

Table:

Title Research Area Modified Time
The phase behavior of connected hard and soft particles. 12/09/2020 - 17:15
Polymer-grafted nanoparticles Nano-compositesNanoparticlesPolymer PhysicsThermodynamics and molecular simulations 12/09/2020 - 17:12
Gelation and network formation in polymer-grafted nanoparticles Molecular SimulationsStatistical ThemodynamicsPolymer PhysicsSoftmatter EngineeringNano-composites 08/03/2020 - 22:47
Polymer grafted nanoparticles as separation and fuel cell membranes Statistical ThemodynamicsPolymer PhysicsNano-compositesColloidsSoftmatter EngineeringRenewable Resources 08/03/2020 - 22:29
The phase behavior of connected hard and soft particles. Statistical ThemodynamicsPolymer

PhysicsNano-compositesBiomaterialsSoftmatter EngineeringColloidsMolecular Simulations 08/03/2020 - 22:24
The role of shape in the self-assembly of polymer-grafted nanoparticles. Statistical ThemodynamicsPolymer PhysicsNano-compositesSoftmatter EngineeringColloids 08/03/2020 - 22:19
The role of impurities in the self-assembly of polymer-grafted nanoparticles. Statistical ThemodynamicsPolymer PhysicsNano-compositesSoftmatter Engineering 08/03/2020 - 22:17

Table:

Title Research Area Modified Time
Efficient simulation of large scale process flowsheets Process system engineering 12/09/2020 - 12:24

Table:

Title Research Area Modified Time
Ultrasonic atomisation and the Faraday instability - a route for drug nanoparticle synthesis: Experiments, modelling and simulations Drug DeliveryComputational Flow Modelling (CFD)Fluid Mechanics and StabilityAerosolsNanoparticles 12/08/2020 - 17:51

Table:

Title Research Area Modified Time
CFD based investigation of the dynamics, stability and transition regimes of gravity driven rivulets and other constrained liquid surfaces. Computational Flow Modelling (CFD)SurfactantsSurface ScienceFluid Mechanics and Stability 12/08/2020 - 17:40

Table:

Title Research Area Modified Time
Film formation and anti-microbial studies of nano-composite coatings Nano-compositesNanoparticlesColloids 12/06/2020 - 10:26

Table:

Title Research Area Modified Time
Zebrafish and embryo models for nanomedicine studies NanoparticlesBiomaterials 12/03/2020 - 23:32
Scaffolds for regenerative medicine Biomaterials 12/03/2020 - 23:30
Simulation and fabrication of resorbable occlusion devices for surgery Softmatter EngineeringBiomaterials 12/03/2020 - 23:19

Table:

Title Research Area Modified Time

Development of a Decision Support System for Management of Emergency Operations Process Safety and Risk ManagementProcess Systems Engineering 08/04/2020 - 11:26
Development of Safety Regulations: Integration of Cost-Benefit Analysis Process Safety and Risk ManagementProcess Systems Engineering 08/04/2020 - 11:25
Development of a risk-informed decision framework to derive the optimal organizational safety budget across globally dispersed manufacturing sites Process Safety and Risk ManagementProcess Systems Engineering 08/04/2020 - 11:22
Development of decision-support system for enabling socially acceptable approaches to hazardous process plant siting Process Systems Engineering 08/04/2020 - 11:20
Studies on assessment of lacuna in Indian industrial risk governance framework, and development of strategies to rectify them Process Safety and Risk ManagementProcess Systems Engineering 08/04/2020 - 11:18

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This information is for the members of the department who wish to engage in video conferencing over the internet. The department video conferencing facility is located in the department conference room. Following are some details local users may need to provide to their remote counterparts of a meeting.
A booking for the use of the facility can be done at thehallbook website (HOD Office VC room). Please contact the SysAd@che for any assistance with the setup.
The department also has askypeID for video conferencing. Please request your remote party to add the skypeID: che.iitb in their skype contacts. They should also send you their skypeID.

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1. Public IP Address 103.21.127.110
2. Model:Polycom HDX 7000 Series(IP based, no ISDN support)
3. Local IP address (for use within IITB): 10.102.1.10

Undergraduate Research and Design projects are offered as part of BTP and SLP credits (available only for fourth year B.Tech and DD students). Please find a link to the allotment ruleshere. Please contact the respective faculty for more information. Faculty can add new projects to this list by accessingthis link(after logging in with their LDAP credentials).
Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

Table:

Title Floated On

Chemical sensor development for water contaminants and technology for their removal 05 Aug 2024
A microfluidic device for deciphering bacterial motion in presence of nanoparticles for household water treatment systems 05 Aug 2024
A microfluidic device for deciphering bacterial motion in presence of nanoparticles for household water treatment systems 29 Dec 2023
Development of polymeric implant for nanoparticle mediated drug delivery in pancreatic cancer 29 Dec 2023
Chemical sensor development for water contaminants and technology for their removal 29 Dec 2023
Engineering nanoparticle size and shape: Multiscale modeling, simulation and applications 29 Dec 2023
An Autonomous Water Quality Monitoring System with Sensors, for Water Quality Parameters 28 Jul 2022
Modeling of a solar photocatalytic reactor using fluid flow and mass-energy conservation equations 01 Jan 2022
Developing population balance models of particle size distribution of polymers in a reactor 01 Jan 2022
Modeling adsorption and reaction of contaminants by nanoparticle impregnated polymeric fibers 31 Jul 2021

Table:

Title Floated On
Mechanism studies for CO2 conversion on novel catalysts using TAP technique. 02 Aug 2024
Catalyst and process development for Sustainable Plasma-catalytic Methane Valorization 01 Jan 2024
Catalyst development for sustainable conversion of CO2 to chemicals 31 Dec 2023

Table:

Title Floated On
Conservative mulit-phase-fluid formulation with moving solid boundaries: model building and simulations 02 Aug 2024
Minimization of discrete errors in two-phase flow modeling with unequal densities 01 Jan 2024
Analysis of discrete Boltzmann equation 29 Jul 2023
No-slip boundary condition for moving boundary in two-phase flow 28 Jul 2023

Table:

Title Floated On
R&D Strategy for the Indian Chemical Industry 31 Jul 2024
Enabling Effective Industrial Risk Governance 10 Jan 2024
Performance and Strategy for R&D in the Indian Chemical Industry 02 Jan 2024
Prediction of Controlled Amorphous and Crystalline Drug Release 02 Aug 2023
Risk-based layout of multi-level process plant 02 Aug 2023
Preventive Maintenance Scheduling using Markov Chain Analysis 24 Jul 2022
On Assessing the Role of MSMEs in the Indian Chemical Industry 26 Jul 2021

Table:

Title Floated On

Cell-cycle tracking using Machine Learning approaches 31 Jul 2024
Transition of spatiotemporal patterns in packed-bed reactors 27 Dec 2021
Decoding edges in state transition graphs 13 Jan 2021

Table:

Title	Floated On
Liver Organoid on Chip	29 Jul 2024
Development of a micorlfuidic chip to study cell migration	29 Jul 2023
Development of a multi-dimensional concentration gradient generator	31 Dec 2022
Developing Brain Tumor on Chip	31 Dec 2022
Replicative senescence in human mesenchymal stem cells.	26 Jul 2022

Table:

Title	Floated On
Machine Learning and DFT-Driven Catalyst Design for CO2 Conversion	26 Jul 2024

Table:

Title	Floated On
Effect of mechanical forces on microplastic formation	25 Jul 2024
Microplastics from PP and their effect on cells	25 Jul 2024
Microplastic and nanoplastic formation by LLDPE	25 Jul 2024

Table:

Title	Floated On
Design principles of bioogical networks.	25 Jul 2024
Principles of protein evolution.	25 Jul 2024

Table:

Title	Floated On
Sterilization and preservation with supercritical cabon dioxide	25 Jul 2024

Table:

Title	Floated On
Battery pack simulation	25 Jul 2024

Table:

Title	Floated On
Optimization for addressing food-energy-water nexus	25 Jul 2024

Table:

Title	Floated On
Computational Fluid dynamics of producer gas burner	24 Jul 2024

Table:

Title	Floated On
Root cause identification using causal AI	24 Jul 2024
Creation of pollution sources database using NLP based Machine Learning approaches	02 Aug 2023
Process data digitization using low cost software and hardware interventions	02 Aug 2023

Table:

Title	Floated On
Quantifying dynamics of drug resistant colonies using advanced image processing and computational models	27 Feb 2024

Table:

Title	Floated On
CFD analysis for improving freeze-dryer design	11 Jan 2024

Table:

Title	Floated On
Computational screening of Porous Materials for Adsorbed Natural Gas	04 Jan 2024
Microscopy-guided first-principles-based modeling of optical properties of carbonaceous aerosols	15 Jan 2021

Table:

Title	Floated On
Modeling dispersion of a gas pulse in a TAP reactor	03 Jan 2024

Table:

Title Floated On
Precise kinetic characterization of CO2 reduction catalysts by Temporal Analysis of Products (TAP) technique. 02 Jan 2024
Carbon capture materials by flame synthesis 28 Dec 2021

Table:

Title Floated On
Simulating the Rheology of Particulate Networks in Complex Fluids 02 Jan 2024

Table:

Title Floated On
Global dynamics of glaciers 01 Jan 2024
Liquid-liquid counter-current flow in microchannels 26 Jul 2023

Table:

Title Floated On
Cancer Tumours and CAF interactions 31 Dec 2023

Table:

Title Floated On
Controlled Drug Delivery: Experiments 23 Dec 2023
Coating Flows in Viscoelastic Fluids: Experiments 23 Dec 2023
Coating flows in Viscoelastic Fluids:Theory 23 Dec 2023

Table:

Title Floated On
GCMS-based metabolomics studies. 07 Aug 2023
Plastic degrading bacteria. 07 Aug 2023
Metabolic modeling of Pre-Diabetes 30 Dec 2021
New biological insights by mapping of metabolomics data to metabolic pathways and by generating qualitative models 13 Jan 2021
Deep learning methods for metabolite identification from high resolution LC-MS data. 13 Jan 2021

Table:

Title Floated On
Data Refinement and Modeling of Elasticity of Solid Propellant Matrix 05 Aug 2023

Table:

Title	Floated On
UTM for soft solids	06 Jan 2023
In silico experiments on human bone remodeling to explore the effects of Romosozumab treatment for metabolic diseases	31 Jul 2021

Table:

Title	Floated On
Genome Scale Flux Balance Metabolic Models for recombinant CHO cells	04 Aug 2022

Table:

Title	Floated On
Understanding electroporation using simulations	25 Jul 2022
Effect of electric field on neurons	25 Dec 2021
Development of a quadrupolar trap for investigating ice formation and cloud electrification	15 Jan 2021

Table:

Title	Floated On
Modeling immune response in diabetic patients to evaluate effects of co-morbidity during covid infection	05 Jan 2022
Modeling the disease state of fibrosis	26 Jul 2021

Table:

Title	Floated On
Dynamics of Airborne SARS-CoV-2 (for only Joint Masters Program Students with WashU)	05 Jan 2022

Table:

Title	Floated On
Modeling and simulation li-ion battery with Si/Graphite anode	30 Dec 2021
Modeling diffusion in li-ion battery active materials	30 Jul 2021
Li-ion Battery: Modeling impedance response	13 Jan 2021

Table:

Title Floated On
Development of quadrupole and acoustic traps to levitate charged drops, rain drops, cough droplets and pollen to study their dynamics, instability and interaction with aerosols for environmental and health effects applications. (Wash U programme) 24 Dec 2021

Table:

Title Floated On
Filter-based Correction Algorithm for Aerosol Optical Properties in Support of the COALESCE network 13 Jan 2021
Atmospheric chemistry of organic aerosols: Insights from aerosol mass spectrometry 13 Jan 2021

A detailed curriculum document is provided in an attachment below.
Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

DD Projects are assigned in the Spring Semester (Jan to April) of the first year. Please contact the respective faculty for more information. Faculty can addnew projects here.
Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

Table:

Title Authored on
Artificial Tissue Design: A Computational Engineering Approach 13 Nov 2024

Table:

Title Authored on
Reinforcement learning for batch process optimization 12 Nov 2024
Robust Distributed Model Predictive Control 21 Dec 2023

Table:

Title Authored on
Na-ion battery: exploring the capacity fade of anode 11 Nov 2024
Battery Pack Modeling for EV 21 Dec 2023

Table:

Title Authored on
Protein-protein interaction map of a cell. 08 Nov 2024

Table:

Title Authored on
PE-clays as a novel high performance adhesive 08 Nov 2024
Plastics recycling: Using supercritical CO2 to clean up additives 28 Dec 2023

Table:

Title Authored on
Chemical recycling of PVDC using supercritical water treatment 08 Nov 2024

Table:

Title Authored on
Computational Screening of Porous Materials for Adsorbed Natural Gas 02 Jan 2024

Table:

Title Authored on
Modelling Biopolymers - 1 01 Jan 2024
Modelling Biopolymers - 2 01 Jan 2024
Modelling the Elastomer Matrix of Solid Propellant 01 Jan 2024

Table:

Title Authored on
Simulating the Rheology of Particulate Networks in Complex Fluids 01 Jan 2024

Table:

Title Authored on
A lattice Boltzmann diffuse interface model for two-phase flow with moving solid boundaries 01 Jan 2024

Table:

Title Authored on

Developing organ on chip models 31 Dec 2023

Table:

Title Authored on
Engineering nanoparticle size and shape: Multiscale modeling, simulation and applications 29 Dec 2023
Chemical sensor development for water contaminants and technology for their removal 29 Dec 2023
Development of polymeric implant for nanoparticle mediated drug delivery in pancreatic cancer 29 Dec 2023
A microfluidic device for deciphering bacterial motion in presence of nanoparticles for household water treatment systems 29 Dec 2023

Table:

Title Authored on
State and Parameter Estimation Approach for Online Adaptation of Data-Driven Models 29 Dec 2023

Table:

Title Authored on
Elastohydrodynamics of a deformable membrane in a micro channel 29 Dec 2023
Pattern formation amid turbulence: how large-scale order survives small-scale chaos 29 Dec 2023

Table:

Title Authored on
Catalyst development and process modeling for sustainable conversion of CO2 and methane 22 Dec 2023

Table:

Title Authored on
modeling and simulation for simulated moving bed reactors 21 Dec 2023
Hydrogeneration of carbon dioxide to dimethyl ether. computational catalysis and process development 21 Dec 2023

Table:

Title Authored on
System dynamics modeling and optimization for decarbonization of transport sector 21 Dec 2023

Table:

Title	Authored on
Capacity-fading in Lithium-Ion Battery electrode materials	21 Dec 2023

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Admission Admission to the first year of the Undergraduate Programmes leading to the degrees of B.Tech. Five-year Dual Degree Programmes and 5-year Integrated M.Tech. and M.Sc. Programmes is made through the Joint Entrance Examination (JEE) which is common for all the six Indian Institutes of Technology (Bombay Delhi Guwahati Kanpur Kharagpur and Madras) Indian School of Mines Dhanbad and the Institute of Technology BHU Varanasi.
The minimum academic qualification for admission through JEE is a pass in the final examination of 10+2 system or its equivalent referred to as the Qualifying Examination. In case the relevant qualifying examination is not a public examination the candidate must have passed at least one public (Board / University) examination at an earlier level. Those appearing in 10+2 final or equivalent examination may also appear in JEE (Screening Test and Main Examination) for consideration of provisional admission.

jee@cc.iitb.ac.in
Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

Supercritical Fluid-based (SCF) Processing has been a significant research focus at the Department of Chemical Engineering at IIT Bombay for over three decades. The principal areas of research are:
• Extraction of natural products• Purification of extracts / concentration of active ingredients• Drying / removal of residual solvents from pharmaceuticals• Micronization of high-value nutraceuticals and pharmaceuticals• Drug encapsulation• Preservation of liquid and solid foods• Reactions in supercritical fluids• Pressurized Water-based extraction processes for natural medicinals and nutraceuticals
Apart from the study of a large variety of specific systems requiring SCF processing, the research experience has been translated into development ofprocessandengineeringdesignsof SCF systems (bench top to commercial scale) for:
(i) SCF-based extraction of natural products (spices, medicinal herbs, natural colours, flavours and fragrances, etc.)(ii)SCF-based micronization of nutraceuticals and pharmaceuticals Technology Consultation
Working for over a decade on the various aspects of SCFET, the research group at IIT,Bombay, has acquired substantial knowledge-base and can offer specialized services as:
♦ Process Optimization♦ Selection / Choice of Viable Products♦ Selection of Optimum Plant Configuration♦ Trouble shooting and Re-Engineering of the existing SCFE plants
Generation of Extracts for Test MarketingThe bench and pilot - scale SCFE facilities are available for the generation of extracts of the customers' choice, so as to enable test marketing for the assessment of extract quality and market price
Contract ResearchThe IIT, Bombay research team undertakes both fundamental and applied research in diverse areas of supercritical fluid technology. The comprehensive technical knowledge base, creativity

and commitment to excellence that the team offers, is at par with the best available internationally
Mode of interaction with the Industry:Work for the industry is carried out either in the form of sponsored research projects or asconsulting assignments. Both form of research are subject to norms recommended by theIndustrial Research and Consultancy Centre (IRCC) of IIT Bombay , and are subject tospecific policies relating to Intellectual Property that may be generated during such researchand any related Transfer of Technology. Details of such policies are available at the IRCCwebsite:http://www.ircc.iitb.ac.in/IRCC-Webpage/
Consulting assignments for the industry is typically executed in five consecutive phases:(i)Phase 1 :involves experimentation using available SCF processing setups (that range from bench top to pilot scale) towards the production of samples with desired specifications. Such products are made available to the concerned industry for test marketing. In all such instances the preferred raw material for processing need be provided by the industry.(ii)Phase 2 :involves preliminary feasibility analysis for commercial scale operation for a set of multiple products. IIT Bombay may provide assistance in the form a technical and economical viability from the findings of Phase 1 and for selection of a set of viable products.(iii)Phase 3 :involves generation and transfer of basic process design forbench top /pilot / commercial-scale of operationwhich would provide the basis for detailed engineering of the SCF production setup / plant.(iv)Phase 4 :involves transfer of the process ‘know-how’, i.e., the optimized process conditions for obtaining the product on a commercial-scale.(v)Phase 5 :: In continuation of the above phases, detailed engineering and commercial fabrication may be carried out by the client directly, or through suitable vendors/suppliers. During such an activity IIT Bombay may provide expert assistance to concerned vendors, if needed. Depending on the specific process and design developed in phases 1-4, IIT Bombay may be in a position to suggest possible vendors for the manufacture of the SCF setup.Progression of above phases occurs on the request from the concerned client. The above demarcation into phases is primarily for helping a client reach appropriate decisions in keeping with its interest/goal. However, IIT Bombay follows a flexible approach in the executing (and, if required, converging) the above phases, depending on the specific needs of a client.
Meeting IIT Bombay faculty for consultation:All meetings with IIT Bombay SCF-research faculty group may only be by appointment, set up through either email communication or telephonic discussion. Without prior appointment, consultation may be declined. IIT Bombay does not provide ad hoc estimates of SCF equipment or of commercial project costs without the completion of the assessment process comprised of at least phases 1- 3.
Financial Charges:Each phase of work for an industrial client is assessed separately for arriving at the total charges for its execution. This typically includes the institutional overheads (based on the extent of use of research facilities) and faculty consultation fees. The minimum consultationcharge is Rs 10,000/-.
Contact:The Principal R&D Team Members from IIT Bombay are faculty with the Department of Chemical Engineering• Prof Sandip Roy (sr@che.iitb.ac.in, 91-22-2576 7249)• Prof Madhu Vinjamur (madhu@che.iitb.ac.in, 91-22-2576 7218)• Prof Mamata Mukhopadhyay (mm@che.iitb.ac.in; 91-22-2576 7248)• Group email:scfe@che.iitb.ac.in
Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

Chemical Engineering
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Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

Table:

Name of Lab	Room no.	Building	Phone No	Faculty Associated
Automation Lab		Chemical Engineering	4218, 4229	Ranjan Kumar Malik
Biochemical Engineering		Chemical Engineering	4205	Sarika MehraSameer Jadhav
Biomolecular Engineering	125C	Chemical Engineering	4209	
Biosystem Engineering		Chemical Engineering	4248	Pramod P Wangikar
CAD Laboratory			7790	Ravindra D GudiRanjan Kumar MalikMani BhushanLate Arun S Moharir
Cellulose Laboratory			4219, 4241	Jhumpa AdhikariHemant NanavatiHariharan S Shankar
Fluid Mechanics Lab		Chemical Engineering	4238, 4232	Mahesh S TirumkuduluDevang V Khakhar
Heat Transfer Lab		Chemical Engineering	4235	V G Rao
Membrane Lab			4208	Jayesh Bellare
Organic Processes Lab			4225, 4221, 4243	Vinay A JuvekarAnurag MehraAkkihebbal K Suresh

022-25767201
sudhirdhoble@iitb.ac.in

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02225767202
sunil@che.iitb.ac.in

91 (22) 25767206 (O)
swapna_sg@iitb.ac.in

02225767206
ashokgupta@iitb.ac.in

02225767202
kprakash@iitb.ac.in

02225767202
kprakash@iitb.ac.in

02225767206 (O)
mangeshv@iitb.ac.in

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We encourage international students to apply for the IIT Bombay institute TA fellowships for our PhD programs. More details about this can be found athttps://www.ir.iitb.ac.in/en/students/scholarship-foreign-phd-students

Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

This is a collection of information resources mainly for the Faculty of the department. Some of the pages are only visible when the faculty islogged in.

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Please consult the following links for soft copies of Department Brochure Publicity Materials and Annual Reports.

Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

M.Tech Projects are assigned in the Spring Semester (Jan to April) of the first year. Please contact the respective faculty for more information. Faculty can addnew projects here.

Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

Table:

Title	Floated On
Simluation of jet from surface waves	04 Jan 2024

Table:

Title	Floated On
MD simulations of small scale hydraulic jump	04 Jan 2024

Table:

Title	Floated On
Simulating the Rheology of Particulate Networks in Complex Fluids	01 Jan 2024

Rheology of Particulate Networks in Gels 27 Dec 2022

Table:

Title Floated On
Statistical models of evolutionary dynamics of stress response. 01 Jan 2024

Table:

Title Floated On
Control Relevant Dynamic Modeling and Model-based Conrol using GOBF-ANN Models 01 Jan 2024

Table:

Title Floated On
Experimental investigation on particle clustering in turbulent channel flow 01 Jan 2024

Table:

Title Floated On
A lattice Boltzmann diffuse interface model for two-phase flow with moving solid boundaries 01 Jan 2024
Minimisation of spurious currents in two-phase lattice Boltzmann method 29 Dec 2022

Table:

Title Floated On
CFD and ML-based analysis and prediction of fluid and particle dynamics in a spouted bed. 01 Jan 2024

Table:

Title Floated On
Subspace Identification Methods for Data-Driven Dynamic Models 01 Jan 2024
Model Predictive Control of Harvester Combine 28 Dec 2022

Table:

Title Floated On
State and Parameter Estimation Approach for Online Adaptation of Data-Driven Models 29 Dec 2023
Dynamic Watermarking based defense of Closed Loop Cyber-Physical Systems 29 Dec 2023

Table:

Title	Floated On
Modeling electroporation in Vesicles and neuronal Cells	27 Dec 2023

Table:

Title	Floated On
Molecular Dynamics simulations of efflux-pump and regulator to identify role of mutations in AMR	27 Dec 2023

Table:

Title	Floated On
A microfluidic device for deciphering bacterial motion in presence of nanoparticles for household water treatment systems	26 Dec 2023
Development of polymeric implant for nanoparticle mediated drug delivery in pancreatic cancer	26 Dec 2023
Chemical sensor development for water contaminants and technology for their removal	26 Dec 2023
Polyurethane particle size distribution and stability in a multistep industrial reactor and dispersion system (sponsored by Pidilite Industries, Mumbai)	27 Dec 2022

Table:

Title	Floated On
Stochasticity during cell-death	25 Dec 2023
Signal flow dynamics using machine learning approaches	25 Dec 2023
Data-driven model of non-uniform state transition in packed-bed reactors	25 Dec 2023

Table:

Title	Floated On
Flow Focusing for Flow Cytometry	25 Dec 2023
Atomisation of thin liquid sheets:Experiments	25 Dec 2023

Table:

Title	Floated On
Modeling of drying of thin film polymer coatings	25 Dec 2023
Supercritical Carbon Dioxide Assisted Loading of Drug Eluting Medical Implants for Sustained Release	01 Jan 2023

Table:

Title	Floated On
Metabolic engineering of cyanobacteria.	25 Dec 2023

Table:

Title	Floated On
optimization of thermal reclamation process	24 Dec 2023
Process intensification by reactive chromatography	24 Dec 2023
Understanding superacidity of zeolites as catalysts through experiments and modeling	31 Dec 2022

Table:

Title	Floated On
Characterization of surface characteristics of ground rubber powder for recycling	24 Dec 2023
Recycling of PVDC by supercritical water treatment	15 Dec 2023

Table:

Title	Floated On
ORR/OER for metal air batteries	24 Dec 2023
Development of an advanced potentiostat	24 Dec 2023
Investigations into a Zn-ion battery	24 Dec 2023
Investigations into a Zn-ion battery	26 Dec 2022

Table:

Title	Floated On
To develop and characterize viscoelastic gels for cellular applications	24 Dec 2023

Table:

Title	Floated On
Predicting & Understanding Thermophysical Properties of Phase Change Materials via Molecular Simulations	22 Dec 2023
Molecular simulation study of mixed gas hydrate	27 Dec 2022

Table:

Title	Floated On
Assessment of prodction of synthetic fuels (E-fuels) from CO2 and green hydrogen	21 Dec 2023
Optimization of biomass utilization strategy for energy, chemicals, and plastics	21 Dec 2023

Table:

Title	Floated On
Understanding motion of intrinsically disordered proteins through simulations.	21 Dec 2023

Table:

Title	Floated On
Modeling and simulation of dendrite growth in Li-ion battery	21 Dec 2023
Porous electrode characterization for Li-ion battery applications	27 Dec 2022
Modeling and simulation of the battery pack in electrical vehicle	27 Dec 2022

Table:

Title	Floated On
Catalyst development for CO2 hydrogenation to chemicals	20 Dec 2023
Process modelling of plasma-catalytic conversion of methane to higher hydrocarbons.	20 Dec 2023

Table:

Title	Floated On
Modelling the Elastomer Matrix of Solid Propellant	18 Dec 2023
Modelling Biopolymers - 2	18 Dec 2023
Modelling Biopolymers - 1	18 Dec 2023

Table:

Title	Floated On
Splitting water: Modeling electrochemical processes at the Ni/YSZ cathode	17 Dec 2023

Table:

Title	Floated On
Development of Biobased Active Packaging films for enhanced shelf-life of meat	17 Dec 2023

Table:

Title	Floated On
Automation for calendering process in Li-ion batteries	15 Dec 2023

Table:

Title	Floated On
Control Performance Monitoring	15 Dec 2023
Dynamics and control of biogas-fuel cell system	15 Dec 2023
Dynamic analysis of multi-effect distillation columns	27 Dec 2022

Table:

Title	Floated On
Experiments on Icephobic surfaces and abrasion resistance	03 Jan 2023

Table:

Title	Floated On
Integrate protein-DNA interaction network with genomic data to predict the impact of mutations in clinical strains of M. tuberculosis.	02 Jan 2023
Genome Scale Flux Balance Metabolic Models for recombinant CHO cells	02 Jan 2023

Table:

Title	Floated On
Optimal Energy Transition approaches	02 Jan 2023
Detection of model plant mismatch in advanced process controllers (Project jointly with Yokogawa)	02 Jan 2023

Table:

Title	Floated On
Three-dimensional self assembly of graphene	01 Jan 2023

Table:

Title	Floated On
Convective Heat Transfer with OpenFOAM	31 Dec 2022

Table:

Title	Floated On
On the Relationship between Safety and Sustainability in the Hydrogen Economy	30 Dec 2022

Table:

Title	Floated On
Role of flexibility in the miscibility of polymer-nanorod composites	29 Dec 2022

Table:

Title	Floated On
Modeling immune response in diabetic patients to evaluate effects of co-morbidity during covid infection	27 Dec 2022

A detailed curriculum document is provided in an attachment below.
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A collection of policies conventions followed in this department. This page also contains links to guidelines for set up during commonly encountered installation and problems.
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The heart of Chemical Engineering at IIT Bombay is excellence in undergraduate and graduate education. Our central goal is teaching students the principles of chemical engineering, how to conduct innovative research and preparing them for a professional career. Our students enjoy personal experiences in scholarship and independent inquiry, in which they play an active role in formulating the research to be undertaken, implementing the work, and carrying it to completion. Graduate research projects combine careful fundamental study with recognition of the practical and technological importance of the research.The department has a long-standing history of excellence in both undergraduate and graduate education. Currently, the department has about 900 undergraduate, 100 M.Tech students and more than 200 students working towards their Ph.D. Our graduates are placed at leading positions in industry and academia.
Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

Candidates with a Bachelors degree in Chemical Engineering or equivalent and with a valid GATE score in Chemical Engineering are admitted to the M.Tech. programme in Chemical Engineering.
Chemical department offer direct admission to the limited number of candidates solely based on higher GATE percentile. However a candidate may not accept the direct admission offered and choose to appear for written test/ interview in discipline of one's choices.
Candidate with a Bachelor's degree in Chemical Engineering or equivalent and with a valid GATE score in Chemical Engineering is required for admission to the M.Tech. programme in chemical engineering.
The students joining M.Tech programme will be considered for Teaching Assistant ships based on the following norms:
Permanent staff members having worked for more than 2 years at the Institute can join the M.Tech. Programme. The admission criteria is same as to the sponsored candidates
The Institute also admits a limited number of students under self financed category on the basis of their GATE percentile and performance in written test/interview. These students have to support themselves fully.
With a view to encourage its own employees (Project and Institute staff) as well as persons working in Industries the Institute admits a limited number of sponsored candidates to the M.Tech. Programme. It is expected that such candidates, after successfully completing the programme are better equipped to work in organizations sponsoring them.
Sponsored candidates from recognized Academic Institutions, with valid GATE score and some professional experience, will be treated on par with other candidates having valid GATE score during selection.Sponsored candidates with more than two years professional experience and without valid GATE score can also apply for admission. Their selection will be subject to satisfactory performance in a written test and an interview to be conducted by the Institute. The written test will be conducted to examine their knowledge in the discipline of their basic degree which forms the prerequisite for admission to the corresponding specialization of the M.Tech. Programme. To be eligible for admission, the performance in the written test/ interview should be comparable to that of the last general candidate admitted to that specialization. Such candidates should have obtained at least 60% marks or equivalent grade in the qualifying examination
The research activities of the department encompass Process Modelling, Simulation, Computer Aided Design, Optimization and Control, Transfer Operations, Separation processes, Petrochemicals, Electrochemical Processes, Thermodynamics, Colloid and Interfacial Science, Microstructure Engineering, Supercritical Fluid Extraction, Membrane Processes, Polymers and Advanced Materials, Reaction Process Engineering, Carbon Molecular Sieves, Pressure Swing adsorption, Pollution Control, Bio-and Food Processes, Fluidization.
Deputy Registrar (Academic),IIT Bombay,Powai, Mumbai - 400 076.
Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

The Department of Chemical Engineering offers several academic programs for post graduate studies. These include Dual Degree Masters, M. Tech., PhD, and an MS (Research).The Department offers several fields of study for post graduate studies. These fields include traditional fields of chemical engineering (like, fluid mechanics, chemical reaction engineering) or newer areas of research where chemical engineers have made important contributions (like, bioengineering, sustainability). Research is often done with collaboration with faculty from other Departments/Centers at IIT Bombay. This structure allows graduate students to take full advantage of IIT's unique interdisciplinary environment and enables students to pursue an individualized plan of study.The field of chemical engineering offers advanced degree programs to prepare its students for research and technical careers in industry, academia and government. The program strikes a balance between the science of chemical engineering and its implementation through synthesis -- a blend that provides a strong base in the discipline's fundamentals

while developing in its students the skills to apply these fundamentals to significant engineering problems.
Post-Graduate Admission
Curriculum
Placements for PG Students
Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

The Research program at the department offers a solid foundation in both theoretical and applied aspects of chemical engineering. We offer research programs in many cutting-edge technology areas.The department is home to several consortia and interdisciplinary research centers.Chemical Engineering houses state-of-the art research facilities.
Research Areas
Laboratory Facility
Research Laboratories
Health, Safety, and Environment (HSE) Plan
PhD TA Topics
Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

Chemical Engineering in essence concerns the economic design and operation of chemical plants. Today chemical plants encompass a considerable range. "New" chemical plants such as, computer chip, manufacturing units, engineered micro-organisms, engineered ecosystems for environment upgradation, and drug delivery systems coexist with the "traditional" chemical plants for manufacture of polymers, pharmaceuticals, cement, fertilizer, etc.Chemical Engineering fundamentals draw from physics, chemistry, mathematics and increasingly biology which are then combined with engineering principles to understand and control molecular and macroscopic processes in these diverse systems. The discipline is expanding and the new science and engineering are helping develop technologies that are more efficient, safer and environmentally friendly. Chemical Engineers have made important contributions to society over the years and the breadth and versatility of their training will continue to open many new opportunities for them in the future.The Chemical Engineering Department at IIT Bombay is committed to excellence in Chemical Engineering education in the context of the evolving discipline. The Department has a strong core curriculum complemented by electives in important emerging areas at both undergraduate and postgraduate levels. Research is an important focus of activity and the faculty in the Department lead high quality research programmes in a spectrum of areas. The Department houses excellent experimental facilities for research and is supported by a strong team of technical staff. The Department has strong links with industry with interactions spanning consultancy, sponsored research, and continuing education programs. In addition, the alumni are important stakeholders in the Department’s vision and have continuously provided generous support in different ways.Our mission is to create and sustain an environment for learning, enquiry and generation of new ideas to aid the education of chemical engineers who will lead the profession in development of new technologies and in service to their profession.
Prof. Mahesh S Tirumkudulu

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The department currently has about 45 faculty and 28 staff.
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This is a collection of information resources related to IT and Computing. mainly for the current members of the department (Students Staff and Faculty). Some of the pages are only visible when the user is logged in otherwise an "Access Denied" message is displayed.
Hall/Room Booking
IT Policies
Video Conferencing
Webmail
Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

The Department of Chemical Engineering at IIT Bombay was started in 1958, with assistance from the erstwhile Soviet Union under a UNESCO aid scheme. Today, the department is recognized as a leading Chemical Engineering Department in India. The Department offers B.Tech, Dual Degree (B. Tech. + M. Tech and M.Tech. + Ph.D.), M. Tech. and Ph.D. degree programs and has more than 50 faculty who work in diverseresearch areas.The Department has extensive experimental and computational facilities, through funding from Government and Industry. The Department attracts significant funding through government funding agencies and also has strong interaction with Industry. Several faculty provide service by way of consultancy projects and continuing education courses in many areas of Chemical Engineering.Historically, the Department had a diverse presence in different research areas of traditional Chemical Engineering. Over time, the Department has strongly diversified into emerging areas such as biotechnology, energy and sustainability, along with data-driven approaches to problem solving. This is also reflected in the evolution of the curriculum offered in the academic programs of the Department.

Department Brochure and Annual Reports
Mission Statement
Message from Head
Contact Us
How to Reach IITB
Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

The B. Tech. program in the Department of Chemical Engineering begins with a foundation in mathematics, chemistry, and physics. These fundamentals are used to develop the analytical tools of chemical engineering - fluid mechanics, chemical thermodynamics, and chemical kinetics - in the sophomore and junior years. The units of chemical processes - such as chemical reactors, bio-reactors, distillation columns and heat exchangers - are analyzed with these tools beginning in the junior year. In the senior year students design chemical processes by integrating process units with regard to economics, safety, and environmental impact. This program prepares a student for professional practice in traditional areas of chemical engineering – chemicals, polymers, petroleum, utilities, pharmaceuticals -, as well as emerging areas of biotechnology and electronic materials.Along with core chemical engineering classes, our curriculum offers sufficient flexibility to allow students to explore emerging areas in chemical engineering and courses from other departments of their interest.The Department has more than 40 faculty, each active in research in a particular domain of Chemical Engineering. The research and teaching laboratories of the Department are housed with state-of-the-art experimental and computational research facilities. The curriculum allows interested and passionate students to pursue research for one year in a faculty's research laboratory for credit towards their graduation. Several interested students pursue research purely for the joy of doing science, and learning the ways of doing research!
UG Admission
UG Curriculum
Placements for UG Students
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Click here to Book a Hall/Lecture RoomThe following guidelines are to be followed for booking lecture halls:
Appointments for Visiting Academic (or other department Visitors) can be made atVisiting Academic Slots.
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Ordered List:

1. Booking has to be made by only a faculty or office staff by logging in using IITB-LDAP userid in theMeeting Room Booking System(MRBS).
2. There are two kinds of meeting places: "Lecture Halls" and "Meeting Rooms" (comprising library, Conference room, faculty lounge and Rm#237)
3. Request must arrive before 12 Noon on the previous working day.
4. For delayed requests (past 12 noon deadline):User to ensure availability of free slots.Call Mr. Jayesh/ Sameer (Ph no: 4233) or Sysad (Ph no: 4237) and try to confirm orally, but please be prepared for surprises when you turn up at the Hall!
5. User to ensure availability of free slots.
6. Call Mr. Jayesh/ Sameer (Ph no: 4233) or Sysad (Ph no: 4237) and try to confirm orally, but please be prepared for surprises when you turn up at the Hall!
7. Paper register booking are to be avoided.Register will be kept with SysAd (locked).Onrare circumstances, users may enter request in the presence of SysAd, but should ensure online update.

8. Register will be kept with SysAd (locked).
9. Onrare circumstances, users may enter request in the presence of SysAd, but should ensure online update.
10. Mr. Jayesh/ Sameer will finalise "Agenda" (from the web) for the following day(s) by 5 pm on any working day.
11. A spare projector may be with the Sysad.
12. Report Civil/Electrical/Projector/Computer complaints to Class Room Maintenance Unit(Ph no: 4233).

Ordered List:

1. User to ensure availability of free slots.
2. Call Mr. Jayesh/ Sameer (Ph no: 4233) or Sysad (Ph no: 4237) and try to confirm orally, but please be prepared for surprises when you turn up at the Hall!

Ordered List:

1. Register will be kept with SysAd (locked).
2. Onrare circumstances, users may enter request in the presence of SysAd, but should ensure online update.

This is a collection of information resources mainly for the current members of the department (Students Staff and Faculty). Some of the pages are only visible when the user is logged in otherwise an "Access Denied" message is displayed.
IT Resources
Academic resources
Library
Notice Board (Private)
Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

PhD Admission Information
Curriculum
Placements for PhD Students
Head of DepartmentDept. of Chemical EngineeringIndian Institute of Technology BombayPowai, Mumbai 400 076(Maharashtra), IndiaEmail:office@che.iitb.ac.inPhone:+91-22-2576 7201 / 7202

This electronic Notice Board consists of content (or scanned copies of content) normally displayed in regular (real) Department Notice Boards. It contains for example Post Graduate Admission information Scholarships Academic and Administration Section Notices etc. You must be logged in with your LDAP ID to view the list and details that will then be displayed below. To receive an email intimation (in GPO) when a new advertisement is posted here click on any one of the advertisement links below then in the bottom right of that page click on "Subscribe to: Posts of type Department Notice Board Article" and confirm acceptance.

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Table:

Title File Attachments
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