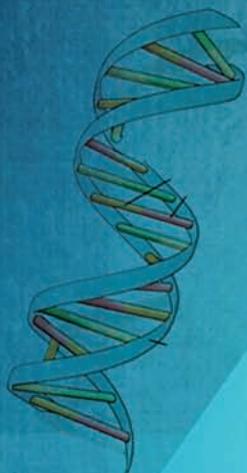


INDIAN INSTITUTE OF SCIENCE EDUCATION & RESEARCH KOLKATA



PLACEMENT BROCHURE 2012-13

DEAN'S MESSAGE

The Indian Institute of Science Education & Research (IISER) was created in the year 2006 by the Ministry of Human Resource Development as a "system" of institutions meant to be centre's of excellence in teaching and research in the basic sciences. IISER Kolkata is one of the oldest among the IISERs, and already has well-established laboratories that have produced world-class research output. In this institute the students are admitted in an integrated BS-MS degree course which involves two years of exposure to all the science disciplines, two years of study in a "major" discipline and finally one year of research. We impart undergraduate teaching in a research environment and involve the undergraduate students in research, so that they can adequately gear to a career in R&D. In addition, we have the PhD Programme and the Integrated MS-PhD Programme which are specifically focused on research.

The IISERs have the mandate to produce human resource specifically trained to handle the research and development demand of the country. This highly trained manpower is meant to cater to the R&D needs of the government sector (the research laboratories and educational institutions) as well as of industry. We request all companies that have R& D wings to actively consider our students for campus recruitment.

Prof. Soumitro Banerjee

Dean of Student Affairs,

IISER Kolkata



ABOUT THE INSTITUTE

- SCIENCE the sole pathway to world leadership.
- EXCELLENCE a habit for success.
- VALUES that make us what we are.
- FUTURE the only way to go.

These lay as cornerstones of IISER-Kolkata.

The institute is considered as an essential platform for young enthusiastic scientific investigators and leaders in India to nurture, thus, classifies as an institute of national importance.

The institute spent its initial years(2006-08) within the IIT Kharagpur extension centre in Kolkata. In 2008, it acquired 200 acres of land in Mohanpur, in the outskirts of Kolkata and a clean green campus. IISER - Kolkata forms a new pathway for the amalgamation of the diverse aspects of Science under one roof. Students are taught in a fashion unique and futuristic. Minds are exposed from quantum sense of particles to the evolution of human beings.

The course work for first two years deals with the fundamental concepts of prime importance in Mathematics, Physics, Chemistry, Life Sciences, Earth Sciences and Communication skills; which drive students to simultaneously consider microscopic details and conjoin them to grasp the macroscopic ramifications. This integrated approach of the program rejuvenates and strengthens the creative yet analytical approach of students. Self designed experiments and project-works in diverse courses help students to connect with the subject better and to get exposed to the various challenges, consequently, imparting problem solving skills on a real world level. Furthermore, it inculcates an attitude necessary for research and innovation. A vital part of the learning culture is the summer projects and internships. From the very first year onwards, these projects provide exposure and experience to the students.

ADMISSION

One of the most important features of a premier institution is the quality of its students. In order to make sure that only the top notch students get admitted IISER-Kolkata has introduced the following admission procedure.

Kishore Vaigyanik Protsahan Yojana (KVPY) Fellowship: KVPY is one of the most prestigious fellowships for Indian students who have completed their secondary level schooling. The fellowship is offered by the Department of Science and Technology (DST), Govt. of India. The scholarship is awarded to candidates with an exceptional aptitude in science. Each year several thousand apply for the fellowship. After a written exam and an interview, only the brightest ones (<0.05%) are shortlisted.

National Olympiads: The Olympiads are the science equivalent of the International Olympics. The Olympiad examinations, conducted at regional, national and international levels, are considered to be the toughest and the most challenging exams at the pre-college level. Participation in the National Olympiad Camp is a very rare honor, and students representing India in the International Olympiads are eligible for applying.

IIT-JEE: The students qualifying the IIT-JEE are eligible to apply for admission in IISER-K.

Top 1% of boards: IISERs invite application from students who stand among the top 1% of their respective boards in higher secondary or equivalent exams. These applications are then screened and the shortlisted candidates are called for an aptitude test. Only the students qualifying the aptitude test are offered admission in the IISERs.

Students gaining admission in IISER-K are automatically eligible for the INSPIRE fellowship awarded by DST.

COURSES

Unity in Diversity: The pre-major years

The first two years in IISER-Kolkata is a unique experience for students as they are exposed to inter-disciplinary research from the outset of undergraduate studies. By the end of two years our students take up and complete numerous projects in all five basic disciplines of Science. The knowledge to handle these problems are provided through the following inter-disciplinary course work** which is mandatory.

Physics	Biology	Chemistry	Mathematics	Interdisciplinary
Classical Mechanics I	Cell Biology	Chemistry of Elements	Real Analysis	Thermodynamics
Electromagnetism and Optics	Genetics	Chemical Energetics and Dynamics	Mathematical Method	Earth, Planetary and Environmental Science
Electronics and Instrumentation	Evolutionary Biology Ecology	Spectroscopy	Complex Analysis	Indian Heritage in Art, Literature and Science
Quantum Mechanics	Systems Biology	Bonding, Structure and Symmetry	Probability and Statistics	Computational Method

** This course work is with respect to 2008-13 batch.

MAJORS

In the third year, students are oriented towards a major of their choice (15 credits) – as Mathematics, Earth Sciences, Biology, Chemistry or Physics. Yet the unique flexibility is still present in the form of two elective minor courses worth 6 credits.

In the Fourth year, we offer a series of specialized courses in each subject (please see the selected courses list which follows this page). This keeps our students well equipped to handle problems at the frontier of Science and Technology.

The fifth year constitutes of an independent research project which serves as a partial dissertation for MS Degree. This year long project simulates a quasi research lab environment. Its an enriching mentored programme were an aptitude for independent research is nurtured. Progression of the dissertation is follows:

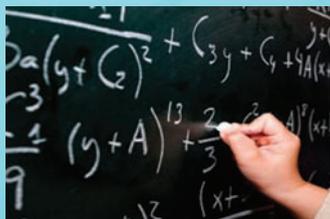
1. Identification of a problem of importance, yet unsolved.
2. Day to day report based communication with mentor; discussion and follow-up.
3. Co-operating and co-existing with members of the research group working in the same lab.
4. Completion of project within stipulated time frame.
5. Graded seminar and a written thesis report.

SELECTED COURSE LIST



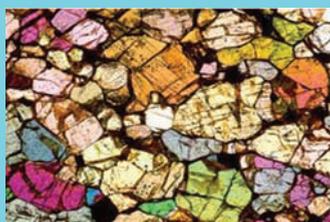
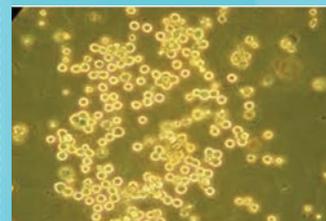
Chemistry
Synthetic Organic Chemistry
Materials and Polymer Chemistry
Medicinal Chemistry
Spectroscopy
Computational Chemistry

Physics
Nonlinear Dynamics
Quantum Computation
X-Ray Diffraction
Nano-Scale Materials and Ultrafast Phenomenon
Ultra High Vacuum and Atomic spectroscopy



Mathematics
Analysis of Algorithms
Statistics and Inference
Number Theory and cryptography
Graph Theory and Combinatorics
Numerical Analysis

Biology
Applied Microbiology
Immunology and Tissue Culture
Biostatistics, Bioinformatics and Systems Biology
Cancer Biology
Enzymology



Earth Science
Remote Sensing and GIS Application
Sequence Stratigraphy
Environmental Geology
Petroleum Geology
Seismology and Geophysics

ACADEMIC FACILITIES

In the current scenario, science has become a very competitive field. Raw intelligence is often not enough for carrying out cutting edge scientific work, especially where experiments are involved. It has to be aided with the entire front running technological supplements that are available. IISER-K embraces this fact and has furnished all its labs with state-of-the-art equipment and facilities. These facilities are not only available for faculties and research scholars but also for interested undergraduate students. A small subset is listed below:

Department of Biological Sciences:

Imaging Facility (Zeiss LSM710 confocal microscope, Olympus IX81 epifluorescence microscope)
Histology and Histopathology facility (Shandon)
Cell and Tissue Culture Facility
Relevant Computational Facility for Genomics.

Department of Physical Sciences:

Precision spectroscopy with optical tweezers
Multipurpose high vacuum chamber for thin film deposition and processing
Low temperature photoluminescence setup
Single X-ray diffractometer (Bruker, Kapp Apex II Duo with Mo and Cu sources)

Department of Chemical Sciences:

Atomic Probe Microscopy, NT-MDT (with accessories for studying magnetism, tunneling)
Fluorescence Spectrometer (Horiba Jobin Yvon, Fluoromax-3, Xe-150 W, 250-900 nm)
Micro Raman Spectrometer (Horiba Jobin Yvon, HR 800 double grating)
NMR Spectrometers (JEOL, 400 MHz and Bruker 500 MHz)

Department of Earth Sciences:

- Broadband Seismological Observatory equipped with CMG-3T 360s period sensor, DM24 Digitizer, state-of-the-art Data logger and Global Positioning System.
- A 7000B triple quadrupole GC-MS-MS system.
- Inductively Coupled Plasma - Mass Spectrometry (series-X2 thermo scientific)

Our computation facility is at par with the best academic institutions with high end servers like AMD and IBM Xenon quad core rack servers. Computer center also provides the network service to the institute and is connected to the National Knowledge Network (NKN). The computation lab is equipped with more than 30 high end dual boot work-stations, it is used by various departments for simple as well as multithreaded simulation and programming.

INTERNSHIPS

Students are encouraged to participate in eight to twelve weeks of summer internship in industries/research labs outside their parent institute every year. Students also gain experience by visiting various research labs as part of summer and winter schools in different institutes. So far our students have been represented in the following learning centers around the globe:



CONFERENCES

IISER-K hosts a wide range of conferences and symposiums organized by the faculty and students covering almost all the domains of natural sciences. Important conferences held in IISER- Kolkata include:

International Conference of Cold Atoms (2008)

Mathematical Foundations of Quantum Mechanics (2010)

Symposium on Polymer Sciences (2011)

Kickoff Workshop and International Meeting on Bioinformatics and Genomics (2011)

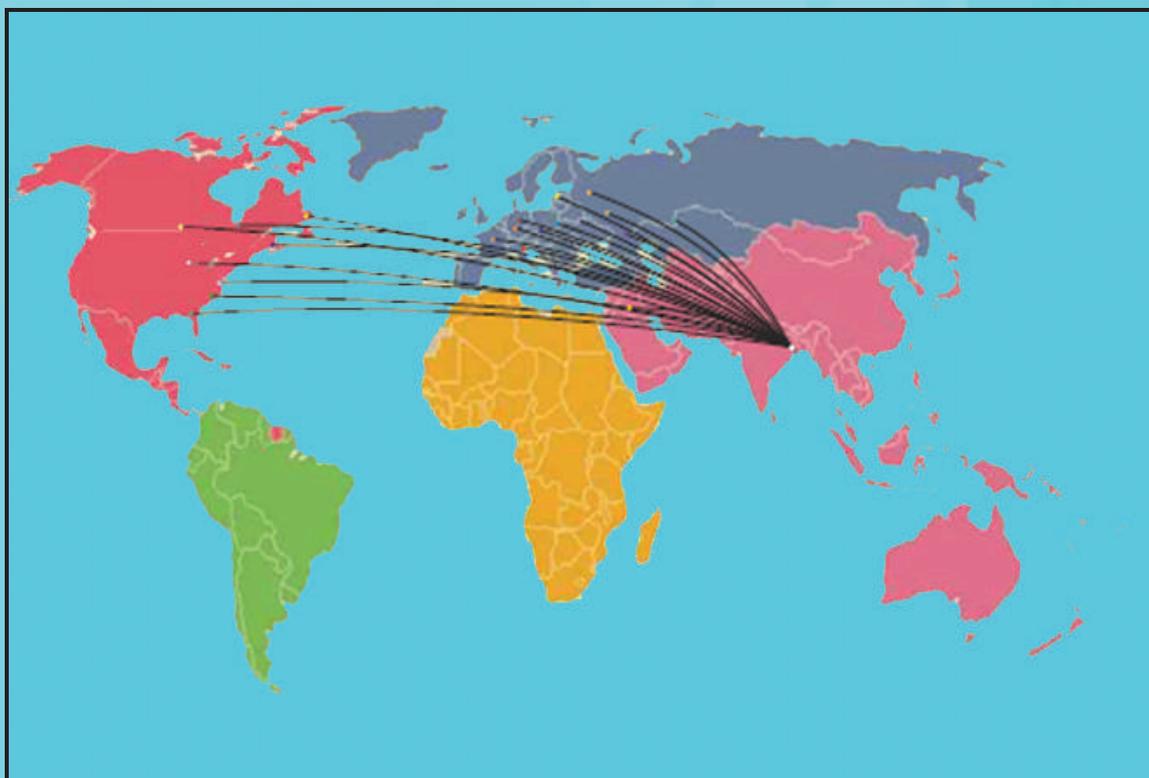
International Non-Equilibrium Winter School (2011)

Current Topics in Condensed Matter (2011)

Workshop on Field Theory: Recent Trends and Applications (2011)

Indo-Israel Meeting on Condensed Matter (2011)

Frontiers in Modern Biology (2012)



FUNDING AGENCIES

External Funding

Apart from generous funding from DST, CSIR, DBT and Ministry of Earth Sciences:

- The Max Planck Society, Germany
- Swedish International Collaborative Scheme
- Alexander Von Humboldt Foundation
- Ernst Mach Research Grant
- CIMMYT: The International Maize and Wheat Improvement Programme
- Mathematical Sciences Research Institute- Berkeley
- Natural Sciences and Engineering Research Council of Canada
- University of Hong-Kong
- Geological Survey of China
- DBT-Wellcome Trust India Alliance
- Defense Research and Development Organization
- WWF India

Count amongst the main funding agencies associated with projects administered by the faculty at IISER-Kolkata.

AWARDS AND HONOURS

- | | |
|------|--|
| 2012 | INSA Medal for Young Scientist in Earth Sciences - Dr. Melinda Kumar Bera |
| 2012 | Karen Harvey Prize from the American Astronomical Society's Solar Physics Division - Dr. Dibyendu Nandi |
| 2011 | Head of Max Planck-DST Partner Group - Dr. Shree Prakash Pandey |
| 2011 | Associates of the Indian Academy of Sciences' fellow - Dr. Supriyo Mitra in Earth Science and Dr. Ritesh Singh in Physical Science |
| 2011 | D B T-Wellcome Trust India Alliance intermediate Fellowship - Dr. Partho Sarothi Ray |
| 2011 | INSA Medal for Young Scientist in Earth Science - Dr. Supriyo Mitra |
| 2011 | INSA Medal for Young Scientist in Physics - Dr. Dhananjay Nandi |

OUTREACH

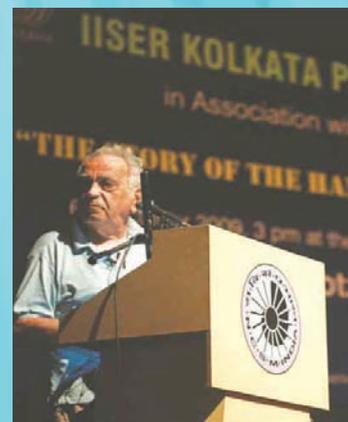
At IISER-K, we try to contribute our bit to spread scientific awareness to the layman, and reveal science as a simple, innovative and fun enterprise to school and college students. In the process our efforts towards spreading awareness are channelized in three main directions:

PUBLIC LECTURES IN ASSOCIATION WITH SCIENCE CITY:

IISER - Kolkata in association with Science City hosts internationally acclaimed scientists in public lectures. Admission to these special events is free for school and college students. The aim is to provide a source of inspiration for students and encouraging young minds of the community to emulate interest so as to consider pure sciences as a career option. The packed auditoriums and halls testify to the strong spirit of enthusiasm as the modern fathers of the sciences instill and enhance a fascination for science and aptitude for excellence.

Some of the distinguished scientists we hosted in the past few years include:

- George Fitzgerald Smoot (Nobel Laureate in Physics, 2006)
- Amotz Zahavi (Propounder of the Handicap Principle in Evolutionary Biology)
- Loren Acton (Astrophysicist and Payload Specialist, NASA)
- Herbert Roesky (President, Academy of Science, Gottingen)
- Roger Penrose (Recipient of the Wolf Prize, known for his work on Black holes with Stephen Hawking and his books "Emperor's new mind" and "Road to Reality")
- Sir Anthony Leggett (Nobel Laureate in Physics, 2003)



INTERNATIONAL EXPOSURE

IISER-Kolkata believes in exposing its students to the top class facilities. In this regard IISER Kolkata has successfully collaborated with a number of reputed institutes. Our students have won fellowships and completed projects in places like Rochester Institute of Technology, Caltech, and University of Hamburg etc. Similarly students from top institutes across the globe have found our research environment conducive. Amongst the recent visitors to our institute we have had students from Gottingen University, Lund University, Changshu Institute of Technology, etc.

INQUIVESTA - THE SCIENCE FEST

The students' body of IISER - Kolkata organizes its annual science fish-tailed INQUIVESTA in spring each year. The fest has been sponsored by various MNCs including Pfeiffer, Buchi, HOLMARC, etc. Inquivesta is the scientific alternative of tech-fests, participants hail from various colleges from all over India ranging well above a thousand every year. The first ever science fest of its kind in India, Inquivesta aims at celebrating the spirit of science among the students of India.

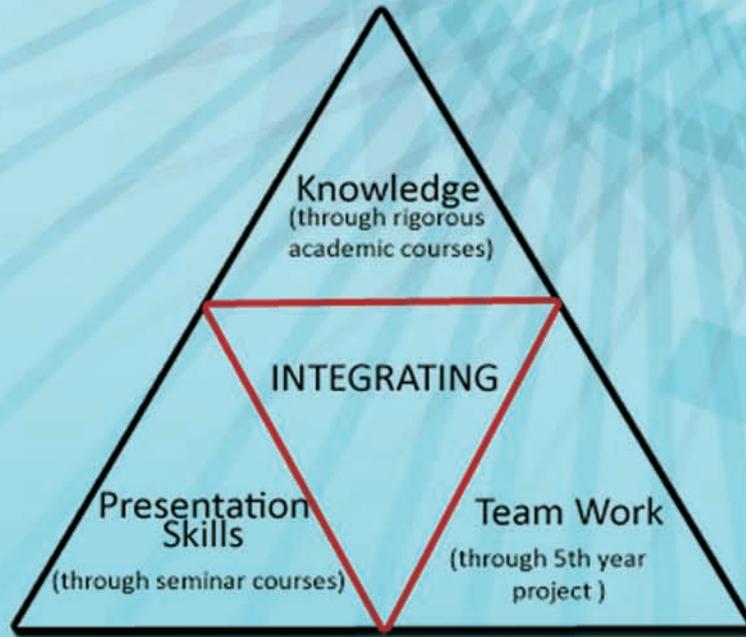


JAGRITI: SOCIAL SERVICE FORUM

Jagruti is IISER-Kolkata's social outreach cum help forum, with the workforce including both students and faculty. Since 2009, Jagruti has organized regular classes for children of security guards, daily wage laborers and other miscellaneous workers who work in the IISER campus. It complements regular school studies with an innovative program of familiarization with science and the language, such classes have separate modules, taught by student volunteers, aimed at children studying in classes 5 to 12.

Jagruti has recently encompassed a wider range of social activities by organizing with the help from the Institute doctor regular free medical checkups and blood donation camps. Additional donation drives such as distributing warm clothes during winter to people residing in the rural areas around the campus are made. The students and faculty members at IISER-Kolkata intend to play key roles towards social upliftment through Jagruti.

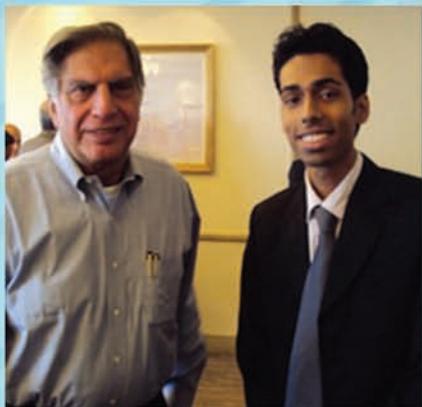
WHAT WE HAVE TO OFFER



Eclectic Computational Skills
Numerous courses starting from proficiency in Unix Operating system, delving in to the programming languages Python, Fortran, Java, Perl and Matlab, etc as per their respective requirements.

Excellent Problem Solving Skill
The advanced interdisciplinary curriculum, imparts a creative yet analytical approach in students, the research exposure through voluntary summer projects and compulsory semester projects makes each student excellent problem solvers, with a host of standard, crossover and unconventional techniques in the repertoire.

Experience of working with the state-of-the-art equipment
Our teaching lab is modeled on research labs. Our students start developing the skill and experience in operating state-of-the-art equipment from the very first year of the undergraduate education.



Challenger Mishra
(Rhodes Scholar)
The Rudolf Peierls Centre for
Theoretical Physics
University of Oxford

“IISER Kolkata is perhaps the only institute in the nation, where inspite of being masters’ student, one can actually assume the leadership of a project of the group while simultaneously being part of the team in another. The overall development of personality developing from such arrangements not only helped me in contributing effectively to my research groups in Brownsville and Gottingen, but also culminating in my receiving the prestigious Rhodes Scholarship which remains a crowning acknowledgement of the leadership abilities developed in IISER Kolkata”



Anwar Mohiuddin
The Department of Geology
and Geophysics
Yale University

“IISER Kolkata is a prestigious institute. A student gets a perfect infrastructure and milieu to flourish. The healthy yet competitive environment has played an imporant role in shaping me up for my endeavours towards some of the academic triumphs I have had in these past 5 years. I am confident the quality of education that I have acquired in IISER, will help me prosper here, at Yale, as well”

ALUMNI



Ujani Chakraborty
Department of Molecular
Biology and Genetics
Cornell University

“Being involved in several research groups in IISER Kolkata in close collaboration with some of the most distinguished professors worldwide gave me a new dimension with prior fascinations with extra-curricular activities involving team-work and gave it a scientific orientation that has made me an indispensable part of my current group in Cornell.”



Arghya Modak
The Davis Group Chemistry
Research Laboratory
University of Oxford

“The healthy yet one of the most stringent academic competitions in the country that exists in IISER Kolkata, is perhaps the single most effective striving force towards the perfection I needed to acquire the Commonwealth Scholarship as the most deserving candidate in my field from the country.”

ALUMNI



Manish Arya
Shell India

“An extensive course structure could be quite demanding as a student, but it prepares well for the future. Now I find that the process through which I have gone is being appreciated both by me and my recruiter, Shell India.”



Badshah Badarudeen
Indian Institute of
Management -Indore

“IIT-JEE fulfilled my love for solving problems, and IISER Kolkata illuminated the path ahead. Unique interdisciplinary courses imparted abyssal understanding, inspiring a comprehensive aptitude. Also, a chance to organize Inquivesta made me adept in management skills.”

IISER KOLKATA



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Q. 2009

ncisco (UCSF)
magazine



FACULTY

IISER-K boasts of a high student to teacher ratio. With total of 100 faculties, ratio is close to 7:1. Our faculties compare with the best in the world. In this page, we mention the Departmental chair of our five departments:

Ravikant Vadlamani
Associate Professor
Dept: Earth Science
E-mail: des.chair@iiserkol.ac.in

Annagiri Sumana
Assistant Professor
Dept: Biological Science
E-mail: dbs.chair@iiserkol.ac.in

Prasanta Panigrahi
Professor
Dept: Physical Science
E-mail: dps.chair@iiserkol.ac.in

Kanineeka Sinha
Assistant Professor
Dept: Mathematics and Statistics
E-mail: dms.chair@iiserkol.ac.in

Balaram Mukhopadhyay
Assistant professor
Dept: Chemical Science
E-mail: dcs.chair@iiserkol.ac.in

PLACEMENT CELL

The Placement Centre of IISER-K primarily serves BS-MS graduating students. The center is well equipped with excellent infrastructure to support all stages of the placement process.

The following facilities are made available for the placement activities:

- Auditorium / lecture halls for conducting pre-placement talks and written tests.
- Air-conditioned meeting rooms for interview.
- Campus tour including visit to R&D facilities.
- Luxurious guest houses at Mohanpur and Salt Lake, Kolkata (subject to availability).
- Office space including computers with web access.
- LCD projector and PA system.
- Volunteers to assist the company representatives.
- Video conference hall for online interviews.

The companies are encouraged to contact Placement Centre for all official communication. For more details

Visit the page: www.iiserkol.ac.in/placement.html

Contact us: placement@iiserkol.ac.in

CONTACT DETAILS

Placement Officers: _____

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Departmental Student Representatives: _____

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Shampy Mansha (Physics)
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Swapil Paliwal (Chemistry)
swapil@iiserkol.ac.in

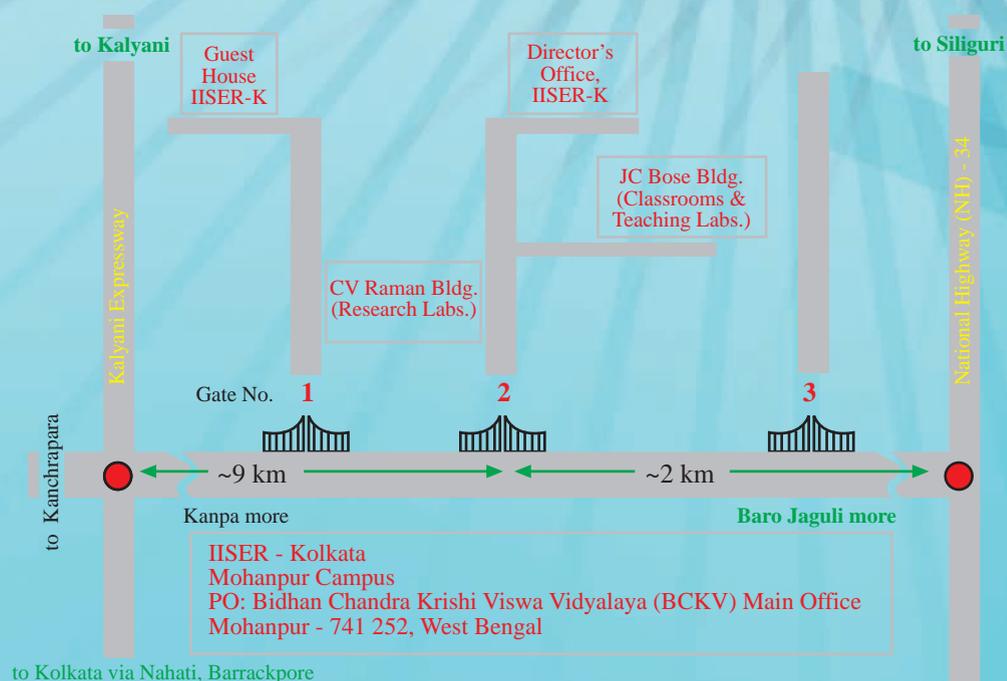
Vikas Agrawal (Earth Sciences)
vikasagrwal175@iiserkol.ac.in

HOW TO REACH

IISER Kolkata is currently functioning from two locations i.e Mohapur Campus and Kolkata (Salt Lake) Campus.

Mohanpur Campus

Road Map of IISER-Kolkata, Mohanpur Campus



How to reach

By train

(A) From Sealdah Stn. take any local train which goes to Santipur, Krishnanagar, Kalyani Simanta, Ranaghat.

(B) Get down at Kanchrapara Stn. and take Bus no. 22 to Baro Jaguli. Get down at Gate No. 2 of BCKV

By bus from Kolkata:

(A) Take any bus that goes to North Bengal and get down at Baro Jaguli.

(B) Take Bus no. 22 from Baro Jaguli to Kanchrapara and get down at Gate No. 2 of BCKV



The men of experiment are like the ant, they only collect and use; the reasoners resemble spiders, who make cobwebs out of their own substance. But the bee takes the middle course: it gathers its material from the flowers of the garden and field, but transforms and digests it by a power of its own. Not unlike this is the true business of philosophy (science); for it neither relies solely or chiefly on the powers of the mind, nor does it take the matter which it gathers from natural history and mechanical experiments and lay up in the memory whole, as it finds it, but lays it up in the understanding altered and digested. Therefore, from a closer and purer league between these two faculties, the experimental and the rational (such as has never been made), much may be hoped.

- Francis Bacon