

INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR



“

All who have meditated on the art of governing mankind have been convinced that the fate of empires depends on the education of youth ”

– Aristotle

It is this great vision that has become the guiding light of the Institute since its foundation. IIT Kharagpur was set up to create the opportunity for Indian students to get the best quality technical education possible. It continues to do so. Over the past few decades, the Institute has strived hard to achieve excellence and be among the best in academics, research and development in Science, Technology, Social Sciences, Law, Medicine, Management, Architecture and Agriculture besides culture and heritage. We have a holistic approach towards education and believe that a wholesome personal development, health and wellbeing, along with a mind to appreciate art and culture and empathy for fellow beings are important facets of education.

IIT Kharagpur is the torchbearer of the IIT system. It is India's highest-ranked institution for nurturing graduate employability. It has contributed immensely to India's strategic sectors of Defence, and Space and Atomic energy as well as to the Medical Sciences, Law, Architecture, Public and Rural Development. The Nation continues to look up to us to address issues close to its heart.

Clean Water, Bio-energy, Environment, Climate Resilience, health and wellbeing are common concerns all over the world. IIT Kharagpur is trying to contribute as much as possible to the long-term resolution of these problems. The Institute envisages to focus on research in all these areas, particularly in collaboration with top universities of the world through projects, academic programmes and mobility schemes.

Let us pursue the quest for knowledge together!

Partha P Chakrabarti
Director





ABOUT IIT KHARAGPUR

The Indian Institute of Technology, Kharagpur, was the first world-class technical institute set up in post-independent India. Since 1951, when it started functioning from the Hijli detention camp, a prison house for India's freedom fighters, IIT Kharagpur has set the standards for technical education in India.

IIT KGP, as it is popularly called, provided the model for the four other IITs that were established soon after its birth. Collectively, they made up the illustrious IIT system --- now a conglomerate of 23 IITs -- that has produced legions of technocrats, thought leaders, innovators, researchers and entrepreneurs who have made India proud.

IIT Kharagpur retains its place among the top Indian institutions of international repute. It is recognized as an Institute of National Importance by the government of India. In the last decade, the Institute has developed into a multi-disciplinary institution covering not merely Engineering and Technology, the Basic Sciences, but also Humanities and Social Sciences, Law, Management, and Medical Science and Technology, becoming the first of its kind of Institute in the IIT system.

A large number of successful programs and academic initiatives, such as the dual degree programs, the scope of earning a minor in a subject or gaining extra credit from micro-specializations, outreach credits and enabling researchers to move smoothly to interdisciplinary programs were first begun by IIT Kharagpur.

The Institute's emphasis on fundamental research has been complemented by its participation in action-oriented national projects. IIT Kharagpur, in fact, is sought out by both public and private organizations for its expertise in varied fields. Its Sponsored Research and Industrial Consultancy office looks after the smooth operation of large-scale and the innumerable sponsored research and industrial consultancy projects undertaken by the Institute.

The Institute's Science and Technology Entrepreneurship Park, a unique initiative within the IIT system, helps in product and process development. Among the many other flagship schemes of IIT Kharagpur is the upcoming hospital and medical research centre.

IIT Kharagpur has conceived and executed several national projects. The government-run Global Initiative of Academic Networks (GIAN) and the National Digital Library of India (NDLI) germinated in IIT Kharagpur, and continue to be managed by the Institute.

IIT Kharagpur's Alumni are among the most celebrated people all around for world for their contributions to diverse fields, be it education, industry or culture. Most of them attribute their success to their experience of life and study at IIT Kharagpur. The Institute caters to the largest number of students among all IITs and, much like their predecessors, students stay in a fully residential, green, expansive and diverse campus.

HISTORY AND JOURNEY



1950s

Establishing the IIT system with
224 students and 42 teachers

First PhDs (Physics and Maths),
including Dr. Mani Bhaumick

Naval Arch, Agriculture,
Architecture



1960s

Vibrancy in academic research

Growth in Engg, Science,
Humanities

Dr. S.K. Ghosh's seminal work
on semiconductors

Technology for rice milling
affecting 1 lakh rice mills
across the nation



1970s

Growth in capacity

Sponsored research and
consulting

Rs 1 crore Defence Project on
Radar awarded to
Prof. G.S. Sanyal

Setting up of Rural
Development Center



1980s

First B.Tech programs in Computer
Sc & Engg, Biotechnology, Industrial
Engineering

First formal cell for Sponsored
Research

First sponsored research in Artificial
Intelligence

Rubber Technology Center



1990s

First Management School in an IIT
(Alumni funded)

First Science and Tech
Entrepreneurship Park

Coordination of Tech Development
Mission Program

Advanced Interdisciplinary Centers



2000s

First School of Medical Science &
Tech at an IIT

First Law, Telecom, Infrastructure
Schools at an IIT (Alumni funded)

Outreach Centres in Kolkata and
Bhubaneswar with hybrid
educational programs & NPTEL

Sponsored Research crosses
Rs 100 cr - first in IIT system

R&D Centers in Energy, NanoTech,
Water

First industry-funded consortium -
AVLSI Consortium

RuTAG, Tea Engg, TBI, TIETS
incubated startups



2010s

National Digital Library of India

Global Initiative of Academic
Networks (GIAN)

First Center of Railways Research

Alumni funded Centers:
Entrepreneurship, Petroleum,
Quality Engineering, Happiness,
Innovation, International Program

Medical Research Hospital and
College

Research Parks at Kolkata and
Bhubaneswar

Highly successful multi-institutional
academic programs

India Centric Research : SandHI,
Center for Classical Arts

Highly successful technology and
social convergence programs

IIT KHARAGPUR TODAY

CORE UNITS

19
Departments

12
Schools

10
Centers

30+
Special
R&D Units

BROAD DISCIPLINES



Engineering &
Technology



Management



Basic
Sciences



Law,
Entrepreneurship



Biosciences,
Earth Sciences



Medical Science &
Technology



Social Sciences,
Humanities



ACADEMIC PROGRAMS

B.Tech, B.Arch, Dual Degree,
MBA, MHRM

LLB, MMST,
M.Sc/M.Tech/MCP/MS, PhD,
DSc, CER

Minor, Micro-credits, Micro-
specializations

Multi-institutional

PEOPLE, INFRASTRUCTURE

Around

12,000

Students

46%

UG

31%

PG

23%

PhD

762

Faculty

1,005

Staff

MODERN ACADEMIC COMPLEX

24

Hostels

2,100

acre Township

ANNUAL OUTCOMES

2,600

Graduates

**HIGHLY
EMPLOYABLE**

2,000

Papers

40,000

Citations

50-100

Patents

₹400 crore

Augmented Funding

30

Entrepreneurs



ACADEMIC UNITS



Engineering



Basic
Sciences



Social
Sciences



Medical Science
and Technology



Focussed R&D
Units

Engineering

Electrical Engineering



<http://www.iitkgp.ac.in/department/EE>

Academic Programs - UG courses

- B.Tech in Electrical Engineering and Instrumentation Engineering

PG courses (M.Tech, MS Research, PhD)

- Dual Degree in Machine Drives and Power Electronics*, Control Systems Engineering*, Power and Energy Systems Engineering*, Instrumentation Engineering, Instrumentation and Signal Processing* Engineering, Engineering Entrepreneurship, Control Systems Engineering, Financial Engineering

*stand-alone M.Tech course

Thrust Areas

- Efficient Power Converters & Drives including integrated converters
- Micro-grid & Renewable Energy
- Embedded Sensors & Systems
- Signal & Image Processing including machine learning
- Estimation & Control of Automotive & Aerospace Systems

Electronics and Electrical Communication Engineering



<http://www.iitkgp.ac.in/department/EC>

Academic Programs - UG courses

- B.Tech in Electronics and Electrical Communication Engineering

PG courses (M.Tech, MS Research, PhD)

- Dual Degree in Fibre Optics and Lightwave Engineering*, Engineering Entrepreneurship, Financial Engineering, Microelectronics and VLSI Design*, RF and Microwave Engineering*, Visual Information and Embedded Systems Engineering*, Telecommunications System Engineering*

*stand-alone M.Tech course

Thrust Areas

- Photonics and Broadband Communication Networks
- Nanoelectronics Spintronics and VLSI Circuits and Systems
- Design and Development of Embedded Systems for Computer Vision, Image and Signal Processing
- Computational Modelling of Forward and Inverse Radar problems and Advanced Antenna Array Processing
- Systems Biology
- Compressive Sensing and Sparse Signal Processing
- Sensor Networks
- Analog/Mixed Signal and RF Design

Computer Science and Engineering



<http://www.iitkgp.ac.in/department/CS>

Academic Programs - UG courses

- B.Tech in Computer Science and Engineering

PG courses (M.Tech, MS Research, PhD)

- Dual Degree in Computer Science and Engineering*, Engineering Entrepreneurship, Financial Engineering

*stand-alone M.Tech course

Thrust Areas

- Algorithms and Theory
- Artificial Intelligence and Machine Learning,
- Complex and Social Networks, Data and Web Mining
- Cryptography and Security
- Formal Methods
- Natural Language Processing
- Visual Information Processing



G.S. Sanyal School of Telecommunication



<http://www.iitkgp.ac.in/department/GS>

Academic Programs

- Micro Specialization Course on "Embedded Wireless Systems" (UG)
- Wireless Communications and Networks (PG)

Thrust Areas

- Wireless Communication and Networking: 5G and beyond
- Optical WDM Networks: Resource Allocation and survivability
- Millimeter Wave Communications
- Performance Analysis for delay tolerant networks



Center of Excellence in Artificial Intelligence



<http://www.iitkgp.ac.in/department/AI>

Academic Programs - UG courses

- High quality certificate program on Artificial Intelligence and Data Sciences (forthcoming)

Thrust Areas

- Foundations of Artificial Intelligence and Machine Learning
- Machine Learning Applications
- Natural Language and Speech processing
- Computer Vision



Center for Computational and Data Sciences



<http://www.iitkgp.ac.in/department/CD>

Academic Programs - UG courses

- High Performance Scientific Computing (interdisciplinary)

Thrust Areas

- Development of High Performance Computing Tools
- Computational Biology and Materials Science
- Computational Fluid Dynamics
- Climate Change and Natural Disasters
- Smart Infrastructure and Sustainable Cities
- Big Data Analytics, Social Networking and Cryptography



Industrial and Systems Engineering



<http://www.iitkgp.ac.in/department/IM>

Academic Programs - UG courses, M.Tech, MS Research, PhD

- B.Tech in Industrial Engineering
- Dual Degree in Industrial Engineering and Management*, Design and Quality Engineering (Industrial Electronics), Design and Quality Engineering (Mechanical Engineering), Financial Engineering

*stand-alone M.Tech course

Thrust Areas

- Logistics & supply chain management
- Production planning and inventory control
- Operations research and data science
- Human factors and safety engineering
- Manufacturing systems and process excellence
- E-business and information systems



Mechanical Engineering



<http://www.iitkgp.ac.in/department/ME>

Academic Programs - UG courses

- B.Tech in Mechanical Engineering, and Manufacturing Science and Engineering

PG courses (M.Tech, MS Research, PhD)

- Dual Degree in Manufacturing Science and Engineering*, Thermal Science and Engineering*, Mechanical Systems Design*, Engineering Entrepreneurship, Financial Engineering, Petroleum Engineering, Engineering Entrepreneurship, Industrial Engineering and Management

*stand-alone M.Tech course

Thrust Areas

- High Speed Machining, Grinding and Development of Cutting Tools / Grinding Wheel
- Micro Manufacturing and Microscale Transport Processes, Laser Materials Processing
- Bio-mechanics, Bio-micro-fluidics and microscale transport processes, lab-on-a-chip
- Computational Fluid Mechanics, Experimental Heat Transfer, Refrigeration systems
- Smart materials and composites, noise & vibration



Aerospace Engineering



<http://www.iitkgp.ac.in/department/AE>

Academic Programs - UG courses

- B.Tech.- Aerospace Engineering

PG courses (M.Tech, MS Research, PhD)

- Dual Degree in Aerospace Engineering*, Engineering Entrepreneurship, Financial Engineering

*stand-alone M.Tech course

Thrust Areas

- Unmanned Aerial Vehicles and related Technologies
- Smart and Composite Structure
- Experimental and Computational Research on Turbulent Flows
- Propulsion and Combustion
- Flight Dynamics and Control



Civil Engineering



<http://www.iitkgp.ac.in/department/CE>

Academic Programs - UG courses

- B.Tech in Civil Engineering

PG courses (M.Tech, MS Research, PhD)

- Dual Degree in Engineering Entrepreneurship, Financial Engineering, Structural Engineering*, Environmental Engineering and Management*, Transportation Engineering*
- M.Tech in Hydraulic and Water Resources Engineering
- M.Tech in Geotechnical Engineering
- M.Tech in Railway Engineering (Mechanical/Civil/Electrical)

*stand-alone M.Tech course

Thrust Areas

- **EnE:** Water and Wastewater treatment, Solid Waste Engineering, Environmental Microbiology, Environmental Impact Assessment, Air Pollution Modeling, Bio-energy
- **SE:** Reliability engineering, nonlinear mechanics, structural health monitoring, fluid-structure interaction.
- **HWRE:** Submerged Jets, Coherent Turbulent Structure, Sediment Transport and Scour, Numerical Study of Surface Flow, Hydrological Model.
- **TE:** Pavement Design, Traffic Planning and Design, Low-cost Road Construction.
- **GTE:** Geotechnical earthquake engineering, slope stability, ground improvement, microbe-soil interaction, static and cyclic soil-structure interaction and foundation strengthening of monumental structures.



Mining Engineering



<http://www.iitkgp.ac.in/department/MI>

Academic Programs - UG courses

- B.Tech in Mining Engineering

PG courses (M.Tech, MS Research, PhD)

- Dual Degree in Mining Engineering*, Safety Engineering, Financial Engineering, Petroleum Engineering

*stand-alone M.Tech course

Thrust Areas

- Rock Mechanics and Ground Control
- Surface and Sub-Surface Environment
- Mine Safety and Systems Engineering
- Advanced Surveying and Geo-informatics
- Safety Engineering
- Clean Coal Technology



Ocean Engineering and Naval Architecture



<http://www.iitkgp.ac.in/department/NA>

Academic Programs - UG courses

- B.Tech in Ocean Engineering and Naval Architecture

PG courses (M.Tech, MS Research, PhD)

- Dual Degree in Ocean Engineering and Naval Architecture*, Engineering Entrepreneurship, Financial Engineering

*stand-alone M.Tech course

Thrust Areas

- Marine and Ocean Hydrodynamics
- Marine Design and Production
- Coastal Hydrodynamics & Marine Hazards, Ocean Structures
- Marine Vibration, Wave Energy, Subsea engineering.
- Offshore Technology, Hydroelasticity



School of Nanoscience and Technology



<http://www.iitkgp.ac.in/department/NT>

Academic Programs - UG and PG course

- Introduction to Nano-Science and Technology (elective)

Thrust Areas

- Nanofabrication/nanoelectronic & photonic devices
- NEMS, Nanosensors, Bulk nanostructured materials for structural applications
- Novel nanomaterials
- Nanostructured coatings for energy conversion/storage and surface engineering
- Nanobiotechnology
- Computational nanostructures and Soft nanotechnology.



DHI Center of Excellence on Advanced Manufacturing Technology



<http://www.iitkgp.ac.in/department/DH>

Academic Programs - PG course

- Embedded Controls and Software

Thrust Areas

- Speciality materials
- Design and Automation
- Additive Manufacturing
- Digital manufacturing and IIoT



Chemical Engineering



<http://www.iitkgp.ac.in/department/CH>

Academic Programs - UG courses

- B.Tech. in Chemical Engineering

PG courses (M.Tech, MS Research, PhD)

- Dual Degree in Chemical Engineering*, Petroleum Engineering, Financial Engineering

*stand-alone M.Tech course

Thrust Areas

- Multiscale Transport Processes
- Separation Technology
- Reaction and Biochemical Engineering
- Materials and Interfacial Science
- Modelling of Chemical Processes
- Clean Technology
- Petroleum and Petrochemicals



Metallurgical and Materials Engineering



<http://www.iitkgp.ac.in/department/MT>

Academic Programs - UG courses

- B.Tech in Metallurgical and Materials Engineering

PG courses (M.Tech, MS Research, PhD)

- Dual Degree in Metallurgical and Materials Engineering*, Engineering Entrepreneurship, Financial Engineering

*stand-alone M.Tech course

Thrust Areas

- Classical Metallurgy and Materials Science
- Computational Material Science
- Iron and Steel
- Advanced Materials



Cryogenic Engineering Center



<http://www.iitkgp.ac.in/department/CR>

Academic Program

- M.Tech in Cryogenic Engineering

Thrust Areas

- Cryogenic Engineering
- Advanced Materials
- Non-conventional Energy



Materials Science Center



<http://www.iitkgp.ac.in/department/MS>

Academic Program

- M.Tech in Materials Science and Engineering.

Thrust Areas

- Nanomaterials/Nanocomposites
- Energy Materials
- Electrically Conducting Polymer Nanocomposites
- Polymer Membranes for Gas Separation and Proton Exchange



Rubber Technology Center



<http://www.iitkgp.ac.in/department/RT>

Academic Program

- M.Tech in Rubber Technology

Thrust Areas

- Rubber product design & development
- Polymer blends and polymer (nano) composites
- Synthesis of tailor-made polymers and modification polymers/rubbers
- Green approach in polymer synthesis and technology
- Smart polymer & nanocomposites in novel applications; electrical, self-healing & biomedical applications
- Recycling of polymers and rubbers
- Smart textile materials for military and space applications



Steel Technology Center



<http://www.iitkgp.ac.in/department/SL>

Academic Program

- Steel Technology (PG)

Thrust Areas

- Raw Materials – Beneficiation
- Energy Efficient Production of Iron & Steel – Modeling / Simulation
- Environmental Issues – Pollution / Waste utilization, Mitigation of GHG
- Processing / Fabrication – Forming; Rolling; Forging...
- Steel Products / Application – Auto / Railways
- Special Techniques for Characterization / Property Evaluation



Geology and Geophysics



<http://www.iitkgp.ac.in/department/GG>

Academic Programs - PG courses

- Integrated M.Sc. in Exploration Geophysics, Applied Geology (5 Years)
- M.Sc. in Geophysics, Geology (2 Years)
- Integrated M.Sc and M.Tech in Petroleum Engineering (6 Years)
- M. Tech in Exploration Geosciences

Thrust Areas

- Crustal Evolution and Metallogeny
- Paleoclimatology (Paleontology, Geochemistry)
- Isotope Geology
- Seismology
- Environmental Hazards and Mitigation



Center for Oceans, Rivers, Atmosphere and Land Sciences



<http://www.iitkgp.ac.in/department/CL>

Academic Program

- M.Tech in Earth System Science and Technology

Thrust Areas

- Ocean Modeling and Data assimilation over Bay of Bengal, Indian Ocean and North Indian Ocean
- Mesoscale Modeling and land surface data assimilation for extreme weather events
- Regional Coupled Modeling and Monsoon Dynamics
- Urban Boundary Layer, UHI Impact on Regional Climate
- Climate Modeling
- Study of Forest Biomass and Carbon Sequestration



School of Energy Science and Engineering



<http://www.iitkgp.ac.in/department/ES>

Academic Program

- M.Tech in Energy Science and Engineering

Thrust Areas

- Conventional Energy: Mechanical, Chemical, Electrical
- Renewable Energy: Solar PV, Solar Thermal, Wind, Bioenergy
- Organic Storage Technology



School of Environmental Science and Engineering



<http://www.iitkgp.ac.in/department/EF>

Academic Programs - PG courses

- Interdisciplinary (M.Tech, MS Research, PhD)

Thrust Areas

- Water and Wastewater treatment, Sanitation and Health
- Industrial Wastewater Treatment and zero liquid discharge
- Air pollution
- Solid waste management (Organic, electronic waste, medical waste management)
- Groundwater contamination transport and acid mine drainage
- Environmental Impact Assessment



School of Water Resources



<http://www.iitkgp.ac.in/department/WM>

Academic Program

- M.Tech in Water Engineering and Management

Thrust Areas

- Urban, Suburban, Rural water management
- Water economics, pricing and policy
- Surface water – groundwater interaction
- Impact of anthropogenic activities and possible climate change on water resources
- Water quality management at River basin and Urban scales
- Hydroinformatics
- System approach for water resources management



Deysarkar Center of Excellence in Petroleum Engineering



<http://www.iitkgp.ac.in/department/DE>

Academic Program

- Transdisciplinary Programme for Petroleum Engineering (TPPE)

Thrust Areas

- Reservoir Simulation and History Matching
- Data Analytics in Petroleum Industry
- Petroleum Geostatistics
- Fractured Rocks
- Drilling & Wellbore Hydraulics
- Drilling Fluids



Agricultural and Food Engineering



<http://www.iitkgp.ac.in/department/AG>

Academic Programs - UG courses

- B.Tech.- Agricultural & Food Engineering

PG courses (M.Tech, MS Research, PhD)

- Dual Degree in Farm Machinery & Power*, Post Harvest Engineering, Dairy & Food Engineering, Food Process Engineering*, Aquacultural Engineering*, Agricultural Systems & Management*, Land Water Resources Engineering*, Engineering Entrepreneurship, Financial Engineering
- M.Tech. – Agricultural Biotechnology

*stand-alone M.Tech course

Thrust Areas

- Agro-Informatics
- Mechanized Food Processing
- Natural Resources Management
- Precision Farming



Biotechnology



<http://www.iitkgp.ac.in/department/BT>

Academic Programs - UG courses

- B.Tech in Biotechnology and Biochemical Engineering

PG courses (M.Tech, MS Research, PhD)

- Dual Degree in Biotechnology and Biochemical Engineering*, Engineering Entrepreneurship, Financial Engineering

*stand-alone M.Tech course

Thrust Areas

- Healthcare Biotechnology (Prospecting novel therapeutics/diagnostics molecules for cancer, protozoan parasites, microbes, tuberculosis etc.
- Bio-energy (Production of bio-diesel, bio-ethanol and bio-hydrogen)
- Bioremediation, Biomaterials and Tissue engineering



School of Biosciences



<http://www.iitkgp.ac.in/department/BS>

Academic Program

- M.Sc in Chemical and Molecular Biology (Jointly Offered by IIT Kharagpur and IACS Kolkata)

Thrust Areas

- Immunology
- Biophysics
- Solution Nuclear Magnetic Resonance (NMR) Spectroscopy
- Signal Transduction and Gene Expression
- Protein engineering
- Epigenetic regulation
- Host-pathogen interaction: influenza A and B viruses that cause respiratory infection in humans



P.K. Sinha Center for Bio-Energy



<http://www.iitkgp.ac.in/department/BE>

Academic Programs

- MS Research, PhD

Thrust Areas

- Lignocellulosic Biofuels (Bioethanol, Biobutanol, Biogas)
- Algal Biofuels (Biodiesel, Bioalcohols, Biohydrogen)
- Microbial Fuel Cells
- Waste to Energy and renewables
- Biorefinery and Biorenewables



Rural Development Center



<http://www.iitkgp.ac.in/department/RD>

Academic Programs - UG courses, M.Tech, MS Research, PhD

- Two courses at undergraduate level
- Three courses at Masters level

Thrust Areas

- Development and Transfer of Technology
- Resource Planning and Marketing
- Tribal Development



Architecture and Regional Planning



<http://www.iitkgp.ac.in/department/AR>

Academic Programs - UG course

- Architecture (B.Arch - 5y)

M.Tech, MS Research, PhD

- City Planning
- Sustainable Built Environment

Thrust Areas

- Green Architecture sustainable and energy-efficient designs
- Urban information system
- Universal Design in Built Environment
- Advanced Housing Research
- Transportation Research
- Geo Informatics



Ranbir and Chitra Gupta School of Infrastructure Design and Management



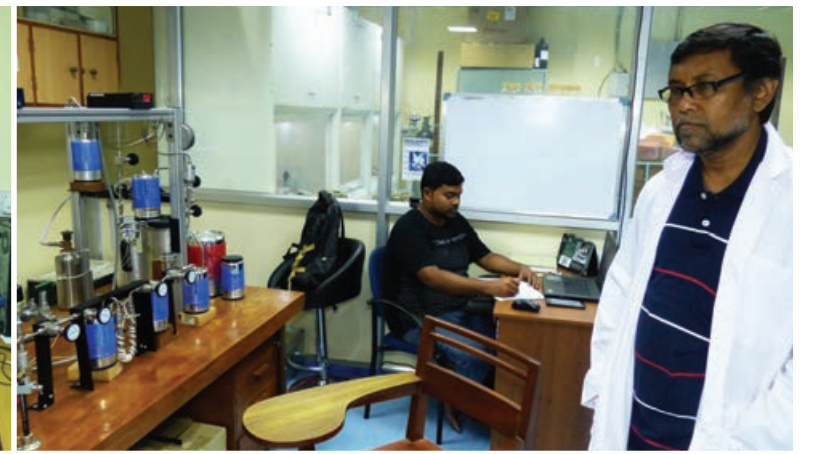
<http://www.iitkgp.ac.in/department/ID>

Academic Program

- M.Tech in Infrastructure Design and Management

Thrust Areas

- Smart urban Health, education and economy generating social infrastructure
- Transport-oriented-development (TOD) based infrastructure
- Water resources based Economic Zone based Logistics infrastructure
- Climate-based and disaster responsive mitigation infrastructure
- IT-enabled and ICT driven regulatory and governance infrastructure
- Smart Micro-Electro-Mechanical-systems driven intelligent infrastructure.





Basic Sciences

Mathematics

<http://www.iitkgp.ac.in/department/MA>

Academic Programs - UG courses, M.Tech, MS Research, PhD

- Integrated M.Sc in Mathematics and Computing (5 Years)
- M.Sc. in Mathematics (2 Years)
- M. Tech in Computer Science and Data Processing

Thrust Areas

- Functional Analysis
- Fluid Mechanics
- Cryptography
- Statistics and Complex Analysis

Physics

<http://www.iitkgp.ac.in/department/PH>

Academic Programs - UG courses, M.Tech, MS Research, PhD

- Integrated M.Sc in Physics (5 Years)
- M.Sc in Physics
- M.Tech in Solid State Technology

Thrust Areas

- Condensed Matter Physics
- Optics and Photonics
- Atomic, nuclear and high energy physics, Astrophysics
- Nonlinear dynamics and complex systems

Chemistry

<http://www.iitkgp.ac.in/department/CY>

Academic Programs - UG courses, M.Tech, MS Research, PhD

- M.Sc. in Chemistry
- Integrated M.Sc. in Chemistry (5 Years)
- Joint M.Sc Ph.D. in Chemistry

Thrust Areas

- Structure and properties of Transition metal complexes
- Smart materials for sensors and selective gas adsorption
- Protein folding and Enzymatic Catalysis
- Homogeneous Catalysis
- Drug design and delivery
- Spectroscopy of assemblies
- Molecular modeling and Theoretical Chemistry

Social Sciences

Humanities and Social Sciences

<http://www.iitkgp.ac.in/department/HS>

Academic Programs

- Integrated M.Sc. in Economics (5 Years)
- Master of Human Resource Management

Thrust Areas

- Development Studies
- Human Resource Management and Ethics
- Cultural and Communication Studies



Rajiv Gandhi School of Intellectual Property Law



<http://www.iitkgp.ac.in/department/IP>

Academic Programs

- Bachelor of Laws with Honours in Intellectual Property Law (LLB) (3 Years)
- Master of Laws (LLM) (2 Years)

Thrust Areas

- Intellectual Property Law
- Corporate Laws
- Environmental Laws
- Criminal Law
- Public Law
- International Law
- Energy Law



Vinod Gupta School of Management



<http://www.iitkgp.ac.in/department/BM>

Academic Programs

- Master of Business Administration (2 Years)
- Master of Business Administration in the Executive MBA Programme (3 Years)
- Post Graduate Diploma in Business Analytics (2 Years) [Jointly offered by IIT Kharagpur, IIM Calcutta and ISI]

Thrust Areas

- Big Data Analytics including Financial Analytics, Marketing Analytics and HR Analytics
- Banking, Derivatives and Risk Management, Micro finance
- Management of Family Businesses and Start-ups



Rekhi Center of Excellence for the Science of Happiness



<http://www.iitkgp.ac.in/department/RX>

Academic Programs

- PG courses

Thrust Areas

- Happiness and health
- Happiness and physiological changes
- Cultural dimensions of happiness
- Happiness, well-being and ecology
- Community well-being
- Creativity and happiness
- Leadership and happiness
- Relaxation techniques for happiness
- Stress and well-being and other related areas.

Medical Science and Technology



School of Medical Science and Technology



<http://www.iitkgp.ac.in/department/MT>

Academic Programs

- Master of Medical Science and Technology (3 Years)
- M.Tech in Medical Imaging and Informatics (2 Years)

Thrust Areas

- Microfluidics and Point of Care Diagnostics
- Multimodal Medical Imaging & Image Processing
- Tissue Engineering, Regenerative Medicine, Stem cells and Bio-Materials
- Signal Transduction, Proteomics and reproductive health
- Cancer Biology & Public Health

Focussed R&D Units

Rajendra Mishra School of Engineering Entrepreneurship



<http://www.iitkgp.ac.in/department/RJ>

Academic Program

- Dual Degree - B.Tech in Parent Dept and M.Tech in Entrepreneurship Engineering

Thrust Areas

- Business Analytics
- Healthcare Service delivery
- Energy Management
- Start up Environment and ecosystem Analysis
- Product Design, Analytics and manufacturing
- E-Waste Management
- Digital Technology

School of Nano Science and Technology



<http://www.iitkgp.ac.in/department/NT>

Academic Programs

- Introduction to Nano-Science and Technology (Elective)

Thrust Areas

- Nanofabrication / Nanoelectronic & Photonic Devices / NEMS / Nanosensors
- Bulk nanostructured materials for structural applications
- Novel nanomaterials
- Nanostructured coatings for energy conversion/storage and surface engineering'
- Nano-biotechnology
- Computational nanostructures

Subir Chowdhury School of Quality and Reliability



<http://www.iitkgp.ac.in/department/RE>

Academic Programs

- M.Tech in Reliability Engineering

Thrust Areas

- Network Reliability
- Probabilistic Risk Assessment
- Reliability in Design
- Quality Control
- Software Reliability
- Condition-Based Maintenance
- Human Reliability

Center for Theoretical Studies



<http://www.iitkgp.ac.in/department/TS>

Academic Programs

- Micro-Specialization in "Simulation Methods and Applications"
- PhD program

Thrust Areas

Nucleate theoretical research on fundamental aspects of basic and engineering sciences

Center for Educational Technology

 <http://www.iitkgp.ac.in/department/ET>

Academic Program

- M.Tech in Multimedia Information Processing

Thrust Areas

- Instructional Design
- Technology Enhanced Learning
- Teaching-Learning Process; Distance Education; Speech and Image processing
- Speech Technology development for Indian Language and ICT application
- Cognitive Psychology & Human Resource Development; E-learning
- Natural Language Processing for e-Learning
- Artificial Intelligence in Education

Advanced Technology Development Center

 <http://www.iitkgp.ac.in/department/AT>

Academic Program

- M.Tech – Embedded Controls and Software

Thrust Areas

- MEMS
- Micro Sensors and Actuators
- Microfluidics
- Photonics
- Solar PV Systems
- Molecular Beam Epitaxy (MBE)



RESEARCH

Presently, IIT Kharagpur has more than 160 research laboratories with state-of-the-art equipment. These laboratories are engaged in carrying out cutting edge research in important niche areas, including emerging technologies that are likely to have enormous social impact. The Institute carries out a lot of sponsored research and industrial consultancy as well, all managed through the designated office of SRIC (Sponsored Research and Industrial Consultancy). IIT Kharagpur has also created a research park at Kolkata to foster an environment of research with industries, and to nurture a generation of entrepreneurs.

IIT Kharagpur has been concentrating on six domains of great importance when it comes to research. They are:

ADVANCED MANUFACTURING TECHNOLOGIES

AFFORDABLE NEXT GENERATION HEALTHCARE TECHNOLOGIES

TECHNOLOGIES FOR SMART INFRASTRUCTURE DESIGN

GEOSCIENCES FOR THE FUTURE OF THE EARTH

INTELLIGENT AND GREEN TRANSPORTATION TECHNOLOGIES

DIGITAL CONVERGENCE TECHNOLOGIES

Advanced Manufacturing Technologies

IIT Kharagpur has profound expertise in manufacturing technologies. Some of the domains of expertise are:

1. The Steel Technology Centre has excellent research facilities, including instrumented hot and cold rolling mills, forging press and different types of furnaces for steel making, optical microscope, analysis and so on.
2. The Department of Mechanical Engineering has acclaimed competence in additive manufacturing, micro-nano robotics, micro-fluidics, modern joining methods, such as friction stir welding.
3. The Department of Industrial and Systems Engineering and the Reliability Engineering Centre have significant expertise in smart manufacturing processes making use of an integrated, computer-based platform having simulation, three-dimensional visualization, and analytics.
4. The Department of Metallurgy and Materials Engineering has significant expertise in the areas of extractive and physical metallurgy, mechanical behaviour of materials, Nanoscience and technology, powder metallurgy and environmental degradation of materials.
5. The Institute has well-equipped laboratory with sophisticated machines like high resolution X-ray diffractometers, thermal analyzers, Lithium-ion battery laboratory, hot press and Universal testing machine.

Affordable Next Generation Healthcare Technologies

1. The institute has existing medical research facilities under the School of Medical Science and Technology, and significant collaboration with healthcare providers under the MHRD mega project called 'Signals for Life Sciences'. Additionally, the Institute has well-established and highly acclaimed research groups working in several areas.
2. The Microfluidics research group of IIT Kharagpur has significant expertise in the development of rapid diagnostic platforms, and is presently focused on developing microfluidics-based portable and inexpensive diagnostic devices.
3. The Membrane group has extensive expertise in fabrication, characterization and systems-level engineering on the fabrication of ultra-low-cost water purification and dialysis modules for various biological applications.
4. The Institute's Biomaterials and Tissue Engineering laboratory is actively involved in fundamental understanding of cells-materials interaction and their manifestation in the development of customized implants and devices.
5. IIT Kharagpur's Protein Chemistry laboratory has expertise in protein aggregation involving protein-small molecule and protein-protein interactions. One unique feature of the research conducted is a blend of experimental protein chemistry with structural analysis.
6. The Institute's Soft Nano group has wide expertise in Nano patterning on various different types of soft, bio-compatible surfaces, with capability to control surface chemistry.



Technologies for Smart Infrastructure Design

1. The Institute has a number of departments actively engaged in infrastructural engineering. These are Civil Engineering, Architecture and Regional Planning, the Ranbir and Chitra Gupta School of Infrastructure Design and Management, Geology & Geophysics and several others.
2. A number of infrastructural projects in the country have been executed satisfactorily by the Institute.
3. IIT Kharagpur intends to continue smart and sustainable social infrastructure planning, based on the diverse need of habitats across the country considering all regional variations

Geosciences for the Future of the Earth

1. IIT Kharagpur has a high SCOPUS ranking in Earth and marine sciences.
2. The Institute is uniquely poised with its Geoscience and Mining Engineering departments and strong faculty pool in mineral/geochemical science and Geotechnical studies to explore nuclear fuels and waste disposal, a strategic research area of national interest.
3. The Institute also has highly competent climate science and water research groups that are already engaged in a number of national mission mode programs. It has a unique Center for Earth, Ocean, River, Atmosphere and Land Sciences. Additionally, IIT Kharagpur has related research experience in the Department of Mining Engineering, Department of Ocean Engineering and Naval Architecture.
4. State-of-the-art facilities exist for geochemical and mass spectrometry, environmental and water quality analytics, geophysical instrumentation for surface and sub-surface explorations, geotechnical and rock mechanics, mining technologies, high-end computational resources for digital models, remote sensing, signal processing and simulation, natural disaster risk assessment, geo-archaeological exploration, urban sub-surface and regional planning.

Intelligent and Green Transportation Technologies

1. IIT Kharagpur has developed a collaborative research laboratory with General Motors on Electronics, Control and Software for Automotive Applications over a period of 5 years. Several US patents have been granted.
2. The Institute has the first (and largest) Centre for Railways Research in any academic institution in the country. Major research projects have been funded by Indian Railways.
3. The AUTOSAFE project was executed in close collaboration with TU Munich and industrial partners from India and Germany under the Indo-German S&T cooperation. The project led to the development of a platform for formal timing analysis of automotive control systems.
4. The Institute has longstanding collaboration with DRDO labs, such as DRDL, ADE, LRDE, ITR, CAIR DEAL etc., and also with HAL and ISRO.
5. The Institute is working closely as a consultant with all the shipbuilding yards in the country and the Indian Navy. It also has excellent relations with the VLSI and the Power Electronics industry.
6. The Institute has expertise to develop hardware/software for embedded real time applications, hardware, software engineering design, aerodynamics, hydrodynamics, structures, control and guidance, wireless and microwave communication.

Digital Convergence Technologies

1. IIT Kharagpur has built the integration platforms for the National Digital Library of India and the Global Initiative for Academic Networks.
2. The Institute is part of several other initiatives, such as Digital Earth and Digital Train Communication Networks for Indian Railways.
3. The Institute is building a hospital which is expected to have a fully digital hospital platform and outreach.
4. The design of the Immersive Experience Laboratory is being planned .
5. Other projects, such as High Performance Computing, Geo-Spatial Infrastructure are under discussion with various stakeholders including national and international partners.
6. An experimental Cloud (Badal) and a hardware platform for High-End Data Analytics have been developed. The Institute has domain and proven interdisciplinary expertise in these areas including Hardware, Software, AI and Data Science, Engineering Design, Library Science, Earth and Climate Science, Interoperable Platforms and ERP.

Research on Techno - Social Convergence Themes

IIT Kharagpur has also been working on four programs that have had, and will continue to have, deep social impact. These Techno-Social Convergence research programs are:

- **Signals & Systems in Life Sciences**
- **Future of Cities**
- **Technological Interventions for Food Sustainability**
- **Science and Heritage Initiative (SandHI)**



Signals and Systems of Life Sciences

The focus of this project is on sensing, understanding and interpreting the signals obtained from life systems from a signal processing perspective. IIT Kharagpur has established several partnerships with leading healthcare institutions for translational research in this domain. The project professes an engineering approach to problem-solving in the life sciences domain.

This approach considers human physiology to comprise of multiple biosystems, which generate biosignals. These biosignals give an indication of healthy or the pathological state of the biosystems and, in turn, that of an individual. One biosystem can generate multiple biosignals. Conversely, one biosignal can be the manifestation of more than one biosystem. The biosystems among themselves can be interconnected and may not be working in isolation. Hence, our investigation involves going beyond a system or an organ based approach and prefers a multi-pronged strategy that is expected to give better validation of a specific hypothesis.





Future of Cities

The aim of this project is to find appropriate technological intervention in areas related to:

- A. Planning & Policy,
- B. Design & Development,
- C. Habitation & Maintenance and
- D. Governance with the common goal of improving the quality of urban life.

This unique initiative involves more than 50 professors/researchers of 13 departments of IIT Kharagpur and more than 15 researchers from other institutes in India and abroad. These programs are expected to have a deep impact and promote international collaboration and produce action-oriented results.



Technological Interventions for Food Sustainability

The aim of this project is to do translational research on the food chain, ranging from technologies for enhancing agricultural productivity, technologies for food processing and preservation, and technologies for supply chain management. The departments of Industrial and Systems Engineering, Biotechnology, Agriculture and Food Engineering, and Humanities & Social Science have come together to address these research directions.



SandHI

Science and Heritage Interface



SandHI is a multi-institutional mega project led by IIT Kharagpur for deep studies on technological interventions for understanding, preserving and developing our heritage. SandHI spans nine domains, namely

- | | |
|---|---|
| A. Language and culture studies, | F. Role of health systems in invigorating Indic concepts of death and dying, |
| B. Deep structures of Indian music and audience responses, | G. Geo-archaeological studies and architectural exploration of Indian historical gaps, |
| C. Iconography and the role of semantics and semiotics in culture, | H. Creative economy and regeneration of urban systems, |
| D. Meditation systems and foundation of holistic human health, | I. A detailed exploration of all projects in the case of Varanasi |
| E. Invigorating social engineering of Indic systems of donation, | |

INTERNATIONAL PROGRAMS

IIT Kharagpur is in collaboration with many globally renowned universities to promote exchange of knowledge. The Institute's faculty and advanced graduate students often visit universities in exchange programs to acquaint themselves with new technology, methodologies, research culture and research areas in other institutions. The Institute also has several programs under which foreign faculty and international students can come to IIT KGP to either teach or study on a short or medium-term basis, or collaborate in research.

For International Students

Dual Doctoral Program

IIT Kharagpur offers Dual Doctoral Program jointly with its partner institutions. MIPA, or the Melbourne India Postgraduate Academy, is one of them. Developed by a collaboration between the University of Melbourne (UoM) and IIT Kharagpur (one of the three partner IITs), MIPA facilitates the DDP, wherein students receive PhD degree jointly awarded by UoM and IIT Kharagpur. Students enrolled in MIPA work on a project jointly developed by both supervisors and mentored by a joint advisory committee consisting of academics from UoM and IIT Kharagpur.

IIT Kharagpur also offers Dual Doctoral Degree Program (DDDP) with Curtin University of Technology, Perth, Western Australia. Both the institutions are promoting appropriate joint research projects and joint courses of study with particular emphasis on internationally funded projects.

DDP is also offered by IIT Kharagpur jointly with the University of Wollongong, Australia. The two institutions encourage short term visits of scholars for research and joint research projects.

Doctoral Programs

IIT Kharagpur welcomes foreign students to enroll in its doctoral programs. The Institute has MoUs with several foreign universities, such as University of Melbourne, Curtin University, and University of Wollongong, that facilitate study abroad opportunities at PhD level for students of the partner institutions.

Reciprocal Student Exchange Program

This student exchange program covers funded short-term visit by students between IIT Kharagpur and foreign institutions/universities on a reciprocal basis. The visiting student must be a full-time student enrolled in a degree program in their Institution. The nature and extent of funded support shall cover one or more from the following: travel in India, tuition fees, stay at IIT Kharagpur, food, and medical insurance. IIT Kharagpur has recently launched a funded short-term student

research exchange program with Texas A&M University. Under this program, three students have visited IIT Kharagpur to pursue their summer internship. Likewise, three students from IIT Kharagpur have visited TAMU for their summer internship. Even if the corresponding university of a prospective student does not have an agreement with IIT Kharagpur on student exchange, a short-term visit can be arranged by the Office of International Relations, IIT Kharagpur, after due approval from the department/school/center concerned.

Masters Programs

IIT Kharagpur welcomes foreign students to enroll in its masters programs. The Institute already has standing arrangement with several universities with which it has signed MoUs to facilitate study abroad opportunities at the postgraduate level. Even if there is no standing agreement, students can contact the Dean of Postgraduate Studies and Research, IIT Kharagpur, for enrolment.

Short-term Visit

Foreign students of any recognized institute/university interested in carrying out course work/research not leading to a degree may visit IIT Kharagpur for a short period not exceeding two consecutive semesters with the intervening summer/winter term. The potential students are accepted as 'visiting students'. Research scholars visiting IIT Kharagpur for thesis/ project work/research work are required to contact the professor concerned in advance for approval. Students also visit for joint programmes of short duration such as Practicum and Workshops which are organized by the partner universities.

IIT Kharagpur conceptualized the International Summer and Winter Term, which has now gone national as the Global Initiative of Academic Networks. Every year, foreign academicians and students visit the Institute under this program for short-term courses.

For IIT Kgp Students

Foreign Training Program

International exposure is crucial for a holistic development of an individual and the experience of living and working abroad will be tantamount to this endeavor. FTP is one such program which enables and supports the students to find foreign research internships.

Semester Away Program

Semester Away Programme (SAP) provides students of IIT Kharagpur with the unique opportunity of studying in any university of his choice whether in India or abroad for a semester. SAP provides the students with the opportunity to explore their interests and gain international experience.

For International Faculty

Faculty Position

Indian nationals (including NRIs) and Overseas Citizens of India can apply for regular faculty positions at IIT Kharagpur. Foreign nationals (other than OCIs) can apply for faculty positions at IIT Kharagpur on contract. The contract period would not exceed 5 years at a time and the appointment/renewal would be subject to government clearance.

Short-term Visits

IIT Kharagpur welcomes visits by faculty members from universities around the world. Members of faculty of foreign institutions can come to IIT Kharagpur to teach, do collaborative research, or to explore new opportunities. Visits may be as short as a day for a lecture, a few days for a conference, a week or more for a short course, or a full year on sabbatical leave.

Honorary Appointments

Upon recommendation by an academic unit and the Dean of Faculty, an international faculty member can be given an honorary visiting position commensurate with the level of engagement at the Institute.

SRIC Grant under Collaborative International Research (SGCIR)

IIT Kharagpur welcomes collaborative international research proposals from its faculty members through which collaboration with an outstanding international researcher may be developed for a maximum period of three years. Under this collaboration, the internationally renowned faculty member visits the Institute for a minimum of 10 days. The Institute bears the travel, stay expenses of the international researcher and awards him an honorarium. In turn, the supervisor/mentor may visit the international laboratory for a short duration, maximum 14 days once in three years, and the student may visit the laboratory for a period of 2-3 months once in every year. In this case the Institute will bear all travel related expenditure of the faculty as well as the student.

Visits under the Global Initiative of Academic Networks program (GIAN)

IIT Kharagpur is the national coordinator of the Global Initiative of Academic Networks or GIAN, launched on November 30, 2015 by the government of India. Under GIAN, reputed international faculty can come to IIT Kharagpur (or any other Indian academic institution) to take classes, engage in cutting-edge research jointly with the teaching faculty and students in these institutions. GIAN owes its genesis to the International Summer Winter Term or ISWT program started by IIT Kharagpur in 2014.

Shri Gopal Rajgarhia International Programme (SGRIP)

The Institute is among the first in India to set up an exclusive endowment fund for supporting international travel and stay of students and faculty from IIT Kharagpur and foreign universities. The Shri Gopal Rajgarhia International Programme includes the following:

- ▶ SGR International faculty outreach programme
- ▶ SGR International research scholar support programme
- ▶ SGR International student scholarship programme
- ▶ SGR International workshop/meeting
- ▶ SGR Student International travel support



Some collaborative activities

Columbia University Graduate School of Architecture, Planning and Preservation, USA: How water can be the core of urban management strategies and planning

George Washington University, USA: Inbound and Outbound Internship programs are organized by the law schools of these two institutions

MIT India Practicum Program: The School of Architecture and Planning, MIT, USA and Department of Architecture and Regional Planning, IIT Kharagpur have come together to collaborate for the India Practicum programme. The broad objective of the programme is to critically study urbanization in the current developing world, where the concept is no longer limited to the precincts of what are administratively defined as “cities”

Pepperdine University, USA: Technological knowledge exchange focusing on product engineering, reverse-forward engineering and rapid prototyping. These exchanges will be beneficial in the future activities of the Kolkata research park

Texas A&M University (TAMU), USA has been conducting an inbound and outbound student exchange program every year

University of Manchester, UK: Discussions have been initiated for collaborations in the areas of medical technologies, geology, mining etc

University of Warwick, UK: Internship program is organized each year at the Warwick Manufacturing Group for undergraduate and postgraduate students from IIT KGP

Leibniz University of Hanover, Germany: Inbound students visiting IIT KGP for one semester for academics and research carrying credits

Technical University Munich, Germany: Inbound students visiting IIT KGP for a short duration for academics and research carrying credits

Curtin University, Australia: Joint Symposium held with four major components of the workshop for facilitating the Dual Doctoral Degree Program (DDDP). Another workshop was held in 2017 on “Imaging Science for Art Conservation and Archaeology” with the objective of enhancing international cooperation with Curtin University and Nottingham Trent University

University of Melbourne, Australia: Outbound student visits are taking place under the Dual Doctoral Program (DDP). Collaborative partnerships are being worked out in medical research and water research areas

University of Wollongong, Australia: Outbound student visits are taking place under the Dual Doctoral Program (DDP)

Ben-Gurion University of the Negev: Workshop organized for possible collaborations in the fields of computer science, information security, etc.

MY HOME MY WORLD

Being a student at IIT is the dream of every school-going youngster in India who aims to be an engineer. Each year, more than 1.3 million aspirants compete for about 10,000 seats at the IITs. IIT Kharagpur admits some 1400 plus undergraduate students every year through JEE (Joint Entrance Examination; Main and Advanced) held throughout India. Students in select countries can also appear for this entrance exam. IIT Kharagpur has several programs through which international students can visit Kharagpur for courses or research lasting anywhere between a few weeks to one year.



The Campus

IIT Kharagpur has the largest campus among all IITs - 2,100 acres that is home to some 20,000 residents. The Institute manages its own water supply, public health and waste management, security and healthcare and a market complex.

2100

acres of campus

20,000

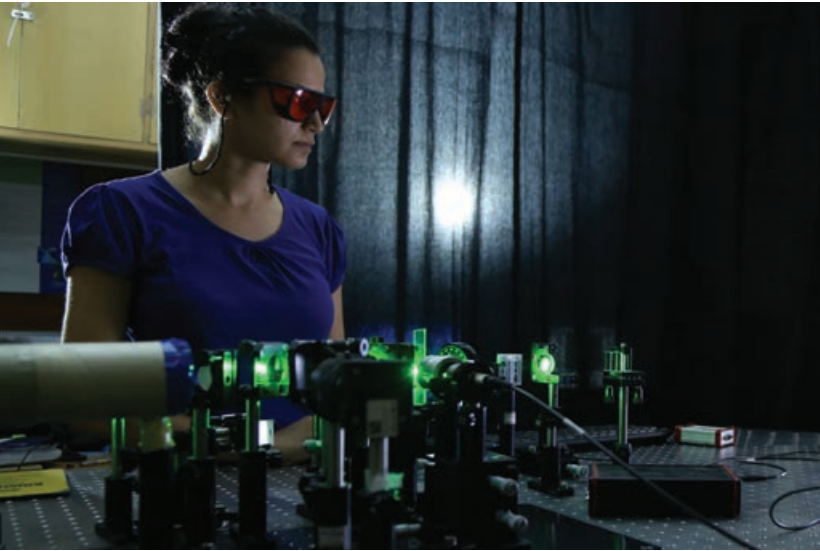
residents

22

Halls of Residence

Residence

IIT Kharagpur has 24 Halls of Residence. Each has its own dining room, canteen, common room, gym, courts and fields, library, high speed LAN in every room and Wi-Fi. Halls of Residence are 'the' most important part of IITKGP student life. This is where they begin life-long bonds with their Hall-mates and Wing-mates. This bond is strengthened through inter-Hall competitions in sports, technology and cultural events every year.



Facilities

IITKGP has hi-tech labs that are at par with its global peers. In addition to specialized labs in every department, the Institute has set up a slew of laboratory complexes: these range from the first year UG laboratories to the Central Research Facility for advanced research in materials and biology.

HI-TECH LABS

CENTRAL RESEARCH FACILITY

The Central Library at IITKGP is considered one of the finest and largest in the world. Its 8,000 sq.m provides reading space for 2,000 people. It has access to all major databases and repositories, including 3.8 million theses and dissertations.

8000

sq.m provides reading space for

2000

people



The Student Activity Centre, better known as the Technology Students' Gymkhana, is the hub of numerous extra-curricular and co-curricular activities. It has an Aquatic Center, basketball courts, tennis courts, volleyball courts, indoor squash and badminton courts and a well-equipped gymnasium.



The Gymkhana also hosts a wide variety of societies and clubs to promote the hobbies and interests of students -- the Dramatics Societies, Technology Robotix Society, Technology Filmmaking and Photography Society, Business Club, Debating Society, the Music Societies, Communique (soft skills), the Quiz Club, Spectra (fine arts), Technology Adventure Society, Technology Dance Society and Technology Literary Society.



IIT Kharagpur has several stadia - Jnan Ghosh stadium, Mahatma Gandhi and Tata Sports Complex - for various games such as hockey, football, cricket and athletics. The Institute also encourages active participation of the students in sports, especially through events like the General Championship and the prestigious annual Inter-IIT Sports Meet.



A medical unit, counselling centers are located within the campus. A market complex exists inside the campus. There are also banks, ATMs and post office located within the campus.

MEDICAL UNIT

BANKs

ATMs



Numerous in-house eateries serve the demands of residents. Some eateries are open overnight, while some serve hot food from early morning itself. Within the campus there are restaurants such as Billoos, Dreamland-Sahara, Hot Bite, Heritage etc. The campus also boasts of retail eatery chains such as Café Coffee Day, Baskin Robbins and Subway. Then there is Chhedis, just on the border of Puri gate. It is a dhaba or roadside eatery that has never closed down in the history of KGP except for once.



Student Activities

The ability of IIT Kharagpur's students becomes amply evident through their participation and regular victories in competitions of international repute, such as winning the HULT Prize, the DST-Lockheed Martin Awards and so on.

IIT KGP conducts numerous contests throughout the year, such as Biz Quiz, Tech Quiz, Maths Olympiad, Chem Quest, and so on that give KGPIans a taste of competitiveness.

Various student activities are encouraged and supported through SRIC. Notable activities include the following:

Underwater Robotics – The Underwater Robotics Research group at IIT Kharagpur has been active in enhancing the capabilities of the student developed Autonomous Underwater Vehicle (AUV) Platform Kraken for various autonomous navigation and control activities. In addition, the test bed AUV of IIT Kharagpur developed under a Ministry of Earth Sciences project is also being revived for underwater field operations relating to oceanography, climatology and other applications.

M.N. Faruqui Innovations Centre – The M N Faruqui Innovations Centre (MNFIC) established in 2016 has now been equipped with mechanical fabrication facilities as well as electronic prototyping setups in a Tinkering Lab. These supplement the design facility which is also equipped with 3D printing setups and are there for the use of student innovators.

Boeing University Relations Program – Under this program, students have designed, built and flight tested unmanned aerial vehicles with vertical takeoff and landing, and cruise capability.

Team Kart – SRIC supports the indigenous development of Formula Student Racing Cars by the Team Kart student group.

RoboSoccer – an activity for the design and implementation of a team of soccer playing robots. Aerial Robotics Kharagpur (ARK) – a students' group working for building autonomous aerial vehicles. The group was formed in February 2015.

Aerial Robotics Kharagpur (ARK) – a students' group working for building autonomous aerial vehicles. The group was formed in February 2015.

TeamAGV – an activity for the design and implementation of autonomous ground vehicles. The team has designed, fabricated and operated autonomous vehicle with multiple sensors data processing and fusion incorporating sophisticated control steps to participate in various competitions in India and abroad.

► The Institute organizes Department Fests, Society Events and, the best of all, Spring Fest, the annual Socio-Cultural Fest, and Kshitij, the annual Techno-Management Fest.

► There are also the Department Fests - The Department of Computer Science and Engineering organizes an online programming contest annually, the Department of Ocean Engineering and Naval Architecture conducts its annual technical meet Samudramanthan, Esperanza (organized by department of Electronics and electrical communication engineering) and so on

► The various societies also conduct events round the year, such as Robosoccer, conducted by the Technology Robotix Society, various plays conducted by the Dramatics Societies, shows conducted by the Music societies, etc.

► Illumination, known as Illu, is a festival unique to IIT Kharagpur and is usually held on the day of Diwali itself. It is a competition among student halls. All halls build vertical panels of bamboo on which thousands of lamps (*diyas*) are mounted forming outlines of people or things. On the same day as Illumination, the Rangoli Competition is organized as an inter-Hall event. Rangolis of exquisite design and details are made using coloured powders, crushed bangles, and pebbles.





ALUMNI CONNECT.

IIT Kharagpur's Alumni, many of them world-known scientists, industrialists, entrepreneurs, visionaries, educators and administrators, have been its source of pride. They are also the Institute's pillars of strength, who have supported its advancement and helped in the transformation of engineering education in India.

The Institute has always maintained a strong connection with its Alumni. A formalized relationship goes back to the 1960s. With the advent of the new century, non-profit alumni foundations were set up in India and the USA in 2002 and 2003 respectively. In 2004, the Office of Alumni Affairs and International Relations was set up at IIT Kharagpur to spearhead the activities of Alumni networking, Alumni communication, organizing Alumni meet, fundraising, reporting and so on.

A key activity of this was to promote international relations as well as MoUs with the top-notch foreign universities, laboratories and corporations for projects, exchange programs, research etc. This office is currently headed by the Dean Alumni Affairs and Dean International Relations.

IIT Kharagpur recognises the professional achievements and contribution of its Alumni through the **Distinguished Alumnus Award** (DAA) given out each year on the Annual Convocation Day. The Institute also grants **Life Fellow** status to those among the Alumni or Faculty who have performed seminal service to the Institute. Professor Anadi Sankar Gupta, Professor G.S. Sanyal are Life Fellows, as are Dr Suhas S. Patil, Mr. Bijoy G. Chatterjee and Mr Brijendra Kumar Syngal.

The Institute also recognizes its Alumni through the **Distinguished Service Award** (DSA). The award is given to those in the Alumni who have provided admirable service to the Alumni Chapters or Foundations, to students or Faculty or to other stakeholders of the Institute through resource generation or through their life in academics and research.

Starting in 2018, IIT Kharagpur has launched the **Young Alumni Achiever Awards** in order to recognize young and promising Alumni who have achieved great success and recognition in their chosen profession. It believes the award gives an opportunity to current and future students to be inspired by their seniors who have achieved notable success following graduation.

“ALUMNI FUNDED INITIATIVES”

The Alumni of IIT Kharagpur have come forward to support many of its ventures. Many of them have provided seed funds for setting up crucial research centers and schools of learning. Others have instituted chairs and scholarships for the Faculty and students that have constantly motivated them towards their goals.



In 1993, with generous contribution from alumnus **Vinod Gupta (BTech/AG/67)**, the Vinod Gupta School of Management was founded. VGSoM today is among the top 10 business schools in India.

Entrepreneur **Arjun Malhotra (BTech/EC/70)**, co-founder of HCL (India's foremost hardware and IT company), wanted to realize his vision of telecommunication playing a transformative role in India's growth story. The G.S. Sanyal School of Telecommunication was set up by him in 1996 to function as a center of excellence in the field of communication technology.

The Rajiv Gandhi School of Intellectual Property Law, set up with the support of **Vinod Gupta** in 2006, is considered among the top three law schools in India. The School runs an active Faculty and student exchange program with GW Law School in USA.

Infrastructure design and management was introduced by alumnus **Ranbir Gupta (BArch/AR/70)**, with whose generous help, the Ranbir and Chitra Gupta School of Infrastructure Design and Management was set up in 2008. The School has set up international collaborations with the University of Tokyo, Columbia University etc.

The need for training and support for entrepreneurship in the field of engineering was recognised by IITKGP in 2010. The initiative, supported by alumni **Devendra Mishra (BTech/ME/66)** and **Amarendra Mishra (BTech/MT/69)**, led to the establishment of the School of Engineering Entrepreneurship, named after their father and former faculty of IITKGP, Prof. Rajendra Mishra.

Alternate energy is one of the most intriguing research areas today. Researchers at the P.K. Sinha Center for Bioenergy have not only created biofuels but have also discovered new sources of fuel. The Center is the vision of alumnus **Dr. P.K. Sinha (BTech/ME/70)**.

Alumnus **Ashok Deysarkar (BTech/CH/71)** wanted petroleum engineering to be made an interdisciplinary and industry-oriented program. The Deysarkar Centre of Excellence in Petroleum Engineering was set up in 2016 with this in mind.

IITKGP has explored the new and intriguing area of the Science of Happiness. With alumnus **Satinder Singh Rekhi (BTech/EE/72)**, the Institute in 2016 launched the Rekhi Center for Science of Happiness. A microcredit course in the Science of Happiness has also been introduced.

In 2017, the Institute established India's first Center for Quality and Reliability. The center of excellence is the brainchild of alumnus **Subir Chowdhury (BTech/AE/89)**.

The Shri Gopal Rajgarhia International Programme, funded by alumnus **Shri Gopal Rajgarhia (BTech/CH/68)**, facilitates international visit of inbound and outbound Faculty and students.

Prof. Tapan Bagchi (DSc/IM/12) has contributed generously to the development of the Central Library, **Kirtan Behera (BTech/ME/65)** to students' all-round performance, **Vijay Kiyawat (BTech/ME/67)** to Faculty health and wellness and **Tilak Sarkar (BTech/NA/85)** to the Innovation Challenge Grant. A number of Chair Professorships and Scholarships have been funded by **Shyamal Ghosh (BTech/ME/60)**, **Vijay Madiseti (BTech/EC/84)**, Ranbir Gupta et al.

The Institute's latest Centre of Excellence for Artificial Intelligence has been set up with the seed fund provided by entrepreneur **Aneesh Reddy (BTech/ME/2006)**, co-founder of Capillary Technologies.

A group of alumni came together to fund the Institutional Development Program at IITKGP aimed to position the Institute among the top universities in the world. This group included, Vinod Gupta, Ranbir Gupta, Arjun Malhotra, P K Sinha, Ashok Deysarkar, Shri Gopal Rajgarhia, **Mani Bhaumik (PhD/PH/58)** and **Purnendu Chatterjee (BTech/ME/71)**.

In 2018, the **IIT Kharagpur Foundation (IITKGPF) of USA**, came forward with its Award Program for International Internships that funded as many as 14 students from various disciplines and at various levels of study at IIT Kharagpur to pursue research or internships at renowned academic institutions abroad.

In 2018 again, the **A.K. Singh Distinguished Chair Professorships** was initiated by the batch of 1993 (Electrical Engineering) for IIT KGP Faculty devoted to the use of Artificial Intelligence and Machine Learning. This was in memory of their batchmate, A.K. Singh, a brilliant student and a remarkable IPS officer who lost his life combating the Naxals in Bihar.

