



भारतीय प्रौद्योगिकी संस्थान खड़गपुर
INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

Advertisement No.: R/10/2023 Dated July 01, 2023

Subject: Advertisement for various Faculty Positions

Indian Institute of Technology Kharagpur, an Institute of Eminence (IoE), is the first and the largest in the chain of IITs engaged in teaching, research and development requires faculty for its various academic units. The Institute invites online applications from Indian nationals, Persons of Indian Origin (PIOs) and/or Overseas Citizens of India (OCI) [*], possessing excellent academic background, commitment to top quality teaching and proven credentials for carrying out outstanding research and development for various Departments / Centres / Schools / Academy :

[*] Foreign Nationals (other than OCIs and PIOs) are encouraged to apply for faculty positions for fixed tenure not exceeding five years on contract basis subject to clearance from Government of India (GoI).

FACULTY OF BIO-TECHNOLOGY AND BIO-SCIENCES

- 1) Department of Biotechnology
- 2) P. K. Sinha Centre for Bio-Energy & Renewables
- 3) School of Bio-Science
- 4) School of Medical Science and Technology
- 5) Centre of Excellence in Affordable Healthcare

FACULTY OF ENGINEERING AND ARCHITECTURE

Mechanical Sciences Division:

- 1) Department of Aerospace Engineering
- 2) Department of Agricultural and Food Engineering
- 3) Department of Civil Engineering
- 4) Department of Mechanical Engineering
- 5) Department of Metallurgical & Materials Engineering
- 6) Department of Mining Engineering
- 7) Department of Ocean Engineering & Naval Architecture
- 8) School of Water Resources

Electrical & Computer Sciences Division:

- 1) Department of Electrical Engineering
- 2) Department of Electronics & Electrical Communication Engineering
- 3) Department of Computer Science & Engineering
- 4) School of Energy Science & Engineering
- 5) G. S. Sanyal School of Telecommunications
- 6) Centre of Excellence in Artificial Intelligence
- 7) Centre for Computational & Data Sciences
- 8) Subir Chowdhury School of Quality & Reliability

Chemical Sciences Division:

- 1) Department of Chemical Engineering
- 2) Rubber Technology Centre
- 3) School of Environmental Science & Engineering

Architecture, Design & Planning Division:

- 1) Department of Architecture & Regional Planning
- 2) Ranbir and Chitra Gupta School of Infrastructure Design & Management

FACULTY OF SCIENCES

- 1) Department of Physics
- 2) Department of Chemistry

- 3) Department of Mathematics
- 4) Department of Geology & Geophysics
- 5) Centre for Oceans, Rivers, Atmosphere and Land Sciences

FACULTY OF HUMANITIES, SOCIAL & ECONOMIC SCIENCES

- 1) Department of Humanities & Social Sciences
- 2) Centre for Rural Development and Innovative Sustainable Technology
- 3) Rekhi Centre of Excellence for the Science of Happiness

FACULTY OF INTERDISCIPLINARY SCIENCE & ENGINEERING

- 1) Department of Industrial & Systems Engineering
- 2) Materials Science Centre
- 3) Cryogenic Engineering Centre
- 4) Advanced Technology Development Centre
- 5) Deysarkar Centre of Excellence in Petroleum Engineering
- 6) School of Nano-Science & Technology
- 7) Partha Ghosh Academy of Leadership
- 8) Centre of Excellence on Safety Engineering & Analytics (COE-SEA)
- 9) Rajendra Mishra School of Engineering Entrepreneurship
- 10) Centre of Excellence for Indian Knowledge Systems

SCHOOL OF LAW

- 1) Rajiv Gandhi School of Intellectual Property Law

SCHOOL OF MANAGEMENT

- 1) Vinod Gupta School of Management

IMPORTANT NOTE

- The areas of specializations in Departments/Centres/Schools/Academy shall be based on the requirement by the respective Departments/Centres/Schools/Academy.
- The list of Department/School/Centre/Academy wise specialisations may be viewed at the home page of the online application portal.
- The Institute reserves the right to shortlist the candidates as per the requirement of the respective Department/Centre/School/Academy depending upon exigencies. Prospective Candidates are advised to constantly visit the Institute's website for updates.

ELIGIBILITY CRITERIA

Posts: Professor, Associate Professor and Assistant Professor

Qualifications for the Post(s): Ph.D. with first class or equivalent at the preceding degree in the appropriate branch with a very good academic record throughout. *Ph.D. should have been awarded on or before the last date of application.*

Qualifications for the post(s) in Rajiv Gandhi School of Intellectual Property Law: Ph.D. with first class or equivalent in LLM (Master of Laws) after LLB (Bachelor of Laws) with a very good academic record throughout (**Specialization** – Tax law, Competition law, Labour and Industrial Law, Corporate Law, Family Law, Constitutional Law, Criminal Law, Banking and Financial Laws).

Experience for the Posts:

Posts	Experience required for the post
Professor	A minimum of 10 years' teaching / research / industrial experience of which at least 4 years should be at the level of Associate Professor in IITs, IISc Bangalore, IIMs, NITIE Mumbai and IISERs or at an equivalent level in any such other Indian or foreign Institution(s) of

	comparable standards.
Associate Professor	A minimum of 6 years teaching / research / industrial experience, of which at least 3 years should be at the level of Assistant Professor or equivalent positions in IITs, IISc Bangalore, IIMs, NITIE Mumbai and IISERs or in any such other Indian or foreign Institution(s) of comparable standards.
Assistant Professor Grade I	At least 3 years teaching / research / industrial experience, excluding however, the experience gained while pursuing Ph.D.
Assistant Professor Grade II	<ul style="list-style-type: none"> • Candidates with less than 3 years experience may be appointed on contractual basis as Assistant Professor Grade II. • At the entry level they may be placed in Level 10 of Pay Matrix with basic pay of Rs. 70,900 or Rs. 84,800 in Level 11 of Pay Matrix depending upon the experience and shall move to level 12 of Pay Matrix with a minimum basic pay of Rs. 1,01,500 on completion of 3 years of requisite experience and on assessment of satisfactory performance.

Pay level and Pay Matrix for the Posts:

Position	Level and Pay Matrix	Pay Band (Pre-revised)	AGP (Pre-revised)	Minimum basic pay in pay level	Gross emoluments (approx) including DA/Transport Allowance at the prevailing rate
Professor	Level-14A Pay Matrix: Rs.159100-220200/-	PB-4 Rs. 37,400- 67,000/-	Rs. 10,500	Rs. 1,59,100	Rs. 2,31,034
Associate Professor	Level-13A2 Pay Matrix: Rs. 139600-211300/-	PB-4 Rs. 37,400- 67,000/-	Rs. 9,500	Rs. 1,39,600	Rs. 2,03,344
Assistant Professor Grade I	Level-12 Pay Matrix: Rs. 101500-167400/-	PB-3 Rs. 15,600- 39,100/-	Rs. 8,000	Rs. 1,01,500	Rs. 1,49,242
* Assistant Professor Grade I in IITs, IISc Bangalore, IIMs, NITIE Mumbai and IISERs on completion of 3 years of service shall move to Level 13A1 of Pay Matrix and will, however, continue to be designated as Assistant Professor Grade I.					

Reservation: Without any compromise on qualification, experience and competence, reservation for SC/ST/OBC/EWS/PWD categories is applicable as per MHRD/Government of India rules. The certificates issued by the Competent Authority needs to be attached in support of his/her claim.

Accommodation: Suitable residential accommodation as per rules will be provided in the Campus of the Institute on joining the Institute.

Incentives for pursuing Excellence in teaching and research:

- Faculty Start Up Research Grant (FSRG) be provided to new faculty members to develop a strong research proposal for extramural support, with a part of the background work being funded by an intramural start up grant.
- A Cumulative Professional Development Allowance (CPDA) of Rs. 3 Lakhs for every block period of 3 years (Rupees one lakh per year) may be made available to every member of the faculty on reimbursable basis to meet the expenses for participating in both national and international conferences, paying the membership fee of various professional bodies and contingent expenses.
- An additional amount of Rs. 50,000/- is given to a faculty member for attending conferences abroad who is a Principal Investigator of a Sponsored Project amounting to at least Rs. 15 Lakhs and has at least three Published Papers in referred journals in the preceding three years.

- d) Reimbursement of relocation charges within India / abroad of upto Rs. 1,50,000/- to the faculty members at the time of their joining.
- e) Interest free soft advance of Rs. 50,000/- to the newly recruited faculty members.
- f) Honorarium of Rs. 15,000/- per month to the faculty members who have been awarded the S.S. Bhatnagar Prize OR who are fellows of at least two National Academies.
- g) Transport Allowance and re-imburement of Telephone bills upto Rs. 1500/- per month as per rules.
- h) Free local telephone facility in the Department as well as residences within the campus.
- i) Children Education Allowance (CEA) / LTC facility as per Government of India rules.
- j) Medical facility for self and other dependent family members in the B C Roy Technology Hospital within the campus and for referrals to Speciality Hospitals as per IIT Kharagpur rules.

General Information


- Minimum requirement of experience may be relaxed in respect of outstanding candidates.
- Degrees obtained by the candidate should have been awarded by a recognized University / Institute.
- Mere eligibility will not vest any right on any candidate for being called for interview. The decision of the Institute in all matters will be final. No correspondence will be entertained from the candidates in connection with the process of selection / interview.
- The Institute reserves the right to call for interview only those candidates shortlisted on the basis of their qualification, experience, research and publication records and departmental requirements, interaction in the department, etc.
- The candidates should be preferably below 35 years of age for the post of Assistant Professor.
- The Institute reserves the right to fill or not to fill any or all the posts advertised.
- Persons employed in Government Organizations / Quasi Government Organizations should submit their application through proper channel.
- Travel support to the extent of Air fare (economy class) by the shortest route within India and Institute Guest House facilities free of charges in the campus to the candidates for appearing in the interview for faculty position.
- Canvassing in any manner may entail disqualification of the candidature.
- Any dispute with regard to the selection / recruitment process will be subject to Courts / Tribunals having jurisdiction over Kolkata.

Candidates possessing requisite qualification & experience are required to **apply online ONLY** (<https://erp.iitkgp.ac.in/Jobs/auth/facapps.htm>) on or before **31-07-2023**.

Hardcopy of the application is not required. Candidates are requested to upload PDF files of all degree certificates/testimonials/caste certificate/age proof certificate etc. as file attachment at an appropriate place.

If any technical problem encountered with online application, please contact through phone: +91-3222-281017/18/19.

Candidates may also contact the Heads of the various Departments / Centres / Schools / Academy. Their address, phone numbers and email are available on Institute webpage.


कुलसचिव / Registrar



भारतीय प्रौद्योगिकी संस्थान खड़गपुर
INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

Advertisement No.: R/10/2023 Dated July 01, 2023

Subject: Specializations for Faculty Recruitment against advertisement No.: R/10/2023 Dated July 01, 2023.

The applicants may go through the websites of the respective academic units for more details on specializations, areas of research etc.

FACULTY OF BIO-TECHNOLOGY AND BIO-SCIENCES

1) Department of Biotechnology and Bioscience

Biochemical, bioprocess and biosystem engineering, Computational biology, Biomolecular engineering, Tissue engineering and Biomaterials, Structural biology and structure based drug design, Stem cell biology, Developmental biology, Genetics, Virology, Animal models of chronic human diseases, Neurobiology.

2) School of Medical Science and Technology

Biophysics/Biological Physics/Biomechanics, Medical Physics, Computational Biology/Medical Statistics, Biomedical Instrumentation, Circuits and Systems, Biomedical Engineering, Electronics/Electrical Engineering. Applicants with relevant industrial R&D experience and translational research expertise in healthcare domains are encouraged.

3) Centre of Excellence in Affordable Healthcare

Electronics / Electrical / Mechanical Engineering or relevant fields with specialization in Biomedical Systems / Instrumentation, Biomedical Signal / Image Processing, Machine Learning and Embedded System Development; Assistive technology / Rehabilitation and Implants, Robotics; Low cost diagnostics & imaging, digital pathology, point-of-care device; Low cost prosthetics which includes upper limb, knee, hip and shoulder implants, biomedical robotics. Candidates with experience in - translational research in healthcare domain with clinical partners / interdisciplinary work, prototype development / filing of intellectual property / commercialization will be given preference.

FACULTY OF ENGINEERING AND ARCHITECTURE

Mechanical Sciences Division:

1) Department of Aerospace Engineering

Reconfigurable Helicopter, Aircraft and Satellite Control, Avionics, Inertial Navigation, Inter-Planetary Satellite Mission, Hypersonic and Supersonic Combustion, Ion and Electric Propulsion, Real Time Control of Aerodynamics for Drag Reduction, Aeroelasticity, Vibration control of Large Aerospace Structures, Distributed Space System, Future Aircraft Design, Loss of Control Prediction of Aircraft and its Recovery, Space Debris Mitigation. Radar Evading Aircraft Design, Urban Air Mobility System Design, Insect Dynamics and Control, Insect Aerodynamics, Micro Drones Technology

2) Department of Agricultural and Food Engineering

Farm Machinery & Power [Precision Agriculture, Human factors, AI & ML applications, Automation/ robotics in agricultural operations]; Food Process Engineering [Equipment & Machine Development with hygienic practices & automation, AI & ML applications, Transport Processes]; Aquacultural Engineering [Design of hydraulic structures/ fresh & brackish water farm structures/ fishing gear & cage culture for improved fish production; Fisheries biology].

3) Department of Civil Engineering

Hydraulic and Water Resources Engineering [Remote sensing applications in water resources; Physical process based modelling of terrestrial hydrology and climate; Experimental and computational hydraulics of environmental and engineered flows; Hydroclimatological extremes – floods and droughts; Coastal engineering; River engineering; Hydropower and dam engineering; Optimization and decision making in water resources]; Transportation Engineering; Environmental Engineering [Water quality and treatment, modelling of environmental processes, wastewater management, air pollution and control, climate change, noise pollution, EIA, risk assessment, solid and hazardous waste management, any other environment-related area]; Geotechnical Engineering [Experimental geomechanics with experience in laboratory and/or in-situ testing; Geotechnical instrumentation and remote sensing for terrestrial geomechanics applications; Clay mineralogy; Molecular modelling]; Structural Engineering.

4) Department of Mechanical Engineering

Additive Manufacturing; Machining & micro-machining; Surface Engineering; Precision- Micro-Nano- Engineering; Non-traditional Manufacturing; Robotics; Autonomous Systems & Automation; Casting, Welding & Forming; Thermo-fluid analysis and/or design of Engineering Systems; Thermo-fluid analysis of Biological Systems; Sustainable Energy, Clean energy, Energy storage; Micro and nano-scale fluid flow and heat transfer; Interfacial and Multi-phase flows; Refrigeration and Air conditioning; Gas Turbines; IC Engines; Turbomachinery; Multi-body dynamics and control; Mechanics of advanced materials (cellular structures and Metamaterials); Mobility systems; Rotor dynamics; Experimental solid mechanics; Machine condition monitoring; Biomedical engineering; Tribology;

5) Department of Metallurgical & Materials Engineering

Sustainable Extractive Metallurgy; Processing of Materials (Joining of Materials, solidification, Additive Manufacturing, etc.); Functional Materials (Energy Materials, Magnetic Materials, Electronic Materials including Thin Films, Bio Materials, etc.); Corrosion and High Temperature Oxidation; Any other Emerging Areas in Metallurgical and Materials Engineering.

6) Department of Mining Engineering

Mine Ventilation and Underground Environment, Mineral and Coal Processing, Mine Environment Engineering, Mine Safety and Health, Mine Planning, Mine Finance and Mineral Economics, Mine Digitization and Automation and Geo-Informatics.

7) Department of Ocean Engineering & Naval Architecture

Experimental and Theoretical Marine Hydrodynamics including CFD, potential flow simulations; Marine Structures including Marine safety and risk assessment; Wave hydrodynamics and hydroelasticity; Ship and offshore structure design and production; Control systems of ships/ underwater vehicles

8) School of Water Resources

Groundwater Modelling and Management; Water Economics and Governance; Hydro-informatics / Information & Communication Technology (ICT) in Water; Water Pricing; Water Governance and Policy; Urban/Rural Water Supply Systems; Water & Wastewater Treatment and Reuse; Industrial Wastewater Management.

Electrical & Computer Sciences Division:

1) Department of Electrical Engineering

Machine Drives and Power Electronics, Control Systems, Power and Energy Systems, Instrumentation and Integrated Electronics, Signal Processing and Machine Learning.

2) Department of Electronics & Electrical Communication Engineering

Communications, Signal Processing, Wireless Networks, Image and Video Processing, Machine Learning, Circuits and Systems for Signal Processing, VLSI Design, RF and Microwave Engineering, Antenna and Propagation, RFIC.

3) Department of Computer Science & Engineering

Compilers and Programming Languages, Computer Systems (Computer Architecture, Operating Systems, Networked Systems, System Security, Distributed Systems and Cloud Computing, GPU Computing), Software Engineering, Database Systems, Pervasive Computing, Algorithms and Theoretical Computer Science, Privacy, Security & Cryptography, Embedded and Cyber Physical Systems, Artificial Intelligence and Machine Learning, Natural Language Processing and Information Retrieval, Data and Web Mining, Computer Vision and Image Processing, Complex and Social Networks, Formal Methods, VLSI and Electronic Design Automation, Bioinformatics and Computational Biology, Quantum Computing, Human Computer Interaction.

4) Centre of Excellence in Artificial Intelligence

Machine Learning (ML): Deep learning, Reinforcement learning, Probabilistic and Bayesian models, Federated learning, Quantum ML, etc.; Artificial Intelligence (AI): Search and optimization, Knowledge representation and reasoning, Game theory, Multi-agent systems, Planning, Reasoning under uncertainty; Theoretical, Statistical, Mathematical foundations of AI / ML; Natural Language processing, Speech Processing, Text and Data Mining; Information Retrieval; Computer Vision; Robotics; Knowledge Modelling; Cognitive AI; Human-Computer Interactions; Hardware and Systems for AI and ML; Big Data; Data Engineering; Ethics of AI (fairness, accountability, transparency, explainability, bias, safety, privacy, trustworthiness); Responsible AI; Applications of AI to domain areas (such as but not limited to Cyber-physical systems, healthcare, bioinformatics, manufacturing, education, energy, earth sciences, transportation, communication, hardware design, social themes, agriculture, law)

5) G. S. Sanyal School of Telecommunications

Wireless Communications, Wireless Networks, Optical Networks, Optical Communications, Telecommunication Security, Information Theory, Signal processing for Communications.

6) Centre for Computational and Data Sciences

Design and Management of Hardware and Software for High Performance Computing (HPC) Systems; Data Management/Analytics/Visualization; HPC application domains including but

not limited to the areas of Computational Biology/Computational Fluid Dynamics/Multi-scale Modelling/Computational Physics/Numerical Mathematics/Cryptanalysis/Computational Geo-Science/Atmospheric Modelling/Computational Mechanics.

7) School of Energy Science and Engineering

Bio-energy, Electric Power and Energy Systems, Energy Materials, Energy Storage, Thermal Sciences, Solar Photovoltaic Cells, Fuel Cells, Hydrogen Energy

8) Subir Chowdhury School of Quality and Reliability

Product & Process (software and hardware): (a) Quality: Robust design and optimization/planning/ measurement/testing/control/assurance/management/data & datamining/ SPC etc. (b) Reliability: Design/modelling/testing/prediction/estimation, probabilistic risk assessment, human reliability, preventive/condition-based maintenance, PHM etc.

Chemical Sciences Division:

1) Department of Chemical Engineering

Transport Phenomena, Fluid Flow; Heat and Mass Transfer, Reaction Engineering, Thermodynamics; Instrumentation and Process Control, Chemical Process Technology; Pollution Control; Bioengineering; Biomaterials; Nano and Composite materials; Polymers; Green Energy.

2) Rubber Technology

Polymer Science and Engineering, Polymer materials, Rubber engineering, Rubber science and Technology, Polymer processing and engineering, Polymer biomaterials, Rubber technology, Polymer chemistry, Polymer technology

3) School of Environmental Science and Engineering

Water and wastewater treatment, air pollution and control, climate change, solid and hazardous waste treatment and management, biological processes for waste treatment, geological processes, reclamation of mines, environmental applications of remote sensing and GIS.

Architecture, Design & Planning Division:

1) Department of Architecture & Regional Planning

Urban Design, Landscape Architecture, Interior Design, Conservation, Sustainable Designs and Process, Energy and Building Science, Artificial Intelligence & ML, Ergonomics, Culture and Society, Advanced Architectural Design Theory, Parametric Design, Sustainable Habitats, Energy Auditing, Net Zero buildings, Systems Architecture, Steel Structures, Project Management, Product Design, Visual Design, Product manufacturing, Design Theory, Sustainable Urban Planning, Housing, Transportation; Socio-Economic & Regional Planning [GIS & Remote Sensing, Econometrics, Planning Statistics].

2) Ranbir and Chitra Gupta School of Infrastructure Design and Management

Sustainable Habitat Design, Net zero Building, Building Energy Systems, Energy Auditing, Sustainable Habitats, Housing Infrastructure Planning and Design, Building Information Management, Construction Project Management, Environmental Management, Remote Sensing and GIS, Water Infrastructure, Disaster Management, Waste management and

Circular Economy, Urban Transport Management, Infrastructure Monitoring and Management and Utilities Infrastructure Design.

FACULTY OF SCIENCES

1) Department of Chemistry

Inorganic synthesis: metalloporphyrin, cluster and cages, nanomaterials; inorganic photochemistry, bioinorganic chemistry, materials chemistry. Peptides and peptidomimetics, metabolomics, organic materials; enzyme/DNA-RNA based catalysis. Experimental biophysical chemistry and resonance spectroscopy; theoretical reaction dynamics.

2) Department of Geology and Geophysics

3-Dimensional Seismic tomography; Electrical & EM geophysics; Metamorphic Petrology, Sedimentology/Sequence stratigraphy, Coal/ Petroleum/Basin analysis, Ore geology, Stable Isotope Geochemistry; Nuclear geophysics/Nuclear Physics with experience in radiation equipment, Magnetotelluric (MT) Electromagnetic geophysics, Satellite/Airborne/Drone based geophysics, Mathematical modelling using numerical methods for small and large scale geophysical problems, Seismic method, Gravity and magnetic methods; Remote Sensing and GIS/Geomorphology/Neotectonics; Groundwater geophysics.

3) Department of Mathematics

Complex Analysis, Fluid Dynamics, Partial Differential Equations, Artificial Intelligence, Coding & Information Theory, Formal Methods, Machine Learning, Operating System, Algorithm and Theoretical Computer Science, Computer Architecture, Data Science & Big Data Analysis, Computational Discrete Mathematics, Topology & Geometry, Scientific Computing, Numerical Analysis, Probability & Statistics, Mathematical Finance (quantitative modelling of financial markets and mathematical tools and theories).

4) Department of Physics

Condensed Matter Physics, Devices and Related Technologies; Nuclear Physics; High Energy Physics; Astrophysics, Gravitation & Cosmology; Physics of Fluids; Statistical Physics; Soft Matter; Nonlinear Physics; Atomic and Molecular Physics; Optics & Photonics; Quantum Computation, Information and Technology; Mathematical Physics.

5) Centre for Ocean, River, Atmosphere and Land Sciences

Urban Climate Science, Monsoon Dynamics, Physical Oceanography and modelling of Ocean processes, Modelling of Planetary Boundary Layer and Air-Sea Interactions, Modelling of Extreme Events and Climate, Carbon Sequestration, Biodiversity, Forest Remote Sensing, Ocean, River and Atmospheric Dynamics.

FACULTY OF HUMANITIES, SOCIAL & ECONOMIC SCIENCES

1) Department of Humanities & Social Sciences

Economics (AI and ML, Game Theory); Database Management; English (English Language Teaching, Communication Studies); Sociology (Science and Technology Studies - STS, Sociology/// of Health); Human Resource Management (Organization Behaviour and Structure); Foreign Languages (French, German).

2) Rekhi Centre of Excellence for the Science of Happiness

Positive psychology, Cognitive Psychology, Educational Psychology, Cognitive neuroscience, Music and brain, Data sciences, Sports psychology, Ecology and environmental studies - preferably with research exposure in Happiness and Wellbeing.

FACULTY OF INTERDISCIPLINARY SCIENCES & ENGINEERING

1) Department of Industrial & Systems Engineering

Industrial and Systems Engineering; Operations Research; Data Analytics, AI & ML; Systems Analytics & Optimization; Production and Operations Managements; Supply Chain Managements; System Dynamics and Simulation; Manufacturing & Service Science; Engineering Ergonomics and Human Factors; Safety Engineering and Analytics; Work Systems Design and Virtual Reality Applications; Healthcare Systems Engineering; Product Design and Life Cycle Management; Process Excellence, Quality Engineering, Statistical Quality Control; Management Information Systems and E-business.

2) Materials Science Centre

Polymer Rheology and processing; Ceramic Engineering, Structural Ceramics.

3) Centre of Excellence on Safety Engineering & Analytics (CoE-SEA)

Safety engineering & management; Safety analytics; Prevention through design (PtD); Probabilistic risk assessment & uncertainty analysis; Ergonomics & human factors; Human error; behaviour & human reliability analysis; Occupational health; Injury epidemiology; Safety Economics; Industrial/ Mine/ Chemical process/ transportation/ Construction/ Infrastructure/ Agricultural/ Manufacturing & machinery/ Electrical/ Fire Safety; Cyber-physical systems safety & security; disaster management, Application of data analytics, virtual & augmented reality, IoT, AI, ML, human sensing technologies and other Industry 4.0/5.0 technologies & techniques in safety.

4) Centre of Excellence for Indian Knowledge Systems [CoE-IKS]

Indian Science and Technology with the Focus on Sanskrit Source Texts; Sanskrit and Natural Language Processing, Language science; Ganita, MahajagatikaVidya (Mathematics and Astronomical sciences); Sthapatya Vastu Vidya, Nirmana Vidya and ParibashaVidya (Built-environmental sciences); Nandantathya and Shilpa Shastra (Aesthetics and Design Sciences); Ayurveda, Yoga; Rasayana and BhautikaVidya (Chemical and Physical sciences)

5) Cryogenic Engineering Centre

Quantum Materials, Applied Superconductivity, Ultra Low Temperature Techniques; Cryogenic Processes & Equipment: Liquefaction, Hydrogen Technology, Refrigeration, Storage & Transfer

6) Deysarkar Center of Excellence in Petroleum Engineering

Enhanced Oil Recovery, Petrophysics, Petroleum Geoscience, Reservoir Characterization, Well logging, Drilling and Hydrofracking, Reservoir Engineering and Simulations, Geothermal Energy, Carbon Capture, Sequestration and Storage.

7) Rajendra Mishra School of Engineering Entrepreneurship (RMSoEE)

Entrepreneurship: Entrepreneurship development and ecosystem; Start-up or venture creation; social entrepreneurship; Entrepreneurial finance and economics; Growth and

Sustainability of enterprises; Entrepreneurial leadership; legal aspects including IPR, marketing management for start-ups, human resources management, Entrepreneurial ecosystem development including incubation, acceleration and funding.

Product Engineering and Innovation: Design Thinking; Product Development; Intelligent Manufacturing; Innovation management and diffusion;

Sectoral Technological Modelling and Development: Energy and Clean Technology; Smart-grid; Healthcare, Entrepreneurship; Bio-innovation; Rural Technology; Waste Management; Data Analytics & Modelling.

Innovative Product development based on Artificial Intelligence and Machine Learning, Robotics, Electronics and devices, Biomedical devices and personal products, construction technologies, interdisciplinary systems for agriculture, education, cyber physical systems – including robotics, telecommunication, intelligent systems in automotive electronics etc.

8) School of Nano Science and Technology

Nanofabrication / Nanoelectronic and Photonic Devices / NEMS / Nanosensors; Bulk nanostructured materials for structural applications; Novel nanomaterials: Synthesis, self-assembly and applications; Nanostructured coatings for energy conversion/storage and surface engineering; Nano-biotechnology; Computational nanostructures

9) Advance Technology Development Centre

MEMS based sensors and Actuators; Integrated Photonics; VLSI and System on Chip (SoC); Mobile Computing for CPS/IoT, Edge/Fog/Cloud Computing for CPS/IoT; AI and ML for CPS, Speech; Image and Signal processing; Robotics & Automated Systems; Augmented Reality/Virtual Reality/Mixed Reality.

10) Partha Ghosh Academy of Leadership

Public Leadership and Innovation; Ethical and Etiquette Leadership; Organizational Leadership; Vedic Leadership; Professional Leadership and Ethics; Transformational Leadership; Communication & Entrepreneurial Leadership; Strategic Leadership;

SCHOOL OF MANAGEMENT

1) Vinod Gupta School of Management

Marketing Management: Marketing Analytics, International Marketing, B2B Marketing, Sales and Distribution, Retail Marketing, Digital Marketing. Human Resource Management and Organizational Behaviour: HR Analytics, Labour Relations. Finance and Accounting: Quantitative Finance, Accounting Analytics, Banking, and Corporate Accounting, Financial Technologies (FinTech), Actuarial Modelling, Entrepreneurial Finance. Economics. Business Analytics, Information systems.

SCHOOL OF LAW

1) Rajiv Gandhi School of Intellectual Property Law

Tax law, Competition Law, Labour and Industrial Law, Corporate Law, Family Law, Constitutional Law, Criminal Law, Banking and Financial Laws.

