

**INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
POWAI, MUMBAI - 400 076**

INFORMATION SHEET

Faculty positions at the level of Professor/Associate Professor/Assistant Professor in its various academic Departments, Centres, Schools and Inter-disciplinary programs have been advertised by the Institute vide advertisement No.C-9/07-08 dated 9 May, 2007. The various requirements and other related information are stated below.

Government of India Policy on reservation of faculty positions, including that of persons with disability will apply.

QUALIFICATION:

Ph.D. with First class or equivalent (in terms of Grades etc.) at the preceding degree in the appropriate branch, where relevant, and with a very good academic record throughout.

EXPERIENCE:

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| Professor | A minimum of ten years teaching/research/professional experience of which at least 4 years should be at the level of Associate Professor in a research organization or industry as on the date of application. The candidate should have demonstrated leadership in research in a specific area of specialization in terms of guidance of Ph.D. students, strong record of publications in reputed journals and conferences, patents, laboratory development and/or other recognized relevant professional activity. |
| Associate Professor | A minimum of six years teaching/research/professional experience of which 3 years should be at the level of Assistant Professor, Senior Scientific Officer/Senior Design Engineer in a research organization or industry as on the date of application. The candidate should have demonstrated adequate experience of independent research in terms of guidance of M.Tech. and Ph.D. students, publications in reputed journals and conferences, patents, laboratory development and/or other recognized relevant professional activity. |
| Assistant Professor | A minimum of three years teaching/research/professional experience, excluding the experience gained while pursuing Ph.D. Candidate should have demonstrated research capabilities in terms of publications in reputed journals and conferences. <i>Eligible candidates with less than the requisite experience may be taken as Assistant Professor (Contractual basis) in the pay band of Rs.15600-39100 PB-3 with sufficient number of advance increments.</i> |

PAY BAND :

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| <p><u>PROFESSOR</u></p> <p>PB-4 (Rs.37400-67000) with Academic Grade Pay of Rs.10,500/- p.m. <i>For Direct recruits, minimum pay in the Pay Band to be fixed at Rs.48,000/- p.m.</i></p> | <p>Plus Allowances as admissible to Central Government employees</p> |
| <p><u>ASSOCIATE PROFESSOR</u></p> <p>PB-4 (Rs.37400-67000) with Academic Grade Pay of Rs.9,500/- p.m. <i>For Direct recruits, minimum pay in the PB-4 to be fixed at Rs.42,800/- p.m.</i></p> | |
| <p><u>ASSISTANT PROFESSOR</u></p> <p>PB-3 (Rs.15600-39100) with Academic Grade Pay of Rs.8,000/- p.m. <i>For Direct recruits, minimum pay in the Pay Band to be fixed at Rs.30,000/- p.m.</i></p> | |

AREAS OF SPECIALIZATION

[Aerospace Engineering](#), [Chemical Engineering](#), [Chemistry](#), [Civil Engineering](#), [Computer Science & Engineering](#), [Earth Sciences](#), [Electrical Engineering](#), [Energy Science & Engineering](#), [Humanities & Social Sciences](#), [Industrial Design Centre](#), [Mathematics](#), [Mechanical Engineering](#), [Metallurgical Engineering & Materials Science](#), [Physics](#), [Biosciences and Bioengineering](#), [School of Management](#), [Centre for Environmental Science & Engineering](#), [Centre for Studies in Resources Engineering](#), [Centre for Technology Alternatives for Rural Areas](#), [Industrial Engineering & Operations Research](#), [Systems & Control Engineering](#)

| Aerospace Engineering | Specializations |
|---------------------------------------|---|
| Professor | Heat Transfer and application to Aerospace problems Aerospace Vehicle Design/ Air Transportation Computations and theory in high-speed flows Computational electro-magnetics |
| Associate Professor | Autonomous aerial vehicles |
| Assistant Professor | <p>Structures : Basic strength in structural mechanics with a specialization from the following areas: Composite Materials and Structures, Adaptive/Morphing /Smart Structures Technology, Computational Structural Mechanics, Aeroservoelasticity, Aerothermoelasticity, Structural and Multidisciplinary Design Optimization.</p> <p>Aircraft/Space Flight Dynamics and Control : Flight dynamics of aerospace vehicles. Development, application and implementation of techniques for estimation, identification, control and guidance in problems of aerospace interest. Interest and experience Hardware implementation of control technologies, autonomous vehicles is desirable.</p> <p>Propulsion : Turbomachinery, Rocket & space propulsion, airbreathing/non-airbreathing propulsion. Systems Design & Engineering : Design Optimization, Systems Design, Engineering Design, Multi-disciplinary Design Optimization, Systems Engineering.</p> |

| <u>Chemical Engineering</u> | <u>Specializations</u> |
|---|---|
| Professor Associate Professor Assistant Professor | Reaction Engineering and Catalysis, Interfacial Science & Engineering, Transport and Separation Processes, Process Systems Engineering & Control, Food & Biochemical Engineering, Polymer and Materials, Nanotechnology, Thermodynamics, Membrane Science & Technology, Electrochemical Engineering |

| <u>Chemistry</u> | <u>Specializations</u> |
|--|--|
| Professor | Polymer Chemistry, Functional Polymers Design and Photophysical Studies of Porphyrins Synthetic and mechanistic study of organic reactions and development of methods Total synthesis of biologically active natural and unnatural products |
| Associate Professor Assistant Professor | All areas of Chemistry |

| <u>Civil Engineering</u> | <u>Specializations</u> |
|----------------------------------|---|
| Professor Associate Professor | Transportation Systems Engineering Geotechnical Engineering Remote Sensing Engineering Structural Engineering Water Resources Engineering Coastal and Ocean Engineering |
| Assistant Professor | Transportation Engineering Infrastructure Systems Remote Sensing and Geodesy Water Resources, Hydraulics, Environmental Engineering and Ocean Engineering Structural Engineering Geotechnical Engineering Civil Engineering materials |

| <u>Computer Science & Engineering</u> | <u>Specializations</u> |
|---|---|
| Professor Associate Professor Assistant Professor | Any area of Computer Science & Information Technology |

| <u>Earth Sciences</u> | <u>Specializations</u> |
|-----------------------|--|
| Professor | Economic geology with specialization in melt inclusion Metamorphic geology and unstable isotope systematics Sedimentology |
| Associate Professor | Mineral spectroscopy Igneous petrology and volcanology Geomagnetism and electromagnetic methods Hyperspectral remote sensing |
| Assistant Professor | Organic geochemistry Geophysics with specialization in Seismics/Seismology Petrophysics related to Petroleum exploration Theoretical Geophysics/ Geophysical modeling/ Geophysical Signal processing |

| <u>Electrical Engineering</u> | <u>Specializations</u> |
|-------------------------------|--|
| Professor | Power electronics and power system, communication networks, semiconductor memory, control theory and VLSI CAD tool development |
| Associate Professor | Micro/nano electronics, communication theory, control theory |
| Assistant Professor | Communication Systems. Signal and Image processing. Micro/nano-electronics, VLSI Design . Control theory and applications. Power Electronics and Power Systems. Embedded Systems. |

| <u>Energy Science & Engineering</u> | <u>Specializations</u> |
|---|--|
| Assistant Professor Associate Professor Professor | Electrical, energy systems, Grid connection of renewables, power electronics and controls for application to renewable energy efficiency and integration IC engines, alternate fuels, fuel cell, hydrogen storage, clean coal combustion, bio-energy and chemicals, solar thermal, solar PV, wind, hybrid systems. Dye-sensitized PV, nanomaterials for energy, batteries, energy storage, microbial fuel cells. Energy Management, Process Integration, Clean Coal, Bioenergy, Electrical energy systems, Grid connection of renewables, power electronics and controls, Solar Thermal, Solar Photovoltaics. |

| <u>Humanities & Social Sciences</u> | <u>Specializations</u> |
|--|--|
| <i>Economics</i> Assistant Professor Associate Professor Professor | Finance, Econometrics, Mathematical economics, Macroeconomics, Public policy, International trade and finance, Agricultural economics, Industrial economics, Development economics. |
| <i>English</i> Assistant Professor Associate Professor | Literary theory, Drama/ Theatre/ Performance, Novel/Narratology, Cultural Studies, Women's Studies, Autobiography Studies, Theoretical Linguistics with specialization in Morphology, Semantics or Cognitive Science |
| <i>Philosophy</i> Assistant Professor Associate Professor | Contemporary Western Philosophy and Indian Philosophy |
| <i>Psychology</i> Assistant Professor Associate Professor | Clinical Psychology, Cognitive Psychology and Organizational Behaviour |
| <i>Sociology</i> Assistant Professor Associate Professor Professor | Sociology of development, Urban / rural sociology, Science, Technology and Society, Ethnicity and religion, Research Methods |
| <i>Cell for Indian Science and Technology in Sanskrit</i> Associate Professor | Astronomy (Jyotisha), Mathematics (Ganita), Metaphysics |
| Assistant Professor Associate Professor | Communication Skills |

| <u>Industrial Design Centre</u> | <u>Specializations</u> |
|--|---|
| Professor | Product Design |
| Associate Professor | Animation Design Ergonomics |
| Assistant Professor | Transportation Design / Auto Design Animation Design / Gaming Design Interaction Design Product Design Communication Design |

| <u>Mathematics</u> | <u>Specializations</u> |
|---|---|
| Professor Associate Professor Assistant Professor | Algebra, Algebraic Geometry, Algebraic Topology, Combinatorics, Differential Geometry, Functional Analysis, Harmonic Analysis, Number Theory, Numerical Analysis, Partial Differential Equations, Probability and Statistics. |

| <u>Mechanical Engineering</u> | <u>Specializations</u> |
|----------------------------------|--|
| Professor Associate Professor | <p>Manufacturing Engineering: Design, Modeling and Optimization of Manufacturing Processes (Casting, Forming, Machining and Welding), Precision Manufacturing, Non-conventional Manufacturing Processes, CAD/CAM/CIM and Rapid Prototyping, Automation, Micro and Nano Manufacturing, Industrial Engineering and Operations Research, Logistics, Quality and Maintenance Systems.</p> <p>Thermal & Fluids Engineering : Fluid Mechanics and Fluid Power, Nuclear Engineering, Heat Transfer, Thermal Engineering, Refrigeration and Cryogenics.</p> <p>Design Engineering: Stress Analysis, Fatigue, Fracture, FEM and BEM, Kinematics, Dynamics, Control, Instrumentation, Textile Machinery, Mechatronics, Nanotechnology, MEMS, Condition Monitoring, Tribology, Acoustics, Vibration and Noise-Control, System Design.</p> |
| Assistant Professor | Computational mechanics, Nuclear reactor thermal-hydraulics, Computer integrated manufacturing, Refrigeration, Air conditioning and cryogenics, NEMS, MEMS and Mechatronics |

| <u>Metallurgical Engineering & Materials Science</u> | <u>Specializations</u> |
|--|---|
| Professor Associate Professor Assistant Professor | <p>Electronic materials – processing and characterization</p> <p>Nano-materials and Nano-engineering - Advanced processing techniques</p> <p>Surface Engineering</p> <p>Thin films processes and applications</p> <p>Advance Magnetic materials</p> <p>Advanced ceramics and Powder Metallurgy</p> <p>Process metallurgy with adequate background in process modeling</p> <p>Physical/Mechanical metallurgy</p> <p>Polymer engineering including electronic polymers</p> <p>Composites and nanocomposites</p> |

| <u>Physics</u> | <u>Specializations</u> |
|---------------------|--|
| Professor | <p>Theory of electronics structure & optical properties of polymers.</p> <p>First Principles Electronic Structure Calculations of Novel Magnetic Systems.</p> <p>Magnetic and magnetotransport properties of metallic thin films.</p> <p>Magnetic properties of inter-metallics.</p> <p>Electronic Structure Theory of crystalline insulators, polymers and disordered metallic alloys.</p> <p>Magnetism of low-dimensional spin systems and oxide materials</p> |
| Associate Professor | <p>Statistical Physics: Non-equilibrium and Biological systems.</p> <p>Statistical mechanics of granular materials & Polymers</p> <p>Experimental Nuclear Physics (Relativistic heavy ion collisions)</p> |
| Assistant Professor | <p>Cosmology and Astro Particle Physics - Theory</p> <p>Nonlinear Optics, Ultra Fast Laser Spectroscopy, Photonics, Quantum Optics (All Experimental), Theoretical Quantum Optics.</p> <p>Nano Materials & Nano Structures</p> <p>Theoretical Condensed Matter Physics (Many body theory)</p> <p>Nuclear Physics Theory, Experimental Nuclear & Particle Physics</p> <p>Quantum Computing (Experimental)</p> <p>Bio-Physics (Diffusion dynamics in Bio-systems (Experimental), Random processes in Complex system (theory)</p> |

| <u>Department of Biosciences & Bioengineering</u> | <u>Specializations</u> |
|---|--|
| Professor | Medical Instrumentation and Micro-biosensors, Microbial degradation of aromatic compounds and metabolic engineering, Biomaterials, biointerfaces and nanomedicine |
| Assistant Professor | Medical Signal and/or Image processing Biomechanics Physiological Systems Modelling Experimental and Computational Neuroengineering Rehabilitation Engineering Cell and Tissue Engineering Medical Instrumentation Medical Informatics & Telemedicine Bionanotechnology Biologist/Biophysicist interfacing the two areas. |

| <u>Shailesh J. Mehta School of Management</u> | <u>Specializations</u> |
|---|---|
| Assistant Professor | Operations Management Technology and innovations Management Financial Accounting Information Technology Entrepreneurship Intellectual Property Rights Industrial Organization Financial Management Quantitative Methods Strategic Management Marketing Management Organization Behavior & Human Resource Corporate Law & Communication International Business Aviation Management |
| Associate Professor | International Business Intellectual Property Rights Information Technology |
| Professor | Strategic Management Marketing Management Operations Management Financial Management |

| <u>Centre for Environmental Science & Engineering</u> | <u>Specializations</u> |
|---|--|
| Professor | Biodegradation and Remediation of Petrochemical Wastes, Environmental Application of Nano-materials and Toxicological Implications, Biotransformation and Toxicity Evaluation of Complex Organic Pollutants, Environmental Systems Modelling and Optimization, Physicochemical and Biological Treatment Processes, Air Pollution Control, Technologies and Mitigation Strategies for Climate Change. |
| Assistant Professor | Air Quality Monitoring and Assessment Air Pollution Control Global Climate Change Energy and Environment Sustainable Development (Policies and Actions) Environmental Systems Modelling Environmental Management Cleaner Technologies and Preventive Environmental Management Urban Drainage and Land Use Management (Planning and Monitoring) Solid, Hazardous and Biomedical Waste Management Ecology, Biodiversity and Forests Water Supply and Sanitary Engineering Bioremediation and Environmental Biotechnology Environmental Impact Assessment Environmental Policies and Laws |

| <u>Centre for Studies in Resources Engineering</u> | <u>Specializations</u> |
|---|---|
| Professor Associate Professor Assistant Professor | Disciplines: Agricultural Engineering, Agriculture and Agronomy, Atmospheric Sciences, Civil Engineering, Computer Science, Earth Sciences, Electrical Engineering, Environmental Science and Engineering Forestry, Geodesy, Geoinformatics, Geomatics, mathematics, Physics, Statistics, Soil Sciences Specialization: Agro-Informatics/Agriculture, Atmospheric Remote Sensing, Computational GIS, Computer Vision and Graphics, Environmental Studies, Forestry, Glaciers and Mineral Exploration, Geomatics, Image Processing, Lidar and Hyperspectral Remote Sensing, Microwave Remote Sensing, Natural Hazards, Oceanography, Terrain Evaluation, Urban Planning and infrastructure development, Water Resources |

| <u>Centre for Technology Alternatives for Rural Areas</u> | <u>Specializations</u> |
|---|--|
| Assistant Professor Associate Professor | Development Studies with special emphasis on Public-Policy and Governance issues, Environmental issues such as Global Warming and Clean Development Mechanism, Technology Transfer in the Context of Regional Planning. Sociology of Science, History of Science & Technology in the context of Regional Development in India. Natural Resources Planning and Utilization: (i) Soils and Agriculture (including Horticulture, Organic Farming), (ii) Energy (including renewables), (iii) Water Resources (including Micro-Watershed) |

| <u>Industrial Engineering & Operations Research</u> | <u>Specializations</u> |
|---|---|
| Professor | Stochastic models arising from Markov decision processes and queuing theory, with applications to supply chains, logistics and manufacturing systems. |
| Assistant Professor | Linear and nonlinear optimization including interior point methods, conic and semi-definite programming and recent techniques for integer programming. Recent computational methods for optimization. Game theory, including stochastic and dynamic games. Algorithmic aspects of game theory with emphasis on applications to Industrial Engineering and Operations Research. Discrete optimization and related areas like Graph theory, Combinatorics Statistical inference with emphasis on inference from processes and their applications to decision making Econometrics, Microeconomics and related areas of Mathematical Economics with emphasis on applications to Industrial Engineering and Operations Research Stochastic models: Continuous time stochastic processes; contemporary areas such as dependent processes, stochastic orders, rare events, large deviations and extreme value theory, with applications to Industrial engineering and Operations Research. In addition, candidates with an excellent record and published work in other areas of Industrial Engineering and Operations Research would also be considered. Strong work in contemporary techniques in O.R., as well as sustained work in application of quantitative techniques to domains such as Finance, Manufacturing systems, Services systems, pricing and revenue management, risk analysis, Logistics and Transportation systems and Infrastructure can be considered. |

| <u>Systems & Control Engineering</u> | <u>Specializations</u> |
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| Assistant Professor Associate Professor | Systems Science (Theory and Applications) Systems Engineering (Theory and Applications) Systems Optimization (Theory and Applications) Fault Diagnosis Control Systems (Theory and Applications) |

GENERAL INFORMATION

1. Candidates should have an excellent academic record, good communication skills, a commitment to high quality undergraduate and post-graduate education and the potential for creative research.
2. The Institute encourages interaction of the faculty with industry, other research and professional institutions. Consultancy is encouraged at IIT Bombay and liberal consultancy policies are in practice.
3. Facilities for Research and Development activities exist in all the Departments and Centres. These are being continuously modernized with contemporary equipment and services. Good facilities also exist for computing. The Institute has a well stocked library with 4 lakhs volumes of books and journals, 2000 current periodicals and other research materials.
4. Relocation allowance up to Rs. 1 Lakh for faculty returning from abroad for reimbursement of air fare for self and spouse and transportation of belongings. The limit is Rs.50,000/- for faculty joining from within India.
5. Seed grant up to Rs. 10 Lakh to new faculty member for initial set up cost of research laboratory. This enables an early start to research work until sponsored projects from outside agencies are sanctioned.
6. The Institute provides Cumulative Professional Development Allowance (CPDA) of Rs. 3 Lakhs for every block period of 3 years, a minimum of Rs. 2 Lakhs is earmarked for presenting papers at conferences and a maximum Rs. 1 Lakh is available towards membership fee of professional bodies and contingency expenditure. One additional conference in the block period is supported from IRCC/donation funds subject to availability.
7. The posts carry allowance such as D.A., T.A., D.A. on T.A., H.R.A. as per rules of the Institute which at present correspond to those admissible to Central Government employees stationed at Mumbai. Depending upon the qualifications and experience, higher salary may be offered in deserving cases.
8. Candidates called for interview will be re-imbursed air fare by Economy class (By Air India only) from the place of their residence and back by the shortest route.

9. About 90% of the faculty and research staff live on the Campus. The Institute endeavours to provide suitable accommodation to all faculty. However, initially new faculty may have to stay in transit accommodation. Every faculty quarter is provided with intercom and broadband Internet access.
10. Most of the day-to-day facilities are available on the Campus including two banks, a post office, a small shopping center, two schools (upto 12th standard) for children, a well equipped 65 bed hospital, sports facilities including a swimming pool and vast play-ground for field games. Cultural facilities include film clubs, Classical music societies, debating and drama and a hobbies club. The Staff Club in particular is a center of social and cultural activities.
11. Candidates other than those belonging to SC/ST communities must send a Demand Draft for Rs.100/- drawn on any nationalized bank payable at Mumbai, in favour of Registrar, IIT Bombay along with the application. No fee is applicable to candidates applying from abroad.
12. Persons employed in Government/Semi-Government Organisation or Educational Institutions must apply through proper channel.
13. The Institute reserves the right to screen and call only such candidates as are found prima-facie suitable for being considered by the Selection Committee. Thus, just fulfilling the prescribed conditions would not entitle one to be called for interview.
14. The Institute may consider candidates whose area of specialization lie outside those stated herein, provided these persons have an outstanding record.
15. Separate application must be sent if a candidate is applying for a faculty position in more than one Department/Centre etc.
16. The Institute reserves the right to fill or not to fill any or all the posts advertised.
17. The Selection Committee at its discretion may relax the minimum requirements in case of outstanding candidates for each of the above 3 posts.
18. No correspondence will be entertained from candidates regarding postal delays, conduct & result of interview and reasons for not being called for interview.
19. Application forms completed in all respects are to be submitted by all candidates along with necessary enclosures.
20. The referees may be requested to send their reports directly in confidence to the Dean (Faculty), IIT Bombay.
21. This is a rolling advertisement. There is no last date.

Date: Updated in March, 2010

Sd/-
REGISTRAR

