



**INDIAN INSTITUTE OF SCIENCE**

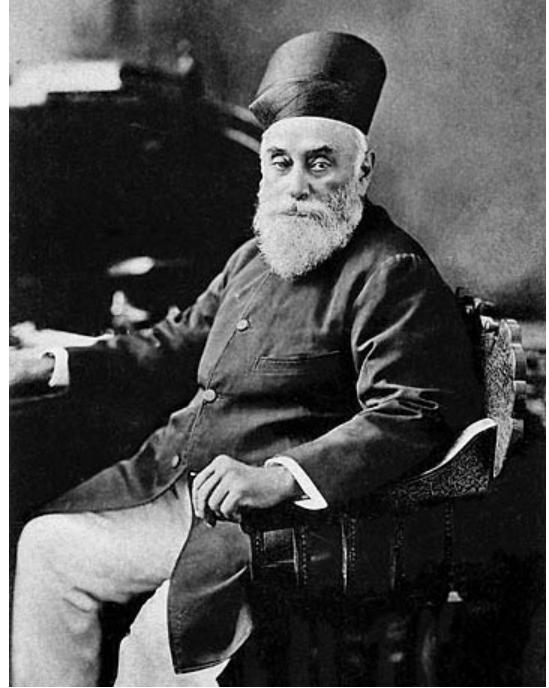
**BANGALORE**



**PLACEMENT BROCHURE**

**2014-15**

## VISION



*“ The objectives of the Institute shall be to provide for advanced instruction and to conduct original investigations in all branches of knowledge and, in particular, in such branches of knowledge as are likely to promote the material and industrial welfare of India. ”*

## J.N. TATA

Jamsetji Nusserwanji Tata (1839-1903) was one of those visionaries who was convinced, even as early as the end of nineteenth century, that the future progress of this country depended crucially on research in Science and Engineering. He created an endowment in 1898 to establish a University of Science for educating and developing the faculties of the best of our young men and women. He envisaged this university as destined to promote original investigations in all branches of learning and to utilise them for the benefit of India.

It was Lord Ramsay, Nobel Laureate and discoverer of the noble gases who was deputed by the Royal Society of England to study the proposal for a University made by Jamsetji and after a quick tour of our country chose Bangalore as a suitable place for this Institution.

His Highness Shri Krishnaraja Wodeyar-IV, the Maharaja of Mysore came forward with an offer of 372 acres of land, free of cost, in Bangalore and promised other necessary facilities.

The detailed report that emerged from various committees appointed to study the constitution of this university recommended that “the Institute be devoted to experimental science and that it aim at training students, in experimental methods, carrying out original research ...”

Set up in 1909, the Institute has not only fulfilled the expectations of the visionaries but continues to be a leader in the frontiers of research and training in Science and Technology in the country.



## From the Director's desk



Over the 105 years since its establishment, the Indian Institute of Science (IISc) has become the premier institute for advanced scientific and technological research and education in India. Today IISc has 39 departments, units, or centres, 3500 students, and about 500 academic and scientific staff, supported by 600 administrative personnel. Out of this population of students, about 2200 are in various PhD programs, almost 900 are enrolled for various masters degrees, whereas about 400 are registered in the newly established, research oriented, Bachelor of Science (BS) programme, of which the first batch will graduate in 2015. Recently, on an annual basis, the Institute produces over 200 PhDs, and over 400 students graduate with various masters degrees.

The students at IISc are trained in a world-class academic environment comprising top-notch research faculty, and state-of-the-art research facilities. The education of the students takes place in an environment of high quality fundamental and applied research, thus producing individuals who are trained to think beyond textbook material. The courses are taught by faculty who bring to bear on teaching their unique insights gained from using the subject matter in their own research. All students, whether doctoral, or masters, or undergraduate, undergo hands-on involvement in one more scientific or engineering research projects, and thereby are trained in problem formulation and solution, laboratory and/or computing skills, technical writing, technical presentation, and the peer evaluation process.

As the industry in India seeks to expand their research, design, and development activities, we are confident that the individuals we produce will provide the innovation and leadership skills that the industry will be looking for.

Our Placement Centre is operated by our Centre for Scientific and Industrial Consultancy (CSIC), and serves as the interface between the graduating students and the prospective employers during the placement process. This Placement Booklet provides an overview of our departments and the various academic programs.

I invite you to visit our campus to talk to and to interview our students. Our Placement Centre will provide you with all the required logistical support.

**Prof. Anurag Kumar**  
Director, IISc

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## About IISc

Indian Institute of Science was founded by Jamshetji Nusserwanji Tata in 1909, to promote scientific temper and research aptitude in the upcoming generations of the nation. Since its inception, the institute has been the nation's flagbearer of world-leading research and postgraduate education in a wide range of scientific and technological fields.

Over the course of the century, many eminent personalities have been associated with the institute, among whom are stalwarts like C. V Raman, G. N. Ramachandran, Harish Chandra, S. Ramaseshan, A. Ramachandran, C. N. R. Rao and R. Narasimha. Alumni of the institute have been instrumental in kindling quality research and education across the country. Notable among them are Homi J. Bhabha who conceived the idea of Tata Institute of Fundamental Research (TIFR); Vikram Sarabhai and Satish Dhawan, the pioneers of the Indian space programme and the Indian Space Research Organization (ISRO); and J. C. Ghosh who established the first Indian Institute of Technology (IIT) at Kharagpur.

The Institute offers doctoral, course-based Masters, and research based Masters programs in various science and engineering disciplines. Recently, a 4-year bachelors program in Science has been introduced to usher motivated young talent into scientific research.

On the changing face of science and technology of the 21st century, the institute has strived to remain a forerunner. Interdisciplinary programs in Mathematical Sciences and Nano-science blur the lines between traditionally unrelated fields; while programs in Transportation Engineering, Management, Earth Sciences, Climate Change and Neuroscience train graduates to face the major research and engineering challenges of the present day.

In summary, Indian Institute of Science combines its legacy of over a century with expertise in the cutting-edge of science and engineering research; to train graduates with stellar technical ability and a noble sense of values, and to lead the progress of research and technological evolution across the country.



## IISc in the NEWS

The institute has pioneered nation-leading research and education across a wide range of science and engineering fields, and university rankings by several global organizations testify this. IISc as a whole, and several departments in particular, have been consistently ranked among the best in the world, and as the absolute best in India.

Ranked 23rd worldwide in the Global Employability Survey 2014, up 12 positions from the previous year's position of 35. Among Indian universities, IISc stands first with a huge margin.

The survey is conducted by RH Emerging in partnership with the German polling institute Trendence and interviews more than 5000 top recruiters in 20 different countries.

(Source: [http://emerging.fr/rank\\_en.html](http://emerging.fr/rank_en.html))

Academic Ranking of World Universities (also known as Shanghai Rankings) ranks IISc as the best in the nation. Additionally, several departments and divisions are ranked spectacularly well globally; including Material Science (ranked 39), Chemistry (ranked 43), Computer Science (ranked 51-75), and Engineering (ranked 76-100).

(Source: <http://www.shanghairanking.com/>)

The subject rankings of QS University Rankings ranks IISc as rank 46 for Material Sciences, in the 51-100 equivalence class for Chemistry, Chemical Engineering, Civil and Structural Engineering, Electrical and Electronics Engineering. IISc features in the 101-150 and 151-200 lists for several other subject areas.

(Source: <http://www.topuniversities.com/>)

Times Higher Education Rankings ranked IISc as #1 in the nation in university reputation rankings in 2013.

(Source: <http://www.timeshighereducation.co.uk/world-university-rankings/news/the-indian-reputation-rankings>)





# Aerospace Engineering

The department of Aerospace Engineering was started in December 1942. It is one of the oldest departments in the Institute and also the first ever established in the country. Ever since, the department has had a symbiotic relationship with the National Aerospace Laboratories and Government organizations like DRDO, ISRO, DST, ADA, and companies like Boeing, Airbus, General Electric, Pratt & Whitney etc.

## Programmes

### Course Programmes

**Master of Engineering (M.E.)** : It's a two year integrated program where students are trained in their respective area of interest. Course ware is designed specifically to provide students solid foundation in their respective field along with the practical training.

### Research Programmes

*Ph. D*  
*M. Sc. (Engg.)*

### Research Highlights

The boarder contours of research activities may still be identified in terms of dominant streams as: Aerodynamics, Structures, Combustion & Propulsion and Guidance & Controls.

\* *Aerodynamics*: Linear and Non-linear Stability Theories, Aerodynamic configuration optimization, Fluid Dynamics, Computational Fluid Dynamics, Low-speed boundary layer stability & transition, Low Numerical Diffusion methods, Experimental Fluid Aerothermodynamics, Shock Wave Dynamics, RANS, Low speed aerodynamics.

\* *Structures*: Nonlinear macro- and micro- mechanics of composites, Finite Element Analysis, Structural dynamics and design optimization, Fatigue and Fracture of Composites, Structural Health Monitoring, Helicopter dynamics, Vibration and Noise control, Smart Structures, Optimization Techniques, Damage Mechanics, Nano structures & MEMS modeling, Computational Mechanics, Experimental Modal Analysis, Non-Destructive Testing & Evaluation.

\* *Combustion and Propulsion*: Spray dynamics, Theoretical and Computational Aero acoustics, Plasma dynamics, Electric propulsion, Bio fuel sprays and spray/droplet interaction with solid surfaces, Heat and Mass Transfer, Energy Technologies for Rural Areas, Developments of catalysts for monopropellants, Internal Flows.

\* *Guidance & Controls*: Computational Electromagnetics, Navigation and Guidance Signal processing, Detection and Estimation, Filtering and Tracking, Sensing and Measurement, Optimization techniques, Robust control design, Unmanned Aerial Vehicles (UAV), Estimation techniques, Guidance of missiles and launch vehicles, Flight mechanics, Aerial Robotics, Data Security, Queuing and Neural Networks.



# Centre for Atmospheric & Oceanic Sciences

The Centre for Atmospheric Sciences was established in 1982 under the chairmanship of Prof. Roddam Narasimha. This became the Centre for Atmospheric and Oceanic Sciences in 1996. Owing to its interdisciplinary nature, over the years, the centre has attracted faculty and students from different branches of science and engineering. In addition its intellectual character, research in atmospheric and oceanic science addresses issues relevant to our society and our future.

## Programmes

### Course Programmes

**Master of Technology (M.Tech.) in Climate Science** : This program is designed for students with a Bachelor's degree from any branch of Engineering, or Master of Science in the Physical Sciences. This is a two year program which consists of course work and a project. It is intended to provide a sound foundation in the theory of the atmosphere-ocean-climate system, and to develop skills in computational, data analysis and observational techniques.

### Research Programmes

*Ph. D.*

*M. Sc. (Engg.)*

### Research Highlights

Research at CAOS revolves around the tropical climate. In addition to the theme of understanding the monsoon and its variability, current faculty interests span a wide range of topics in the realm of atmosphere-ocean-climate sciences. These include : aerosol measurements and impacts, atmosphere-ocean-coupled general circulation and climate modeling, cloud physics, geophysical fluid dynamics, paleoclimate studies, physical-chemical-biological oceanography of the Indian Ocean, radiative transfer, satellite meteorology, space-time structure and scaling in geophysical fields, and tropical convection. A list of research topics is provided below :

- \* Aerosols and their impacts on climate
- \* Atmospheric boundary layer analysis
- \* Climate Physics
- \* Geophysical fluid dynamics
- \* Monsoon variability and predictability
- \* Numerical simulation of the Atmosphere-Ocean-Climate system
- \* Paleoclimate studies
- \* Physical-Chemical-Biological oceanography
- \* Satellite meteorology
- \* Space-time structure and scaling in geophysical data
- \* Tropical convection





## Centre for Earth Sciences

The Center for Earth Sciences at IISc aims to capture glimpses of Earth processes and their impacts through observations, lab experiments, analytical chemistry and computational simulations. Established in 2007, our academic programs lead to M.Tech., M.Sc. (Eng) and Ph.D. degrees. Research projects are funded by non-governmental and governmental agencies. Through multidisciplinary interactions, state-of-the-art laboratories and interdisciplinary research, we envision newer frontiers in research and teaching.

The Centre focuses on interdisciplinary scientific research with the objective of expanding realm of knowledge in basic and applied earth sciences with specific reference to the Indian context and to provide quality education in the area of earth sciences. Broad research themes of interest to the Centre include natural hazards, reconstructing past environment and projections to future, surface processes and mass transport, and geology and environment including ground water pollution, medical geology and anthropogenic effects on the quality of environment.

### Programmes Offered

#### Course Programmes

*Master of Technology (M.Tech.) in Earth Science*

#### Research Programmes

*Ph. D.*

*M. Sc. (Engg.)*

#### Research Highlights

Researchers are involved in understanding the evolution of the Indian plate and its relation to other continental masses. The jig-saw puzzles of continental fits are fine-tuned using geological, geochemical, geochronological and paleomagnetic data from India, Madagascar and Sri Lanka. Geochemical and microstructural studies of ore bearing rock formations, mapping structural fabrics in naturally occurring sedimentary formations are other areas of work. This work is facilitated by our section cutting and polishing facilities and advanced petrological laboratories equipped with microscopes, and fluid inclusion stages.

Remote Sensing and GIS and its various applications in Earth Sciences , Planetary science, civil engineering (hydrology), mapping, Groundwater Prospects and Recharge Zone Mapping, creation of Digital Elevation Modeling (DEM), Flood Mapping and Monitoring, disaster management etc.

# Centre for Product Design & Manufacturing

The Center for Product Design and Manufacturing is dedicated to continuous research in the area of design, spanning across the broad areas of design methodology, human factors in design, vehicle design, simulation and testing. The Center uniquely combines cutting edge design research with design practice through its carefully designed course and research programmes.

## Programmes Offered

### Course Programmes

**M. Des. (Master of Design):** The 2-year M. Des. programme is designed to train engineering and architecture graduates in practically oriented design, and equip them with key knowledge in functional, aesthetic, ergonomic, material, manufacturing and marketing aspects. Students are trained in a variety of areas, including elements of design, materials and manufacturing, computer aided design (CAD), product design, automotive design, planning and marketing, design management etc.

### Research Programmes

**Ph. D.**

**M. Sc. (Engg.)**

### Research Highlights

The research in CPDM is clustered in its state of the art laboratories.

- \* *Computer Aided Design (CAD) Lab:* CAD, Geometric Modelling, Product Life Cycle Management.
- \* *Computerized Anthropometry and Ergonomics Simulation (SCALE) Lab:* Cognitive vision modelling and behavioral modelling for digital human models, synthesis and analysis of linkage mechanisms, wearable product design
- \* *Creative Automobile Research (CAR) Lab:* CAE, Product Impact Safety Design & Testing, Designing & Prototyping of Light weight Vehicles, Automobile & Locomotive Crashworthiness, Vehicle Dynamics & Active Safety, Methodologies for Vehicle Design, Lightweight Material for Impact Safety, Bio-Mechanics.
- \* *Computerized Anthropometry & Ergonomics Simulation (SCALE) Lab:* Ergonomics, Modular Mechanisms, Geometric, Topological & Kinematics Modelling.
- \* *Human Engineering Research (HER) Lab:* Medical and clinical engineering, human factors, biomedical engineering, occupational health and safety, work and sports engineering, biosensors and biomechanics, neuroscience and engineering psychology.
- \* *Innovation Design Study and Sustainability (IDEAS) Lab:* Requirements engineering, design synthesis and creativity, ecodesign and sustainability, biologically inspired design, product aesthetics etc.
- \* *Sustainability by Design (SuDesi) Lab:* Framework for understanding the emerging scenarios for design for sustainable development, design philosophies for welfare of the commonman, frameworks for robust, proactive assessment of sustainability of products.
- \* *Virtual Reality (VR) Lab:* Visual and haptic reality, virtual assembly planning, simulation and evaluation, virtual product design and evaluation



# Chemical Engineering

The Department of Chemical Engineering (established in 1943) at IISc began as a center for excellence in research and higher education in chemical engineering to address the needs of a phenomenally growing chemical industry in post-independence India. The department has evolved significantly over the last seven decades, reflecting changes in the Indian chemical industry and the chemical engineering profession worldwide. It has emerged as a major center for expertise in modeling complex fluids and advanced materials today. Similarly, efforts in biochemical engineering have culminated in the establishment of several novel bioreactors across the country. The turn of the century is witnessing the fusion of traditional chemical engineering areas with modern fields like information science, communication technology, nanoscience, and biology. Department's traditional strengths in reactor analysis, multiphase systems, and catalysis have been retained. The high faculty-to-students ratio facilitates close interaction and a cherished informal atmosphere. Since 1961, more than 500 degrees have been awarded in the ME, MSc (Engg), and PhD programs. Its alumni today include industrialists and academicians in India and abroad.

## Programmes Offered

### Course Programmes

**M. E:** The ME programme is a two-year course based program designed to prepare students to address complex industrial and technological problems through an advanced knowledge of various chemical engineering subjects. It has 32 credits of course work and 32 credits of project work.

### Research Programmes

**Ph. D.:** The PhD programme is designed to prepare each student to participate in technology development, problem solving and innovation in chemical engineering, be it in industry or research institutions and universities.

**M. Sc. (Engg.):** A minimum of 12 credit hours of graduate course work, of which at least 6 credits are from core courses, in addition to a 3 credit mathematics course are required for the MSc (Engg) degree. Independent research work is assessed through a general test midway into the programme and a final defense of the thesis.

### Research Highlights

The key research areas include:

- \* Biomolecular Engineering
- \* Catalysis and Reaction Kinetics
- \* Colloids and Interfacial Science
- \* Complex Fluids and Transport Processes
- \* Computational Fluid Dynamics
- \* Energy Engineering
- \* Environmental Engineering
- \* Nanotechnology
- \* Thermodynamics, Statistical Mechanics and Molecular Simulations





# Civil Engineering

The Civil Engineering department was founded in 1950, and is one of India's finest centers of advanced research and training in the area. The department has been recognized as a Center of Advanced Studies (CAS) by the UGC and as a Center for Excellence in Water Resources by the Central Board of Irrigation and Power. Over the years, the department has built excellent experimental and computational facilities for carrying out research in frontier areas of civil engineering.

## Programmes Offered

**Course Programmes** The department offers M.E programs in three specializations, and an M.Tech programme in Transportation Engineering

**ME in Geotechnical Engineering** : covers courses like basic geomechanics, earthquake engineering, earth and earth-retaining structures, foundation engineering, geoenvironmental engineering and geosynthetics.

**ME in Structural Engineering**: focusses on subject areas like solid mechanics, mechanics of concrete, finite element methods, linear structural dynamics, optimization methods and stability studies.

**ME in Water Resources and Environmental Engineering**: trains students in areas such as computational fluid dynamics, surface water hydrology, ground water and contaminant hydrology, water quality modelling, and water supply and sewage system design.

**MTech in Transportation and Infrastructure Engineering**: trains students in pavement engineering, transport and traffic modelling, optimization methods, operations research, GIS and remote sensing, probability models and applied statistics.

## Research Programmes

*Ph. D.*

*M. Sc. (Engg.)*

## Research Highlights

The department conducts research in four major areas:

- \* Geotechnical Engineering
- \* Structural Engineering
- \* Transportation Engineering
- \* Water Resources and Environmental Engineering

Currently, the department performs research on areas like earthquake engineering, mechanics of materials, damage and fracture mechanics, foundation engineering, soil reinforcement and geosynthetics, computational mechanics and modelling, rock mechanics, condition assessment of railway bridges, environmental engineering, climate hydrology, water resources management, stochastic hydrology, watershed hydrology, hydrochemistry, hydraulics and transportation engineering



# Computer Science & Automation

The Department of Computer Science and Automation (CSA) was created in 1969 and was originally called the School of Automation till the mid-eighties. Ever since its inception, the department has been a pioneering academic centre for higher education, research, and innovation in key areas of computer science.

The department was ranked among the top 100 computer science departments in the world in terms of its publication profile and citations accumulated by the publications (Source: Academic Ranking of World Universities, ARWU, August 2012)

According to the 2013 Academic Ranking of World Universities, IISc Computer Sciences is ranked in the range 51-75.

## Programmes

### Course Programmes

**M.E. in Computer Science** : The 2 year M.E. program offered by the department is structured to provide a solid foundation in core areas of computer science through course work while allowing enough flexibility for the student to pursue an area of specialization in their research projects.

**M.E. in Systems Science and Automation** (offered jointly with the Dept. of Electrical Engineering) : details can be seen in EE department page (14).

### Research Programmes

*Ph. D.*

*M. Sc. (Engg.)*

### Research Highlights

Research in the department can be broadly grouped into three areas:

\* *Theoretical Computer Science*: The theory group works on the mathematical foundations of computing. Current research areas include algorithmic algebra, approximation algorithms, coding theory, combinatorial geometry, computational geometry, computational topology, cryptography, formal verification, graph theory, logic, and randomized algorithms.

\* *Computer Systems*: The Computer Systems group in the department carries out research across virtually the entire spectrum of areas in this field including compilers, computer architecture, computer networks, databases, distributed computing, embedded systems, energy-aware computing, graphics and visualization, mobile and wireless systems, operating systems, real-time operating systems, storage area networks, systems security and performance modeling.

\* *Intelligent Systems*: Research in the intelligent systems group focuses on auctions and mechanism design, bioinformatics, data mining, electronic commerce, game theory, machine learning, pattern recognition, reinforcement learning, stochastic control and optimization and stochastic simulation.



# Electrical Communication Engineering

ECE (Electrical Communication Engineering) Department started in 1946 with a Post Graduate course DIISc(PG) in Electronics Engineering/Ultrashort. Since the inception, the department has pioneered research in the areas of electronics, acoustics, microwaves and analog computers. One of the greatest strengths of the department is its rich heritage and the people who foresaw the potential, in relatively less explored domains, in its early years.

## Programmes

### Course Programmes

***M.E (Telecommunication Engineering):*** The area of Telecommunication engineering is concerned with analysis and design of a variety of communication systems. The core courses give students a solid foundation in probability theory, digital communications and networking.

***M.E (Signal Processing Engineering):*** Offered jointly with the department of EE, the program provides an advanced level of education in novel theory, algorithms, performance analysis and applications of techniques for the processing, learning, and extraction of information from signals. The core courses develop advanced levels of understanding of related topics in detection and estimation, linear algebra, random processes and DSP system design.

### Research Programmes

*Ph. D.*

*M. Sc. (Engg.)*

### Research Highlights

Some of the Research and Development projects undertaken by the department are:

- \* *Wireless Communication:* Multiple antenna communication, OFDM and next-generation wireless systems (cognitive radios, LTE-OFDM).
- \* *Networking:* Wireless sensor networks, belief propagation, mobile P2P networks, intrusion detection.
- \* *Information theory and Coding:* Distributed storage, network error correction, quantum information theory.
- \* *Speech and Audio Processing:* Speech analysis, synthesis, recognition and enhancement, acoustic scene analysis, multi-channel sound field processing.
- \* *Image Processing:* Image analysis, restoration and enhancement, face detection, online handwriting recognition.
- \* *Biomedical Processing:* Tomographic, optical, MRI and acoustic biomedical imaging.
- \* *Computer Vision:* Geometric estimation in computer vision.
- \* *Video Analytics:* Object tracking, action recognition, human-computer interaction.
- \* *Compressed sensing.*





# Electrical Engineering

The department of Electrical Engineering was founded in 1911, with Prof. Alfred Hay as its founding chairman. Since its inception, the department has pioneered research in diverse areas ranging from high-voltage engineering and power electronics to system science and signal processing.

## Programmes

### Course Programmes

**ME in Electrical Engineering:** This program strikes a balance between mathematical rigour on one hand and experimental and hands-on experiences on the other. Students acquire a range of skills from courses including Power Systems, Power Electronics and High Voltage Engineering, besides mathematically-oriented courses aimed at solidifying the theoretical foundations.

**ME in System Science and Automation** (offered jointly with the Department of CSA): The interdisciplinary area of System Science deals with the design and analysis of a variety of systems including control systems, multimedia systems and cyber-physical systems. The course is designed to give students a solid foundation in data structures, algorithms, stochastic models, linear systems and optimization; and let them specialize in one or more areas of machine-learning, data-mining, signal-processing, game-theory, computer-vision etc..

**ME in Signal Processing** (offered jointly with the department of ECE): This course is designed to familiarize students with the present-day theory and practice of signal processing. Students learn a variety of courses covering the theory and practice of Signal Processing; including digital signal processing, adaptive signal processing, linear and nonlinear optimization, image processing, wireless networks etc.

### Research Programmes

*Ph. D.*

*M. Sc. (Engg.)*

### Research Highlights

The research activity in the department can be categorized into the following 5 fields:

- \* Power Electronics: Switched Mode Power Converters, Space Borne Power Supplies, Resonant Converters, Uninterrupted Power Supplies, High-Voltage Power Supplies etc.
- \* Power Systems: Integration of wind and solar energy into the national power grid, efficient algorithms for scheduling and commitment problems, stability issues in HVDC systems, advanced voltage regulators and power system stabilizers etc.
- \* High Voltage Engineering: Breakdown phenomena in insulation media, over-voltage phenomena in systems, EHV/UHV power transmission, electromagnetic field theory etc.
- \* System Science and Automation: Signal processing, pattern recognition, machine learning, data mining, artificial intelligence, image processing, game theory and mechanism design, data science etc.
- \* Signal Processing: Biomedical imaging, image and speech processing, computer vision, sensor networks, sparse signal processing etc.



# Department of Electronic Systems Engineering

The Department of Electronic Systems Engineering (DESE)—then called Center for Electronic Design and Technology (CEDT)—was founded in 1974 with support from DoE, UGC and the Swiss Development Corporation. The department focusses on research and development of industry-standard devices and systems, taking into account practical issues like industrial design, ergonomics, system-level packaging and thermal design.

## Programmes

### Course Programmes

**Master of Technology (M.Tech.) in Electronic Systems Engineering:** The M.Tech programme in Electronics Design is one of the most sought-after programmes in the country. This course covers all aspects of system design, development and life cycle support; and intends to develop multidisciplinary expertise in the students. The course is design oriented with nearly two thirds of the 24 months spent on learning by practical work.

**Master of Engineering (M.E.) in Microelectronics:** The M. E. programme in Microelectronics is offered jointly with the Department of ECE, and focuses on VLSI design. The course is also closely related with the Center for Nanoscience Research and Engineering (CeNSE). The students acquire skills in areas such as microsensors, nanoelectronics, advanced CMOS technology, computer aided design, advanced digital and analog VLSI circuits, multicore architectures etc.

### Research Programmes

*Ph. D.*  
*M. Sc. (Engg.)*

### Research Highlights

Key areas of research in the department can be classified and enlisted as follows:

- \* VLSI Design: Digital VLSI circuits, Analog VLSI circuits, FPGA prototyping, Finite state machines, clock trees, OpAmp design.
- \* Embedded Systems: Internet of things, system integration, PCB designing and layouts, circuit design, ADC design.
- \* *Communication Networks*: Network science, epidemic control, information dissemination, physical layer security, wireless sensor networks, WLAN performance management, optimal load scheduling and smart grids, etc.
- \* *Signal and Information Processing*: Information theory, coding and signal processing, nano-memories, music signal processing, quantum information processing, mathematical biology,
- \* *Electromagnetics*
- \* *Electromechanics*
- \* *Power-Electronics and Alternate Energy Systems*: Multilevel inverters for high-power drives, power-electronics-based renewable energy systems.
- \* *Nanoelectronics*: transistor modelling based on quantum-mechanical transport equations, electro-thermal effects in 2D-material-based MOS transistors, quantum mechanical tunnelling in thin-layer materials, electrothermal modelling of semiconductors and SoCs etc.



## Department of Instrumentation & Applied Physics

The Department of Instrumentation and Applied Physics was established in 1996, and pursues a wide area of interdisciplinary research activities in the broad domain of applied physics.

### Programmes

#### Course Programmes

**M.Tech :** The department offers an M. Tech. programme in Instrumentation, which trains students in areas such as advanced micro/nano systems, semiconductor devices and circuits, digital signal processing,, control system design, optical engineering, bioinstrumentation and imaging etc.

#### Research Programmes

*Ph. D.*

*M. Sc. (Engg.)*

#### Research Highlights

The department performs research in the following key areas:

\* *Applied Photonics:*

Sensing, microscopy and nanoscale imaging

\* *Materials Research:*

Material science and engineering, surface engineering

\* *Integrated Systems:*

Integrated systems and electronics, system design and instrumentations

\* *Energy and environment:*

Energy systems, environment and urban solutions





# Management Studies

The origin of the Department can be traced back to 1947 when the Section of Economics and Social Sciences was setup. This pioneering step was largely a result of the long-term vision of J.N. Tata, which had sown the seeds of management education and research in the country.

This vision was given substance by a resolution of the Indian Institute of Science to establish philosophical and educational Department, including methods of education, ethics and psychology, Indian history and archeology, statistics and economics, and comparative philology.

## Programmes

### Course Programmes

**Master of Management:** The Master of Management program focuses on training the students in Technology Management and Business Analytics. The program is unique in the country as it is futuristic and builds leadership in the two important and niche arena of Management, namely, Technology Management and Business Analytics. The students also get the exposure to live problems and practical aspects/ challenges of running an enterprise by their summer term. This exposure leads to an understanding of the application aspects of management, which the students can use in their project work to deliver feasible and optimal solution to real life business challenges.

### Research Programmes

*Ph. D.*

### Research Highlights

In the recent years, the Department has received sponsorship for research and consultancy projects from:

International agencies: The World Bank, European Union, UNDP, DFID, FASID, SIDA & USAID.

Central and State Governments: Ministry of Statistics, MOEF, MCIT, Government of India, Ministry of Education, Government of Karnataka, etc.

Public Sector Enterprises and other national organizations such as, BEL, BHEL, Canara Bank, Central Silk Board, CIVIC, CPRI, DRDO, DST, HKADB,, ISRO, KPCL, etc.

Private Enterprises: ACE Designers, Brigade Group, HLL, Infosys, Liquid Crystal Pvt. Ltd., etc. As of now Research focus covers:

- \* Empirical Finance and Applied Statistics
- \* Strategic Management & Marketing
- \* Human Resources Management
- \* Industrial Economics: SMEs and Innovation
- \* R&D Management & Knowledge Management
- \* Management of Intellectual property
- \* Project Management & Entrepreneurship
- \* Operations Research
- \* Energy Policy and Management
- \* Public Policy
- \* Operations Management
- \* Language for Specific Studies
- \* Organization Behaviour



# Materials Engineering

The Department of Materials Engineering (formerly known as the Department of Metallurgy) was established in the year 1945 and is dedicated to the advancement of education and research in metallurgy and materials engineering. Recently, the department has received the status of the Networking Resource Centre for Materials (NRC-M), from the University Grants Commission, to promote interactions with academic institutions in materials science and engineering. The total publication per year from the department on an average is about 100 papers in national and international journals. Research collaborations exist with universities and laboratories in Japan, China, Korea, Singapore, UK, France, Germany, Norway, Sweden, Mexico and USA. The Department is also active in the area of industrial consultancy.

## Programmes

### Course Programmes

**M.E. :** The two year M.E. program accepts candidates with a B.E./B.Tech. or equivalent degree in Materials Engineering and allied areas including Metallurgy, Mechanical, Chemical and Ceramic Engineering.

### Research Programmes

*Ph. D.*

*M. Sc. (Engg.)*

### Research Highlights

Active research groups exist in the fields of Processing and Characterization of Materials, Thermodynamics, Computational Materials Science and Advanced Materials such as Bulk Metallic Glasses, Composites, Structural Ceramics, Intermetallics, Shape Memory Alloys and Bio Materials. Some of the ongoing research topics in the department include:

- \* Nanostructured materials.
- \* Computational materials science.
- \* Phase Field Modelling.
- \* Monte Carlo & phase simulations of phase transformations & coarsening.
- \* Solidification, mass & heat transfer modeling of laser processing of materials.
- \* Crystallographic texture in structural & functional materials.
- \* Solid-state diffusion in materials.
- \* Mechanical characterization of bulk metallic glasses, foams & composites.
- \* Rapid solidification of metals.
- \* Synthesis of thin films by laser ablation & decomposition of precursors.
- \* Mechanical characterization & interfacial fracture of thin films.



# Mathematics

The Department of Mathematics was established in 1956, and excels in areas of both pure and applied mathematics. In addition to conducting path-breaking research and training young researchers, the department is also involved in diverse initiatives such as the IISc Mathematics Initiative and Mathematics Olympiad.

## Programmes

### Research Programmes

*Ph. D.* is meant for students with masters degrees in mathematical and physical sciences (or equivalent qualifications) and trains them for advanced research in mathematics.

*Integrated Ph. D.* takes exceptional students with bachelors degrees and serves as a platform to launch bright minds early into research.

### Research Highlights

The department aims to promote close collaboration between various mathematical disciplines and other applied areas. Current areas of research are:

- \* Algebraic and combinatorial topology
- \* Commutative algebra and algebraic geometry
- \* Differential equations
- \* Differential geometry
- \* Finite fields and coding theory
- \* Functional analysis and operator theory
- \* Harmonic analysis
- \* Low-dimensional topology
- \* Nonlinear waves, hyperbolic equations and numerical analysis
- \* Nonlinear dynamics
- \* Probability and stochastic processes
- \* Several complex variables
- \* Time-series analysis





# Mechanical Engineering

Mechanical Engineering activities at the Indian Institute of Science commenced prior to the Independence, in 1945, with the establishment of the Department of Internal Combustion Engineering. The classrooms, laboratories and offices of the department are located at the South-East end of the Campus in three buildings – the Power Engineering Building, the TPS Building and the New Mechanical Engineering Building.

## Programmes

The Department offers a richly integrated curriculum of education and research to its students - a **two-year course programme Masters (M.E.)** and research-oriented **M.Sc(Engg.)** and **Ph. D.** programmes.

## Research Highlights

Students have a variety of opportunities to investigate a broad range of research in about a dozen thrust areas. Some of the specific areas include Computer-Aided Design and Manufacturing, Rapid Prototyping, Robotics and Controls, Turbomachinery and Combustion Systems, IC Engines, Multi-Phase flow, Nano-mechanics, Tribology, Computational Fluid Dynamics and Acoustics. Much of the research is conducted within the department, but many projects are carried out in collaboration with other departments and centers on campus, as well as with other R&D institutions and national laboratories in the country and abroad. The faculty, students and staff author more than 100 research publications annually in leading national and international journals and conferences. Several of the faculty are fellows of various national academies in science and engineering, and have received recognition in the form of national and international awards.

- \* CAD& Robotics Lab [Coordinator: Prof. A. Ghosal]
- \* Compliant and Small Systems Lab
- \* Multiphase Flow, Combustion and Laser Diagnostic Lab [Coordinator: Dr. Saptarshi Basu]
- \* Computational Solid Mechanics Lab
- \* Combustion and Spray Laboratory [Coordinator: Prof. R.V Ravikrishna]
- \* Dynamics Lab
- \* Experimental Mechanics Lab
- \* Fluid Mechanics and Turbomachinery Lab [Coordinator: Prof. R. Govardhan]
- \* Force Microscopy Lab
- \* Foundry Science and Manufacturing Lab [Coordinator: Prof. S.V Kailas]
- \* Heat Transfer Lab [Coordinator: Prof. Pradip Dutta]
- \* Micro Electronic Mechanical Systems Lab [Coordinator: Prof. G.K Ananthasuresh]
- \* Nanotribology Lab
- \* National Facility for Semi-Solid Forming [Coordinator: Prof. Pradip Dutta]
- \* Refrigeration and Air Conditioning Lab
- \* Technical Acoustics Lab [Coordinator: Prof. M.L Munja]
- \* Tribology Lab
- \* Vibrations Analysis Lab



# Supercomputer Education and Research Centre

SERC provides state-of-the-art computing facility to the faculty and students of the Institute. The Centre is conceived of as a functionally distributed supercomputing environment, housing leading-edge computing systems, with sophisticated software packages, and connected by a powerful high-speed fibre-optic network. The computing facilities are connected to the campus LAN, WLAN and also to the Internet.

High performance computers have significantly changed the way we do research in science and engineering. With the nationwide thrust on Information technology and the need for self-reliance in defense, space and other national initiatives there is an increasing demand for scientists and engineers with specialized computing skills that are necessary for solving critical design, research and/or development problems. The Supercomputer Education and Research Centre (SERC) at IISc provide excellent opportunities for pursuing advanced research and education in various aspects of Computer Systems & Computational Sciences. Computer Systems mainly deals with High Performance Computing including Operating systems, Computer Architecture etc. Computational Science is an interdisciplinary area that brings together the domain-specific knowledge of science and engineering and the relevant topics of computer science and mathematics.

## Programmes

### Course Programmes

**Master of Technology (M.Tech.) in Computational Science:** It starts in August and spans 2 years (4 semesters). In the first year, the student is exposed to fundamental concepts of Computational Science such as data structures and programming, modeling and simulation, mathematical and computational tools. The second year takes the students towards their fields of specialization through specialized courses. The course culminates with an inter-disciplinary dissertation project.

### Research Programmes

**Ph. D.:** It is designed to prepare each student to participate in technology development, problem solving and innovation in computational science, be it in industry, research institutions and universities. Students can enter the PhD programme either with a master's or a bachelor's degree in engineering.

**Master of Science (M.Sc.) Engineering (by research):** It is a research program offered by SERC. Research areas in this group deal with the design, implementation and evaluation of computer hardware and software. Computer Architecture, Compilers, Database Systems, Graphics and Visualization, Grid Computing, High Performance Computing, Multimedia Systems, Computer Network and Information Security, and VLSI Systems and Architecture.

### Research Highlights

Cloud Systems, Machine Learning, Computer Architecture, Database Systems, Graphics and Visualization, High Performance Computing, Image Reconstruction, Image Analysis, Biomedical Diagnosis/Imaging, Video Analytics, Bio informatics, Parallel Algorithms, Medical Imaging, Multimedia Systems, Information Security, Computational Electromagnetics, Scientific Computing, Computer Vision, Numerical Analysis and Algorithms, Computational Nano Photonics, Big Data.



## Bachelor of Science (4 year) Program

The 4-year Bachelor of Science (B.S) Programme at IISc is designed as a blend of Core Science topics and essential engineering skills that can serve as a launching pad into Industry. The novelty of this programme lies in its interdisciplinary approach, strong flavour of engineering, exposure to disciplines in the humanities and social sciences, and a year-long research project. With a strong conceptual understanding and excellent hands-on skills, the versatile graduates of this programme are second to none in the country.

### Course Programmes

Graduates of this programme major in one subject, chosen from a pool of six. In addition, they may also choose another field of interest as a minor.

**1. Biology:** Offers an excellent ingress to the contemporary areas of experimental, computational and theoretical biology. Students acquire skills from courses that include the multidisciplinary aspects of fundamental biology, biotechnology, health, agriculture, bio-engineering, systems biology and synthetic life. Students are also made familiar with laboratory techniques in Biochemistry, Microbiology, Neuroscience and Biophysics.

**2. Chemistry:** Graduates will have a solid theory background in areas such as organic synthesis, analytical chemistry, crystallography, spectroscopy, quantum chemistry etc. Hands-on laboratory training in modern and more contextual chemistry topics is also a salient feature of the course. The modern laboratory programme, exposure to modern instrumentation, and the research training make these Chemistry Graduates well equipped for careers in chemistry and allied interdisciplinary areas.

**3. Environmental Science:** Graduates will be well acquainted with salient topics in Environmental Chemistry, Earth Science, Atmospheric Science and Environmental Engineering. Laboratory courses supplement this understanding with state of the art equipment. They provide hands on experience with state of the art equipments and teach essential experimental techniques in environmental management. These graduates would have taken research projects in the final semesters in an Environmental Science area of their choice.

**4. Material Sciences:** The course is designed to equip students with solid understanding of Modern Materials' Development, Analysis and Design, concentrating on both theoretical and practical nuances. A vibrant set of elective courses will give students flexibility to specialize in structural materials, functional/electronic materials, materials chemistry, and materials processing. Students are exposed to research through summer projects, as well as industrial visits. Well-equipped laboratories ensure that Graduates are well acquainted with cutting edge practices and instruments.

**5. Mathematics:** The course provides a solid foundation in mathematics, covering various topics in algebra, analysis, probability, topology and differential equations. In addition, students also acquire skills in programming and other aspects of engineering where applied mathematics is used. With strong analytical skills and a broad-based background in the mathematical sciences, Graduates are well equipped for careers in both pure and applied mathematics.

**6. Physics:** Courses are designed to impart students strong conceptual understanding, combined with adroit hands-on skills. Graduates would have taken courses from a wide pool including Quantum Mechanics, Electrodynamics and Thermodynamics. Their conceptual understanding is corroborated by laboratory experiments. Summer research projects serve to give students a flavour for critical thinking and familiarize with them modern equipment.



# Biological Sciences

The Division of Biological Sciences at the Institute is engaged in frontline research at the frontiers of modern biology. The scientists in the Division deal with almost all aspects of modern biology: molecular biology, structural biology, immunology, enzymology, reproductive and developmental biology, ecological and environmental studies and so on.

## Programmes

### Research Programmes

*Ph.D.*

*Integrated Ph. D.*

### Research Highlights

\* *Biochemistry:*

Eukaryotic transcription and gene expression, Genetic recombination, telomere biology, genome instability, DNA mismatch repair, Protein-DNA interactions, Trna genes, Research in contraception; Cell biology, Proteosomes, chaperones, cellular stress response, Spermatogenesis.

\* *Ecological Sciences:*

The assessment and conservation of biological diversity; Understanding the evolution of cooperation and conflict in animal societies; Monitoring the population dynamics of wild plant and animal species.

\* *Microbiology and Cell Biology:*

Silk worm Molecular Biology and Biotechnology: Sex determination and associated phenomena in man, fruitfly and many bug; Genetic transformation of commercially important plants, Edible vaccines; Molecular genetic analysis of flower development; Studies on initiation of protein synthesis and DNA repair using E.Coli and Mycobacteria as model systems.

\* *Molecular Biophysics:*

Conformation of cyclic peptid and conformational analysis of protein structure; X-ray crystallography of proteins and other biologically important molecules; Structure and confirmation of biological molecules using spectroscopic techniques; Membrane biophysics and biology; Peptides-chemistry, structure and biology.

\* *Molecular Reproduction, Development and Genetics:*

Mechanism of Genomic imprinting; Structure-function relationship of glycoprotein hormones and their receptors; Regulation of eukaryotic gene expression, role of growth factors in development and reproduction; Use of monoclonal antibodies for structural studies of protein antigens;

# Chemical Sciences

The Division of Chemical has a long and rich tradition of research right from the inception of the Institute and has played a major role in the advancement of Chemical Sciences and Technology in the country for many decades. Current research activity is focussed on several frontier and interdisciplinary areas such as Laser Spectroscopy, Chemical Dynamics, Organometallics, Functional Polymers, Supramolecular Chemistry, Smart Materials and Magnetic Resonance Imaging.

## Programmes

### Research Programmes

*Ph.D.*

*Integrated Ph. D.*

*M.Sc. (Engg.)*

### Research Highlights

\* *Department of Inorganic and Physical Chemistry:*

Molecular Structure and Chemical Bonding; Laser Spectroscopy; Solid State Chemistry Electrochemistry; Chemistry of Nonmetals; Organometallic Chemistry; Bioinorganic Chemistry; Polymer Chemistry; Combustion Chemistry.

\* *Solid State & Structural Chemistry Unit :*

Synthesis of New Materials; Electronic and Magnetic Properties of Oxides, Chalcogenides and related materials; Amorphous Solids; Solid Ionic; Material and Solid State Electrochemistry; Oxide Catalysis; phase transitions in Solids; X-ray Crystallography; Molecular Relaxation Phenomena; Reaction Dynamics; Statistical Mechanics and Monte Carlo Simulation.

\* *Material Research Center:*

Synthesis and characterization of Materials, Ceramic Sensors; Optoelectronic Materials, Thin Solid Films, Diamond Coatings, Ceramic Composites, Amorphous and Metastable Materials, Theoretical studies of Defect Physics, Dislocation Dynamics, Instabilities of Plastic Flow.

\* *Department of Organic Chemistry:*

Synthetic Organic Chemistry; physical Organic Chemistry; Structural Organic Chemistry; Bio-organic Chemistry; Theoretical Organic Chemistry.

# Physics

The Department of Physics was founded in 1933 by Professor C V Raman. It originally established itself as an international centre for research in Optics & Spectroscopy. It is now carrying out research in the broad areas of condensed matter physics and biocrystallography.

## Research Programmes

*Ph.D.*

*Integrated Ph. D.*

## Research Highlights

\* *Astronomy and Astrophysics:*

Theoretical studies of interacting and starburst galaxies, galactic dynamics, solar magnetic fields and dynamo theory.

\* *Condensed matter Physics:*

High temperature superconductors, rf and microwave response, tunneling; Strongly correlated electronic systems: mixed valent and heavy fermion systems and oxides; Disordered systems: Anderson localization and metal insulator transitions, colossal magnetoresistance, glasses and spin glasses; Quantum transport: conductance fluctuations in disordered systems, mesoscopic systems and tunneling; Soft condensed matter: statistical mechanics and rheology of colloids, polymeric fluids, gels, micelles, membranes and liquid crystals; Low-dimensional systems: conducting polymers, highly conducting amorphous carbon films phenomena and applications, irradiated polymers;

\* *Complex and Non-equilibrium Systems and Biology-Inspired Physics:*

Theoretical and numerical studies of neural networks and optimization problems, cellular automata and models that exhibit self-organised criticality, spatio-temporal chaos, fluid and MHD turbulence.

\* *Bimolecular Structure and Biophysics:*

Structure and Biophysics: Structure studies of biomolecules using x-rays, molecular modelling and NMR, peptide and protein crystallography, complexation studies and drug-nucleic acid interactions, database analysis and genomics.

\* *Atomic and Optical Physics:*

Nonlinear optics, high pressure Raman Spectroscopy, photon correlation spectroscopy, laser cooling and trapping of atoms, ion trapping, precision atomic tests of parity violation and time-reversal symmetry violation.



## Student Life

### Gymkhana

The IISc Gymkhana is the oldest in Bangalore. It provides world-class sports and recreational facilities to the students of the Institute. In addition, Gymkhana is also the umbrella under which the sports and extra-curricular activities of the Institute are organized.

### Dramatics Club

The Dramatics Club of IISc, titled "Rangmanch", was formed in 2009, and is a confluence of students interested in theatre arts. Rangmanch performs plays in both English and Hindi, ranging from classics like 'God' by Woody Allen and 'Dakghar' by Tagore; to short plays scripted and directed by the members themselves. Apart from stage-plays, the group also dabbles its hands in other forms of theatre art, like street plays, musicals, dance drama, pantomimes, etc..

### Film Making Club

The IISc Film Making Club was formed in November 2012 and brings together film-enthusiasts in the campus. The club pools a variety of talents like photography, editing, acting, direction etc., and provides a platform for the enthusiasts to collaborate on creative endeavours like short-films and documentaries. Currently, the club is actively pursuing two short-film projects, both of which are in their pre-production stages.

### Notebook Drive

Notebook Drive is a social initiative started in 2002, with the objective of supporting education of underprivileged kids. The activities of the group span over 30 schools covering 4 districts in and around Bengaluru. The core activity of the group is the distribution of notebooks and other stationery to school kids. Other newer initiatives include provisioning library and sports facilities, organizing science fairs and education trips, children's day celebrations, project mentoring, English communication classes etc. The group also organizes scholarship schemes for further education of bright and deserving students.

### Papyrus Library

Papyrus library is an unofficial, student-managed library that allows bibliophiles of the campus indulge in their favorite hobby at a nominal fee. The library now has a collection of over a thousand books, ranging over a variety of genres spanning fiction and nonfiction. In addition, the library also has complete collections of popular comics like Calvin & Hobbes, Tintin and Asterix to cater to lighter side.

### Rhythmica

Rhythmica is the official music team of IISc, and functions under the Gymkhana Music Club. Rhythmica was founded in 2002. The group hosts four shows every year—one each in August, Diwali, Founder's Day (March), and June—in addition to several other unofficial shows. The group has over 50 members hailing from diverse cultural backgrounds, ranging from students to staff and professors, making it one of the largest and most diverse groups in IISc.

### Voices

'Voices' is the campus newsletter of IISc, which disseminates news about the events and happenings in the campus, and provides a platform for students to voice their opinions. 'Voices' is published every month, and is managed by an active team of volunteers.

## Placement @ IISc

Unlike other institutions, where placement of students is taken care of by the administration and students usually do not get chance to actively contribute in that, here in IISc, we students are the integral part of the placement committee or in other words we are the only who form the committee. From the first stage of this process i.e. contacting companies, inviting them to participate in our placement activities to the final stage when students receive offer letters everything is coordinated by the placement committee formed under Students' Council under the guidance of the Faculty Placement Coordinator / CSIC Chairman.

To help students from the administration side, CSIC (Centre for Scientific & Industrial Consultancy) facilitates the placement committee in the whole process.

The Student council of IISc hosts an annual event titled "**Samanway**", to enhance ties between academia and industry. The event consists of talks from leaders of both industry and academia, career fairs, industry stalls, panel discussions, and more. The **2013 edition** of the *Samanway* event saw participation from both established companies as well as promising startups in various fields.

The **2014 edition** is being organised at a much grander scale, and be conducted in 3 parts, covering different subject areas.

- \* Part I: Pure Sciences: The first part, held on April 12, 2014, focused on industrial research in the pure-science areas of Physics, Chemistry and Biology.
- \* Part II: Computational Engineering: This part will be held in October and will focus on areas of applied mathematics including computer science, simulation and modelling, communication and information technology, design and imaging.
- \* Part III: Production and Manufacturing: The final part of *Samanway* 2014 will be held in October 2014 and will focus on areas like production technology, manufacturing, robotics and AI.

### The Placement Process:

The process followed for placement in the Institute is as follows:

- \* PPT, tests, interviews, final result declaration is expected to be completed on the same day.
- \* Each company gets one full day (9.00 AM to 8.00 PM) for PPT, tests, interviews & final result declaration.
- \* CV's will be sent on request.
- \* Each student is entitled to a single job only.
- \* Students can join the company latest by August 2015.

## Our Recruiters

### #

3M

### A

ABB

AdityaBirla

Adobe

Airbus

Airvana

Amazon

Analog-Devices

ANDRITZ

Ansys

Applied materials

Applied micro

Arista

Arm

Ashok Leyland

Atkins

### B

Boeing

Bosch

Bharat Forge

BPL

Broadcom

### C

CD-adapco

C-DOT

CPRI

Cirel

Cisco

Citrix

Comsol

Crompton greaves

Cypress

### D

Dell

DRDO

Dr Reddy's

### E

Eaton

EBay

Educational initiative

EMC

### F

Flipkart

### G

GE

Genpact

GKN

GM

Godrej Aerospace

Google

### H

Halliburton

Hindustan Unilever

Honeywell

HPCL

### I

IBM

Intel

Ittiam

ITnIT

### J

John Deere

Juniper

### K

Kawasaki

### L

Lam-research

### M

Mahindra and Mahindra

MathWorks

Microsoft

Motorola

MRF

### N

NVidia

### O

OptumSoft

### Q

QUALCOMM

Quest

### R

Rambus

### S

Samsung

SanDisk

Siemens

Sigma Aldrich

SKF

SMR

Sony

Strand

### T

TATA

TCS

Telco construction equipment

TE

Texas instruments

TimeTooth

TRDDC

### U

Unisys

UTC aerospace

### V

Videocon

VMware

### W

Wal-Mart

WEG

### X

Xerox





# The Placement Team

## Placement Coordinator

### **Dr. M. Mathirajan**

Chief Research Scientist,  
Department of Management Studies  
Faculty of Engineering  
Indian Institute of Science  
Bangalore 560 012

#### Email:

[msdmathi@mgmt.iisc.ernet.in](mailto:msdmathi@mgmt.iisc.ernet.in)  
[placement@iisc.ernet.in](mailto:placement@iisc.ernet.in)

#### Phone:

(+91)9840776331  
(+91)9945668905  
+91(80)22932605

## Core Committee

### **Abhinav Site**

Computer Science & Automation  
9611170613  
[abhinav.site15@gmail.com](mailto:abhinav.site15@gmail.com)

### **Puneet Pahuja**

Computer Science & Automation  
9611122929  
[er.puneetpahuja@gmail.com](mailto:er.puneetpahuja@gmail.com)

### **Prachet Verma**

Electronic Systems Engineering  
9164551879  
[prachet.verma@gmail.com](mailto:prachet.verma@gmail.com)

### **Pothula Shiva Harsh**

Aeronautical Engg  
9611126426  
[shivaharsh.p@gmail.com](mailto:shivaharsh.p@gmail.com)

### **Nihar Paul**

Atmospheric & Oceanic Sciences  
8762771629  
[nihar@caos.iisc.ernet.in](mailto:nihar@caos.iisc.ernet.in)

### **Vikranth**

Management  
9611325329  
[lokeshwar.bvb@gmail.com](mailto:lokeshwar.bvb@gmail.com)

### **Computer Science & Automation**

Anurag Tomer  
Purshotam Chauhan  
Rishabh Singla  
Naman Patel  
**Contact:** [anuragtomer12@gmail.com](mailto:anuragtomer12@gmail.com)

### **Aerospace Engineering**

Felix Abraham  
Akshay Adlakha  
**Contact:** [felixam1127@gmail.com](mailto:felixam1127@gmail.com)

### **Civil Engineering**

Abhinav Thirumuru  
**Contact:** [abhinav3773@gmail.com](mailto:abhinav3773@gmail.com)

### **Mathematics**

Jayanta Basak  
Subhajit Ghosh  
**Contact:** [jayanta.bsk@gmail.com](mailto:jayanta.bsk@gmail.com)

### **Electronic Systems Engineering**

Adil Meersha  
Pratik Jain  
Rohit Ronge  
**Contact:** [adilmeersha@gmail.com](mailto:adilmeersha@gmail.com)

### **Chemical Engineering**

P Arjun Kumar  
Banoth Kumar  
Balaaji Mahadevan  
**Contact:** [arjunkumarp9@gmail.com](mailto:arjunkumarp9@gmail.com)

### **Centre for Product Design & Manufacturing**

Budhaditya Mitra  
Balaji HR  
Siddhant Prasad  
S.S Siddhartha  
**Contact:** [placement@cpdm.iisc.ernet.in](mailto:placement@cpdm.iisc.ernet.in)

### **Mechanical Engineering**

Manoj Pal Singh  
Ajinkya  
Vamsi  
**Contact:** [manoj\\_svnit07@rediffmail.com](mailto:manoj_svnit07@rediffmail.com)

### **Supercomputer Education & Research Centre**

Nithish Divakar  
Kachore Vaibhav Ankush  
Anshul Kumar  
**Contact:** [anshulkumarkaitwar@gmail.com](mailto:anshulkumarkaitwar@gmail.com)

### **Electrical Communication Engineering**

Tony M George  
P Sahas Kumar  
**Contact:** [mglts.in@gmail.com](mailto:mglts.in@gmail.com)

### **Bachelor of Science**

Apaar Shanker  
Krishnan Iyer  
Arjun Chakrawal  
Abhinav Jain  
**Contact:** [apaar92@gmail.com](mailto:apaar92@gmail.com)

### **Materials**

Akash Bhattacharjee  
Amitkumar Sawant  
**Contact:** [akbakash@gmail.com](mailto:akbakash@gmail.com)

### **Instrumentation and Applied Physics**

Piyush Kumar Pandey  
**Contact:** [piyush.iisc@gmail.com](mailto:piyush.iisc@gmail.com)

### **Management Studies**

Sachin Sharma  
Sowmiyan Morri  
**Contact:** [shansharma23@gmail.com](mailto:shansharma23@gmail.com)

### **Electrical Engineering**

Ganesh Ghalme  
Shashank  
Vinith Kumar T  
Sugoto Maulik  
Pradeep Bansal  
**Contact:** [ganeshghalme@gmail.com](mailto:ganeshghalme@gmail.com)

## **PLACEMENT SECTION, IISc Bangalore**

**Placement Coordinator,**  
Centre for Scientific and Industrial Consultancy,  
Indian Institute of Science , Bangalore – 560 012.

Phone : +91(80) 2293 2236, 2293 2917

Email : [placement@csic.iisc.ernet.in](mailto:placement@csic.iisc.ernet.in)  
[iiscplacement2014@gmail.com](mailto:iiscplacement2014@gmail.com)

Brochure Team: Budhaditya Mitra, Aniket Kulkarni