



Director's Report

Introduction

The Golden Jubilee celebrations of the institute culminated on the 50th Foundation Day of IIT Bombay in March 2009. The institute continues to be rated as one of the top technical universities in the world. It attracts both top quality faculty from all over the world and the best breed from the country for its Bachelor's, Master's and Doctoral programmes. In the 51 years of its existence, around 35,000 engineers and scientists have graduated from the institute. The institute is known for its strong research groups in varied areas of science and technology that are making substantial contribution to national projects. The institute is also creating a niche for its innovative short-term courses through continuing education and distance education programmes. The illustrious alumni of this institute have been major contributors to national and international objectives and are often sought-after for coveted positions in the realms of business, academics, and research. The institute continues to interact closely with the alumni for enhancing its activities through interactions in academic and research programmes as well as mobilizing financial support.

Academic Programme

IIT Bombay has taken several new initiatives in restructuring and strengthening its academic programmes at postgraduate and undergraduate levels over the past five years. Subsequent to the introduction of a new curriculum for the B.Tech. programme in 2007, the academic year 2008-2009 heralded the restructuring of the two-year M.Sc. and six-year M.Sc.-Ph.D. dual degree programmes and also introduced an exciting opportunity for students of Master's programmes in Technology, Philosophy, Design and Management to seamlessly move into the Ph.D. programmes in their respective disciplines. The institute has not only sustained the existing level of excellence but has also tried to do significantly better in all aspects related to academics. Introduction of new programmes, increase in intake at the postgraduate level, focus on research and development are the crucial factors that have helped in IIT Bombay's recognition as a premier institute of higher learning.

During the year 2008-2009, IIT Bombay was assigned the responsibility of mentoring two new Indian Institutes of Technology at Gandhinagar and Indore. IIT Gandhinagar started its academic session in the year 2008-2009 and IIT Indore will open next year. IIT Bombay has taken up the enormous challenge to set up these two institutes of the stature of an IIT within the span of one academic year, which is unprecedented in history. The tasks involved setting up physical infrastructure, defining and installing processes and systems to start the academic programmes and related administrative activities. Preparing the curriculum, equipping the laboratories, deputing faculty, technical and administrative support staff and teaching assistants, recruitment of faculty and staff, setting up academic administration system for registration and maintenance of student records, creation of academic bodies are but a few activities undertaken by this institute. While this task has stretched the resources of the institute to the limit, there is pride and immense satisfaction to find that the new mentee institutes have taken off smoothly.

The institute has made rapid strides towards the realization of its vision of being the leading institution for postgraduate teaching and research in the country. As a result of all-round efforts spanning over two decades, the first milestone will be achieved in the academic year 2014-2015, when among 8250 students on roll, the distribution of UG and PG students would be around 2750 (33.3%) and 5500 (66.6%), respectively. Our student intake has steadily been increasing over the last few years. Compared to 4310 students on roll in the year 2001-2002, the number of students on roll in the academic year 2008-09 is 5865, an increase of 36 per cent in a span of seven years. This expansion, however, has not been achieved at the cost of undergraduate education, an area in which the reputation of this institute is acknowledged globally. The institute has responded pragmatically to the large increase in the intake by substantially reorienting itself academically, technologically and administratively and using it as a great opportunity to retain its leadership in engineering education in the country.

The new undergraduate curricula for engineering and science education was implemented with effect from the academic year 2007-2008. It introduced a new rigour and methodology in undergraduate teaching, laying emphasis on developing analytical skills and challenging the students intellectually. Its flexibility, which gives students a range of degrees to choose from (B. Tech. or B.Tech. with Honors or B.Tech. with one Minor or B.Tech. with Honors and one Minor or Dual Degree and one Minor), has raised their level of enthusiasm for academics. In the Autumn 2008 semester, 310 students from the first batch of 2007 were allotted minor courses out of a total of 392 eligible students, that is, 79 per cent of the eligible students took this exciting new opportunity. The overwhelming response from this batch indicates that our undergraduate students find the opportunity for minors a rewarding experience. The popularity of IIT Bombay as the most sought-after destination in the nation has continued unabated. It is encouraging to note that 54 out of the top 100 rankers in JEE 2008 have opted for this institute which makes IIT Bombay the first choice for toppers of this prestigious examination. It appears that the merits of the new curriculum have excited the prospective undergraduate students of the country. Similarly, the numbers of applicants seeking admission to the M.Sc. and M.Sc.-Ph.D. dual degree programmes and the various postgraduate programmes (many with their own research fellowships) of the institute have increased considerably, and we are admitting students with very high GATE, JAM and CEED (or equivalent entrance test) scores.

The institute has taken cognizance of the difficulties faced by the students to cope with the intense competition, stress and academic rigour that are demanded by its programmes. The Institute Student Mentor Programme, initiated a few years ago, provides a support structure for the undergraduates, which is essentially managed by the senior students and is targeted largely for the freshers and sophomores, under the supervision of a faculty coordinator. This programme reached new heights during 2008-2009, with 60 mentors not only ensuring that the first year students settled comfortably into the campus life, but also mentoring senior students at the department level to solve their academic problems and difficulties. For undergraduates, whose academic performance does not meet the requirements for continuation in their programmes, a second chance for continuation in the form of Academic Rehabilitation Programme (ARP) has been introduced in the year 2008-2009. A special Senate-appointed committee prescribes a customized academic load for an ARP student, provides necessary support with the help of student mentors, and carefully monitors behaviour and performance for a semester. An ARP student is rehabilitated into her/his programme on successful completion.

Several initiatives to introduce new academic programmes in order to generate human resource relevant to research and industrial sectors as well as in areas that are socially relevant will be taken in the academic year 2009-2010. The School of Biosciences and Bioengineering and the Industrial Engineering and Operations Research group have started dual degree M.Sc.-Ph.D programmes this year and M.Sc.-Ph.D. programmes from Mathematics, Earth Sciences and Environmental Science and Engineering are in the pipeline. A new M.Tech. programme in Manufacturing, Materials and Modelling, which is visualized to be the trendsetter for offering customized programmes on request from leading industrial organizations to cater to their specialized needs for human resource generation for research and development activities, will be introduced in the academic year 2009-2010. This postgraduate programme is trans-disciplinary in nature and is the first of its kind in the institute and would be administered jointly by the Departments of Metallurgical Engineering and Material Science, Mechanical Engineering and Mathematics. A Master's degree programme in Infrastructure Engineering and Management, to be offered jointly by Civil Engineering Department, IIT Bombay, and Nanyang Technological University, Singapore, has been approved. The joint IIT Bombay Monash University Ph.D. programme has been considerably strengthened by the induction of 14 more Ph.D. students during the academic year 2008-2009 and the total number of research scholars on roll in this programme has gone up to 29.

Special emphasis on Ph.D. programmes during the past few years, which include introduction of a faster system of thesis evaluation, introduction of qualifying examination prior to registration for Ph.D., publication of research papers before thesis submission, among many others, has yielded rich dividends. The turnaround time for evaluation has been significantly reduced without compromising the process. Introduction of M.Sc.-Ph.D. dual degree programmes for the students of science disciplines and of M.Tech.-Ph.D. (similarly for M. Phil.-Ph.D. and others) for the students of engineering and other disciplines provide attractive options for students enrolled in M.Sc., M.Tech. (and other equivalent) programmes to move midstream into the Ph.D. programme. A comprehensive review of the Ph.D. programme at IIT Bombay has been initiated in 2009 with the objective of making it more effective, productive and attractive. All the academic activities are actively participating in this endeavor and it is envisaged that the outcome will have a great impact on the research culture of the institute, in general, and its doctoral programme, in particular, in the years to come.

The Ph.D. student strength has been on the rise and we are on course to achieve our target of 2000 Ph.D. students (24%) on roll among 8250 students in the academic year 2014-2015. While in the academic year

2001-2002 we had on roll 771 Ph.D. students, in the academic year 2008-2009 the number has risen to 1508, an increase of about 96 per cent in a span of just seven years. As far as Ph.D. output is concerned, as against the 73 Ph.D. degrees awarded in 2001, the figures are 105, 152, and 200 Ph.D. degrees for the years 2005-2006, 2006-2007, and 2007-2008, respectively. A very encouraging aspect of our Ph.D. programme has been the much-desired increase in the Ph.D. output in engineering, and since the past three years around 65 per cent of the Ph.D.s is in the engineering disciplines. Incentives in the form of internships for periods ranging from a few weeks to a year at select research institutions in the country and abroad has been facilitated. Research scholars are given the opportunity to interact with research community at the national and international levels by providing funds for financial assistance to support international conferences to the tune of Rs. 50 lakhs per year. During the academic year 2008-2009, 120 students were granted financial assistance for attending international conferences as against 114 for the previous year.

A new era of education and research in science and technology has been ushered in by this institute. Augmentation of our academic infrastructure, instructional and laboratory facilities and human resource have been planned carefully to meet the challenges ahead. With its forward looking academic plans and programmes, IIT Bombay is ready to actively participate as an important resource to enhance India's science and technology capabilities in the changing global scenario.

Research and Development Activities

Research and development remain an important activity of IIT Bombay. It received Rs.72.76 crores as grants towards sponsored and consultancy research projects in spite of global economic and industry downturn. Increased Institute-Industry R&D interaction was seen this year also, including Public-Private Partnership models.

Funding for Sponsored Research Projects

Nearly 190 new sponsored projects were initiated during the year 2008-09 with a sanctioned outlay of about Rs.72.0 crores. These include projects in all areas of science and engineering supported by government and industries, both national and international.

Funds of about Rs.57.7 crores were received for the new projects initiated during the year and for the ongoing projects of previous years. A list of some of the funding agencies is given below:

National Government Agencies

- Aeronautical Development Agency
- Aeronautical Research & Development Board

- Atomic Energy Regulatory Board
- Bhabha Atomic Research Centre
- Board of Research in Nuclear Sciences
- Central Institute of Indian Languages
- Council of Scientific & Industrial Research
- Defence Research & Development Organisation
- Department of Biotechnology
- Department of Electronics
- Department of Information Technology
- Department of Science & Technology
- Government of Goa
- Government of Maharashtra
- Indian Council of Agricultural Research
- Indian Council of Medical Research
- Indian Space Research Organisation
- Ministry of New and Renewable Energy
- Ministry of Water Resources
- Naval Materials Research Laboratory
- Naval Research Board
- Technology Information, Forecasting and Assessment Council, DST

Indian Industry

- Aditya Birla Science and Technology Co Ltd., Raigad
- Dow Chemical International Pvt. Ltd., Mumbai
- Intel Technology India Pvt. Ltd., Bangalore
- Media Lab Asia, Mumbai
- Microsoft Research Lab India Pvt. Ltd., Bangalore
- Nokia India Pvt. Ltd., Bangalore
- Piramal Life Sciences Ltd, Mumbai
- Reliance Industries Ltd., Mumbai
- Tata Consultancy Services Ltd., Mumbai
- Tata Consulting Engineers Ltd., Mumbai
- Tata Steel Ltd., Jamshedpur
- Tata Teleservices Ltd., Mumbai

International Agencies and Industry

- Agilent Technologies, USA
- Applied Materials Inc., USA
- Asian Institute of Technology, Thailand
- Asian Media Information & Communication Centre, Singapore
- Corning Inc. USA
- Du Pont Center for Coll. Research & Education, USA
- European Commission, Belgium
- Hewlett Foundation (Woods Hole Research Centre), USA
- IBM Corporation, New York

- Infineon Technologies AG, Germany
- Intel Corporation, USA
- International Institute for Applied Systems Analysis, Austria
- Monash University, Australia
- Navtosol Anonymi Naupigiken, Greece
- Procter & Gamble Technology (Beijing) Co. Ltd., China
- Semiconductor Research Corporation, USA
- Taiwan Semiconductors Mfg. Co., Taiwan
- The UK India Education & Research Initiative (UKIERI), UK
- The World Bank, USA
- US Department of Defence, USA
- Yahoo Inc., USA

In addition to the external funding, the institute internally funded a number of research projects with a total outlay of Rs.3.07 crores to new faculty and the faculty who received the best research paper awards for initiating and nurturing their research and also for assisting in the setting up or upgradation of national facilities.

Funding from Government Agencies

The Department of Science and Technology as the major funding agency sanctioned 60 new projects and a number of workshops with a sanctioned funding outlay of nearly Rs.24.8 crores. For the current year, funds to the tune of Rs.23.0 crores were received for about 110 new and ongoing projects. The projects funded were in the wide ranging areas of science and technology, including energy science and engineering, environmental science and engineering, chemical engineering, chemistry, computer science, civil engineering, earth sciences, electrical engineering, Geo ICT, mathematics, mechanical engineering, metallurgical engineering and materials science, nanotechnology, physics, systems and control engineering, and industrial design.

Grants were also received for the implementation of projects under the programmes/schemes of Swarnajayanti Fellowship, J.C. Bose Fellowship, Fast Track Scheme for Young Scientists, Indo-Japan Cooperative Programme, and Ramanna Fellowship.

The Ministry of Communications and Information Technology funded 12 new and ongoing projects with about Rs.12.1 crores. The Ministry of New and Renewable Energy funded seven new and ongoing projects with about Rs. 1.1 crores.

Different defence establishments sanctioned about 27 new projects with Rs. 6.2 crores outlay in the areas of science and engineering such as chip design, terrain models, logistics management systems, algorithm for

underwater target tracking, prediction modelling for measuring water depths, damage detection technique for laminated composites, thermal hydraulic studies, source code for 3D visuals, studies in solid oxide fuel cells, and software for spatial data studies using remote sensing. They funded more than 45 ongoing projects with about Rs.3.27 crores during this year.

Other major governmental funding agencies include the Department of Biotechnology (Rs. 1.35 crores), the Bhabha Atomic Research Centre (Rs. 1.07 crores), and the Council of Scientific & Industrial Research (Rs. 1.02 crores).

Funding from Industry

Interaction with industry through sponsored and contract research was excellent. Funds of nearly Rs.6.6 crores were received during this year towards 43 new and ongoing projects.

About Rs.4.5 crores were received from various international organisations such as Agilent Technologies, USA; Applied Materials Inc., USA; European Commission, Belgium; Infineon Technologies AG, Germany; International Institute for Applied Systems Analysis, Austria; and Procter & Gamble Technology (Beijing) Co. Ltd., China.

Major Sponsored Projects

Ministry of Communications and Information Technology has sanctioned a project entitled “Indian Nanoelectronics Users Programmes (INUP)” with an outlay of Rs. 12.4 crores over a period of five years. It also released an amount of Rs. 3.4 crores towards first year installment.

Tata Teleservices Limited, Mumbai, and the Department of Telecommunication, Ministry of Communications and Information Technology, jointly sanctioned a project with an outlay of Rs. 12 crores over a period of five years to set up a center of excellence in telecommunication domain in the institute called Tata Teleservices-IITB Centre of Excellence in Telecommunications (TICET).

Department of Science and Technology sanctioned a financial outlay of Rs. 5.47 crores over a period of five years towards establishing a “National Facility of ⁴⁰Ar - ³⁹Ar Geo-thermochronology” in the institute. It also released an amount of Rs. 4.9 crores as first installment in this year.

Department of Science and Technology sanctioned a project with a financial outlay of Rs. 4.6 crores to augment the research facility in the Chemistry department under the FIST programme over a period of five years.

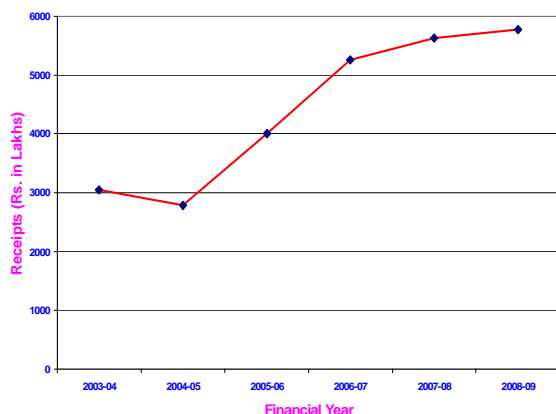
Aeronautical Development Agency under the National Programme on Micro and Smart Systems sanctioned a project, “iSens: A lab-on-chip for Cardiac Diagnostics” with an outlay of Rs. 2.6 crores over a period of three years.

Major Consultancy Projects

- Development of Web based course on “Piping Engineering”
- Development of model and software on “Calculation of Transmission Loss based on Power Tracing”
- Characterisation Study and Modelling of Flash Memory
- Design Evaluation Study of Press Projects

Research Projects Completed

- About 180 sponsored research projects in all areas of science and engineering were completed during this financial year.
- The significant outcomes of these research projects were research publications, development of research laboratories, research manpower generation and development. As part of these research activities, a number of technical workshops/seminars in varied areas of science and engineering were also conducted which benefited a large number of technical and research persons from academia and industry.

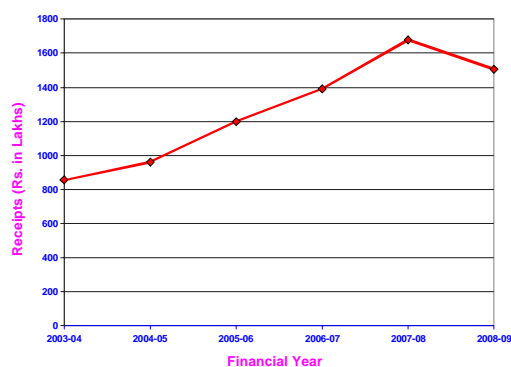


Sponsored Project Grants Received in Last Six Years

Consultancy activities

The consultancy continues to be an important activity which received projects with an outlay of Rs. 16.9 crores from industry and government, and the receipts for this year are Rs. 15.06 crores. Different types of consultancy were provided such as expert advice, product/process/software development, analysis, evaluation, proof-checking, product design, web-based course design, and limited testing and opinion. Consultancy was taken up for industry and other organisations from India and abroad and also for government. Some representative projects include:

- Advice on green hospitality and green building
- Bakery exhaust heat recovery steam generator
- Cargo airline route optimisation
- Chemical analysis of air quality sample filters
- Consulting in airline cargo revenue management
- Design of emergency locking retractor mechanism, and home automation system
- Design of intake well, jack well and bridge
- Development of SIMPIG and GCOND software
- Evaluation study of elevated and underground metro
- Expert advise on networking and structural investigation of buildings
- Master artisans training in design development
- Modelling of urea unit
- Personal health and motion monitoring system
- Pilot study for changing business process
- Porting ERTS robot into Microsoft robotics studio
- Proof-checking of building, sky-walk design, cable-stayed bridge across river, etc.
- Retainership consultancy
- Study on real time systems and bio-refinery



Consultancy Receipts for the Last Six Years

New and Sophisticated Instruments Installed

- Secondary Ion Mass Spectrometer
- Transmission Electron Microscope
- Modified Gantry Design 5 Axis Machining Center
- Confocal Multi Probe System
- Advanced Confocal Laser Scanning Microscope
- Servo Hydraulic Formability Testing Systems
- Automatic Sheet Metal Grid Strain Analyser

Technology Transfers/Commercialisation

- Software for use of corrosion simulation was transferred to a CFD company
- Spark family of educational robots was transferred to a start-up company involved in building and

deploying custom-made embedded systems for industrial purposes

- Hindi word net software package was transferred to an international internet company
- Design of V-trough concentrated module was transferred to a Mumbai-based company
- Technology on extraction of natural sweetener from leaves was transferred to an Indian company
- Technology on soil biotechnology was transferred to an Indian Company
- Software development and documentation synchronisation package was transferred to a Chennai-based company

IIT Bombay has entered into agreements with intellectual property commercialisation firms, namely, M/s. Radix Global Solutions, USA, and Intellectual Ventures, Bangalore, to interact/work with the institute towards enlarging IP/technology commercialisation efforts.

Patents

Seven patents were granted during the year for the applications filed earlier in the different areas of science and engineering. Sixteen new Indian patent applications were filed in the current year. They include inventions in the areas of catalysts, water treatment, nano materials, transformer, nano carbon, mechanical device, superconducting transformer, and radiation device.

Three Patent Cooperation Treaty (PCT) applications were also filed in the areas of polymers, electrical transformer, and communication network.

Cooperation Programmes with Industry and Universities

The institute has persistently promoted effective interaction with industry focusing on strong R&D partnerships. A number of MOUs were signed for various cooperation programmes with various universities, institutes and industries. Some representative ones are:

Outreach Programmes

PULSE

An issue of PULSE Science & Technology magazine of IIT Bombay was published, highlighting some of the recent technologies developed/transferred and articles on ongoing R&D activities in the institute, among others.

Participation of IIT Bombay in Various Exhibitions

IIT Bombay participated in various exhibitions in the recent past where Research and Development activities were showcased to various audiences. These exhibitions were very well received and appreciated by all visitors. They are:

- R&D Exhibition at **PAN IIT Alumni Global Conference 2008** held at IIT Madras, Chennai, during 19th - 21st December 2008.
- R&D Exhibition was organised as part of **Alumni Day function**, held on 27th and 28th December 2008.
- **IIT Bombay Techfest**: As part of the event, an R&D exhibition with a dedicated stall was set up featuring some of the R&D breakthroughs.

Other Initiatives

Collaborative Research Forum

Collaborative Research Forum was initiated to facilitate (a) people who have successfully conducted collaborative research to share experiences and insights, (b) people who seek collaboration to bring their ideas to fruition by finding suitable partners, (c) people who want to brainstorm, exchange ideas and discuss issues related to big problems like sustainability, environmental issues, energy, transportation, infrastructure, disaster management, rural empowerment, etc. The forum met on four occasions and discussed topics such as Sustainable Energy Systems, Sustainable Transportation in the Context of Climate Change, Cancer Research, Systems Biology and Functional Genomics, Nanoelectronics: Bio-sensors, Medical Diagnostics, Organic Electronics, Molecular Electronics, and Engineering of Medical and Therapeutic Devices for Physically Challenged and other Patients. The faculty members who were active in the respective areas made presentations. Interactive session/discussion between the presenter and the audience followed the presentations. A large number of faculty, students and staff attended the meetings and participated in the discussions.

IIT Bombay Research Fellowship

This scheme entered the sixth year. This year, 31 students were offered fellowships and 65 students were offered summer internships to carry out research work in various ongoing sponsored research projects.

- **Project Staff Recruitment**

Project staff advertisements in The Times of India and the Employment News were started. Due to this, there has been an enhancement in the quality of the project staff. There were about 700 project staff members carrying out research work in various ongoing research projects. About 300 of them joined in the financial year 2008-09.

- **On-line Initiatives**

The efforts towards further automation of office procedures continued in the year and some of them are as follows: Project staff leave application, resignation, and project investigator's approval for the same, mediclaim-related activity, generation of various reports for sponsored projects such as raising invoices, receipts and payments information, utilization certificates, etc., were made on-line. As part of the new initiatives, application for research fellowships and summer internships and its processing by faculty were made on-line.

Outreach Programmes

The CEP (Continuing Education Programme), QIP (Quality Improvement Programme) and CDP (Curriculum Development Programme) activities continued to attract wide interest from industry, academia and our own faculty. The CEP courses are aimed at working professionals. The QIP courses are generally for teachers working in various universities and are fully funded by AICTE. These courses are very popular and draw a large number of deputations. A very significant number of college teachers continued to get benefits from this programme. With a view to having more interaction between industry professionals and teachers, special attempts were made to open up the CEP courses to college teachers and the QIP courses to industry professionals, and this has been found to be a very worthwhile experience by the teachers and the industry personnel alike.

Continuing Education Programme

CEP sustained its significant activity despite the challenging industrial scenario prevailing throughout this period. There were CEP courses in the 'Open' as well as 'In-house' categories from almost all the academic units of the institute.

Many of our CEP courses are now well established and continue to attract large participation. The course on Piping Engineering reached a milestone, completing its 50th edition in December 2008. Similarly, the courses on Low Cost Hi-Tech Automation, Industrial Engineering, Production Management for Excellence, Human Computer Interaction, Gear Box Technology, Energy Management, Wind Energy Technology, Solar Energy, etc., were well received. The fifth batch of certificate course in Management with dual

specialization in Marketing and Managing People was also conducted at Mumbai and New Delhi. Three editions of a newly developed course on 3-Phase DC-AC EMU rakes were conducted for engineers from Indian Railways. Two editions of another newly developed course were conducted for Mathematics teachers at secondary school level – one at IIT Bombay and one at Indore.

The 6th annual course for IPS officers on "The Role of Technology in Crime and Crime Prevention" brought 27 very senior persons from Indian Police Service to the campus for a week. The multidisciplinary course was highly appreciated by the IPS officers. Her Excellency Smt. Pratibha Patil, the President of India, made a special mention in her Convocation address at IIT Bombay in 2008 about the conduct of such a course by IIT Bombay.

A few courses newly introduced by CE&QIP are noteworthy. On the initiative of Shailesh J. Mehta School of Management (SJMSoM), a long-term certificate programme on General Management for Technical Professionals was attempted in distance mode using the existing facilities of Hughes Communications India Limited, Gurgaon. The course is broadcast live from their studio in Mumbai and is simultaneously available at their centers in India and abroad. This arrangement allowed a large number of participants, 137 in this edition, to benefit without burdening our infrastructure. The first experience has been good and the model is now being tried for another course from SJMSoM on Supply Chain Management.

Seven courses were also offered in a new 'CEP-CDEEP' mode. In this, teachers from engineering colleges in Gujarat and Maharashtra attended contact mode CEP programmes on curriculum subjects in science and engineering in IIT Bombay. Some of the courses were simultaneously recorded by CDEEP and the recordings were offered to the colleges for use in their regular teaching. Four engineering departments (Chemical, Civil, Electrical, and Mechanical) and the Department of Mathematics participated in this activity.

Three courses were conducted this year in UAE under an existing arrangement with Pinnacle Knowledge Group there. These were on Piping Engineering, Project Management and Automation & Control. The group has funded a substantive project on web-enabling of the Piping Engineering course. The course is now available in its on-line as well as blended version. The content manager developed during this project is eminently suitable for technical courses and will allow many more of our CEP courses to be recast in their on-line version. The courses will be made available through CEPGlobe.com. This should also offer our CEP a much-needed scalability and global reach without unduly taxing the infrastructure and faculty time.

The contact mode CEP courses seems to have reached a plateau. The total number of CEP courses conducted this year was 150 with over 4000 participants from all sectors of industry. The revenue from CEP courses was Rs. 4.35 crores, about 15 per cent lower than that for the last year. The courses in UAE earned an additional revenue of USD 23000.

Quality Improvement Programme

The response to Quality Improvement Programme has been good. Four courses were conducted this year. In all, 94 participants from various engineering institutes/ colleges attended these courses. The AICTE has revised the budget for QIP courses from the year 2009-2010, and it is expected that more number of short-term courses would be conducted.

Under the programme, the college teachers admitted to our M.Tech. and Ph.D. programmes were 11 each. The corresponding figures for those who would be passing out are 18 and 13, respectively. Teachers were also taken under the advance admission scheme of Ph.D. programme, and 19 of them would be joining in 2009-2010 session.

There is acute shortage of accommodation for QIP students. To overcome this problem, the construction of new apartments is underway.

The Curriculum Development Programme (CDP) of AICTE also continued to be popular with the IIT faculty. Three books were completed and four new proposals sanctioned under the programme this year.

International Relations

IIT Bombay has already earned a name in the international arena. The institute is fast progressing, and it has been directing its efforts towards reaching world-class status. Collaborations and linkages have helped enhance its global presence to a great extent.

MoUs with Foreign Universities

This year IIT Bombay signed MOUs with a number of reputed foreign universities for facilitating faculty and student exchanges and collaborative research projects. These are:

- Kyushu University (Japan)
- University of Cambridge (UK)
- Technische Universitat Munchen (Germany – renewal of MoU)
- Dongguk University (Korea)
- Institute of Engineering, Tribhuvan University (Nepal – renewal of MoU)
- Tsinghua University (China)
- Universite Catholique de Louvain (Belgium)
- Universite de Liege (Belgium)

- Friedrich Alexander Universitat Erlangen Nurnberg (Germany – renewal of MoU)
- National University of Singapore (renewal of MoU)
- University of Alberta (Canada)

The final Joint Research Academy terms sheet and a joint venture was signed between IIT Bombay and Monash University (Australia) during this period.

Visits of International Delegations to IIT Bombay

A large number of foreign delegations visited the institute for exploring areas of collaboration and cooperation. The details of some of the major visits are as follows:

- TU 9 university delegation
- Professional Engineers Board Singapore
- Industrial College of the armed forces, USA
- Rice University, USA
- Japanese delegation to discuss the Honda YES Awards
- Hon. Marsha Thomson (MP & Parliamentary Secretary, State Govt. of Victoria, Australia)
- Delegates from Siemens, Germany
- Delegation from CIFAR, Canada
- Delegates from UNESCO
- Delegation from University of Toronto, Canada
- Australian National University
- Delegation from Monash University: The IITB-Monash Research Academy was formally launched on November 26, 2008, and a joint symposium was held on November 27 and 28, 2008.
- University of Alberta, Canada
- Mr. Jacques Valde, French Ambassador & his delegation
- Roundtable discussion with Mr. Kevin Lynch (Clerk of the Privy Council & Secretary to the Cabinet, Canada) and his delegation.
- IIT-EU workshop
- Universite de Liege & Universite catholique de Louvain, Belgium

In addition, several individuals from universities visited IIT Bombay as their representatives.

International Students

A total of 30 international students (Germany, Ethiopia, France, Sweden, USA, Bangladesh, Japan, Spain, Singapore, and Cameroon) registered at IIT Bombay during the academic year 2008-09. They have joined IIT Bombay for course work/project work/postgraduate studies.

Student Exchange Programme

Quite a few students participated in the student exchange programme (under MoUs) during the academic year 2008-09. They are:

- One second year M.Tech. student from the Department of Civil Engineering spent the autumn semester at the National University of Singapore.
- One fourth year dual degree student from the Department of Aerospace Engineering spent the autumn semester at the Purdue University, USA.
- One second year M.Tech. student from the Department of Civil Engineering participated in the DAAD exchange program during the academic year 2008-09.
- Two fourth year dual degree students (one each from the Department of Aerospace Engineering and of Mechanical Engineering) spent the spring semester at the Purdue University, USA.
- Three fourth year dual degree students from the Department of Computer Science and Engineering spent the spring semester at the Rice University, USA.
- One second year M.Tech. student from the Department of Civil Engineering participated in the DAAD exchange program during the academic year 2008-09.
- A total of eight Ph.D. students (two from Chemistry, one from Earth Sciences, one from Energy Science and Engineering, and four from Civil Engineering) visited Japan under the SAARC/IAESTE–Japan Industrial Internship Program (2008) during this academic year.

French Classes

French classes were organised for the faculty, staff and students of IIT Bombay from 11th August 2008. It was conducted in three separate batches of 30-35 members from Monday to Friday.

Alumni Related

Distinguished Service Awards

The Alumni Day was celebrated on 28th December 2008. On this occasion, the institute presented the Distinguished Service Awards to the following alumni for their valuable contribution to the development of the institute:

- Mr. Gautam Motiram Advani (B.Tech., Chemical Engg., 1971)
- Mr. Suresh Venkatraya Shenoy (B.Tech., Metallurgical Engg. & Materials Science, 1972)
- Mr. Hemendra Godbole (B.Tech., Electrical Engg., 1985)

Distinguished Alumnus Awards

The Foundation Day was celebrated on 12th March 2009. On this occasion, the institute presented the Distinguished Alumnus Awards to the following alumni

for their marked distinction in their chosen fields of work:

- Dr. Ajit Keshav Ranade (B.Tech., Electrical Engg., 1982)
- Dr. Dharendra N. Buragohain (B.Tech., Civil Engg., 1963/
- M.Tech., Civil Engg., 1965/Ph.D., Civil Engg., 1969)
- Dr. Chetan Chitnis (M.Sc., Physics, 1983)
- Mr. Girish Jayawant Gaitonde (B.Tech., Electrical Engg., 1983)

The monthly electronic alumni newsletter up to December 2008 was released. This newsletter disseminates information about the institute to the IITB alumni.

Resource Mobilization

One of the major challenges that the institute faces is to retain its position of excellence, and to improve upon it. In addition to academic talent, it requires substantial financial resources for continued modernization of facilities and removal of obsolescence. The Government of India, through MHRD, continues to be the primary source of funds for the institute. Sponsored projects, industrial consultancy and continuing education programmes contribute a small portion to meet our annual expenditure.

In the last few years, we have been attempting to augment the above resources by raising funds through donation from our alumni, who have always been very supportive of their *alma mater*. During the current year, we received donations of over Rs. 8.8 crores from our alumni from India and abroad. In addition to the generous donations from alumni, the institute received over Rs. 2.1 crores as donations from corporations and other organizations. The total donation received during the current year was Rs. 10.9 crores. Out of this, a sum of Rs. 1.02 crores was received from Mr. Pramod M. Chaudhari & Mrs. Parimal Chaudhari for a Chair Professorship and Cell Culture Laboratory, Rs. 19.88 lakhs from Sudhakar & Suresh Shenoy towards Shenoy Design Studio, Rs. 16.91 lakhs from Class of '82 for "New Faculty Joining Bonus", Rs. 48 lakhs from Class of '83 (Major Contribution of Rs. 10.00 lakhs from Mr. Shridhar Shukla) as Gurudakshina, and a sum of Rs.6.2 crores was received from IITBHF (Victor Menezes towards Convention Centre, Bharat Desai towards Indoor Gymkhana, Mr. Wadhwani towards Wadhwani Electronic Laboratory and Shantanu Deshpande Memorial Scholarship & Lectures, etc.).

We also received Rs. 60.00 lakhs from D.L. Shah Trust towards D.L. Shah Chair, Rs. 60.00 lakhs from Forbes Marshall towards Forbes Marshall Chair, Rs. 14.88 lakhs from Boeing International Corporation India Pvt. Ltd. towards Aerospace Engineering Department Student Scholarships and Student Projects, Rs. 15.00

lakhs from Infosys Technologies Ltd. towards Infosys Fellowships, Rs. 9.45 lakhs from British Gas India Ltd. towards Earth Sciences Department, and Rs. 5.00 lakhs from Mrs. Hiralal towards Award in Memory of Late Prof. Hiralal (Chemistry Department).

Faculty Affairs

Recruiting and retaining high quality faculty is indeed a challenging task. Nineteen faculty members on regular basis, 11 on contract basis and two under IIT Faculty Exchange Scheme were appointed during the period. The number of full-time faculty members on the rolls of the institute has risen to 462, comprising 249 Professors, 99 Associate Professors, 110 Assistant Professors, and four Lecturers. In addition, there are 33 adjunct faculty members on the rolls.

The institute provided financial assistance to 133 faculty members for participating in international conferences. In addition, 138 faculty members travelled abroad for attending international conferences using external funding and two faculty members travelled abroad on fellowships for research work.

During this year, two faculty members took voluntary retirement and three resigned.

The faculty of the institute contribute in diverse ways including educational and research pursuits, meeting national and global obligations through membership of various national committees, reviewing manuscripts for publications and editorship for journals. We are proud that their efforts have received recognition in the form of several awards and distinctions, some of which are given below:

Prof. Hemendra Arya, Department of Aerospace Engineering, and his team have won the “Best Hovering/Rotary Wing Vehicle” prize jointly with Massachusetts Institute of Technology, USA.

Dr. M.D. Atrey, Department of Mechanical Engineering, has been selected as a Fellow of Institution of Mechanical Engineers, London, in recognition his exceptional engineering achievements and contributions to the engineering profession.

Prof. D Chandrasekharam, Department of Earth Sciences, has been elected to the Editorial Board of Journal of Advanced Researches on Geology, published by the Institute of Advanced Scientific Research, Irvine, California, USA.

Prof. Subhasis Choudhuri, Department of Electrical Engineering, has been selected for the award of “J.C. Bose Fellowship”.

Prof. Deepankar Choudhury, Department of Civil Engineering, has been selected as (1) Fellow of

International Congress of Disaster Management (FICDM), (2) Member of Technical Committee on “Unsaturated Soil” of Geo-Institute (GI) of American Society of Civil Engineering (ASCE), USA, (3) Member of the National Academy of Sciences (M.N.A.Sc.), India, and (4) Member of the Institute of Engineering (India).

Prof. Choudhury received “Excellent Paper Award for Junior Individuals” (under 40 years category) 2008 for his research paper titled “Seismic Bearing Capacity of Shallow Strip Footings Embedded in Slope” by Deepankar Choudhury and K. S. Subba Rao.

Prof. Choudhury has also been invited as Editorial Board Member of Journal *Disaster Advances* published from Indore, India.

Prof. M. C. Deo, Department of Civil Engineering, has been appointed as Editor-in-Chief of a new Journal *International Journal of Ocean and Climate Systems*, to be published by Multi-Science Publishing Co. Ltd., located in Sussex, UK.

Prof. (Ms.) Karuna Jain, SJMSoM, has been awarded “Best Teachers Award in Operations Management” in recognition of leadership, development, innovation and industry interface of Business School, by Dewang Mehta Business School Awards.

Prof. Jain has also been elected as President of Indian Subcontinent Region of Decision Sciences Institute (ISDSI) for the year 2009-2010.

Prof. Azizuddin Khan, Department of Humanities and Social Sciences, has been selected for “Young Scientists Program” at *XXIX International Congress of Psychology*, Berlin, Germany, from July 20-25, 2008.

Prof. Khan has been awarded Deutscher Akademischer Austausch Dienst (DAAD) Fellowship to participate in ICCL Summer School 2008 “Computational Logic and Cognitive Science” at Technische Universität Dresden, Germany, from August 24 to September 6, 2008.

Prof. Sambasivarao Kotha, Department of Chemistry, received “Prof. S.C. Bhattacharya Award for Excellence in Pure Sciences, 2008” in recognition of his outstanding research contributions in the area of “Expanding the Diversity of Unusual Amino Acid Derivatives and Polycyclic Aromatics through Strategic Utilisation of Contemporary Transition Metal Catalyzed Transformations”, on the 50th Foundation Day of IIT Bombay.

Prof. Kotha has been inducted on the Editorial Board of *Journal of Amino Acids*, to be published by Hindawi Publishing Corporation.

Prof. Malhar Arvind Kulkarni, Electrical Engineering Department, has been elected to the Regulating Council of the Bhandarkar Oriental Research Institute, Pune.

Prof. Rajib Maity, Assistant Professor, Department of Civil Engineering, received an academic visit grant from the International Centre of Excellence in Water Resources Management (ICE WaRM), Australia, under the International Liaison Programme.

Prof. Ranjan K. Malik, Department of Chemical Engineering, has been selected for the “Indira Manudhane Best PG Teacher Award 2008”.

Prof. Milind Malshe, Department of Humanities and Social Sciences – His book *Aadhunik Sameekshaa Siddhaanta* (co-author: Prof. Ashok Joshi, Goa University) has been awarded the prestigious Anushtubh Puraskar Vibhaavari Patil Puraskar for the best book in Marathi in 2007-08.

Prof. D. Manjunath, Department of Electrical Engineering, has been selected for “Prof. S.V.C. Aiya Memorial Award for Telecom Education” from IETE Pune Section for the current year.

Prof. Ashok Misra, Department of Chemical Engineering, received the “Distinguished Alumnus Award of the year 2007-2008” for his outstanding managerial contributions and contributions to the field of Chemical Engineering.

Prof. Misra also received Distinguished Alumni Award from the University of Massachusetts Amherst Alumni Association.

Prof. R. Murugavel, Department of Chemistry, has been elected as Fellow of the Indian Academy of Sciences in recognition for his excellent academic and research work in the year 2009.

Prof. N.K. Naik, Department of Aerospace Engineering, has been honoured with the “Excellence in Aerospace Education Award 2008” by the Aeronautical Society of India in recognition of his contributions in the field of Aerospace Education.

Prof. Rahul Patil, Shailesh J. Mehta School of Management, has been elected as Vice President, Programmes and Meeting, Indian Subcontinent Region of Decision Sciences Institute (ISDSI), for the period 2009-2011.

Prof. S. Narayan Rao, Sailesh J. Mehta School of Management, has been selected as member of “International WHO’S WHO Historical Society”.

Prof. V. Ramgopal Rao, Department of Electrical Engineering, has been elected as a Fellow of the Indian

Academy of Sciences in recognition of his outstanding contributions in the area of Nanoelectronics for the year 2009.

Prof. V.K. Singh, Department of Chemistry, has been elected as a Fellow of the Indian Academy of Sciences in recognition of his significant contribution in Chemical Research for the year 2008.

Prof. B. Sunoj, Department of Chemistry, has been selected for “National Academy of Sciences India Young Scientist Award in Chemical Sciences” for the year 2008.

Prof. Papanasamurthy Sunthar, Department of Chemical Engineering, was recognized by DuPont as one of the 17 young professors from universities in the United States, China, Spain and India with the annual DuPont Young Professor Grant for original research.

Prof. Mahesh Tirumkudulu, Department of Chemical Engineering, has been selected for (1) “Indira Manudhane Applied Research Project Awards 2007” and “Manudhane Award for Applied Research (Consulting) for 2007”.

Dr.(Mrs.)P.Venkatachlam, Centre of Studies in Resources Engineering, received “National Geomatics Award for Technology for the Year 2007”.

Prof. Jugal Kishore Verma, Department of Mathematics, has been elected as a Fellow of The National Academy of Sciences, India in recognition of his outstanding active participation in the various activities of the Academy in the year 2008.

Infrastructure Development

This year we embarked on starting the construction work on three major new building projects, namely, Lecture Hall Complex, Bio-School Building and Additional Wings to Hostels 12 and 13. The Lecture Hall Complex has a seating capacity of over 4800 and it will be ready during the academic year 2010-2011. The Bio-School Building will house three teaching labs and 28 faculty labs apart from classrooms and the departmental office. Additional Wings of Hostels 12 and 13 will have 764 rooms and they will be ready for occupation during the academic year 2010-2011.

The new wing for Hostel 10 with 292 capacity will be ready for occupation during the coming academic year 2009-2010. Some projects started earlier such as Convention Centre, Nano Electronic Centre, Indoor Sports Stadium, Swimming Pool will be completed in the next few months.

We have also started construction work for ‘C’ Type Faculty Housing Building (60 Flats) and Type ‘II-B’ Staff Housing Building (24 Flats). Many other projects

such as 'B' Type Faculty Housing Buildings (120 Flats), Computer Centre and Computer Science & Engineering Department Building, Project Staff Hostel, Married Students Apartments, Type 'II-B' Buildings (48 Flats), 'H-1' Type Staff Housing Buildings (60 Flats), Hostels 14 and 15 (2000 capacity) are at various stages of planning and pre-execution.

Apart from these, the future building projects include Rahul Bajaj Technology Innovation Centre, Building for Department of Energy Science and Engineering, and Monash Research Centre.

Central Library

The Central Library is a true reflection of IIT Bombay's culture of excellence which is known the world over. The library, like all vibrant and productive organizations, strives to keep pace with a global, dynamic, and technology-enabled information environment to meet the expectations of its users.

The library during the year continued to march on its mission of facilitating the creation of new knowledge through acquisition, organization and dissemination of library materials. It offered a range of services including reference and consultation, membership and circulation, document delivery, resource sharing, information alert service, book bank for needy students, user awareness programmes, and ICT-enabled web-based services. It extended the help and support to establish a library at IIT Gandhinagar. The library participated in the Golden Jubilee celebrations of the institute and organized two book exhibitions, a national workshop, and the Sixth Annual Meet of INDEST-AICTE Consortium during the year. The library earned over Rs.48.0 lakhs during the year by providing services to corporates, industry, educational institutions, and others.

Collection building is one of the important functions of the library that supports academic and research work of the students, faculty, staff, and other users. The collection of books, journals, theses, reports, standards, pamphlets, and other reading material in science, engineering, technology, humanities and social sciences, and management is considered one of the best in the country. The library spent over Rs 7.75 crores during the year to maintain and update its collection with new knowledge resources. It added 5670 items during the year. The total library collection now stands at 4,14,475. The library also subscribed to 1442 journals. It procured and processed 629 books for IIT Gandhinagar.

The Central Library has its own homepage, provides web-based access to its resources, procures over 12,000 electronic journals and databases, supports on-line submission of theses and dissertations, and has

set up an institutional repository of publications brought out by the IIT Bombay community.

The library is a part of the institute-wide network and has adequate computing infrastructure to cater to the needs of the users. The WI-FI facility in the reading area continues to attract users to bring in their laptops to have seamless access to print and electronic resources. The OPAC (On-line Public Access Catalogue) is one of the most heavily used databases of the library and is accessible 24x7 via library Web page. Besides listing all the documents available in the library, it allows on-line reservation, circulation, fine collection, and indicates the status of a particular book. OPAC can be searched by author, title, accession number, subject, and several other fields.

The library supports electronic submission of theses and dissertations by the postgraduate and doctoral students. It maintains a full-text database of over 5000 items submitted since 1999-2000 on Intranet. During the year, 512 M.Tech. dissertations and 198 Ph.D. theses were submitted on-line. The library has also developed a database (providing bibliographic details and abstracts) using open source software, GSDL of all the Master's dissertations and Ph.D. theses submitted since 1999 and 1965, respectively. This database containing over 2500 records is accessible through the library homepage.

The Central Library has set up an archive of publications brought out by the institute. The archive already has over 1200 items and is being updated to cover more publications which are permissible within the copyright regulations. The archive is expected to evolve into a database of all the publications produced by the IIT Bombay community and is accessible on the Internet through the library homepage.

Computer Centre

During the year under review, the Computer Centre continued to provide computational and network infrastructural facilities to the IIT Bombay user community. It is responsible for the intra-campus connectivity between the departments and also for the connectivity of IIT Bombay to the outside world. In general, the connectivity issues for the machines inside individual departments are the responsibility of the department itself. The exception to this rule is the main administrative department and the various central services such as Estate, Security, Hospital, Guest House, etc. Hardware/software maintenance and the network connectivity of the computers located inside such units are the responsibility of the Computer Centre.

During the year, several activities have been initiated to reinforce the network infrastructure at IIT Bombay:

- Extension of the campus network facilities to new areas (mainly Type-I residential buildings on Hill side and other locations) has been started during the year and is in advanced stage of completion. As a parallel activity, the infrastructure bottlenecks in the existing segments of the residential portion of the campus network are being identified so as to improve connectivity. Separate underground channels from Computer Centre to Hill side and Lake side residential flats are being laid. These channels have conduits which can be used to easily lay additional underground cables as and when future requirements come up.
- Every year, the occupancy of rooms in student hostels is going up. The number of network ports is being doubled. The existing network infrastructure is five to six years old and is mostly built using unmanaged switches. Complete revamp of hostel networks both in terms of active and passive components has been started during the year and is likely to be completed in the near future.
- The total Internet bandwidth for the IIT Bombay campus users has been increased from 32 Mbps to 108 Mbps. In order to streamline the process of bandwidth purchase, the Computer Centre has now established a panel of Internet Service Providers.

The existing computing clusters GALAXY and CORONA have been upgraded. These clusters continue to be housed in Aerospace Engineering and Chemistry departmental buildings, respectively. The third cluster of 512 nodes is being set up on the ground floor of the Computer Science and Engineering department. The cluster will come into operation during the coming year.

IIT Bombay has joined the National Knowledge Network (NKN) during the year. The Computer Centre operates the facility. This is a multi-gigabit network initiative started by the National Informatics Centre (NIC) to connect academic and research organizations in India. Currently, this network infrastructure is being used by CDEEP to conduct Distance Education programmes between IIT Bombay and IIT Gandhinagar.

Efforts are being made to encourage the use of OPEN SOURCE software both at the operating system and at the application levels. Most of the basic infrastructural systems such as Electronic mail, Web hosting, Browsing, Proxy servers, etc., have been built using public domain software. As far as possible, day-to-day office activities are also being performed using public domain software. Most of the computers in the administrative sections of the institute use some flavour of Fedora as the operating system. From time to time, the Computer Centre tries to conduct basic orientation programmes for the users on various aspects of Linux operating systems and other office software.

The Computer Centre continues to mirror and archive various flavours of Linux operating systems on its anonymous FTP server so that the user community can install the Linux system of their choice and also keep themselves abreast of the latest developments in the various application systems.

The institute continues to be a member of Microsoft Developer Network Academic Alliance (MSDNAA) software licensing programme. This allows the user community to use most of the Microsoft software products in a non-production environment.

Software packages such as ANSYS, MATLAB, MATHEMATICA, MAPLE, and Libraries from Numerical Algorithm Groups (NAG), etc., are available through site licenses administered by the Computer Centre.

Institute Events

The 46th Convocation of the Indian Institute of Technology Bombay was held on Friday, August 8, 2008. **Her Excellency Smt. Pratibha Patil, the President of India and the Visitor to IIT Bombay**, was the Chief Guest and delivered the Convocation Address. The Degree of Doctor of Science (*Honoris Causa*) was conferred on **Shri Ratan N. Tata**, Chairman, Tata Group.

IIT Bombay celebrated its **50th Foundation Day** on Thursday, March 12, 2009. **Dr. Anil Kakodkar**, Chairman, Board of Governors, IIT Bombay, and Chairman, Atomic Energy Commission, was the Chief Guest. The Distinguished Alumnus Awards were presented to four alumni. The '**Prof. H.H. Mathur** Award for Excellence in Applied Sciences, 2008' was conferred on **Prof. (Ms.) Chandra Venkataraman**, Department of Chemical Engineering, and the '**Prof. S.C. Bhattacharya** Award for Excellence in Pure Sciences, 2008' was conferred on **Prof. Sambasivarao Kotha**, Department of Chemistry.

A fitting epitaph to the Golden Jubilee Year was the release of the book ***Punctuations: A photographic journey through the IIT Bombay Campus*** by **Dr. Anil Kakodkar** and **Prof. D.V. Khakhar**. Prof. Chetan Solanki who, along with Prof. Raja Mohanty was the key driver of the project, described that the book was an anthology of photographs and images to capture the flow of life within the institute and, in that sense, the book was an attempt to surmount the transience of memories and affirm the imperishability of history.

"National Education Day" was observed on November 11, 2008, to commemorate the birth anniversary of Bharat Ratna Maulana Abul Kalam Azad – a fitting tribute to the memories of this remarkable man and of his contributions. The highlight of the occasion was an Open House Discussion on "Review and

Enhancement of PhD programme in IIT Bombay”, which analysed the present state of research among the student community of IIT Bombay. Measures were suggested to improve the quality of life of a research scholar on campus and to ensure a more productive research output.

“World Environment Day” was celebrated on June 5, 2008, at the Institute auditorium. The theme for this year was “The Future of Environmental Engineering in IIT Bombay”. The Welcome Address was delivered by Prof. S.R. Asolekar, Head, CESE, and the inaugural address by Prof. S. Biswas Dean (Academic Programme). Dr. Deepak Kantawala, the Chief Guest, presented a lucid lecture on “India’s Environmental Challenges and Policies”. A tree plantation drive was organised on the occasion. The saplings were planted along the road leading to ‘Anantha’ building on Hill side.

“Energy Day” was celebrated on March 21, 2009. On this occasion were held four technical sessions, followed by a panel discussion on “Energy and Economic Development in India”.

“Vanamahotsav 2008” was celebrated on July 19, 2008. On this occasion a tree plantation drive was organised by IIT Bombay. Saplings were planted on the slope of the hill behind ‘Ananta’ building on Hill side.

Conferences/Workshops/ Seminars/Symposia/Exhibitions

Many conferences and symposia were organized at IIT Bombay during the past year. Some of these are listed below:

- A one-day national workshop on “Solar Thermal Power Generation” was organised by the Department of Energy Science and Engineering on April 28, 2008.
- A summer workshop on “Ontology, NLP, Personalization and IE/IR” was conducted by IIT Bombay on July 16-18, 2008. The workshop was sponsored by HP Labs, Bangalore.
- A workshop on “Master Artisans Training in Design Development” was conducted at IDC during August 21-28, 2008, for the benefit of craftsmen and craftswomen from Meghalaya. The workshop organised by Women’s Group and Handicraft Multipurpose Co-operative Society Ltd., a reputed NGO at Meghalaya, was supported by KVIC.
- A workshop on “Photonic” was organised by Physics department during August 26-30, 2008.
- The IIT Bombay Golden Jubilee International Conference and 8th International Workshop on “Transportation Planning and Implementation Methodologies for Developing Countries”

(TPMDC 2008) was held during December 3-6, 2008, at IIT Bombay.

- IIT Bombay participated in the IIT Alumni Global Conference 2008 held at IIT Madras during December 19-21, 2008. In conjunction with the conference, an exhibition showcasing the recent achievements in science and technology was also organised. Dr. Manmohan Singh, Hon’ble Prime Minister of India, inaugurated the conference on December 19, 2008, via videoconferencing.
- SJMSOM organized (jointly with the National Institute of Industrial Engineering, India, and the College of Business Administration, University of Alabama in Huntsville, USA) the Indian Subcontinent Decision Sciences Institute’s (ISDSI 2009) Second International Conference on “Decision Sciences in Global Enterprise Management” during January 3-5, 2009, at IIT Bombay.
- RSC-IITB Symposium on “Chemical Sciences” was held on February 3, 2009, at IIT Bombay.
- The Department of Humanities & Social Sciences organised an International Conference on “Language, Mind and Social Construction” during February 9-11, 2009, at IIT Bombay.
- The School of Biosciences & Bioengineering organised a Symposium on “Emerging Areas in Biosciences & Bioengineering” during February 26-28, 2009, as part of the Golden Jubilee Celebrations of IIT Bombay.
- CSRE organised the 1st National Conference on “Geomatgrix” during February 28-March 1, 2009, at IIT Bombay.
- An Indo-US Workshop on “Advanced Magnetic Materials and Their Applications” was organised by the Department of Physics during March 1-4, 2009, as a Golden Jubilee event of IIT Bombay.

Colloquia/Lectures

- Dr. Ravi Chopra, Director, People’s Science Institute, Dehradun, delivered an Institute Colloquium lecture on “People’s Science: Science by the People; of the People; for the People” on February 25, 2009.
- Justice A.M. Ahmadi, former Chief Justice of India, delivered an Institute Distinguished Lecture on “Relevance of Law for Engineers” on March 24, 2009.

Distinguished Lecture Series

- As part of the Golden Jubilee celebrations, IIT Bombay arranged a Distinguished Lecture series. Seven distinguished personalities, including one Nobel laureate, in the field of science and engineering from around the world, visited the institute and delivered the lectures, as follows:
- Prof. E.C.G. Sudarshan, Department of Physics,

University of Texas, Austin, USA, on “Revelations of Light” on July 15, 2008.

- Prof. John Coates, Cambridge University, UK, on “Number Theory, Ancient and Modern” on September 17, 2008.
- Prof. R. Gallager, Department of Electrical Engineering and Computer Science, MIT, USA, on “A Case Study of Basic Research and Core Technology/Gaussian Channels with Ideal Feedback” on September 29 and October 1, 2008.
- Prof. M.S. Swaminathan, Agriculture Scientist, Chennai, on “Achieving Freedom from Hunger in an Era of Climate Change” on November 6, 2008.
- Prof. Devendra Lal, Scripps Institution of Oceanography, UCSD, La Jolla, USA, on “Remembering Dr. Homi Jehangir Bhabha” on January 22, 2008.
- Prof. S.R.S. Varadhan, Courant Institute of Mathematical Sciences, New York, USA, on “Scaling Limit of Large Systems” on February 11, 2008.
- Prof. Jean Marie Lehn, Nobel Laureate, ISIS, Universite Louis Pasteur, Strasbourg and College de France, Paris, on “Perspectives in Chemistry: From Molecular to Supramolecular Chemistry towards Adaptive Chemistry” on February 19, 2008.

Staff Development

The Personnel Training and Development Cell organized six training programmes on the most preferred areas for the staff members. In-house training was organised on topics such as “Supervisory Skills” and “Introduction to Rules and Regulations” for Groups B and C staff members; “Adult Literacy”, “Health & Stress Management Programme”, and “Computer Literacy Programme” for Group D staff members; and “Business Communication” for Group A (non-teaching) officers. A total of 110 participants attended these programmes.

Some staff members also underwent the training programmes conducted by well-known outside agencies.

Hindi Cell

Hindi Cell is engaged in providing support for effective implementation of the Official Language Policy of Government of India in the institute. For this purpose, it is imparting training to the staff members in Hindi and Hindi Word Processing. The staff members are being persuaded to learn Hindi and use it in their routine official work. This year we have honoured 17 staff members for their excellent initiatives in the Hindi implementation programme.

Hindi Pragya classes were organized with the support of Hindi Teaching Scheme, the Official Language

Department of the Government of India. This year 25 members of the staff have successfully completed the Pragya Course. Twenty three staff members received cash awards for securing good marks in this examination.

We have created a facility where in-house Hindi Word Processing training is being conducted. Six staff members passed the Hindi typing examination held in the month of July 2008. Two of them got cash awards. The examination was conducted by the Hindi Teaching Scheme of the Government of India.

The active participation of senior officers in Hindi workshops were seen this year. Two Hindi workshops were arranged accordingly for them.

As part of the Golden Jubilee celebrations, we convened a seminar on “Technical Terminology” with the support of the Commission for Scientific and Technical Terminology, Ministry of Human Resource Development, Government of India, under the auspices of the Town Official Language Implementation Committee. Sixty officers from various organizations, including officers from the institute, participated in this seminar. Experts in the field of coining Hindi terminology delivered important lectures.

This year, in compliance with Section 3(3), 1839, documents were issued in Hindi and English contents. The process of constructing Web page in Hindi is in progress.

We are continuously updating the news portion of Hindi Web page to bring it in tune with the English Web contents. The process of constructing other web pages in Hindi is in progress.

Hindi Utsav is a very popular event in our institute. The staff members participate enthusiastically in the competitions organized during Hindi Utsav. Hindi noting and drafting, Hindi essay writing, Hindi dictation, and Hindi typing competitions were organized on this occasion. On the concluding day, the winners of the competitions were given cash awards. While distributing the awards among the winners, Prof. J. Vasi called upon the staff to make maximum use of Hindi in their routine work. Small children from the campus presented a beautiful classical dance during the prize distribution function.

Student Activities

The year under review witnessed many sports, cultural and other activities under the aegis of Student Gymkhana.

Sports

The Student Gymkhana organised various sports events throughout the year 2008-09. The prominent among these were the tournaments for first and second year students, postgraduate students, and a few open events in selected sports. The students participated in football league and also played in the IInd Division Bombay Hockey League. Our students secured the 4th overall position in the open intercollegiate tournament organised by VJTL. Various sports camps were also held for the benefit of the students and campus children.

This year IIT Bombay created a history by winning Men and Women General Championship at the 44th Inter IIT Sports Meet held at IIT Madras. This is the first time that IIT Bombay won both under men's and women's categories.

Cultural Events

The students performed a street play called "Agni Pareeksha" on the 5th & 6th of August at Prithvi Theatre, which was well appreciated by the audience.

"Nihlanth" – a Quiz festival – involving seven IITs and six IIMs was organised in the month of August and the Best Lone Wolf Quizzer was an IIT Bombay student who also bagged many other prizes. "Bharat Utsav" – a 4-day-long event to commemorate Indian Art and Cultural Heritage was held in association with SPICMACAY in the month of August. The event included performance by many eminent artists. A Jazz Band from USA expressing the Indian Culture and American History in the form of Jazz music was also conducted.

Apart from conducting cultural events, our students represented in "Literary Debating Fest" held on 22nd July in Indian School of Business, Hyderabad, and won the overall trophy and bagged many prizes. The fourth event was "Eli Yamin Jazz Quartet". This led to a tremendous increase in participation among the cult clubs, and they went on to win a plethora of competitions.

Our students won, for the first time, five overall trophies making IIT Bombay among the leading colleges in Cult activities. Our achievements are as follows:

- Oratorio, ISB Hyderabad – Overall First Place
- Thakur College Fest – Overall First Place
- Manzar – UICT Fest – Overall Second Place
- Chaos – Overall First Place
- Mood Indigo – Overall First Place

For the first time, a jazz named "Eli Yamin Jazz Quartet" (USA) concert by a foreign band was organised. Two Hasya Kavi Sammelans were also organised. As part

of the Golden Jubilee celebrations, a cultural programme was organised in the P.C. Saxena Auditorium on 26th February. An NSO performance was also organised on Gandhi Jayanti Day.

NSS Activities

A certain number of the students joining the undergraduate programme do participate in the NSS activities and undergo the courses related to social outreach endeavors, as a part of their curriculum. This year the number of first year students who did NSS as an academic course was more than 100. Many senior undergraduate and postgraduate students also join this activity as volunteers.

All the students enrolled in NSS were given an exposure to life in rural areas through visit to the underdeveloped regions within the rural areas. They undergo personality development through practical training in yoga and meditation. The students participating in the social outreach programmes help the institute, at least partially, to fulfill its social responsibility.

Some of the activities of NSS during this academic year are as follows:

- Teaching and training of the underprivileged sections of the society to improve their learning skills and knowledge.
- Teaching in the Adult Literacy Programme – meant for the staff in the Health Office and the mess workers in the hostels.
- Teaching the Security personnel and other staff members preparing for their XIIth Std. examinations under the National Institute of Open Schooling (NIOS).
- Providing theoretical and practical training on basics in Computer Literacy to the underprivileged members of our own society.
- Sensitisation about the life in rural India through the Group for Rural Activities (GRA).
- Personality development through practical training and special education about Yoga and Meditation under the Navchetna Shibir.
- Participation in special events, including the Independence Day and Republic Day activities of the institute and Shram Dhaan during Gandhi Jayanti Day.
- Environmental Awareness campaign during the Ganesh Cathurthi festival like use of clay from Powai lake for making Ganesh idols.

On the whole, it was a very fruitful year, very fulfilling in terms of the social outreach programmes that our students conducted. We shall strive to have more of these activities in the coming years. Many students excelled in their performance; some of them were given certificates of significant contributions to this activity.

NCC

As part of co-curricular activities, NCC conducted regular training sessions and a two-week annual camp.

Mood Indigo 2008

Mood Indigo, the annual cultural festival of IIT Bombay, was hosted from December 20 to 23, 2008. There were over 20,000 from 400 colleges across the country participating in the festival. Mood Indigo is the biggest college fest in the country in terms of magnitude.

There were over 40 competitions in this festival. These competitions spawned different genres that include dance, dramatics, music, literary arts, speaking, and fine arts. Apart from competitions, Mood Indigo held lots of informal events, workshops, street events, exhibitions, interactive sessions with famous personalities, and many more. Each of the four days, a concert (Pro-nite) in the Open Air Theatre was held. Each day, a different set of professional artists performed, leaving the audience spell-bound. Some of the events of **Mood Indigo 2008** were:

Pro-Shows:

- Sonu Nigaam
- RoopKumar Rathod & Shonali Rathod
- Kavita Seth
- Ensiferum (Band from Finland)
- Haasya Kavi Sammelan

Competitions:

- Parliamentary Debate
- Dance Drama
- 'Mantra' – Hindi Band Competition
- Live-wire' – English Rock Band Competition
- One Act Play

Exhibitions:

- Limca Book of World Records Exhibition
- Vintage Cars Exhibition

Informal Events:

- Paintball
- Treasure Hunt
- 'Mood I Most Wanted' – Personality Hunt

Student Mentor Programme

The Student Mentor Programme for the year 2008-09 was aimed at fulfilling the vision set out by the earlier programme. The team had an enlarged mandate – to look after not only the freshmen entering the institute but also some senior students who were facing problems.

The Student Mentor Programme has evolved significantly since its inception and has now become an integral part of the institute. The various surveys conducted in the institute have shown that the programme has been widely appreciated by the faculty and students.

Eureka! '08

Eureka! as a business plan competition was conceived in 1998. It provides a platform for technocrats in-the-making to evaluate their business plans and possibly get funds for the same. Eureka! aims to encourage the youth across the globe to flesh out their ideas in business terms that combined technology, vision and business acumen.

A decade into its conception, Eureka! has evolved into a fully grown support system that aggregates all the parameters required for guiding a successful and sustainable business – ideation, idea validation, research, team building, mentoring, networking, as well as funding and incubation. Commencing on the 1st of September, the competition saw a 50 per cent increase in participation with over 2000 entries in the form of executive summaries. To set the highest standards in the selection, Eureka! '08 partnered with PricewaterhouseCoopers in shortlisting the entries. In all, 40 participants were selected and they were asked to present their business plans. The participants were provided intensive mentoring to help them formulate their plans. The valuation was done by venture capitalists from Seedfund at the Mentor's Meet in December. The final presentations took place on the 7th of February at the Entrepreneurship Summit '09, where a panel of judges saw the top eight teams present their business plans.

As a part of Eureka! 08, there was a workshop organised in IIT Bombay, with the help of ISB Hyderabad, for IIT Bombay students to help them formulate business plans and work on their ideas! Among the winners, "Empower" from Mumbai University was the first (theirs was the best Cleantech Business Plan); "Acceptor", a team from National Institute of Design, Ahmedabad, was the second; and "Delta Climate", a team of students from IIT Bombay, got the third position.

The prize incentive this year was increased to a formidable Rs.21.0 lakhs. Besides, the winners were given the opportunities to pitch in front of Mumbai Angels, one of the most respected and admired angel funding collectives anywhere. They were also given an opportunity to represent India at the Intel UC Berkeley Entrepreneurship Challenge. Venture Capital, a mentoring incubation facility, was offered to the winners, apart from the prizes.

A constant endeavor of Eureka! has been to explore the upcoming trends and attempt to envision what

hasn't been. For the first time, a new 'Cleantech' category was introduced to encourage start-ups in the field of clean/sustainable technology. A special prize of Rs.2.0 lakhs was given to "Epower" and "Delta Climate", the top two teams in this category. Apart from this, "Delta Climate", from IIT Bombay, was fully sponsored by the Foundation for a Sustainable Future to represent Asia at Carnegie Mellon University's Sustainable Living Biz Competition, which was held in March 2009. Further, a materials research facility, by Applied Materials in IIT Bombay, of about Rs.6.5 crores was offered, free of cost, to the top 15 teams in the 'Cleantech' category.

Entrepreneurship Summit (E-Summit)

E-Summit '09 is the flagship event of E-Cell. It is a conclave for students, corporate, young entrepreneurs, the academia, successful start-ups and venture capitalists to come together to interact and further build on the entrepreneurial ecosystem of the country.

The summit saw over 1000 attendees and was the largest E-Summit till date. A series of panel discussions, Interactive sessions and networking forums through the day were conducted, where experts from the industry, successful entrepreneurs like Mr. Kanwal Rekhi, Mr. Ashok Wadhwa, Mr. Terence Hart, Ms. Anjali Bansal, Mr. Mahanjit Jolly, etc., discussed on the major hurdles that entrepreneurs face in their journeys. Mr. David Wittenberg, Mr. Laurence Norwood, Mr. Agnello Dias, and Mr. R. Balki took workshops on innovation, team building, branding and other entrepreneurial skill sets. The day concluded with an interactive session with Mr. Rahul Bose who spoke on "Leadership and Initiative-taking", which was a very popular session.

Besides these sessions, the summit saw Mentoring sessions where over 30 teams got one-to-one mentoring with the corporate and successful entrepreneurs attending the event. There was also the Investor pitch where representatives of over 20 VC firms were present and 16 teams pitched in. Reputed firms like Tata Capital, Crossover Advisors, Draper Fisher Jurvetson, Helion Venture Partners, Mumbai Angels, Indian Angel Network, Blue Run Ventures, Canaan Partners, Nexus India Capital, Seedfund, Sequoia Capital, and Ojas Venture Partners were present.

There was also a Start-ups Showcase where 20 start-ups from all over the country were selected to showcase their unique products or services. It proved to be a unique platform for the start-ups to meet their potential investors and to know the latest ventures and ideas in the market.

The summit saw the conclusion of Eureka! 08, an international business plan competition, and was the

host to the Global Conference of Entrepreneurship Promoting Bodies, that took place the next day.

Global Conference of the Entrepreneurship Cells

The only meeting of its kind, the Global Conference of E-Cells saw over 50 entrepreneurship cells from colleges all over the country. Having a common platform to interact and discuss, the cells had a unique opportunity to network with representatives from professional organizations like the Indus Entrepreneurs (TiE) and the National Entrepreneurship Network (NEN). They also got to meet and discuss with representatives from the Praxis Center for Entrepreneurship, Canada.

Ideaz'08

Ideaz – a Pan-IIT innovative business idea competition – is for IIT students to use this platform to add a business perspective to their ideas or projects, motivating and teaching them about business in the process.

Ideaz'08 was launched on 11th August and concluded on 1st September. This year Ideaz saw an increase in participation where over 300 teams participated from all the seven IITs. Among the winners, HelloIntern from IIT Bombay came first, Team Jugaad from IIT Bombay came second, and the third place was shared between Team Zenith and Team Parivartan from IIT Roorkee and IIT Kharagpur, respectively. HelloIntern was also given a special Rediff Innovative Idea prize worth Rs.25,000. The total prize money of the competition was a record Rs.1.25 lakhs. And the top 10 teams were given support in the form of mentorship to further develop their idea and to work on a business plan to participate in Eureka!

Start-up Jobs

A unique initiative taken by the Entrepreneurship Cell this year was the start-up jobs fair. In collaboration with the National Entrepreneurship Network (NEN), E-Cell organized placements.

There were two one-day events – on 8th November 2008, Mr. Vishal Gondal and Mr. Sandeep Murthy initiated the students into the working of a start-up; on 17th January 2009, Mr. Shalin Mantri from NEN briefed the students. Many students got placed through this process. The E-Cell also participated in the annual Global Start-up Workshop organised by MIT.

Techfest 2009

Techfest 2009, IIT Bombay's annual international science and technology festival, was successfully organized from 24th to 26th January 2009. Techfest celebrated the 12th anniversary of its existence this year. Events comprising competitions, workshops, lecture series, exhibitions and professional shows

introduced the participants to various fields of science and technology. With 60,000 students representing about 2000 colleges from all over India and countries like UAE, Sri Lanka, Venezuela and Nepal, the event was certainly the biggest till date. The fact that it was held in the Golden Jubilee year of IIT Bombay made this Techfest all the more special. With competitions in science and technology ranging from robotics to designing vehicles out of junk, participants were left spellbound by the magnitude of the festival. There were six major international competitions with total prize money of US\$ 5000. **Full Throttle: Earthbound** was a sequel to the highly famous IC engine-driven car competition held over the years. **Micromouse** was held for the sixth consecutive time and saw a huge appreciation from both the audience and the participants. The gap between competitions requiring high level of technical skills and routine robotics was more than made up by **Goal**, an image processing-based competition, which was highly appreciated as a sequel to the last year's **Pixel**. The national robotics challenge, **Photovore**, was a culmination of the zonal rounds held earlier at four centers in India under the banner of **Techfest Nexus**. It proved to be a true national event with a huge number of participants from many states in India. **Arthrobots** was the grand finale of **Techfest Inexus** conducted at three centers outside India. For the very first time, **Prayaas** aimed at solving the persistent energy crisis and health care problems that the society faces today. **Techfest Scholastic** aimed at nurturing the budding talents of the country, i.e., it focused on the school children. **Robowars** was the first of its kind inter-college combat robotics competition. **Arbobs** was an attempt to bridge the gap between technology and arts and the event was much appreciated. **Gravity Groove**, "a rollercoaster designing event" and **Concreate**, wherein participants had to design suspension bridges, were aimed at students from the Civil Engineering department. **Simulate** was an event targeting people active in the field of CFD. **Ozone**, the on-the-spot zone, provided the thrill and excitement throughout the three days by hosting a variety of quizzes and an interesting mini-lecture series.

The lecture series proved to be a bridge between the students and eminent personalities. Dr James Hansen, Director, GISS, NASA, enlightened the students on the hazards of climate change and global warming and how they can be reduced in a special videoconference. Another videoconference with Eric Chivian, recipient of the 1985 Nobel Peace Prize, was a foray into the importance of biodiversity for human health. The lecture by Mr. Spencer Wells on the genographic project was highly appreciated. The lecture by Chris Philips on the science of invisibility was the biggest draw of the lecture series and proved to be a highly enriching experience. The lectures by Mr. Simon Boxall, Mr. Henry Markram, and Ms. Susanna Edwards left the audience

with a memory that they can cherish forever. Workshops on Bio-informatics, Haptics, Physical Computing, SPAD and Green Camp supplemented the educational value of lectures and competitions and provided the participants with a rich hands-on experience.

For all the three days of the fest, crowds flocked in huge numbers to the exhibition arena where exhibits from various universities across the globe and from industrial firms were displayed alongside IITB R&D exhibits. Some of the exhibits worth mentioning are CKBot and Slinky Automation (both from Modular Robotics Lab, University of Pennsylvania), Toriton, Salamandra Robotica (EPFL), Amphibot (EPFL), Microsoft Surface, Reactable and OLPC. The audience was left spellbound by exhibits from DRDO, the Nissan Technology Square and the Airbus.

If these activities occupied one's daytime, even the nights were not left alone. **Technoholix**, spanning all the three nights, showcased a mix of cultural arts along with high-end technology. A highly popular group 3Run, the world's best and most celebrated Parkour performers left everyone spellbound. Laserman from France and Karizma from Turkey left the audience wanting for more. The SciTech finals conducted on the second night of the festival were highly appreciated by the audience.

The **12th Techfest** was a great learning experience for all the participants and the organizers. It lasted for three days but it will remain for ever etched onto the mind of everyone who was involved with it.

Concluding Remarks

We are privileged to have Dr. Anil Kakodkar as the Chairman of the Board of Governors of IIT Bombay. In over a decade of his association with this institute – first as the Member of the Board of Governors and then as its Chairman – he has guided us towards raising the level of the education and research programmes in our quest for becoming a global institute. Dr. Kakodkar also chairs the IIT Bombay Advisory Council which has provided excellent inputs for taking the institute forward. I take this opportunity to thank him and all the members of the Board of Governors and the Advisory Council.

The Government of India continues to be the primary source of funds for the institute's plan and non-plan expenditure. The institute has also been receiving generous support from its alumni and well wishers for its growth.



Introduction

• A general overview of departmental activities

Established in 1966-67 as “Department of Aeronautical Engineering”, the department was renamed as “Department of Aerospace Engineering” in 1992. The curriculum of Aerospace Engineering encompasses the construction, testing and operations of flight vehicles, including aircrafts, helicopters, rockets and spacecrafts. The courses are based on the fundamentals of fluid dynamics, materials sciences, structural analysis, propulsion, automatic control and guidance and development of computer software.

The department runs strong undergraduate and graduate programs in Aerospace Engineering and carries out basic and applied research as well as continuing education activities in various sub-disciplines of Aerospace Engineering such as Aerodynamics, Propulsion, Structures, Dynamics and Control, Design and Systems Engineering.

The department is an excellent fusion of academics, research, coupled with education beyond the classroom and social responsibilities.

• The vision & mission

The department seeks to establish traditions which will foster creativity and growth of excellence. It has the following broad objectives:

- To provide the best possible educational facilities for training bright students for the careers in Aerospace Engineering.
- To provide a creative atmosphere in which higher studies and research thrive both amongst the students and the faculty.
- To organize a short intensive courses, conferences and seminars on current technological developments which will be of benefit to the surrounding community.
- To provide research and development consultancy

which will promote contact with and be of service to industries and to government and civic organizations.

- To organize quality improvement program for faculty members from various engineering colleges.
- To provide leadership in curriculum design and development.

The department cherishes the hope that its graduates will be the leaders of tomorrow. Their education is patterned with this in view. Besides making available facilities for higher education, training and research in various fields of engineering and technology, the Institute contributes to the industrial development and economic growth of the country by preparing a cadre of engineers and scientists, who provide both man power and support R&D work for industries.

• Faculty strength

The department has 21 highly qualified, full time faculty members. The distinguished faculty of the department includes two faculty members holding the prestigious Alexander Von Humboldt Fellowship. In addition, there are around 40 permanent and 20 temporary staff members who run the administrative offices, laboratories, workshop, drawing office, and are involved with sponsored research work undertaken by the faculty. The department has 286 students out of which about 109 are graduate and 177 undergraduate students.

• Infrastructural facilities

The department has extensive experimental and computational facilities that support its research and teaching activities. Among these are: the **Aerodynamics Lab**, which houses the subsonic and supersonic wind tunnels, open jets, water tunnel and the Laser Doppler Velocity-meter (LDV) facility; the **Instrumentation Lab.**, which has experimental set-ups for control education e.g. temperature control, speed servo, torsion disk, level and flow control etc. in addition to sensors, actuators and other accessories; the **Integrated Modeling and Simulation Lab**, which

has a launch vehicle simulation facility apart from mechatronics related facility; the **Structures Lab**, which has facilities for composite fabrication, material testing, components testing, strain and motion measurements, drop weight and ballistic impact testing, modal testing, split-Hopkinson's bar and non-destructive testing facilities; the **Propulsion Lab**, which houses rig for studying blade cascades, axial flow fan rotor, and stage characteristics, low speed low turbulence wind tunnel; the **MAV Lab**, which has facilities for building & flying aircraft models; and the **ARDB Associate Center for CFD**, which provides computational assistance with its computer servers, and work stations. The Department also houses the **ARDB Center for Aerospace Systems Design and Engineering (CASDE)**, which conducts research and education program related to system design, optimization and system integration. Major **computational facilities** include a 23 node Intel Xeon Cluster, SGI Altix 8 CPU, & SGI Altix 14 CPU machines.

• New infrastructure

Aircraft Design and Computing Lab

A new laboratory, namely Aircraft Design and Computing Lab. (ADCL) was created in the main building of Aerospace Engineering department. The lab houses nine PCs loaded with latest versions of softwares for Aircraft conceptual design and analysis (RDS-Pro), Advanced Aircraft Analysis (AAA), and Aircraft Control Toolbox (ACT) which consists of a suite of MATLAB routines for modeling of control systems of aircraft, helicopters and airships.

Shock Tunnel

The shock tunnel is used to simulate the hypersonic flow with minimum expenses and structural requirements. The facility is capable of producing flows of air up to specific reservoir enthalpy of 1.35 MJ/kg, reservoir pressure of 0.74 MPa, and reservoir temperature 1343 K which is then expanded into the test section using a Mach 8 nozzle. The facility consists of shock tube which is a constant area duct, separated into high pressure gas and low pressure gas regions by an aluminum diaphragm. When the diaphragm ruptures, a shock wave is set up due to high pressure difference. This shock wave traverses into low pressure gas region, compressing and heating it to high pressures and temperatures. The shock wave is then reflected back into the tube from its end, creating a stagnation region of high pressure and high temperature gas at the end of the tube, and thereby allowing the stagnation region to expand through the convergent-divergent nozzle to obtain the desired hypersonic Mach number uniform flow into the test chamber. Models such as re-entry bodies, scramjet engine and missile-shaped bodies can be tested to study its aerodynamics.

Other new set-ups

In addition to the above, following new set-ups were added in the department facilities in the year 2008-09:

Axial Flow Compressor Research Test Rig for rotor tip aerodynamics studies, Diffuser Test Rig for turbine exhaust diffuser system aerodynamic analysis, New centrifugal blower and motor and motor control unit for air delivery to the newly renovated Cascade Tunnel were added to propulsion lab.; Water Tunnel, 6W Ar-Ion Laser from Spectra Physics, Computer controlled 3D traverse system were added to Aerodynamics lab; while bench type modular polariscope system and reflective polariscope system for photo-elasticity studies were added to Structures Lab.

• Major activities proposed

Associate Center for Research and Development in Micro/Mini Aerial Vehicles:

“Associate Center for Research and Development in Micro/Mini Aerial Vehicle” was proposed to Aeronautical Research and Development Board. This activity is part of national initiative on micro and mini aerial vehicles. Broad activities proposed are:

- i) Research into the new concepts which will result into improvement in endurance and payload capacity
- ii) Co-operative mission between various types of vehicles e.g. fixed wing, hovering vehicle and ground vehicles etc.
- iii) Hardware-In-Loop Simulation for co-operative missions

Academic Programs

• Academic activities, including degree programs

The department offers a four-year undergraduate B.Tech. program, a two-year graduate M.Tech. program, a five-year integrated Dual Degree (B.Tech. and M.Tech.) program, and a Doctor of Philosophy (Ph.D.) program. The specializations offered this year for Dual Degree and M.Tech. programs are:

- Aerodynamics
- Aerospace Propulsion
- Aerospace Structures
- Control and Guidance

The curriculum is designed with the aim of catering to the country's growing need for talented, well trained manpower in aerospace engineering, especially in the scenario where India is poised to become a global economic superpower. During this year, as a part of the Institute wide revamping of the UG & DD curricula, the Department has designed its new curriculum providing a student-centric flexible framework which

covers basic inputs in the core areas as well as electives and specially designed supervised self-learning opportunities called “Supervised Learning”. The Department has also redesigned the Minor in Aerospace Engineering for UG students of other departments which is a basket of five selected courses dealing with basics of flight mechanics, performance and design. Numbers of electives are also offered to the students in areas related to the specific field of interest.

The department aims to provide students with a cordial atmosphere and an opportunity to acquire a multi-disciplinary perspective to engineering problems. The department can boast of alumni like the program director of the LCA program, Dr Kota Harinarayana, who have achieved unparalleled success in their professions.

Degrees awarded

Student Intake	
B.Tech	: 24
Duel Degree	: 23
M. Tech.	: 31
Ph.D.	: 2
Degrees Awarded	
B. Tech	: 20
M. Tech.	: 19
Duel Degree	: 11
Ph.D.	: 2

Scholarships

Cybergrants donation & scholarship by Boeing
Boeing has initiated a partnership with IIT Bombay to include IIT Bombay as part of its University Relations (UR) program in India. Boeing’s initial involvement through the UR program begins with scholarships and design related events for bachelor and master’s students. Also incentivize students and provide hands-on exposure / awareness to choose Aerospace Engineering as a career goal through:

- Scholarships
- Technical event / information session for airplane design and build “Cybergrants” donation

• Best teacher award by an alumni Dr. Jayanarayan Lala

Annual teaching award for faculty of the department instituted by an alumni of the department from the 71’ batch, Dr. Jayanarayan Lala through an endowment.

• Any other relevant information

The Indian industry has already recognized and appreciated the talent and capabilities of our students

and the research contributions made by the department. The high quality of job offers by the Indian industry in general to the passing out batches of B.Tech., M.Tech and Dual Degree students of year 2008-09, on the background of economic slowdown worldwide, bear the testimony of this appreciation. This is a hallmark of the Aerospace Department which provides the quality education in classroom, research environment and an urge to know beyond classroom. These activities enable students to develop a versatile personality and remain ahead in competition.

Officers of the IAF, DRDO laboratories and other national aerospace organizations are admitted as sponsored candidates for the M.Tech. programs on regular basis. In addition, QIP scholars, who are faculty in other engineering colleges, are admitted to the department for pursuing their M.Tech. and Ph.D. programs. The department also offers short term courses for working professionals and academicians under the CEP and QIP programs.

R& D Activities

• A general overview of R&D activities

The department has maintained and nurtured the close association with the Aeronautical, Space, Defense and the other industries of the country through invited lectures, faculty participation in continuing education. In addition to providing high technology support and inputs to the national projects like LCA, IGMDP and GSLV through sponsored and consultation projects, the research had spin-off benefits to other fields such as bio-medical engineering. Many of the research programs pursued in the department are funded by the government agencies such as ARDB and DST, government organizations such as ISRO, DRDO, HAL, BARC, NAL, ADE, GTRE, ADA, as well as private industries like SIEMENS, Pratt and Whitney Co. USA, etc.

• Main areas of R&D activity

The department faculties actively pursue research programs that address basic engineering problems as well as applications in various fields of Aerospace science and technology such as:

Experimental Aerodynamics, Aeroacoustics, Computational Fluid Dynamics, Grid Generation, Electromagnetism, Hypersonic flows, Heat Transfer, Aerothermodynamics, Infrared Signature Suppression, Turbomachinery and Airbreathing Propulsion, Combustion studies, Dynamics and Control of Aerospace Systems, Multi-disciplinary Design Optimization of Aerospace Systems, Plate theories, Smart Structures, Aero-elasticity & Aero-servo-elasticity, software development, Composite materials and Impact/Ballistic impact studies.

While the research and development activities of the department continue to contribute to national Aerospace programs, some of the faculty are also engaged in basic research in collaboration with research groups world over e.g. the Technical University of Hamburg-Germany, China Jiliang University-China, Illinois Institute of Technology-USA, Tohoku University-Japan, Cambridge University U.K. Indian Institute of Science-India etc.

• Sponsored Research Projects

The incomes received from sponsored research and consultancy projects:

Total Sponsored Research Projects :	49
New	: 9
Ongoing	: 30
Completed	: 10
Faculty Involved	: 18
Sanctioned Outlay :	Rs. 77,12,781/-

List of Sponsored Research Projects

Project Title	Sponsoring Agency	Project Status(New/ Ongoing/Complete)
Co-Operative Control Of Fixed Wing Mavs.	ARDB	Ongoing
Development of Baseline Free Damage Detection Technique for Laminated Composite Structures.	ARDB	Ongoing
Noise Suppression of High Subsonic Free Jets.	ARDB	Ongoing
MAV to Monitor Areas of Interest Continuously without Human Intervention.	US Department of Defense	Ongoing
Steady/ Unsteady Low Speed Viscous Flow Computations on Static / Moving Grids.	ARDB	Ongoing
Development of Bayesian Framework for Calibration of Twin Spool Turbofan Engine.	ARDB	Ongoing
Metrics And Motifs In Architectures of Complex.	ARDB	Ongoing
AR&DBS Grant-in-Aid for Holding Systems and Systems Engineering Panel Meeting held at CASE, IIT Bombay	ARDB	Ongoing
Axial Fan Performance Evaluation and Enhancement Strategies Under Static and Dynamic Inflow Distortions.	ARDB	Ongoing
Mesoscale Modeling for Monsoon Related Weather Predictions - Phase II	CSIR	Ongoing
Exploration of a Technique for Vibration Control of Wing using Piezoelectric Stack Actuation	ADA	Ongoing
Capability Development to meet MAV08 Mission requirements.	DRDO	Ongoing
Development of Micro-combustors	DST	Ongoing
Study of Shock-turbulent Boundary Layer Interaction in High-speed Air Intake.	ISRO	Ongoing
Assessment of Turbulence Models in Hypersonic Reacting Three-Dimensional Flow around Re-entry Flight Vehicles.	ISRO	Ongoing

Project Title	Sponsoring Agency	Project Status(New/ Ongoing/Complete)
Development of a Three Components Accelerometer Balance for use in IITB Shock Tunnel	ISRO	Ongoing
Siemens Power Generation Inc./ Annular Diffuser Aerodynamics for Turbine Delivery System.	Siemens Power Generation Inc., USA	Ongoing
Garuda Grid Computing Workshop at IIT Bombay on 28-30.6.2007	C-DAC, Bangalore	Ongoing
Flow Computations on Unstructured Grids with Improved Accuracy : An Investigation.	ARDB	Ongoing
Design and Development of 0.3 Meter Fixed Wing Autonomous Micro Aerial Vehicle.	ARDB	Ongoing
Forebody CFD studies of HSTDV Cruise Vehicle.	DRDO	Ongoing
Thermodynamic Design of Wankel Engine.	DRDO	Ongoing
Active Boundary Layer Control in Two Dimensional Cascade and an Axial Flow Fan.	ARDB	Ongoing
Fast Finite Volume Time Domain Technique for RCS Computations of Aerospace Configurations.	ARDB	Ongoing
Estimation of Aerodynamic Coefficients of 450kg Bomb using CFD.	DRDO	Ongoing
Experimental Investigation of Flow Over After-burner Diffuser Cone.	DRDO	Ongoing
Centre of Excellence For Aerospace Systems Design and Engineering (CASDE) Phase –II. 04AB001	ARDB	Ongoing
Hybrid Composites for Structural Applications. 04AB005	ARDB	Ongoing
Sandwich Structures with Composite Inserts: Experimental Studies.	ISRO	Closed
ARDBS Grant-In-Aid For Financial Support for One Day Workshop on Aero-Acoustics At IIT, Bombay on 23.5.2008	ARDB	Closed
AR&DBS Systems/Systems Engg. Panel Meeting IIT, Bombay during 29.02.08 to 01.03.2008	ARDB	Closed
Long Distance Wireless Communication for Rural Connectivity using Tethered Aerostat	One World International Foundation (OWI), New Delhi	Closed
Hardware in Loop Simulator for Control System Assessment of Autonomous Aircraft.	ARDB	Closed

Project Title	Sponsoring Agency	Project Status(New/Ongoing/Complete)
Upgradation of the Associate CFD Centre Of AR & DB at IIT Bombay, 04AB003	ARDB	Closed
Instrumentation Support for CADs Trials, 04AG001	Aerial Delivery Research Development Establishment	Closed
Flow Mechanisms for Stall Inception in Axial Compressors: Modeling, Dynamics and Prediction - Pratt & Whitney, 03IU015	Indo-US Collaboration	Closed
Aero-thermal Studies in Hypersonic Flows for HRV	DRDO 01DD001	Closed
Multi Block Grid Generation for Simulation of Navier Stokes Code for Hypersonic Research Vehicle	DRDO 01DD004	Closed

Consultancy Projects:

Number of Jobs	:	24
Number of Faculty Involved	:	9
Income Generated :		Rs.95,15,300/-

• Patents

Menezes, V.

Takeshi SETO, Kazuyoshi TAKAYAMA, Atsuhiko NAKAGAWA, **Viren Ivor Menezes**, inventors. *Fluid Injection Device*. United States Patent Application (USPTO) No. 20090043480, Filed February 12, 2009.

Extension activities

Conferences

Mandal, J.C.

Organizing committee member of *International Conference on Computational Partial Differential Equations*, December 10-13, 2008, Department of Mathematics, IIT Bombay.

Organizing committee member of *Instructional School on PDEs and National Symposium on Hyperbolic PDEs*, July 14-17, 2008, Department of Mathematics, IIT Bombay.

Seminars

ARDB Meeting: Convener- Prof. P.M. Mujumdar & Prof. K. Sudhakar.

Meeting of ARDB Systems Engineering & Systems Panel was organized by Aerospace Engineering Dept., IIT Bombay, on 29.9.2008.

Seminar on “Aerospace Technologies”: A Seminar on “Aerospace Technologies” was jointly hosted by Aerospace Engineering Department, IIT Bombay, and State delegation of Belgian academies on Nov. 7th 2008 at Indian Institute of Technology Bombay. The seminar focussed on the research activities in the field of aeronautics and space technologies in Belgium and India. Prof. Jean-Marc Defise, Head of Centre Spatial de Liege (Liege Space Centre) of University of Liege, was the coordinator from Belgian side and Prof. Avijit Chatterjee, Aerospace Engineering Department, was the coordinator from Indian side. The speakers on the occasion included the following names:

Prof. P.M.Mujumdar, Head Aerospace Engg. Dept., IITB

Prof. Jean - Marc Defise, Head of Centre Spatial de Liege (Liege Space Centre)

Prof. G. Winckelmans (Universite Catholique de Louvain)

Prof. D. Vandepitte (Katholieke Universiteit Leuven)

Prof. A. Chatterjee (IIT), Prof. S. P. Mahulikar (IIT)

Workshops

The following faculty members conducted various workshops as under:

Mujumdar, P.M., Sudhakar, K.

SIG-MDO - One-day Workshop on MDO for RTA-70, May 30, 2008, Dept. of Aero. Engg, IIT Bombay

Sharma, S.D.

Organized and conducted, a one-day AR&DB Workshop on “Aero-acoustics”, on May 23rd, 2008 at the Department of Aerospace Engg, IIT Bombay. This was the first ever attempt to bring together and form a core research group of the people from research organization, academia, and industry working in the emerging area of Aero-acoustics.

CEP courses

The following faculty members conducted various CEP courses as under:

Joshi, A.

Organized & conducted 6-Day open CEP course on “Classical Control Systems – Theory and Hands-on (CCS_08)”, during 5-10 May 2008 at IIT Bombay.

Sudhakar, K., Mujumdar, P.M., Arya, H., Joshi, A., Jayaraman, J.

Organized and conducted 7-day in-house CEP on “Systems Engineering” held at DIAT, Pune during 2-8 June 2008.

Visitors to the Department

The following visited the department during the year 2008-09:

Mr. Kanchan Biswas, Associate Director, CEMILAC, Bangalore delivered a lecture on “Aircraft Fatigue”, on July 16th, 2008.

Dr. Pierre Vidal, laboratoire De Combustion et de Detonique, Chasseneuil, France, delivered a lecture on “Propulsion by Detonation: Pulsed & Rotative Detonation Engines” on July 24th, 2008.

Dr. Raj Das, CSIRO, Australia, delivered a lecture on “Designing Structures for Optimizing Fracture Resistance and Application of Mesh free Methods for Computational Modeling” on July 25th, 2008.

Prof. P.Nithiarasu, School of Engineering Swansea University, U.K. delivered a lecture on “Realistic Biofluid Dynamics” on July 28th, 2008.

Dr. B N Suresh, Director IIST Trivandrum and Distinguished Guest Professor at IITB, visited during 20-23 Aug for a lecture series on “Launch Vehicle Modeling, Simulation, Control and Guidance” and again during March 2-3 for meeting with Systems group, Nano-satellite project team and lectures to students on various aspects of spacecraft.

Mr. Leveugle Thierry (R&D Director), **Mr. Macret Jean-Luc** (R&D Deputy Director), & **Dr. Oudea Coumar** - R&D Manager for Electronics & MNT (Micro Nano technologies) from Astrium Space Transportation delegation visited on 29 August 2008 for technical presentations and meeting on research collaboration.

Dr. Kathy Hegmann, General Manager IBM India, **Mr Dennis Kalajainen**, VP Global Delivery Excellence & **Prof Dinesh Verma**, Dean, School of Systems Engineering, Stevens Institute of Technology, USA.

Sept 11, 2008. Meeting was conducted for discussing collaboration in the area of systems engineering education and training for professionals.

Dr. Mayank Vahia, Scientist at the Tata Institute of Fundamental Research delivered a lecture in Zephyr 08 entitled “On the Irrelevance of Being Pluto” on Oct.10th, 2008.

Dr. Daniel Raymer, the renowned aircraft designer, President of Conceptual Research Corporation, delivered lecture in Zephyr 08 on his experiences of his past and present projects including the F-22 ‘the mother of all fighter aircrafts’ on Oct.11th, 2008.

Dr. Tomonari Furukawa, Associate Professor of Mechanical Engineering and a Director of Computational Multiphysics Systems Laboratory at Virginia Polytechnic Institute and State University (Virginia Tech), USA, delivered lecture in Zephyr 08 on “Cooperative Control of UAVs for Belief-driven Search and Rescue” on Oct.11th, 2008.

Dr. Tessy Thomas, Associate project director of the Agni-III missile project, (The Missile Woman of India), delivered a lecture in Zephyr 08 on “Missile Technology in India” on Oct.11th, 2008.

Rory Byrne, Chief Designer of Ferrari (Formula one car), visited the department on 20th Oct 08.

Dr. Naveed Hussain, Vice President, Engineering and Technology for Boeing India, visited our department on Oct.16th, 2008 & March 10th, 2009

Dr. Cauty from ONERA delivered a lecture on “Non-destructive techniques for solid rocket motors” on Oct.21st, 2008.

Dr. Ali Merchant - M.I.T., USA, delivered a lecture on “Aerofoil design for Axial Compressor blades” on Oct 23rd, 2008

Boeing Team led by Dr. Peruvemba R Viswanath Senior Scientist, Research & Technology, Bangalore and others from Seattle visited the department on November 17th, 2008 to discuss possible technical collaboration with Aerospace Engineering department in the area of CFD & and experimental fluid dynamics and for Technical Presentations by the Boeing group and faculty group from IITB on respective research activities

Dr. Bharat K. Soni, Professor & Chair, University of Alabama at Birmingham, Department of Mechanical Engineering, Birmingham, AL 35294-4461, USA visited the department on December 2nd, 2008. Title of Talk: “High Fidelity Computational Simulations & Enabling Technologies - R&D, Education, and Training.”

Dr. Tito Islam - Siemens Power, USA, delivered a lecture on “Axial flow Turbine and Turbine Exhaust Diffuser Design” on March 21st, 2009.

Dr. Gaitonde Datta V, Technical Area Leader of the High-speed Flows Group in the Air Vehicles Directorate, Air Force Research Laboratory, Wright-Patterson Air Force Base, USA, visited our department on March 25th, 2009. Title of Talk: “Advanced Simulations for High-Speed Flow Physics and Plasma-Based Control.”

Conferences/ Symposia/ Workshops/ Seminars (Participated/Papers Presented)

National

Mandal, J.C.

Participated in “Engineering Sciences in India and Germany: University versus Industry –Cooperation or Competition?”, *Colloquium for Humboldt Fellows and Awardees in the Engineering Sciences in India*, October 31–November 2, 2008, New Delhi, India.

Participated in *National Symposium on Recent Advances in Computational Techniques- (RACT09)*, January 9-10, 2009 Department of Mathematics, Stella Maris College, Chennai.

Mujumdar, P.M.

Participated in the *Annual Symposium of the AR&DB Structures Panel*, IIT Madras, May 5-6, 2008.

Mujumdar, P.M., Sudhakar, K.

Participated in the *National Symposium on Structural Technologies for the Regional Transport Aircraft (RTA 70)* on 26th-27th May 2008 at NIAS (IISc Campus), Bangalore.

International

Uppal, T., Arya, H.

Presented a paper “A comparative analysis of real-time operating systems on a mini aerial vehicle hardware-in-loop-simulation”, *International Conference on Aerospace Science and Technology (INCAST)*, June 26-28, 2008, National Aerospace Laboratories, Bangalore.

Deore, N., Chatterjee, A.

Presented a paper “A cell vertex based finite volume time domain technique for Maxwell’s Equations,” *12th Asian Congress of Fluid Mechanics*, held during 18-21 August, 2008 at Daejeon, Korea.

Joshi, A.

Participated and presented four papers in the *49th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials (SDM) Conference*, Schaumburg, Illinois, USA, April 7-10, 2008.

Mandal, J.C.

Participated in *International Conference on Computational Partial Differential Equations*, December 10-13, 2008, Mathematics Department, IIT Bombay.

Participated in *Indo-German Workshop-cum-Lecture Series* on “Computational Models and Methods Driven by Industrial Problems (CMMDIP0809)”, January 5-16, 2009, Department of Mathematics, IIT Madras, Chennai.

Mitra, M.

Presented a paper co-authored by Sharan A, “Force reconstruction for wave based damage detection,” *IUTAM Symposium on Multi-Functional Material Structures and Systems*, held during December 10-13, 2008, at IISc, Bangalore.

Mitra, M.

Participated in *IISc Centenary Conference*, held during December 13-16, 2008, at IISc, Bangalore.

Menezes, V.

Participated in *Asian Conference on Mechanics of Functional Materials and Structures 2008*, October 31-Nov. 3, 2008, Matsue, Shimane, Japan.

Mujumdar, P. M.

Participated and chaired a session (on Aircraft Flutter & Gust Response Analysis) in *International conference on Aerospace Science and Technology (INCAST-2008)*, June 26-28, 2008, NAL, Bangalore.

Mujumdar, P. M., Sudhakar, K.

Participated in the *Indo-US workshop on regional air transportation in India*, July 9-10 2008, at Bangalore, organized by NAL Bangalore & MIT, USA.

Naik, N.K.

Participated in *International conference on Aerospace Science and Technology (INCAST-2008)*, June 26-28, 2008, NAL, Bangalore.

Pant, R.S.

OMEGA Aviation Sustainability Short Course on Unleashing Greener Aviation, 17-19 June 2008, Cranfield University, UK.

Participated in *AIM/PARTNER 2nd Aviation and the Environment Research Workshop*, 28-30 July 2008, Cambridge University, UK,

Pradeep, A.M.

Presented a paper “Boundary Layer Control in a Compressor Cascade using Distributed Suction”, GT2008-50225 at *2008 ASME TURBO EXPO conference*, June 2008, Berlin, Germany.

Roy, B.

ASME Turbo Expo 2008: Power for Land, Sea and Air, June 9-13, 2008, Berlin,

Sudarshan Kumar

Participated in *32nd International Symposium on Combustion*, McGill University, Montreal, Canada, August 3 - 8, 2008.

Participated in *44th AIAA/ASME/SAE/ASEE Joint Propulsion Exhibit*, Hartford, Connecticut, USA, 20-23 July 2008.

Invited Lectures**National****Joshi, A.**

Two Lectures and one laboratory session in a *5-Day In-house CEP on Industrial Oil Hydraulics* held at L&T Training Centre, Madh, Malad, Mumbai during 8-13 December 2008. (Coordinator: Prof. N. Ramakrishnan, Mech. Dept.)

Mandal, J.C.

“Numerical Computations of Hyperbolic Partial Differential Equations: Issues and Challenges”, Plenary Talk at *National Symposium on Recent Advances in Computational Techniques* (RACT09), January 9-10, 2009, Department of Mathematics, Stella Maris College, Chennai.

“Fundamentals of Upwind Methods for Hyperbolic Conservation Laws” at the *Instructional School on PDEs and National Symposium on Hyperbolic PDEs*, 14-17 July 2008, Mathematics Department, IIT Bombay.

“Development of Riemann Solvers for Hyperbolic Conservation Laws”, Invited talk at the *Indo-German Workshop-cum-Lecture Series* on “Computational Models and Methods Driven by Industrial Problems (CMMDIP0809)”, January 5-16, 2009, Department of Mathematics, IIT Madras, Chennai.

Mitra M.

“Dynamic Properties of Carbon Nanotubes and Nanocomposites,” *ISAMPE National Conference on Composites*, INCCOM-7, December 4-5, 2008, Bangalore.

Mujumdar, P.M.

“Optimization & MDO: CASDE Experience”, *National Symposium on Structural Technologies for the Regional Transport Aircraft (RTA 70)* on 26th-27th May 2008 at NIAS, (IISc Campus), Bangalore.

“MDO for RTA-70”, *One day SIGMDO workshop on MDO Technologies for the Regional Transport Aircraft (RTA 70)* on 30th May 2008 at Dept. of Aerospace Engg., IIT Bombay

Ramachandran, P.

“Visualization with Mayavi”, *Workshop on parallel computing for aerospace applications*, NAL, Bangalore, September 29—30, 2008.

“FOSS for education, teachers and students”, Keynote address at *GNUUnify09*, Pune, February 13-14, 2009.

“Python for scientific computing”, Talk at *GNUUnify09*, Pune, February 13-14, 2009. <http://gnunify.in/09>

Sharma, S.D.

“Base Flows and Jet Research at IIT Bombay” at NAL Bangalore on the occasion of its Golden Jubilee Discussion Meeting on January 23rd, 2009.

Shevare G.R.

Key note address on “CFD Simulation of Fuel Sub-Assembly” in *CFD Symposium CFD Division, Aeronautical Society of India*, Aug., 2008

Key note address on “From 1D flow to NASA Rotor 37” in *CFD Applications in Power and Industry Sectors*, Hyderabad, Jan., 2009

Sudhakar, K.

“Systems Engineering, MDO, Systems Architecture”, *DRDO Golden Jubilee One Day Mini-Conference on Missile System Engineering*, Missile Complex, DRDL, Hyderabad, 8th November 2008.

“Systems Engineering : CASDE Perspective”, *Systems Engineering Workshop*, Sathyam Development Center, Bangalore. July 23, 2008.

“Systems Design in Engineering Systems - An Educational Institutions Perspective”, *1-Day Workshop on Systems Approach in Engineering Design*, *Systems Society of India*, Trivandrum, January 10, 2009.

“Introduction to Flight Mechanics”, Amritha Institute of Technology, Coimbatore, January 25, 2009

“4 Years + 150 Credits = Engineer?”, Indian Institute of Space Science & Technology, Trivandrum, January 28, 2009.

International

Mahulikar, S.P.

“Infrared Signature Studies of Airborne Targets”, *Proceedings of International Conference on Aerospace Science and Technology*, 2008 (Jun), Bangalore, India.

Mandal, J.C.

“Development of Riemann Solvers for Hyperbolic Conservation Laws”, *Indo-German Workshop-cum-Lecture Series on Computational Models and Methods Driven by Industrial Problems (CMMDIP0809)*, Department of Mathematics, IIT Madras, Chennai, January 5-16, 2009.

“Development of High Resolution Schemes for Hyperbolic PDEs” at the *International Conference on Computational Partial Differential Equations*, Mathematics Department, IIT Bombay, December 10-13, 2008.

Pant, R. S.

“Air transport environment in India: current issues and challenges”, invited talk delivered on 10th July 2009 as part of *DIAL Seminar Series at IfM*, Department of Engineering, Cambridge University, UK

Ramachandran, P.

“Python and Mayavi for scientific computing”, Free Software, Free Society: *Conference on Freedom in Computing, Development and Culture*, Tiruvananthapuram, Kerala, India, December 9-11, 2008.

Ramachandran, P., Varoquaux, G.

“3D visualization with TVTK and Mayavi”, a 2 hour tutorial at *SciPy08: 7th Python in Science Conference*, Caltech, Pasadena, CA, August 20, 2008

Significant Awards/ Distinctions

Lakkad, S.C.

The award “JEC Asia Innovation Award 2008”, instituted by JEC Magazine, Paris, France, was jointly won by Prof. S.C. Lakkad with Kineco Pvt Ltd, Goa, for the project on “Filament Wound Composite Under Carriage Tanks”, which was conducted when Prof. Lakkad was working as a full time faculty in IITB.

Naik N. K.

Received the Excellence in Aerospace Education Award from the Aeronautical Society of India during the 60th Annual General Meeting of the Society on 16th January, 2009. The award comprises a certificate and cash prize of Rs. 20,000/-.

Pant, R.S.

Selected for award of USD 8000 for a short visit to Department of Aerospace Engineering, Purdue

University, USA under the VICS (Visitors from India and China) Scheme, May 2008

Sharma, S.D.

Founder and Editor-in-Chief of the new journal “International Journal of Emerging Multidisciplinary Fluid Sciences”, published by Multi-Science Publishing Company, UK. Inaugural issue was brought out in the March 2009.

Shimpi, R.P.

Member, Editorial Board of International Journal: “Computers and Experimental Simulations in Engineering and Sciences”.

Sudhakar K.

Received the Systems Society of India’s Raj Kumar Varshney Award for lifetime contribution to Systems Science at the National Systems Conference at IIT Roorkee, 17th December 2008. The award carried a Gold Medal and citation for notable and outstanding contribution.

Honorary Work

Chatterjee, A.

Reviewed paper for Shock Waves, December 2008.

Joshi, A.

Member of the Academic Council of the Defense Institute of Advanced Technology (DIAT), Pune.

Reviewer for the Journal of Aerospace Sciences and Technologies (AeSI)

Member of the Executive Committee of the Systems Society of India

Reviewer for Computational Mechanics & Numerical Mathematics (International Journal)

Reviewer for the American Institute of Aeronautics and Astronautics (AIAA) SDM Conferences, May 2009.

Member of Technical Committee of the American Institute of Aeronautics and Astronautics (AIAA) on Structural Dynamics

Mandal, J.C.

Reviewed manuscripts for the International Journal for Heat and Fluid Flow and International Journal for Numerical Methods in Fluids.

Expert Member of National Board of Accreditation, AICTE, India.

Expert Member of Homi Bhabha National Institute (HBNI), Bhabha Atomic Research Centre, Mumbai.

Member of International Advisory Committee for First International Conference on Computational Methods for Thermal Problems, Naples, Italy, September 8-10, 2009.

Menezes, V.

Reviewer, *Current Science*, Indian Academy of Sciences Publication, Bangalore.

Reviewer, *Aerospace Science and Technology*, Elsevier Publication.

Mitra, M.

Reviewed papers for Journal of Sound and Vibration, Proceedings of Royal Society A, Shock and Vibration
Organizing committee member for IUTAM Symposium on Multi-Functional Material Structures and Systems, December 2008, Bangalore

Mujumdar, P. M.

Member - Structures Panel of AR&DB, Min. of Defense, Govt. of India

Member - Expert Review Committee for Structural Testing of Reusable Launch Vehicle Technology Demonstrator (RLV-TD), VSSC Trivandrum

Member - National Expert Committee on the Integrated Technical Review (ITR) of (RLV-TD), VSSC Trivandrum.

Reviewer – J. of Structural & Multidisciplinary Optimization.

Reviewer – Proceedings of the Institution of Mechanical Engineers.

Pant, R.S.

Executive Committee member of AeSI Mumbai Branch.

Visiting Academic Researcher at Institute for Aviation and the Environment, Cambridge University, UK, 9th June to 2nd August 2008.

Invited as member of the Aviation Infrastructure Committee of the Confederation of Indian Industries in 2008

Reviewed a Paper submitted to International Journal of Aerospace Engineering in 2008

Pradeep, A.M.

Reviewer, Journal of Propulsion and Power, Journal of Institution of Engineers (India), Aerospace Division.

Sharma, S.D.

Provided Greater Mumbai Municipal Corporation (BMC) with the technical guidelines and recommendations, as the main technical committee member, for selection of water-meters based on their performance test runs. A pilot project has been recommended to start with as the total project cost is estimated to be nearly Rs.600 crore and there was inconsistency in the performance of products from various short listed vendors.

Shimpi, R.P.

Reviewer for the following International Journals:

1. Ultrasonics (Elsevier Journal)

2. International Journal of Mechanical Sciences (Elsevier Journal)
3. Thin-Walled Structures (Elsevier Journal)
4. Meccanica (Springer Journal)

Sudarshan Kumar

Reviewer for the following journals:

1. International journal of hydrogen energy
2. Fuel
3. Energy and Fuel
4. Recent patents on engineering
5. Macmillan India Limited (Book review)

Students' Activities**STUDENTSATELLITEPROGRAM: Students' project to build functional miniature satellite**

The Student Satellite Initiative is a landmark project taken up by IIT-B students. The plan is to build a fully functional miniature satellite in less than two years which would then be launched by ISRO using the PSLV. This will entirely be a student initiative with mentorship provided by ISRO scientists and IITB Professors.

The Satellite will be a micro-satellite that will fit in a volume of 18*18*23 cubic centimeter and will weigh less than 10 kg. The miniaturization that would be involved in making the satellite is astounding. Currently our students are on the verge of completing the concept design phase and are now reviewing the work that we have done.

Mission of Satellite Program

The project is still in its infancy. Our students are in the process of defining the exact mission of the satellite. Various payloads have been discussed and currently our students are looking into the feasibility of the payload required for the *Measurement of Total Electron Count in the ionosphere and to detect the Equatorial Ionization Anomaly*. For the relevance of our satellite to the student community nationwide, satellite data will be transmitted when the satellite passes over our country so that any interested university with a small ground station (Costing about Rs. 10000/-) will not only be able to detect the beacon signal from our satellite but will also be able to receive useful satellite data from it. This has been proposed to spread awareness among the student community nationwide about this exciting field

ZEPHYR-08: Annual Edutainment Event

Zephyr-08 is an annual edutainment event with an attendance of a huge crowd, nation wide outreach and participation from the eminent colleges across the country. The only event of its kind, serving as an annual national platform for the confluence of Aerospace students, enthusiasts and companies, it caters alike to a layman who is fascinated by flying crafts as to the

expert who makes fascinating crafts. Zyphr-08 was a jam packed event, conducted on October 10-12, 2008 wherein several activities were organized as under:-

Lectures by distinguished dignitaries:-

Dr. Daniel Raymer, Dr. Tessy Thomas, Dr. Mayank Vahia and Dr. Tomonari Furukawa.

- Workshops: i) Fly like a bird - The Ornithopter Workshop
ii) U-Turn- The Boomerang Workshop
iii) Aerchitet- The Balsa Plane Workshop
iv) Flowz - The CFD Workshop
v) Twilight - The Astronomy Workshop
vi) "Ground Station".

Competitions: MACHinfinity, U-Turn, FlightSim 3.0, The AeroRace. Aerotainment Exhibitions: Mavericks of the sky- The MAV exhibition, UAV

UDAAN : Student Outreach Program

The schools outreach program called "Udaan" was started in 2003 and is continued to create awareness about Aerospace Engineering among the school students. Udaan targets the schools within Mumbai and equal number of schools in the rural areas surrounding Mumbai. Various activities are designed to take the adventure and thrills of aviation to schools kids. Following are some examples:

- 1) Paper plane/Aero-modeling Workshop and Competition
- 2) Video shows on aviation & space
- 3) Short talk about Aircraft, Satellites, LVs, Rockets, etc.
- 4) Advances in Aerospace Engineering
- 5) Careers in Aerospace

During such visits Udaan carries posters that depict indigenously developed Satellites, Launch Vehicles, Rockets, Aircraft, etc. These are displayed during the talks and left behind for permanent display in science clubs of schools.

Faculty Members and their Specializations

1. Pradeep A. M.

Aerospace Propulsion, Experimental Aerodynamics, Flow Characteristics and Flow Control of Internal Flows, Experimental Methods and Flow Visualization

2. Hemendra Arya.

Mini Aerial Vehicle, Mechatronics, Hardware-In-Loop Simulations

3. Sanjay Bhat

Control Theory, Non-linear Systems and Dynamics, Stability Theory

4. Avijit Chatterjee.

Computational Fluid Dynamics, Aerodynamics, Computational Electromagnetics

5. Ashok Joshi

Dynamics & Control of Flight Vehicle Structure, Aero-elasticity

6. Subhash Chandra Lakkad

Composite Materials, Structural Design, Biomechanics

7. Shripad Mahulikar

Aerothermodynamics, Heat Transfer in Hypersonics, Jet Propulsion, Micro-channel Cooling, Stealth Technology

8. Jadav Chandra Mandal

Computational Fluid Dynamics

9. Victor Menezes

Hypersonic aerothermodynamics, Hypersonic ground testing facilities and related experimental techniques, Shock waves, Medical and industrial applications of shock waves

10. Mira Mitra

Wave propagation and structural dynamics, structural health monitoring, smart structures, wavelet, carbon nanotubes and nanocomposites, computational mechanics

11. Prasanna Mujumdar

Structural Dynamics & Stability, Aero-elasticity, Aero-servo-elasticity, Multi-disciplinary Design Optimization, Smart Structures

12. Niranjana Naik

Polymer Matrix Composites, Textile Composites,

13. Rajkumar Pant

Aircraft Design, Air Transportation, Optimization

14. Prabhu Ramchandran

Vortex methods, Particle methods, Scientific computing, Computational fluid dynamics

15. Bhaskar Roy

Aircraft Propulsion, Turbo-machines, Axial Flow Compressor/Fan Design

16. Shailendra Sharma

Experimental Techniques in Fluid Mechanics & Aerodynamics, Control of Coherent Structures in Free Shear Flow, Turbulent Mixing of coaxial ducted jets, Vortex Flow, Pulsatile Flow

17. Gopal Shevare

Grid Generation, Computational Fluid Dynamics

18. Rameshchandra Shimpi

Theory of Plates, Finite Element Method, Evolutionary Optimization, Material Testing, Experimental Stress Analysis

19. Krishnendu Sinha

Computational fluid dynamics, Turbulence modeling, Hypersonic flows

20. Sudarshan Kumar

Flameless and mild combustion, Micro combustion, Pattern formation of flames and propulsion

21. Krishnarao Sudhakar

Design Optimization, MDO, Flight Mechanics, Systems Engineering

Chemical Engineering

Introduction

The Department of Chemical Engineering has a strong focus on excellence in education and research. The Department has a dynamic faculty with a wide range of research specializations. Research activities in the Department are supported by excellent research students (Ph.D., M.Tech. and Dual Degree), very competent technical staff, and good experimental and computational facilities.

The enrolment of students into the Ph.D. programme continues to show an uptrend and has contributed to the increase in research activity in the Department. The Department also received good funding for sponsored projects this year.

The Department-Industry interactions were manifold this year including continuing education courses (both open and in-house programmes), consultancy, and technology transfer. The Manudhane Excellence Awards are now in their fifth year.

Academic Programmes

Degrees Awarded

B.Tech.	:	7
Dual Degree	:	21
M.Tech.	:	26
Ph.D.	:	25

R&D Activities

The department is involved in a variety of frontier and traditional areas in chemical engineering research, under the broad areas of:

Biological Systems Engineering
 Energy & Environment
 Materials Engineering
 Process Systems Engineering
 Reactor Engineering
 Transport Phenomena and Complex Fluids

Research Projects

The Department received grants from various sources towards many new projects during the year apart from various ongoing projects, the summary of which is as follows:

Sponsored Research Projects	71
Sponsored Projects	16 (New Projects)
Sanctioned Amount	Rs. 3,81,75,414 Lakhs
Completed Projects	16
Faculty involved	29

The details of these projects is given in the following table:

Project Title	Agency Name	Project Status
“Reverse Osmosis Thin Film Composite Membranes: Investigations into Structure, Property and Function”	DOW Chemical International Pvt. Ltd.	Ongoing
“Synthetic Biology of Cyanobacteria for Solar Ethanol”	Indo-French Centre for The Promotion of Advanced Research	Ongoing
“Development of Incremental Machine Direction Stretching Process for Manufacture of Fluoro Polymer Films”	Bhabha Atomic Research Centre	Ongoing

Project Title	Agency Name	Project Status
“Aerosol Routes for the Synthesis of Nanoparticles with Controlled Structural Properties: Application to Biodegradable Particles for Drug Delivery”	DST	Ongoing
“General Strategies for Nanoparticles of Controlled Size, Shape and Composition: Magnetite as a Case Study for MRI Applications”	DST	Ongoing
“Segregation and Packing of Granular Mixtures During Burden Distribution”	TATA Steel Ltd., Jamshedpur	Ongoing
“Multi-scale Simulation of III-V Compound Semiconductors Alloys”	DST	Ongoing
“Intracellular Changes Occurring During Adaptation of Mammalian Cells to Suspension Culture”	DST	Ongoing
“Nucleation During Granulation with Viscous Liquid Binders Under Controlled Shear Flow”	Procter & Gamble Technology (Beijing) Co. Ltd., China	Ongoing
“Process and Catalyst Development Studies for Synthesis of Biodiesel”	TCE Consulting Engineers Ltd., Mumbai	Ongoing
“Experimental and Numerical Investigation of Oil Recovery from Fractured Reservoirs”	Oil & Natural Gas Commission, Ahmedabad	Ongoing
“DuPont Young Professor Award”	DuPont	Ongoing
“Review Meeting - Chemical Engineering on 24-25, 2008 at IIT Bombay”	Department of Science & Technology	Closed
“Synthesis and use of Ferrofluids for the Intensification of Gas-Liquid Mass Transfer Processes”	Newreka Green-Synth technologies Pvt. Ltd. Mumbai	Ongoing
“Inter Facial Processes Controlling Lead Mobility In Environmental Systems”	McDonnell academy, St. Louis, USA.	Ongoing
“National Faculty Development Centre (NCP Scheme)”	AICTE, Delhi	Ongoing
“Electrification of Village Kolha using Straight Vegetable Oil and Bio-gas”	Donation	Ongoing

Consultancy Projects

The department undertook 29 jobs generating Rs. 2,56,32,839/-. The total number of faculty involved was 12.

Extension Activities

CEP courses:

Extraction and Processing with Supercritical Fluids
Piping Engineering
CFD analysis in Chemical Engg.
Thermodynamic packages in simulation
Advance Pipeline Technology
Modeling, Analysis and Optimization of Industrial Processes
Synthesis, Characterization and applications of Nanoparticles

Symposium

Research Scholars' Symposium 2009

Seminars:

Convener: Prof. P.W. Wangikar

Prof. Arvind Varma R.

"New Methods for Hydrogen Generation from Boron Compounds and Waterproof. George Stephanopoulos" January 6, 2009

Prof. George Stephanopoulos

"Nanoscale Process Systems Engineering: Towards Molecular Factories, Synthetic Cells, and Adaptive Devices", February 10, 2009

Mugdha Gadgil

"A population proportion approach for ranking differentially expressed genes" March 19, 2009

Prof. Gandhi

"Modeling of freezing phenomena induced by chemical reactions" March 12, 2009

Dr. Sachin Jain

"Nano-scale events with macroscopic effects in PP/silica nanocomposites" 5 March, 2009

Prof. Macosko

"Polymer Protected Nanoparticles for Drug Delivery" February 27, 2009

Prof. Mackley

"The processing and application of novel plastic microcapillary films" February 27, 2009

Kirti Chandra Sahu

"Numerical simulations of miscible channel flow with viscosity and density stratifications", January 30, 2009

Prof. Alon McCormick

"Observing and understanding nanostructure formation" March 26, 2009

Visitors to the Department

Prof. Arvind Varma

Distinguished Professor and Head School of Chemical Engineering, Purdue University, West Lafayette, IN 47907, USA January 6, 2009

Prof. George Stephanopoulos

Department of Chemical Engineering
Massachusetts Institute of Technology
Cambridge, MA. 02139, Feb. 10, 2009

Prof. Chris Macosko

Professor of Chemical Engineering and Materials Science and Director of IPRIME the Industrial Partnership for Research in Interfacial and Materials Engineering at the University of Minnesota

Prof. K. S. Gandhi

Department of Chemical Engineering
Indian Institute of Science Bangalore

Prof. Alon McCormick,

Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, USA

Prof. Malcolm Mackley,

Department of Chemical Engineering and Biotechnology, University of Cambridge
Title of Seminar/Conference:
The processing and application of novel plastic microcapillary films

Conferences /Symposia/ Workshops and Seminars (Participated/ Papers Presented)

Wangikar Pramod

Indo American Frontiers of Engineering Symposium, Irvine CA, USA

ESF-EMBO Symposium on Molecular Bioenergetics of Cyanobacteria: Towards Systems Biology Level of Understanding, Sant Feliu de Guixols (Costa Brava), Spain

Tirumkudulu Mahesh S

ICTAM-2008, Adelaide, Australia

Symposium on Chemotaxis by American Mathematical Society, Univ. of Minnesota, USA

Thaokar Rochish M

International congress of Rheology, Monterey, California, US

Unilever Symposium on Multiscale Modeling of Complex Fluids

Jadhav Sameer

DBT Young Investigators Meet, February 24th-28th 2009 at Estuary Island, Kerala

Aghalayam Preeti

“Compartment modelling for Underground Coal Gasification,” *International Pittsburgh Coal Conference*, Pittsburgh, PA, Oct 2008

“Pyrolysis of sawdust-lignite blends,” *International Pittsburgh Coal Conference*, Pittsburgh, PA, Oct 2008

Bhartiya Sharad

“An Engineering Analysis of Biological Regulatory Systems”, *Advances in Instrumentation, Signal Processing, and Communications*, AISPC-09, NDMVP Samaj's College of Engineering, Nashik, January 23-24, (2009),

“Modeling, Identification and Control of Hybrid Systems”, *Trends in Industrial Measurements and Automation TIMA 2009*, Anna University, Chennai, January 04-06, (2009), (Keynote Address)

“Modeling and Online Inferential Estimation of Kappa Number for Wheat Straw Pulping in a Pandia Digester”, *PaperTech India 2008*, Mumbai, India, Sept 18-21, (2008).

Suresh A.K.

Attended and presented two papers in CHISA-08, *18th International Congress of Chemical and Process Engineering*, Prague, The Czech Republic, 24-28 Aug 2008.

Mahajani Sanjay. M.

Indo-German Workshop on Advances in Reaction and Separation Processes, IIT-Madras, 2008

Mahesh T and Venkatesh K. V.

“Escherichia Coli Chemotaxis Across Glucose Gradient,” *Workshop on Cell Migration and Chemotaxis*, Institute of Mathematical Applications, University of Minnesota, May 27-30, 2008.

Patwardhan S. C.

“Constrained State Estimation Using the Ensemble Kalman Filter”, *Proc. of the 2008 American Control Conference, Seattle*, June 5, 2008.

“On-line Sensor Fault Identification in an Autonomous Hybrid System using Likelihood Ratio Approach.” *Proc. of Int. Symposium on Advanced Control of Industrial Processes (AdCONIP'08)*, Jasper, Canada, May 4-6, 2008. (SCP).

“Development of Control Relevant Reparameterized ARX Models for a Packed Bed Distillation Column,” *Proc. of Int. Symposium on Advanced Control of Industrial Processes (AdCONIP'08)*, Jasper, Canada, May 4-6, 2008. (SCP)

Patwardhan, S. C. and Gudi, R. D.

“Quantifying the Impact of Model-Plant Mismatch on Controller Performance: A Non-invasive Approach.” *Proc. of Int. Symposium on Advanced Control of Industrial Processes (AdCONIP'08)*, Jasper, Canada, May 4-6, 2008. (SCP)

Ventakraman Chandra

“The Relative Influence of Local and Long-range Transported Emissions on Aerosols in the Indian Region”, *The International Geosphere Biosphere Programme Congress*, Cape Town, South Africa, May 5-9, 2008 (Poster Presentation)

“Toxicity Characterization of Hydrophobic Organic Compound Mixtures Based on Concentration Addition and Independent Action Models”, *5th SETAC World Congress*, Sydney, Australia, organized by The Society for Toxicology and Chemistry, Aug 3-7, 2008, (Platform Presentation).

“Statistical Tools for Studying Component Effect and Interactions in Chemical Mixtures”, *Society for Risk Analyst (SRA)*, Annual Meeting, Boston, USA, 7th - 10th Dec, 2008 (Platform Presentation).

2nd International Conference on Energy and Environment, The MacDonnell Academy for Global Energy and Environmental Partnership (MAGEEP), Hong Kong, December 8-11, 2008.

Invited Lectures

National

Gupta, S. K.

“Multi-Objective GA and its Applications in Polymers”, *Indo-US Workshop on 'Materials Design: Measurement, Modeling and Informatics*, BEC, Shibpur, Kolkata, 5–7 January, 2009.

“Multi-Objective Optimization: Bio-mimetic Adaptations of Genetic Algorithm”, *Advances in Chemical Engineering, AChemE, 2009*, Thapar University, Patiala, 27 – 28 Feb. 2009.

“Incipient Stable Bubble Formation during Bulk Polymerization of Methyl Methacrylate under Near-Isothermal Conditions”, *Polymer Processing Society Meeting*, PPS-25, Goa, 1 – 5 Mar. 2009.

“Biomimetic Adaptation of NSGA-II-aJG using the Biogenetic Law of Embryology for Multi-objective Optimization”, *Advances in Chemical Engineering*

and Process Technology (ACEPT), National Chemical Laboratory, Pune, 4 – 6 June, 2009.

Khakhar D.V.

“Granular Flow and Mixing in the Process Industries Challenges for Modelling”, *P. S. Murti Memorial Lecture*, Indian Institute of Chemical Technology, Hyderabad, March 16, 2009.

Bandyopadhyay Rajdip

“Substrate-free Janus Films of Porous Silica,” *National Conference in Recent Advances in Surface Engg.*, National Aerospace Laboratories, Bangalore, Feb., 2009.

International

Venkatesh K. V.

“Systems Biology: A tool for Drug Design”, *International Conference on Advances in Therapeutics, Reliance Life Sciences*, Feb 2009.

“Characterization of phenotype using elementary modes,” *International Conference on Integrating Physics, Chemistry, Mathematics and Biology to Understand Living Systems (IPCMB 2008)*, December 4-7, A symposium celebrating 150 years of the birth of Acharya J.C. Bose and 90 years of Bose Institute, Calcutta, India (2008).

“Optimization of Bioprocesses Using Metabolic Engineering”, *Indo-US Conference on Bioprocess & Bio Products Technology Trends & Opportunities*, Hyderabad, 27-28 November 2008.

Patwardhan S.C.

“Nonlinear Bayesian State Estimation: A Review and New Results” at Dept. of Chemical Engineering, Carnegie Mellon University on March 27, 09.

Roy Sandip

“Use of Quantitative Risk Assessment for Insurance Industry”, delivered at The New India Assurance Co. Ltd, 16 September 2008.

Naik V. M.

“Patterns of Creativity in Development of Science and Technology” - 5th July 2008 - IIT Kanpur.

“Multi-scale Material Manipulation through Dielectrophoretic Forces”, *International Conference on Multi-scale Structures and Dynamics of Complex Systems* organised jointly by INSA, CAS-China, RAE-UK, Uniever - 4th&5th Sept 2008, Bangalore.

“Dr KKG Menon - the Scientist” - AFST and UICT - 19th September 2008, Mumbai.

Tirumkudulu Mahesh S

“Stability of a Thin Radially Moving Liquid Sheet in the Presence of Acoustic Excitation” at *ICTAM-2008*, Adelaide, Australia.

Aghalayam Preeti

“Underground Coal Gasification: A Clean coal technology for India” at *Coal Gasification: The Path Forward*, Mumbai, India, Dec 2008.

“Clean Coal: Future Technologies for Coal Utilization,” *Indo-American Frontiers of Engineering Symposium*, Irvine, CA., Feb 2008.

Bhartiya Sharad

“An engineering analysis of biological regulatory systems”, *Advances in Instrumentation, Signal Processing, and Communications, AISPC-09*, NDMVP Samaj's College of Engineering, Nashik, January 23-24, (2009), (Plenary Address).

“Modeling, Identification and Control of Hybrid Systems”, *Trends in Industrial Measurements and Automation TIMA 2009*, Anna University, Chennai, January 04-06, (2009), (Keynote Address).

Suresh A.K.

“Enhancement of Gas-Liquid Mass Transfer Using Ferrofluids – An Experimental Study”, talk delivered in the Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, USA, June 19, 2008.

Mahajani Sanjay. M.

Conceptual Design for Selectivity Engineering with Reactive Distillation”, *Indo-German Workshop*, IIT-Madras, 2008.

“Scale-up Pharmaceutical Processes”, June 2008, UICT-Mumbai.

Rao V. Govardhana

“Photochemical Processes for Industrial Waste Treatment – An overview”, *National Seminar on Role of Chemistry in monitoring and management of Environment*, Organized by Dept. of Chemistry, Sri Venkateswara University, Tirupati, February 16-17, 2009.

Significant Awards and Distinctions

Sandip Roy

Winner of the PANIIT2008 for best position paper in Competition on “IIT Leadership in Research” on the theme of improving the “Research Ecosystem of the IITs”, IIT Madras, 19-21 December 2008.

Jayesh Bellare

Appointed as “Piercy Distinguished Visiting Professor” at the University of Minnesota, USA.

Elected as a Fellow of the Indian National Academy of Engineering.

Patwardhan S. C.

Awarded Indo-US Science and Technology Forum travel grant for working on a collaborative at Carnegie Mellon University.

Venkataraman C.

H.H. Mathur Award for Research Excellence in Applied Science (2008), Distinguished Faculty Career Award, IIT Bombay.

Sunthar P.

Du Pont Young Professor Award, 2008.

Aghalayam Preeti

Amar Dye Chem Award, IChE, 2008.

Mahajani Sanjay. M.

Excellence in Teaching, IIT Bombay (2008).

Honorary Work

Khakhar D.V.

Member, Governing Council, Indian National Academy of Engineering

Member, Science and Engineering Research Council, Department of Science and Technology, India

Member, Programme Advisory Committee, Chemical Engineering, Department of Science and Technology, India

Member, Sectional Committee, Engineering Sciences, Indian Academy of Sciences, Bangalore

Member, Research Council, NIIST, Trivandrum

Reviewer for: Physical Review E, Polymer Engineering and Science, Chemical Engineering Science, Journal of Fluid Mechanics, Physical Review Letters

Venkatesh K. V.

Associate Editor, BMC Systems Biology

Member Editorial Board, International Journal of Systems and Synthetic Biology

Naik V. M.

Member of the National Scientific Advisory Committee, Ministry of Food Processing Industry, Govt. of India
Reviewer and Member of the Programme Advisory Committee of DST for Chemical Engineering.

Member of the Research Council of CFTRI, Mysore
Reviewer for I&EC Research.

Wangikar Pramod

Member, Editorial Board, Biotechnology and Bioengineering.

Viswanathan Ganesh A

Reviewed papers for Chemical Engineering Journal.

Thaokar Rochish M

Reviewed papers for Physics of Fluids.

Mehra Anurag

Reviewer for Industrial Engineering Chemistry, Langmuir

Member, Department of Science & Technology (DST), Chemical Engineering Programme Advisory Committee (PAC)

Faculty Selection Committee, Chemical Engineering, IIT Guwahati.

Bhartiya Sharad

Reviewed papers in Journal of Process Control.

Suresh A. K.

Reviewer, AIChE J, J Memb Sci, I&EC Research, Polymer, Member, Editorial Advisory Board, Recent Patents on Chemical Engineering, a Bentham Science Publishers Journal

Member, Department of Biotechnology (DBT)’s Task force for Bioprocesses.

Member, Department of Science and Technology (DST)’s Fast Track committee for Engineering Sciences.

Mahajani Sanjay. M.

Reviewed papers for I&ECR, Chemical Engg. & Processing: Process Intensification, Chemical Engg. Science, Catalysis Letters

Bhushan Mani

Reviewed papers for journals such as Automatica and Canadian Journal of Chemical Engineering

Bandyopadhyay Rajdip

Member, Organizing Committee of the International Conference on Nano Science & Technology (ICONSAT 2010), to be held at IIT Bombay.

Honorary Member, Editorial Board, International Journal of BioSciences and Technology (2008-onwards).

Reviewer of technical papers in 53rd DAE Solid State Physics Symposium, Bhabha Atomic Research Centre, Mumbai, December, 2008

Reviewer of manuscripts submitted to several American Chemical Society journals.

Invited Member of the Reader’s Panel of the journal Nature (2008-onwards)

Faculty Members and their Specializations

1. Jhumpa Adhikari

Statistical Thermodynamics, Molecular Simulations

2. Preeti Aghalayam

Reactor Modelling, Multiphase Reaction, Catalysis, Renewable Resources, Pollution, Coal Gasification

3. Rajdip Bandyopadhyaya

Porous Media, Colloids, Aerosols, Thin films, Surface Science, Nanoparticles, Nano-composites

4. Jayesh Bellare

Separations, Surface Science, Nanoparticles, Microscopy, Drug Delivery

5. Sharad Bhartiya

Process Control, Modelling, Identification

6. Mani Bhushan

Process Safety Analysis, Process Control, Optimisation, Identification

7. Ravindra D. Gudi

Process Safety Analysis, Process Control, Optimisation, Identification, Biochemical Engineering

8. Santosh Kumar Gupta

Reactor Modelling, Process Control, Optimisation

9. Sameer Jadhav

Surfactants, Computational Flow Modelling (CFD), Drug Delivery, Biomolecular Engineering

10. Vinay A. Juvekar

Surfactants, Separations, Rheology, Electrohydrodynamics, Multiphase Reaction, Surface Science, Polymer Physics

11. Devang V. Khakhar

Surfactants, Rheology, Granular Flow, Reactor Modelling, Polymer Processing, Nano-composites, Drug Delivery

12. Kartic Chandra Khilar

Surfactants, Porous Media, Coatings, Green Engineering

13. Sanjay M. Mahajani

Separations, Computational Flow Modelling (CFD), Multiphase Reaction, Catalysis, Renewable Resources, Coal Gasification

14. Ranjan Kumar Malik

Separations, Modelling, Energy Integration

15. Anurag Mehra

Surfactants, Multiphase Reaction, Nanoparticles, Molecular Simulations, Food Engineering

16. Sarika Mehra

Systems Biology, Computational Biology, Biomolecular Engineering

17. Arun Sadashio Moharir

Separations, Reactor Modelling, Optimisation, Modelling, Pollution

18. Kannan M. Moudgalya

Process Control, Modelling

19. Mamata Mukhopadhyay

Separations, Food Engineering

20. V. M. Naik

Surfactants, Separations, Electrohydrodynamics, Colloids, Surface Science, Nanoparticles, Food Engineering

21. Hemant Nanavati

Statistical Thermodynamics, Polymer Processing, Polymer Physics, Nano-composites, Molecular Simulations, Renewable Resources, Computational Biology

22. Janaky Narayanan

Surfactants, Rheology, Surface Science, Microscopy

23. Santosh Noronha

Renewable Resources, Green Engineering, Systems Biology, Computational Biology, Biomolecular Engineering, Biochemical Engineering

24. Sachin C. Patwardhan

Process Control, Modelling, Identification

25. V Govardhana Rao

Separations, Rheology, Heat and Mass Transfer

26. Sandip Roy

Surfactants, Separations, Process Safety Analysis, Surface Science, Statistical Thermodynamics, Renewable Resources

27. Hariharan S. Shankar

Pollution, Biochemical Engineering

28. P. Sunthar

Surfactants, Granular Flow, Computational Flow Modelling (CFD), Polymer Physics, Drug Delivery

29. A. K. Suresh

Heat and Mass Transfer, Multiphase Reaction, Catalysis, Nanoparticles, Biochemical Engineering

30. Rochish M Thaokar

Surfactants, Electrohydrodynamics, Computational Flow Modelling (CFD), Colloids, Statistical Thermodynamics, Nanoparticles, Drug Delivery

31. Mahesh S Tirumkudulu

Surfactants, Rheology, Computational Flow Modelling (CFD), Colloids, Coatings, Thin films, Surface Science, Drug Delivery

32. Chandra Venkataraman

Aerosols, Surface Science, Nanoparticles, Nanocomposites, Drug Delivery, Renewable Resources, Pollution, Climate Change

33. K. V. Venkatesh

Food Engineering, Systems Biology, Biomolecular Engineering, Biochemical Engineering

34. Madhu Vinjamur

Porous Media, Heat and Mass Transfer, Coatings, Food Engineering, Renewable Resources

35. Ganesh A Viswanathan

Reactor Modelling, Multiphase Reaction, Systems Biology, Computational Biology, Biomolecular Engineering

36. Pramod Wangikar

Process Control, Modelling, Computational Biology, Biomolecular Engineering, Biochemical Engineering

Gh Chemistry

Introduction

The Department of Chemistry comprises 30 faculty members with expertise in various areas of chemistry and allied subjects and a large number of motivated young students assisting the faculty in their research. There is an ongoing effort to maintain quality teaching and research standards and to generate adequate financial support. The department has emerged as one of the leading centers for education and research in India.

Academic Activities

Students Intake:

M. Sc. (Integrated Programme)	: 19
M.Sc. (2-year Programme)	: 28
Ph. D.	: 39

Degrees Awarded:

M. Sc.: 5-yr. Int. programme	: 14
2-yr. M.Sc. programme	: 22
Ph.D.	: 20

The General Chemistry programme of the department consists of two theory and two laboratory courses in the core curriculum of the first year B.Tech./Dual Degree M.Tech. programmes and has received much praise for the molecular level understanding it provides to all areas of technology. The department also offers an additional course to third year B.Tech./Dual Degree M.Tech. (Chemical Engineering) students. Furthermore, the department has three well established academic programmes leading to M.Sc. and Ph.D. degrees: 2-year M.Sc. for post-B.Sc. students, with entrance through JAM, 5-year integrated M.Sc. Chemistry with entrance through JEE, and Ph.D. in Chemistry. The syllabi of all these are reviewed and updated periodically in order to meet the changing scenario in chemistry.

The department is involved in research problems of both basic and applied nature in frontier areas

through sponsored research projects, and as part of the M.Sc. and Ph.D. programmes. A range of expertise in various specializations is available within the department. Faculty members of the department disseminate the outcome of research through research publications, seminars and through participations in symposia. Every year around 100 papers are being published in reputed journals.

The faculty also participated in a variety of activities relevant to academic life. These include lecturing in CEP courses and refresher courses of other universities, helping other institutions in critical review of their academic and research programmes, evaluating student dissertations, serving as experts in different committees, peer review of the research project proposals submitted to funding agencies, and contributing to various journals at home and abroad as referees and as members of editorial boards.

R & D Activities

Sponsored Projects:

Ongoing Projects	: 69
New Projects	: 22
Completed projects	: 22
Sanction outlay for new projects:	Rs. 7,67,62,446/-

Consultancy:

No. of Jobs	: 04
No. of faculty involved	: 02
Income generated :	Rs. 19,54,334/-

The faculty of the department is involved in attracting research funding through various national and international sponsoring agencies in addition to providing industrial support. During 2008-2009, the department has added 22 new sponsored projects with a total financial outlay of Rs.7,67,62,446/- and completed 22 projects. Sixty nine projects are under investigation by various faculty members. The Department encourages the staff working on these projects to use the research outputs for obtaining their Ph.D. degree.

A large number of students have registered for department's Ph.D. programme, and they have been

financed through sponsored projects and individual CSIR and UGC fellowships.

Sponsored Research Projects:Ongoing

Title:	Funding Agency	Status
"Development and Implementation of Quantum Chemical Approaches for Investigation of Electron Scattering and Auger Resonances."	Department of Science and Technology, Government of India.	Ongoing
Design and Implementation of IR + UV laser Field Profiles for selective control of bond cleavage in prototypical tri and polyatomic systems	Board of Research in Nuclear Sciences, Government of India.	Ongoing
"Calix[4]arene conjugates and its models systems as sensors towards ions and neutral species: A fluorescence emission study"	BRNS DAE	The project started from June 2006 will be closed by June 2009.
"Bioinorganic avalanches of synthetic glyco-conjugates: Binding, conformation, structure and inhibition of lectins and glycosidases, and ion sensing properties and chemical nuclease activity of the complexes"	DST	The project started in Jan. 2007 and will be closed by December 2009.
Synthesis, structure and stereochemical non-rigidity of organotellurium compounds with intramolecular coordination of hypervalent type; their use in synthesis of novel heterocycles" Indo-Russian Project	DST	Ongoing
Ramanna Fellowship		Ongoing
"Molecular complexity from Aromatics: Studies on ————— fused polycyclic ethers"	DST New Delhi	Ongoing
"Transition Metal Based Sandwich and Half-sandwich Derivatives with Donor Functionalities: Synthesis, Organometallic Chemistry and Catalytic Applications."	CSIR	Ongoing
"Cyclodiphosphazanes as Building Blocks to Design Inorganic Rings, Cages and Clusters with Both Main Group and Transition Elements and their Catalytic Utilities."	DST	Ongoing
"Ab Initio Quantum Chemical Investigations on C-H... Interactions between Saccharides and Aromatic Amino Acids: Implications in Binding and Recognition in Biological Systems"	DST under SERC Scheme	Ongoing
"		

Title:	Funding Agency	Status
“Investigations on the Stereoselectivity of Sulfur Ylide Promoted Asymmetric Organic Reactions”	CSIR	Ongoing
“Synthetic Studies on Aigialomycin and Salicylhalamide”	DST, Swarna-jayanti project	Ongoing
“Synthetic Studies on Some Biologically Active 10-Membered Lactones”	CSIR	Ongoing
“New Strategies for the Synthesis of Natural Products and Natural Products Like Molecules”	DST	Ongoing
“Synthetic and Catalytic Studies of N-Heterocyclic Carbenes (NHC) and their Late Transition Metal Complexes”	DST	Ongoing
“Synthetic, Structural and Catalysis Studies of Silver and Gold <i>N/O</i> -functionalized N-Heterocyclic Carbene (NHC) Complexes”	CSIR	Ongoing
“Development of Novel Gene Targeting Drugs”	IRCC, IIT Bombay	Ongoing
“Synthesis and Biophysical Studies of G-quadruplex DNA Stabilizing Agents based on 1,8-Naphthyridine”	CSIR	Ongoing
“Development of Anti-malarial Therapeutics based on Chemically Modified Small Interfering RNAs”	DBT	Ongoing
Sponsored Research Projects		
“Theoretical Investigation of Magnetic Molecules and Magnetism in Molecular Crystals”	CSIR	Completed
“Development and Implementation of Quantum Chemical Approaches for Investigation of Electron Scattering Resonances”	DST	Completed
“Investigation and Control of Non-adiabatic Transitions”	Board of Research in Nuclear Sciences, Government of India	Completed
“Exploration of Design and Fabrication of Sensors for Detection of Explosives”	HERML	Completed
“Functionalized Polycarbocyclic Frameworks as Novel Ligands and Organocatalysts in Asymmetric Reactions”	CSIR	Completed
“Coupling of Nitrovinyl Anion With Novel Carbon and Heteroatom Centred Electrophiles: Prospects of Intramolecular and Asymmetric Versions and Applications of the Coupled Products”	DST	Completed

Title:	Funding Agency	Status
“Nitro and Azido Polycarbocyclic Caged Systems: ‘Insensitive’ High Energy Density (HED) Fuels for Volume Limited Applications”	ISRO	Completed
“Studies of N-Heterocyclic Carbene (NHC) Complexes of Nickel and Palladium as Potential Catalysts for Olefin Polymerization and Copolymerization with Functional Monomers”	DST	Completed
“Synthesis of Novel Zinc Complexes as Potential Catalysts for Alternating Copolymerization of Carbon Dioxide and Epoxides and for Ring Opening Polymerization of Lactides”	BRNS	Completed
“Novel Nickel and Palladium Complexes of Sterically Demanding [carbene-C, imido-N] Chelating Ligands as Potential Catalysts for Olefin Polymerization: A Synthetic, Structural and Performance Evaluation Study”	CSIR	Completed
“Molecularly Tailored Copolymers Based on the Bazan Catalyst: Structure-Property Relations and Modeling”	CSIR Project (Rs. 17 Lakhs) in collaboration with Prof. H. Nanavati, Chemical Engineering Department, IIT Bombay and NCL, Pune.	Completed
“Ni, Pd, Ti and Zr Complexes of Non-Functionalized and N/O-Functionalized N-Heterocyclic Carbenes (NHCs) for Ethylene and α -Olefin Oligomerization, Polymerization and Co-Polymerization with Functional Monomers”	Reliance Ind. Limited Project	Completed

Other Activities

Prof. A. K. Singh was appointed on deputation as the Convener, IIT Gandhinagar, for coordinating various activities in connection with the establishment of a new IIT in Gujarat and commencement of academic activities from July 2008.

Prof. C. P. Rao introduced a one-day symposium into the course on Bioinorganic chemistry which is attended by M.Sc. students in Chemistry and Biotechnology as well as Ph.D. students.

Prof. Anil Kumar developed GC-MS and also developed functional amplified fluorescence polymers and new polymerization method for polymerization of 3,4-dialkoxythiophenes.

Prof. R.B. Sunoj is the Coordinator for IIT Bombay High Performance Computing Initiative and is in the process of setting up IIT Bombay’s first supercomputing facility.

Prof. G. Naresh Patwari has started a new programme and constructed a new instrument called fluorescence correlation spectrometer, which can measure diffusion constant, to investigate diffusion kinetic in biological systems. He is in the process of investigating competitive hydrogen bonding in multifunctional molecules using advance laser spectroscopic techniques such as infrared-optical double resonance spectroscopy.

Recognition

The contribution of the members of the faculty has been recognized in the form of Prof. S.C.Bhattacharyya Excellence Award in Pure Sciences, Elected Fellows of National Academy of Sciences, and INSA Young Scientist Award, Award for Excellence in the area of Chemical Sciences, Max Plank-India Fellowship, etc. Many from the faculty serve as members of the Project Advisory Committees of the DST, CSIR and DAE. Members of the faculty also serve on the Editorial Boards of several reputed journals.

Some of the publications have been placed among top 10-25 downloaded articles.

Interaction with scientists through seminars and other formal programmes is an integral part of its academic activity. Further, the faculty keeps abreast of the developments in the scientific world through visits and interactions with various research groups within country and abroad.

Conferences /Symposia/Workshops/ Seminars (Participated/Papers Presented):

National

Singh, A. K. and A. Asefa

“3-Styrylindoles as neutral hydrophobic fluorescence probes”, *21st Research Scholars’ Meet-2009*, RR College, Mumbai, February 13-14, 2009

Mishra M. K.

“Vibrational excitation resulting from electron capture in LUMO of N₂, H₂ and CO molecules – a treatment using the TDWP approach” *National Symposium on Quantum Chemistry, Soft Computing and Optimization*, IACS, Kolkata, 4-5 April 2008

“PhotoDynamic Control : A New Perspective”, *National Symposium on Electronic Structure and Properties of Atoms and Molecules*, University of Hyderabad 10-11 April 2008

“PhotoDynamic Control : A New Perspective”, Keynote Speech at *Bihar Science Conference*, University of Patna, 7-9 May 2008

“Vibrational excitation resulting from electron capture in LUMO of N₂, H₂ and CO molecules – a treatment using the TDWP approach”, Department of Chemistry, *RSC-WI Symposium IIT Bombay* 3 Feb. 2009

Datta S. N.

Participated in discussion Meeting on *Theoretical Chemistry (TCS 2009)*, JNCASR, Bangalore, January 18-22, 2009

Participated in *4th Asia-Oceania Conference on Photobiology* held in Banaras Hindu University, Varanasi, November 24-26, 2008

Singh V.K.

“Molecular complexity from Aromatics” , *Indian science Congress*, 3-7 January 2009.

Vittal, S. ; Kotha, S. and Deodhar, K. D.

“Molecular acrobatics in caged systems: Strategic utilization of catalytic metathesis and photo-thermal metathesis in polycyclic frames” *In-House symposium IIT Bombay (2008)*, IIT-Bombay, September 27th, 2008.

“Molecular acrobatics in caged systems: Strategic utilization of catalytic metathesis and photo-thermal metathesis in polycyclic frames” *21st Research Scholars Meet 2009*, Ramnrain Ruia College, Matunga, Mumbai 400 019, February 13&14th, 2009, Abstract No 34.

“Molecular acrobatics in caged systems: Strategic utilization of catalytic metathesis and photo-thermal metathesis in polycyclic frames” *RSC -IIT Bombay Symposium on Chemical Sciences*, IIT-Bombay, Mumbai, February 3rd, 2009.

Misra, S.; Kotha S.

“Synthetic Approach to Conformationally Constrained alpha Amino Acid Derivatives”, *J-NOST*, Madurai , December 8th, 2008.

Balakrishna, M.S.

“Phosphorus–Nitrogen compounds: Novel mesocyclic thioether based phosphonites: Transition metal chemistry and catalytic investigations” (**Plenary Lecture**). *National Symposium on Recent Trends in Organometallic Compounds and their Industrial Applications*, KIIT & Utkal University, Bhubaneswar, Orissa, 26-28th February 2009.

Ganesamoorthy, C. ; Balakrishna, M.S.

“Novel Polydentate Phosphorus Based Ligands: Synthesis, Transition Metal Chemistry and Catalytic Applications”, *Inhouse symposium*, IIT Bombay, September 27, 2008.

Balakrishna, M. S.; and Ganesa Moorthy, C.

“Rhodium(I) Chemistry of Novel Tetraphosphane Ligands and their Catalytic Utility in Transfer Hydrogenation Reactions”, (oral presentation) *Research Scholars Meet*, Mumbai, Vaze College, 2008.

Sunoj R. B

Participated in the 19th mid year meeting of the Indian Academy of Sciences Bangalore
IISc Bangalore, July, 2008

Sachin Kumar and Prasenjit Ghosh

“Nickel Complexes of N/O-Functionalized N-Heterocyclic Carbenes and Their Utility in Michael Addition Reactions.” *11th National Symposium in Chemistry (NSC)* at NCL Pune (March 6-8, 2009).

Chowdhury Arindam

Participated in the Young Investigators' Meeting, Estuary Island, Kerala. Feb 24-28, 2009. Poster Presentation, *Fluorescence 2009*, TIFR, Mumbai. (Invited oral presentation).

Pradeepkumar, P. I.

"International Conference on Molecular Mechanisms and Systems Biology", held on May 2-4, 2008 at PESIT College, Bangalore

International**Singh A.K and Asefa A.**

"3-Styrylindoles as Neutral Hydrophobic Fluorescence Probe", *4th Asia Oceania Conference on Photobiology*, BHU, Varanasi, November 24-26, 2008.

Datta S. N.

"The Rate of Glucose Equivalent Production in C_4 Plants", *4th Asia-Oceania Conference on Photobiology*, held in Banaras Hindu University, Varanasi, November 25, 2008

Rao C. P.

"Calixarene-conjugates: Selective Recognition of Metal ions & Amino acids and their induced binding core modifications", An invited lecture has been delivered at the *4th Asian Biological Inorganic Chemistry Conference* held at Jeju, Korea Nov. 11-14, 2008.

"An attempt to understand some bioinorganic features".

In the above conference, I had also presented a poster on "Computational Modeling Studies of the Species of Recognition by Conjugates of Calixarene and Carbohydrates" since my student could not attend the same.

Balakrishna M. S.

"Palladium Complexes of Mesocyclic Thioether Based Mono- and Bis(phosphonite) Ligands: Transition Metal Chemistry and Catalytic Applications" *International Conference on Organometallic Chemistry*, ICMOC 23, Rennes, France, July 02-08.2008.

Ghosh Prasenjit

"Pd, Au and Ag Complexes of a Sterically Demanding Imino-functionalized N-heterocyclic Carbene ligand: Syntheses, Structures, and Utility in Suzuki-Miyaura Cross-coupling Reaction", Manoja K. Samantaray and Prasenjit Ghosh, *236th American Chemical Society National Meeting and Exposition (ACS)* at Philadelphia, USA (August 17-21, 2008).

"Facile Long-Range 1,7-Bromination at Two Different Conjugated Carbon Centers (C_{sp^2} and C_{sp^3}) in Au(III)

Complexes of Imino-functionalized N-heterocyclic Carbenes", *23rd International Conference on Organometallic Chemistry (ICOMC)* Jul 14, 2008, at University of Rennes 1, France.

Invited Lectures**National****Singh A. K.**

Guest of Honor and Keynote address at the *Workshop on Curriculum and Courses for M.Sc. (Intg.) Chemistry*, S.V. National Institute of Technology, Surat, April 12, 2008.

"Bioorganic Chemistry – Principles, practice & perspectives and its application to the chemistry of retinal-bound photoreceptors", Department of Chemistry, Gujarat University, Ahmedabad, May 26, 2008.

"Chemistry of Photoreceptors Containing Retinal and Other Related Chromophores", Department of Chemistry, Indian Institute of Technology Delhi, September 12, 2008.

"Chemistry of Linear Polyene-Based Biological Photoreceptors and Design of Multiple and Single Cycle Photoswitches". *National Conference on Green Chemistry*, Chemistry Department, V. N. South Gujarat University, Surat, February 06, 2009.

"Linear Polyene-based Molecular and Biomolecular Photoactivations", *13th ISCB International Conference on Interplay of Chemical and Biological Sciences: Impact on Health & Environment*", University of Delhi, February 27, 2009.

"Bioorganic Chemistry of Retinal-Binding Natural Photoreceptor Pigments and other Related Chromophores of Biological Significance", *Professor T. R. Seshadri Memorial Lecture*, Delhi University, February 28, 2009.

Datta S. N.

"An All-Temperature Magnon Theory of Ferromagnetism", *Discussion Meeting on Theoretical Chemistry (TCS 2009)*, JNCASR, Bangalore, January 20, 2009.

Kotha S.

"Design and Synthesis of Polycyclic Molecules via Catalytic Metathesis", Department of Chemistry, Pune University, 7th April 2008

"Design and Synthesis of Polycyclic Molecules via Catalytic Metathesis", Department of Organic Chemistry, IISc, Bangalore, 8th May 2008.

“Design and Synthesis of Novel Caged Polycyclics: Puspakanediol”, Current trends in organic synthesis”, Department of Organic Chemistry, IISc, Bangalore, November 20-22, 2008.

“Design and Synthesis of Novel Caged Polycyclics: Puspakanediol”, Department of Chemistry, Shivaji University, Kolhapur, December 11, 2008.

“Safety in chemical laboratories”, Department of Chemistry, IIT-Bombay, December 17, 2008.

Mishra M. K.

“Selective Control of HOD Photodissociation”. Department of Physical Chemistry, Indian Association for Cultivation of Science, Kolkata 8 Aug. 2008.

“Vibrational Excitation Resulting From Electron Capture in LUMO of N₂, H₂ and CO Molecules – A Treatment Using the TDWP Approach”, IISER Pune, 25 Aug. 2008

“Electrons in Molecules”, (4 Lectures) at a *Workshop at the Chemistry Department*, Bharthidasan University 24-27 Sep 2008

“Vibrational Excitation Resulting From Electron Capture in LUMO of N₂, H₂ and CO Molecules – A Treatment Using the TDWP Approach”, Department of Chemistry, Univ. of Hyderabad, 11 Feb. 2009.

“Characterisation of Shape and Auger Resonances using the dilated electron propagator”, Department of Physical Chemistry, Indian Association for Cultivation of Science, Kolkata, 27 April 2009

Singh H.B.

“Homometallic and Heterometallic Metal...Metal Interactions”, *Singapore-India Collaborative and Cooperative Chemistry Symposium 5*, held at University of Hyderabad Feb 20-21, 2009.

“Homometallic and Heterometallic Metal...Metal Interactions”, *In-house Symposium*, IIT Bombay, Sep. 27th 2008.

“Homometallic and Heterometallic Metal...Metal Interactions”, IPC Department, IISc Bangalore, July 30th, 2008

Singh V.K.

“Molecular Complexity from Aromatics”, Department of Chemistry, IIT Guwahati, 8th January 2009.

Balakrishna M. S.

“Designing and Fine-tuning of Phosphorus Based Ligands with Functionalities for Transition Metal Chemistry and Catalytic Reactions”, Academies sponsored *Two Day Lecture Workshop on Frontiers in Chemistry*, March 14-15, 2009, National College, Tiruchirappalli 620001, Tamilnadu.

“Chemistry of Transition Elements: Photosynthesis to Energy Storage; Oxygen Transportation to Cancer Therapy”, Inaugural and Key note lectures, *National Workshop on Advances in Coordination Chemistry*, National Institute of Technology Surathkal, Karnataka, Jan 8th and 9th 2009.

“Designing and fine-tuning of phosphorus based ligands with functionalities for transition metal chemistry and catalytic reactions”, Special Invited Lecture, Reliance Industrial Ltd, Vadodara, August 22nd 2008.

Namboothiri I. N. N.

“Application of Nitro Compounds in the Highly Efficient Synthesis of Fused and Functionalized Heterocycles”, at the *45th Annual Convention of Chemists*, November 23-27, 2008, P.G. Department of Studies in Chemistry, Karnatak University, Dharwad.

“Simple Organic Solutions to Complex Scientific Problems”, *Workshop on Challenges of Modern Synthetic Chemistry and Reactivity*, September 29-30, 2008, at Wilson College and Indian Institute of Technology Bombay, Mumbai, India.

Kaliappan K. P.

“Challenges and Opportunities in Target and Diversity-Oriented Syntheses”, *Prof. S. Sivasubramaniam Endowment Lecture*, at Madurai Kamaraj University, Madurai on April 11, 2008.

“New Strategies for Syntheses of Natural Products and Natural Product like Molecules” at Orchid Pharmaceuticals, Chennai on September 12, 2008.

“Metathesis: More than a New Chapter in C=C Formation” at a National Symposium at Aruppkottai College on September 14, 2008.

“Nature to Natural Products and More” at *RSC-IIT B Symposium on Chemical Sciences* at IIT Bombay on February 3, 2009.

“Evolution and Revolution in Organic Synthesis” at a *National Symposium on Green Chemistry* at Kakatiya University on February 10, 2009.

“Evolution and Revolution in Organic Synthesis” at a *National Workshop on Advances in Organic Chemistry and Allied Applications* at NIT Surathkal on February 16, 2009.

“Challenges in the Discovery and Synthesis of New Antibiotics” at a *National Workshop on Advances in Organic Chemistry and Allied Applications* at NIT Surathkal on February 16, 2009.

“New Strategies for the Syntheses of Platensimicin, Palmerolide A and C-Aryl Glycosides” at *Indo-French*

Meeting on Organic Synthesis at Coorg, India on February 27, 2009.

“Organic Synthesis: Where Are We Now” at a *lecture workshop in frontiers of chemistry* at Tiruchi National Engineering College on March 14, 2009.

“Organic Synthesis: Where Are We Now” at a *lecture workshop in frontiers of chemistry* arranged by three national science academies at Theni on March 28, 2009.

Prasenjit Ghosh

“Emerging Horizons of Functionalized N-heterocyclic Carbenes: Catalysis and Beyond”, at the *OMCA-2009*, Utkal University and KIIT University Bhubaneswar, Orissa., February 27, 2009,

“Emerging Horizons of Functionalized N-heterocyclic Carbenes: Catalysis and Beyond”, at NIT Karnataka, February 16, 2009,.

“Synthetic Mimics of Copper and Iron Containing Metalloenzymes”. at the NIT Karnataka., February 16, 2009.

“Fascinating Frontiers of Functionalized N-heterocyclic Carbene Chemistry: A Travelogue” at the National Chemical Laboratory, Pune, on December 30, 2008.

“Fascinating Frontiers of Functionalized N-heterocyclic Carbene Chemistry: A Travelogue”, *Award Lecture (Ajit Memorial Lecture)*, at the Indian Association of the Cultivation of Science (IACS), Kolkata, on December 1, 2008.

“The Story of Functionalized N-heterocyclic Carbenes: From Chemical Catalysis to Biomedical Applications”, at the Wilson College and IITB Conference held at the Department of Chemistry IIT Bombay, on September 30, 2008,

“Constructing C-C Bonds Using N-Heterocyclic Carbenes (NHCs)”, at the *In-house Symposium – 2008* held at the Department of Chemistry IIT Bombay, on September 27, 2008.

“The Story of Functionalized N-heterocyclic Carbenes: From Chemical Catalysis to Biomedical Applications”, at Reliance Ind. Limited (Hazira), on August 22, 2008

“Facile Long-Range 1,7-Bromination at Two Different Conjugated Carbon Centers (Csp² and Csp³) in Au(III) Complexes of Imino-functionalized N-heterocyclic Carbenes”, at *23rd International Conference on Organometallic Chemistry (ICOMC2008)* at University of Rennes 1, France, on July 14, 2008,

“The Story of Functionalized N-heterocyclic Carbenes: From Chemical Catalysis to Biomedical Applications”, at Technische Universität München (TUM), Germany, on July 11, 2008

Patwari G. Naresh

“Exploring Local and Global Minima on Intermolecular Potentials Experiments and Ab-initio calculations,” School of Chemistry, University of Hyderabad October 2008.

International

Singh A. K.

“Light-Driven Molecular Machines”, *11th International Symposium on Natural Product Chemistry*, International Center for Chemical and Biological Sciences (H.E.J. Research Institute of Chemistry and Dr. Panjwani Center for Molecular Medicine and Drug research), University of Karachi, Pakistan, October 29 to November 01, 2008. Also chaired a Session.

“Fluorescence, Photoisomerization and Fluorescence Probe Studies of 3-Styrylindoles and Interaction of Indolic Dienals with Bacterioopsin”, *5th Asian Photochemistry Conference* Chinese Academy of Sciences, Beijing, China, November 1 to 04, 2008.

“Excited State Studies of 3-Styrylindoles and Development of Bacteriorhodopsin Analogues Based on Indolic Chromophores”, Plenary Lecture in the *4th Asia Oceania Conference on Photobiology*, Banaras Hindu University, Varanasi, November 23 to 26, 2008. Also chaired a Session.

Kotha S.

“Design and Synthesis of Polycyclic Molecules via Catalytic Metathesis”, Department of Chemistry, University of Miami-FL, USA, July 12, 2008

“Expanding the Diversity of Polycyclics via Building Block Approach”, Department of Chemistry-NUS-Singapore, Feb 12, 2008.

“Design and Synthesis of Polycyclic Molecules via Catalytic Metathesis” Department of Chemistry-NUS-Singapore, Feb 23, 2008.

“Strategies and Tactics in Olefin Metathesis” Department of Chemistry-NUS-Singapore, Feb 28, 2008.

“Synthesis in Action”, Department of Chemistry-NUS-Singapore, March 10, 2008.

Sunoj R B

“Probing the Importance of Explicit Solvents/Additives in Organic Reactions Through Transition State Modeling”, *World Association of Theoretical and Computational Chemists (WATOC) World Congress*, Sydney, Australia, September 2008.

Namboothiri I. N. N.

“Synthesis of Fused and Functionalized Oxacycles and Pyrazoles from Conjugated Nitroalkenes”, Plenary Lecture, *18th Southern Highlands Conference on Heterocyclic Chemistry*, Aug 31-Sep 02, 2008, Moss Vale, New South Wales, Australia.

“Synthesis and Evaluation of Polycyclic High Energy-Density Fuels”, Paper No. CHED 1574, *235th ACS Meeting*, April 6-10, 2008, New Orleans, LA, USA.

S. Rajkumar, A. Dudi, S. Kumar and I. N. N. Namboothiri.

“Catalytic Asymmetric Synthesis of β -Aminophosphonates via Mannich reaction and Michael Addition”, Paper No. ORGN 14, *235th ACS Meeting*, April 6-10, 2008, New Orleans, LA, USA.

O. P. Oommen, V. Rai and I. N. N. Namboothiri.

Significant Awards & Distinctions**Singh A. K.**

“Award for Excellence 2009 in the area of chemical sciences,” Indian Society of Chemists & Biologists (ISCB) for outstanding contributions.

“Prof. T. R. Seshadri Memorial Lecture – 2009”, Delhi University.

“Elected Vice President, Indian Society of Chemists & Biologists” (2009-12).

Kotha S.

“Prof. S.C. Bhattacharya Award for Research Excellence in Pure Sciences”, IIT-B, 2008.

“NOST council member” (2007-2010).

Editorial board member (J. Chem. Sci. Indian Academy of Sciences 2008-).

Editorial Board Member (Indian J. Chem. 2007-2010).

Editorial Board member (Journal of Amino Acids)

Editorial Board member (Catalysis Journal)

Sunoj R B

“India platinum jubilee young scientist award”, National Academy of Sciences - 2008. “UDCT-Foundation Day Young Scientist Award”, 2008.

Ghosh Prasenjit

“Ajit Memorial Lecture award” from Indian Association of Cultivation of Science, 2008

Pradeepkumar, P. I.

“MaxPlank-India Fellowship 2008”, MaxPlank Society & Department of Science and Technology, Jan 2009

Patents**Kumar Anil**

“Method and Device for Determining Ionizing Radiation,” Harshil Narendra Raval, Shree Prakash Tiwari, Ramesh Raju Navan, Ramgopal Valipe Rao and Anil Kumar Indian Patent File No 1927/MUM/2008.

Namboothiri I. N. N.

“A Facile and Efficient Synthesis of α -Hydrazino- α,β -Unsaturated Nitroalkenes via Morita-Baylis-Hillman Reaction,” I. N. N. Namboothiri and M. Dadwal, *Ind. Pat.* 2008, # 226803.

Membership of Scientific Societies/ Bodies / Organizations**Singh A.K.**

Life Member, Indian Society of Chemistry & Biology

Sunoj R. B.

Life Member of the Chemical Research Society of India

Life Member of World Association of Theoretically Oriented Chemists (WATOC)

Balakrishna M. S.

Life Member of Indian Chemical Society

Life Member of Chemical research Society of India

Life Member of Crystallography Society of India

Life Member of Catalysis Society of India

Member of American Chemical Society

Fellow of Royal Society of Chemistry

Editorial Board Member of Open Journal of Inorganic Chemistry

Editorial Board Member of Indian Journal of Chemistry, Section A.

Editorial Board Member of Indian Journal of Chemical Technology

Murugavel R.

Fellow, Indian Academy of Sciences (2009)

Fellow, Royal Society of Chemistry (2008)

Kaliappan K. P.

Fellow of the Royal Society of Chemistry (FRSC, London)

Member of the American Chemical Society

Life Member of the Chemical Research Society of India

Sunoj R. B.

Life Member of the Chemical Research Society of India

Life Member of World Association of Theoretically Oriented Chemists (WATOC)

Ghosh Prasenjit

Member of the American Chemical Society

Life Member of the Chemical Research Society of India

Honorary work**Singh A. K.**

Editorial Board Member of Journals

Reviewed several PhD thesis from various institutions; Research proposals from various national and international funding agencies; Research papers from various journals

Peer review group member, faculty selections, research, research advisory board/board of studies
Scientist-in-Charge, Organic & Biochemistry Section, ACC-2008, Indian Chemical Society.
Member of the DAE Specialist Group (R&D Sector) – In Advanced Chemical Sciences.
Member, Governing Council, Atomic Energy Education Society
Session Chairman / Advisory Council Member in several conferences
Chairman, M.Sc.(5-Yr Intg.) Chemistry, curriculum/course design, S.V.NIT, Surat.
Chairman, Academic Committee, Gujarat Technical University, Ahmedabad.

Datta S. N.

Member of National Organizing Committee of Discussion Meeting on Theoretical Chemistry (TCS 2009) held in I.I.Sc. Bangalore and JNCASR, Bangalore during January 18-22, 2009.
Reviewed five papers for The Journal of Physical Chemistry of the American Chemical Society.
Reviewed two papers for The Journal of Molecular Structure-THEOCHEM.
Thesis Evaluation of Dr. Priyadarshi Satpati of I.I.Sc. Bangalore, October 2008.

Mishra M. K.

Chairman, GATE 2009, IIT Bombay
Associate Editor, International Journal of Quantum Chemistry (2009-)
Member DST Fast Track Chemical Sciences Expert Committee (2008-)
Convener/Member, Chemistry Section Committee, Indian Academy of Sciences (2006-)
Member, Editorial Advisory Board, Advances in Quantum Chemistry (2005-)
Chairman, Mumbai Chapter, National Academy of Sciences, India (2008-)
Member, Board of Directors, IDBI Intech Limited (2006)

Singh V.K.

Evaluated various Ph.D. theses from various universities, and DST, CSIR research projects
Chemical Sciences Research Committee CSIR, New Delhi, for SRF and RA
Several manuscripts reviewed for the journals such as Journal of Organic Chemistry, Tetrahedron Letters, Tetrahedron, Synlett, Arkivoc, etc.

Kotha S

Reviewer to various journals such as Indian J. Chem., , Proc. Indian Acad. Sciences, Synlett, J. Org. Chem.,, Arkivoc, Tetrahedron, Tetrahedron Letts, Eur. J. Org. Chem. Adv.Syn. Cat, E. J. Org. Chem. Asian J.

Reviewed research proposal to DST and CSIR External examiner to Ph. D. thesis.

Expert committee member to DST- funded industrial projects.

UGC-SAP advisory committee member-Shivaji University, Kholapur

Kumar Anil

Served in the editorial board of "Polymer Reveiws
Vice-Chairman, JEE 2009

Kaliappan K. P.

Member of The review committee of the DST to advise the National Facility for Combinatorial Natural Products at IICT-Hyderabad
Examiner JAM

Sunoj R. B.

Reviewer and adjudicative reviewer for royal society of chemistry journals such as Chemical Communications, Physical Chemistry Chemical Physics, and Organic and Biomolecular Chemistry.
Reviewer for American chemical society journal: Journal of Organic Chemistry
Reviewer for Wiley-VCH journals: European Journal of Organic Chemistry.
Reviewer for Elsevier journals: Tetrahedron and Tetrahedron Letters.
Reviewer for Journal of Chemical Sciences (An Indian Academy of Sciences publication)
Reviewer for Swiss national supercomputing.
Ph.D. Thesis examiner for (a) Osmania university, (b) Kerala university, and (c) Mumbai university.

Datta Anindya

Reviewer for J. Phys. Chem., Photochem. Photobiol., Physical Chemistry Chemical Physics

Ghosh Prasenjit

NMR Incharge, Chemistry Department, IIT Bombay.
JEE (2008) Served as an Institute Representative.
GATE (2009) served as a paper setter.
GATE (2009) served in freezing answers.

Chowdhury Arindam

Reviewed a manuscript from Chem Phys Chem 2008.
Reviewed a grant from ACS-PRF, 2009.

Faculty Member/Area of Research/ Specialization

1. K.D.Deodhar

General: Organic Chemistry
Specific: Studies and development of thermochromic and photochromic dyes : New hetero cyclic systems.

2. A. K. Singh

General: Organic Chemistry,
Specific: Bio-Organic Chemistry, Photochemistry & Photobiology

3. S. Durani

General:Organic Chemistry
Specific: Bio-Organic Chemistry , Structural and Computational Biology
Medicinal Chemistry

4. M. K. Mishra

General: Physical Chemistry
Specific: Quantum Chemistry

5. Pradeep Mathur

General:Inorganic Chemistry
Specific:Organometallic Chemistry

6. H. B. Singh

General:Inorganic Chemistry
Specific:Organometallic Chemistry

7. Sambhu N. Datta

General:Physical Chemistry
Specific: Theoretical Chemistry, Relativistic theory, Magnetic molecules and materials, Aspects of Photosynthesis

8. A. Q. Contractor

General:Physical Chemistry
Specific:Electrochemistry

9. B. L. Tembe

General:Physical Chemistry
Specific:Theoretical Chemistry,Statistical Mechanics, Molecular Dynamics

10. C. P. Rao

General:Inorganic Chemistry
Specific:Coordination Chem. and Bioinorganic, Biomimetic and Biointeraction Chemistry of model Molecules and Protein/enzyme Chemistry, Biochemistry and Biology of Glyco-conjugates Bioinorganic and Biophysical Chemistry of Lectins. Enzyme-inorganic Materials, Biomimetic chemistry of calixarenes and metal modified calixarenes; Transition metal saccharide chemistry and Biology; Glycosidic bond formation: Role of metal ions and metal ion complexation; Transition metal coordination chemistry of protected saccharides; Isolation, purification and bioinorganic reactivity studies of enzymes; Lanthanide metal ion saccharide chemistry

11. V. K. Singh

General:Organic Chemistry
Specific:Organic Synthesis and Photochemistry

12. Sambasivarao Kotha

General:Organic Chemistry
Specific:Unusual amino acids, peptide modifications, metathesis reaction, Suzuki-Miyaura cross-coupling reaction, and new synthetic methodology.

13. G.K.Lahiri

General:Inorganic Chemistry
Specific: Transition metal ions mediated intramolecular and intermolecular organic transformations via the activation of C-H and C-X (F, Cl, Br) bonds. Development of mononuclear and multinuclear ruthenium and osmium complexes as efficient photo-redox assemblies. Development of heterogenized homogeneous metal cluster based catalysts for enantioselective organic transformations. Development of new class of metal complexes as possible models for the active site of metalloenzymes

14. Y. U. Sasidhar

General:Physical Chemistry
Specific:Protein folding

15. Nand Kishore

General:Physical Chemistry
Specific:Biothermodynamics and Biophysical Chemistry

16. M. S. Balakrishna

General:Inorganic Chemistry
Specific:Main group chemistry; Transition metal organometallic chemistry, Homogeneous Catalysis & Biological Studies

17. R. Murugavel

General:Inorganic Chemistry
Specific:Organometallic Chemistry of Main Group Elements; Silicate and Phosphate Materials Chemistry; Supramolecular Chemistry and Coordination Polymers

18. Anil Kumar

General:Organic Chemistry
Specific:Synthetic Polymer Chemistry

19. M. Ravikanth

General:Inorganic Chemistry
Specific:Porphyrin and its analogs : Synthesis and Photodynamics

20. I.N.N.Namboothiri

General:Organic Chemistry
Specific:Organic Synthesis, Physical Organic Chemistry/ Reaction Mechanism

21. K.P.Kaliappan

General:Organic Chemistry
Specific: Organic Synthesis and Chemical Biology

22. A. Datta

General:Physical Chemistry
Specific: Time resolved spectroscopy ; Applications of fluorescence spectroscopy, organized assemblies, porphyrin photophysics

23. R. B. Sunoj

General : Organic Chemistry

Specific: Computational and applied theoretical chemistry

24. Prasenjit Ghosh

General : Inorganic

Specific: Organometallic Synthesis; Homogeneous Catalysis.

25. G. Naresh Patwari

General : Physical Chemistry

Specific: Experimental Spectroscopy and Chemical Dynamics.

26. Arindam Chowdhury

General : Physical Chemistry

Specific: Optical Microscopy: Single Molecule Imaging and Spectroscopy

27. Rodney A. Fernandes

General : Organic Chemistry

Specific : a) Synthetic Organic Chemistry: Asymmetric Synthesis of Natural Products, Asymmetric Catalysis.

b) Organometallic Chemistry: Chiral Palladium Catalysis and Asymmetric Reactions.

c) Enzymatic Chemistry: Chemo-Enzymatic Synthesis

28. Pradeepkumar P.I.

General : Organic Chemistry

Specific : Chemical Biology of Nucleic Acids

29. Ruchi Anand

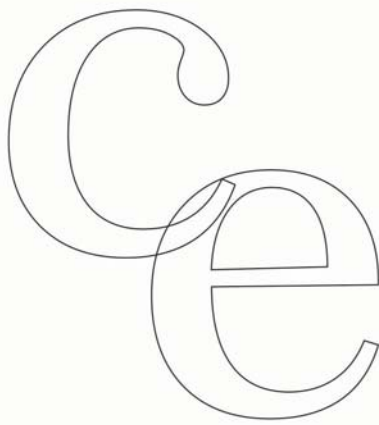
General : Physical Chemistry

Specific : Protein Crystallography

30. Suvarn S. Kulkarni

General : Organic Chemistry

Specific: Carbohydrate synthesis



Civil Engineering

Introduction

The Department of Civil Engineering with its multifaceted faculty continues to maintain and cultivate its strong links with the building and construction industry and academic and research institutions both within and outside the country. Besides high quality teaching and instruction at both UG and PG levels, the department is actively involved in basic and applied research and consultancy and provides high quality technical advisory support through various R & D projects and consultancy to various organizations. The department has attracted significant amount of sponsored research funding from government and private agencies.

Academic Programmes

The department offers broad-based undergraduate BTech degree programme. A dual degree BTech-MTech programme is also run in structural engineering. Postgraduate MTech (admissions through GATE/ sponsorships) and PhD (through selections/ sponsorships) programmes are offered in the following five specializations:

Transportation Systems Engineering
Geotechnical Engineering
Water Resources Engineering
Structural Engineering
Geodesy and Remote Sensing

This year, 45 MTech and 12 PhD students were admitted in the above specializations. In the first year, 73 students were on rolls in the BTech, 12 in the dual degree B.Tech./M.Tech. programmes. The students that graduated from the department are as follows:

Degree Awarded	
BTech.	: 48
MTech.	: 51
Ph.D.	: 15
Dual Degree	: 24
BTech.	: 12
MTech.	: 12

R&D Activities

Sponsored Research

Sponsored Research Projects	: 59
New	: 8
Ongoing	: 38
Completed	: 13
Faculty Involved	: 28

The department received eight new sponsored projects with a sanctioned outlay of Rs. 47,63,403.

A list of a few ongoing sponsored projects is as follows:

Project Title	Sponsoring Agency	Status
“Estimation of Design Values of Seismic Bearing Capacity of Foundations by Pseudo-dynamic Method”	INAE	Ongoing
“Behaviour of Shallow Footings Subjected to Underground and Overground Blast Loading”	DST	Ongoing
“Evaluation of Coal Ash as A Landfill Liner Material for Waste Containment Systems”	DST	Ongoing
“Inelastic Displacement-based Design of Steel Plate Shear Wall (SPSW) Structures”	DST-SERC	Ongoing

Project Title	Sponsoring Agency	Status
“Integrated Watershed Modeling using IRS Data and Geographical Information Systems”	ISRO-IITB	Ongoing
“Assessment of Hydro Climatic Teleconnection for Basin-scale, Real-time Stream Flow and its use in Real-time Streamflow Forecasting”	DST	Ongoing
“Seismic Analysis of Piping Systems with Supplemental Devices”	BRNS	Ongoing
“Centrifuge Model Studies on Strong Ground Motion in the Near Field”	BARC	Ongoing
“Integrated Design of Sewerage, Storm Water Drainage, Drinking Water and Rainwater Harvesting System for Indian Institute of Technology Bombay, Campus”	IITB	Ongoing
“Development of an Integrated Web-based Wave Simulation using Wind Data, Based on Soft Computing”	NIOT	Ongoing
“Risk of Cracking of Clay Liners for Landfill Capping and Environmental Hazards”	Indo-French	Ongoing

Consultancy Work

The department undertook 204 consultancy projects worth about Rs. 6.08 crores during the year by the Civil Engineering Department. In all, 21 faculty members were involved in the above consultancy work.

Extension Activities

In order to encourage and facilitate interaction amongst practitioners and researchers, the following activities were organized:

Conferences

Organized 12th IACMAG Conference in Goa, India during October 1-6, 2008 (Chairman: Singh, D.N.).

Workshops

One day joint workshop by IIT Bombay and PTV, Germany on Micro-simulation of Traffic System using VISUM/VISSIM on May 02, 2008 (Convener: Prof. Tom V Mathew).

Brainstorming Workshop on Application of Advanced Soft-computing techniques in Geo-spatial Data Analysis during September 22-23,,2008 (Convener: Jothiprakash, V., Janga Reddy, M. and Deo, M.C.)

Organized a Workshop on Real time Wave Forecasting using Soft Computing Tools, at IIT Bombay on January 3, 2009 (Convener: Deo, M.C.)

NRB Workshop on Real Time Forecasting of Ocean Waves and Wind, IIT Bombay, Jan. 2, 2009 (Convener: Deo, M.C.).

Short-Term Courses

QIP short term training program on Recent Trends in Water Resources Systems Planning and Management, during 3-7 November 2008 (Convener: Janga Reddy, M. and Jothiprakash, V.)

CEP Courses

Finite Element Method and Applications in Engineering, during November 23-27, 2008 (Convener: Eldho, T.I and Desai, Y.M.).

Recent Trends in Water Resources Systems Planning and Management, during November 3-7, 2008 (Convener: Jothiprakash, V. and Janga Reddy, M.)

Urban Drainage Management-State-of-the-Art, during July 10-12, 2008 (Convener: Gupta, K.)

Mechanics of Solids, during June 30 – July 6, 2008 (Convener: Choudhury, Deepankar)

Hydrologic Impacts of Climate Change and Sustainable Development, during June, 4-5, 2008 (Convener: Ghosh, S.)

Engineering Mechanics, during April 21-25, 2008 (Convener: Choudhury, Deepankar).

Visitors to the Department

Dr. Jeremy Blum, Assistant Professor, Department of Computer Science, Penn State, Harrisburg, USA and National Science Foundation research fellow at IIT Bombay visited and gave lecture on “Intelligent Agent Optimization of Urban Bus Transit Operations,” on January 30, 2009.

Dr. Laurence R. Rilett, Professor of Civil Engineering at the University of Nebraska-Lincoln (USA) and the Director of the Mid-America Transportation Center, visited and gave lecture on “ITS Test Beds for Non-Intrusive Vehicle Detection Sensors” on January 30, 2009.

Prof. R. Kerry Rowe, Vice-Principal (Research) and Professor of Civil Engineering, Queen’s University, Kingston, Canada delivered a lecture titled “Long-Term Performance of Contaminant Barrier Systems” on December 31, 2009.

Participation in Conferences/Symposia/Workshops/Seminars

Chandiramani, N. K.

Participated in *The Mechanics Conference to Celebrate the 100th Anniversary of The Department of Engineering Science and Mechanics*, Virginia Tech. held during May 29-30, 2008 at Virginia Tech., Blacksburg.

Choudhury, D.

Participated in *The International Geotechnical Conference ‘Development of Urban Areas And Geotechnical Engineering’*, held during June 16 - 19, 2008, Saint Petersburg, Russia.

Participated in the *The 12th International Conference of International Association for Computer Methods and Advances in Geomechanics (12IACMAG)*, held during October 1 - 6, 2008, Goa, India.

Participated in the *14th World Conference on Earthquake Engineering (14WCEE)*, held during October 12 - 17, 2008, Beijing, China.

Participated in the *6th Asian Young Geotechnical Engineers Conference (6AYGEC) – 2008*, held during December 20 - 21, 2008, IISc Bangalore, India.

Dasaka, S.M.

Participated in the *Indian Geotechnical Conference-2008* held during December 17-19, 2008 at IISc, Bangalore.

Participated in the *6th Asian Young Geotechnical Engineers Conference (6th AYGEC)* held during December 20-21, 2008 at IISc, Bangalore.

Participated in the *2nd Indian Young Geotechnical Engineers Conference*, held during March 14-15, 2009 at JNTU Kakinada, A.P.

Deo, M.C.

Participated in the *DST Brainstorming Workshop on Application of Advanced Soft Computing Techniques in Geo-Spatial Data Analysis*, during September 22-23, 2008 held at IIT Bombay.

Participated in the *Indian National Conference on Advances in Hydraulic Engineering with special emphasis on Model –Prototype Conformity* during November 6-7, 2008 at CWPRS, Pune

Participated in the *ONGC Seminar on: Challenges in Deep Water Structures*, on December 10, 2008, Mumbai.

Participated in the *Hydro-2008 Conference*, held at MNIT Jaipur during December 15-16, 2008.

Participated in the *International Conference on Ocean Engineering, ICOE2009*, IIT Madras, Feb. 1-5, 2009.

Eldho, T.I.

Participated in the *DST Brainstorming Workshop on Application of Advanced Soft Computing Techniques in Geo-Spatial Data Analysis*, during September 22-23, 2008 held at IIT Bombay.

Participated in the *12th Int. Conf. of Int. Assoc. for Computer Methods & Advances in Geomechanics (IACMAG)* held during October 1-6, 2008 at Goa.

Participated in the *Indian National Conference on Advances in Hydraulic Engineering (INCAHE)* held during November 6-7, 2008 at CWPRS, Pune.

Ghosh, S.

Participated in the National Conference on *Sustainable Water Resources Development and Management* held during June 13-14, 2008 at Govt. Engg. College, Aurangabad.

Participated in the *Planning Workshop on Life Management of Indian Structures* at Thapar University, Patiala, in August 5-7, 2008.

Participated in the *14th World Conference on Earthquake Engineering* in Beijing, China, during October 12-17, 2008.

Participated in the *TU9 Indo-German Workshop*, at IIT Madras, Chennai, during November 30 to December 02, 2008.

Gupta, K.

Participated in the meeting *Urban Infrastructural Challenges of the 21st Century: Efficient Sewerage and Drainage Management*, during June 5-6, 2008 at Institution of Engineers (India): Kolkata.

Participated in the *13th National Hydrology Symposium*, held during August 28-29, 2008 at Delhi.

Participated in the *11th International Conference on Urban Drainage*, Edinburgh, UK, August 31 to September 5, 2008. Participated in the *International Urban Water Conference*, Leuven, Belgium during September 15-19, 2008.

Janga Reddy, M.

Participated in the National Conference on *Sustainable Water Resources Development and Management, SWRDAM-2008* held during June 11-12, 2008 at Aurangabad.

Jangid, R.S.

Participated in the *World Academy Conference of Science, Engineering and Technology*, during February 25-27, 2009 held at Penang, Malaysia,

Participated in the *14th World Conf. on Earthquake Engineering*, Beijing during October 12-17, 2008.

Participated in the *The 12th International Conference of International Association for Computer Methods and Advances in Geomechanics (IACMAG)*, Goa during October 1-6, 2008.

Jothiprakash, V.

Participated in the *12th Int. Conf. of Int. Assoc. for Computer Methods & Advances in Geomechanics (IACMAG)* held during October 1-6, 2008 at Goa.

Participated in the *Thematic Symposia on IITB-Monash Research Academy*, November 27-29, 2008 at IIT Bombay.

Participated in the *International Conference on Transportation Planning and Implementation Methodologies For Developing Countries TPMDC 2008* held during December 3-6, 2008, at IIT Bombay.

Participated in the *National Conference, on Hydraulics, Water Resources and Environment, HYDRO-2008* held during December 15-16, 2008 at MNIT Jaipur.

Participated in the *PanIIT Research Symposium 2008 (PIRS'08) An International Conference on Spirit of Research, Spirit of Innovation*, held during December 19-20, 2008 at IIT Madras.

Participated in the *ASCE-EWRI International Perspective on Environmental and Water Resources Conference*, held at Asian Institute of Technology, Bangkok, Thailand during January 5-7, 2009.

Juneja, A.

Participated in the *Half-day Workshop on IGS (Mumbai Chapter) and IIT Bombay Lectures on Plaxis FE programming* at IIT Bombay on April 11, 2008.

Participated in the *International Foundation Congress and Equipment Expo 09*, during March 15-19, 2009 held at Orlando, Florida.

Kant, T.

Participated and gave an invited lecture at *Indo-Russian Workshop on Solid Mechanics*, Birla Institute of Technology, Panaji, Goa, October 2008.

Participated and gave a keynote lecture at *Sixth Structural Engineering Convention (SEC-2008)*, SERC Madras, Chennai, December 2008.

Participated and delivered an invited talk at *IUTAM Symposium on Multi-functional Material Structures and Systems*, Indian Institute of Science, Bangalore, December 2008.

Mathew, T.V.

Participated in the *10th International Conference on Application of Advanced Technologies in Transportation (AATT-08)* held during May 27-31, 2008 at Athens.

Participated in the *88th Annual Meeting of Transportation Research Board*, held during January 11-15, 2009 at Washington DC.

Invited Lectures

Choudhury, D.

“Introduction to Geotechnical Earthquake Engineering and its Applications” on January 2, 2009 at SVNIT, Surat, Gujarat, India.

“Geotechnical Earthquake Engineering Research and Developments at IIT Bombay” on December 1, 2008 at IIT Madras, India in connection with the TU9-IITM Indo-German Workshop on Earthquake Engineering for Sustainable Structures during November 30 to December 2, 2008

“Recent Developments in Analysis of Waterfront Retaining Structures Subjected to Earthquake and Tsunami” on November 8, 2008 at Department of Earthquake Engineering, Indian Institute of Technology (IIT) Roorkee, India in connection with the receipt of Shamsheer Prakash (SP) Research Award – 2008.

“Analytical Solutions for Design of Waterfront Retaining Structures Subjected to Earthquake and Tsunami” on October 14, 2008 at Beijing, China during Young Researchers Forum of 14th World Conference on Earthquake Engineering (14WCEE), Beijing, China.

“Recent Advances in Seismic Design of Waterfront Retaining Structures” on August 29, 2008 at CPRI, Bangalore, India as organized by NITK Surathkal, BARC Mumbai and CPRI Bangalore, India.

Dasaka, S.M.

“Design and Construction Aspects of Driven Piles,” College of Engineering, Pune on March 29, 2009.

“Site Investigation and Basics of Foundation Engineering,” MANIT, Bhopal on April 9, 2008.

Deo, M.C.

“Climate Change and Effects in Offshore Design,” *Proc. ONGC Seminar on Challenges in Deep Water Structures*, December 10, 2008, Mumbai.

Eldho, T.I.

“Integrated Watershed Modeling using Numerical Method, Geographical Information Systems & Remote Sensing and Scope for Urban Flood Assessment Modeling,” *DST Workshop*, at IIT Delhi on April 21, 2008.

“Mathematical Modeling of Water Resources Systems,” Nirma University, Ahmedabad on 15th July 2008.

“Watershed Modeling Using Numerical Methods, GIS and Remote Sensing,” Nirma University, Ahmedabad on 15th July 2008.

“Application of GIS and SCS-CN Method for Watershed Modeling,” Nirma University, Ahmedabad on 15th July 2008.

“Groundwater Flow and Contaminant Transport Modeling,” Nirma University, Ahmedabad, on 15th July 2008.

“Groundwater Flow Modeling,” Nirma University, Ahmedabad on 28th February 2009.

“Applications of GIS & Numerical Methods for Watershed Modeling,” Nirma University, Ahmedabad on 28th February 2009.

“Applications of Finite Element Method in Engineering,” Indian Rubber Manufacturer’s Research Association, Thane on 30th March 2009.

Ghosh, S.

“Modeling Hydrologic Impacts of Climate Change,” Govt. Engg. College, Aurangabad on June 13-14, 2008.

Ghosh, Subimal

“Climate Change and Uncertainty Modeling,” School of Water Resources Engineering, Jadavpur University on September, 26, 2008.

“Climate Change, Hydrology and Uncertainty Modeling,” NIT Rourkela on November 16, 2008.

Jothiprakash, V.

“Conventional Optimization Technique for a Large Scale Irrigation System,” Pravara Rural College of Engineering, Loni, Maharashtra on 26th Sep 2008.

“Soft Computing Techniques to Establish Rainfall-Runoff Relationship and Reservoir Inflow Prediction,” AICTE-Workshop on Water Resources Systems Engineering, SVNIT Surat on 26th Dec. 2008.

“Rainwater Harvesting,” Indira Gandhi College of Engineering and Technology for Women, Athur, Chengalpat, Tamil Nadu on 11th March 2009.

Juneja, A.

“Measurement and Interpretation of Stress in Small Soil Models,” Department of Civil and Environment Engineering, University of Pittsburgh USA on March 11, 2009.

Kant, T.

“History and Basics of Finite Element Method,” Indian Rubber Manufacturer’s Research Association, Thane on 30th March 2009.

Singh, D.N.

“Modeling of Geoenvironmental Issues,” SVNIT, Surat on January 11, 2009.

“Characterization of Soft Clays for Infrastructure Projects using Bender Elements,” *Proc., National Seminar on Geotechnical Solutions for Infrastructures*, organized by Indian Geotechnical Society, Ahmedabad Chapter on November 11, 2008.

Significant Awards / Distinctions

Choudhury, D.

CBRI Best Paper Award in Diamond Jubilee Conference on Landslide Management – 2008, Central Building Research Institute, Roorkee, India, April 2008.

Contributed one of the Most Popular Geotechnical Papers, ASCE Geotechnical Book News, August 2008, American Society of Civil Engineers (ASCE) Publications, August 2008.

IEI Young Engineers Award – 2008, The Institute of Engineers (India), Kolkata, India, Bhubaneswar, India, October 2008.

IACMAG Excellent Paper Award: Junior – 2008, International Association for Computer Methods and Advances in Geomechanics (IACMAG), AZ, USA, Goa, India, October 2008.

Shamsher Prakash Research Award – 2008, Indian Institute of Technology Roorkee through Shamsher Prakash (SP) Research Foundation, USA, Roorkee, India, November 2008.

ISTE-SGSITS National Award – 2008, Indian Society for Technical Education (ISTE), New Delhi, India, Bhubaneswar, India, December 2008.

Dr. Jai Krishna Prize – 2008, The Institution of Engineers (India), Kolkata, India, Warangal, India, December 2008.

INSA-JSPS Bilateral Exchange Programme 2009-2010, Indian National Science Academy (INSA), New Delhi, India, March 2009.

Deo, M.C.

Contributed one of the Top 10 most cited *Ocean Engineering papers over all years and during 2006-2008* as per Thomson Scientific Analysis (ISI)

Ghosh, S.

Professor N.S. Govinda Rao Medal for Best PhD Thesis for 2007-08, IISc, Bangalore, March, 2009.

Jothiprakash, V.

Certificate of Merit Prize by Institution of Engineers (India) for the paper published in *Agricultural Engineering*, December 12, 2008.

Singh, D.N.

IACMAG Excellent Contributions Award 2008.

IACMAG Appreciation Award 2008 for the outstanding, highly successful and unique organization of the 12 IACMAG Conference in Goa, India, with meritorious efforts, perseverance and efficiency”.

Honorary Work

Banerjee, S.

Member of Organizing Committee, SPIE conference on Health Monitoring and Smart NDE of Structural and Biological Systems, San Deigo, California, USA, March 9-12, 2009.

Reviewed papers for *Journal of Intelligent Materials Systems and Structures*, and *International Journal of Solids and Structures*.

Chandiramani, N. K.

Reviewed papers for (i) *Structural and Multidisciplinary Optimization* (ii) *Journal of Sound and Vibration* (iii) *Shock and Vibration* (iv) *Journal of the Institution of Engineers (India)*.

Choudhury, D.

Reviewed papers for (i) *Canadian Geotechnical Journal*, (ii) *Soil Dynamics and Earthquake Engineering*, (iii) *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, (iv) *International Journal of Geomechanics*, ASCE, (v) *Engineering Geology*, (vi) *Ocean Engineering*, (vii) *Geotechnical Engineering*, Proc. of Institute of Civil Engineers (ICE), (viii) *Geosynthetics International*, (ix) *Journal of Earth System Sciences*, (x) *Sadhana*, *Journal of Engineering Sciences*, (xi) *Journal of Institute of Engineers, India* and (xii) *Indian Geotechnical Journal*, India.

Coordinator of *Session No. 11* and Reviewer for *The 12th International Conference of International Association for Computer Methods and Advances in Geomechanics (12IACMAG)*, October 1 - 6, 2008, Goa, India organized by IACMAG, USA.

Reviewer for *Geotechnical Earthquake Engineering and Soil Dynamics IV (GEESD-2008)*, May 18 - 22, 2008, Sacramento, California, USA organized by GI-ASCE.

Serving as Nominated Expert Member of the Departmental Undergraduate Programme Committee (DUPC) of Department of Civil Engineering, College of Engineering, Pune (COEP), India, since January 2009.

Guest Editor, Special Issue on “Earthquake Geotechnical Engineering – Recent Developments” for *American Journal of Engineering and Applied Sciences (AJEAS)* (ISSN: 1941-7020), Science Publications, USA.

Member, Coordinator for Asia, *ISSMGE Bulletin*, a Quarterly Newsletter, International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE), London, U.K.

Member, Editorial Board, *Disaster Advances* (ISSN: 0974-262X), a Quarterly Journal, India.

Member, Best Paper Award Nomination Committee under Technical Committee on ‘Unsaturated Soils’ of Geo-Institute of American Society of Civil Engineers (GI-ASCE), USA.

Reviewer of PhD theses of Department of Civil Engineering, Indian Institute of Science, Bangalore, India and Faculty of Civil Engineering, Jawaharlal Nehru Technological University (JNTU), Kukatpally, Hyderabad, India.

Reviewer of Master’s theses from VJTI Mumbai.

Dasaka, S.M.

External Expert member of Research Degree Committee of Civil Engineering Department, NIT, Bhopal.

Reviewer of PhD thesis of Department of Civil Engineering, Indian Institute of Science, Bangalore.

Reviewer of Geosynthetics International, International Journal of Earth Sciences & Engineering

Deo, M.C.

Editor-in-Chief, The International Journal of Ocean and Climate Systems, Multi-Science Publications, UK.

Non-official Director, Konkan Railways Corporation.

Associate Editor, ASCE Journal of Computing in Civil Engg.

Member, Editorial Board, International Journal of Ships and Offshore Structures (Taylor and Francis, UK), Open Ocean Engineering Journal (Bentham Press, UK) and Journal of Advances in Civil Engineering, Hindawi Publication Corporation, New York.

Editor, Special Issue – 2008 of the ISH Journal of Hydraulic Engineering, Pune.

Member, Editorial Board of Civil-Comp Conference 2008, UK.

Member, Best Paper Prize Committee, ASCE Journal of Computing in Civil Engg.

Member, Advisory Board, National Water Academy, Ministry of Water Resources.

Member, Advisory Board, Indian National Committee for Hydraulics, Ministry of Water Resources

Member, Faculty Selection Committees of other IITs, IISc and NITs.

Member, Scientists' Selection of a CSIR Labs.

Member, Executive Council, The Indian Society for Hydraulics.

Chair, Curriculum Review Committee, SVNIT Surat.

Member, Board of Studies, Goa University.

Reviewer for papers of ASCE Journal of Computing in Civil Engg., ASCE Journal of Hydraulic Engineering, Natural Hazards, Elsevier, Water Management, ICE, Ocean Engineering, Engineering Application of Artificial Intelligence, Elsevier, Applied Ocean Research, Elsevier, Civil Engineering and Environmental Systems, Springer, Journal of Geophysical Research, AMS, Journal of Environmental and Earth Systems Science, Journal of Hydraulic Engineering, IAHR, Engineering Mechanics, ICE and Computers and Geosciences, Elsevier.

Eldho, T.I.

Associate Editor of International Journal of Ecology and Development.

Editor-in-Chief of the new Journal "International Journal of Water Resources and Environmental Management" to be published by Serial Publications from 2009.

Executive Council Member, Indian Society of Hydraulics, Pune.

Referee PhD Theses, IIT Roorkee, NIT Surathkal, Indian Statistical Institute, Kolkotta.

Technical Review Committee Member of ICAR, Rubber Dam project implemented by Indian Rubber Manufacturing Research Association, Thane..

Technical Committee Member of National Conference on Sustainable Water Resources Development & Management, SWRDM, 2008, Aurangabad.

Technical Committee Member of 17th APD-IAHR Congress to be held at New Zealand in 2010.

Vice-Chairman, GATE 2009, IIT Bombay.

Reviewed research papers for ASCE Int. Journal of Irrigation and Drainage, Journal Institution of Engineers India (Civil Engineering Section), Journal Hydraulics Research, IAHR, Journal of Environmental Monitoring and Assessment, Journal of Environmental Modeling and Software, ASCE Practice Periodical of Hazardous, Toxic, and Radioactive Waste Management, ISH Journal Hydraulics Engineering, Journal of Advances in Water Resources, Journal of Sadhana, Indian Academy of Sciences, Journal of Water Management, Institution of Engineers, UK, Journal of Hydro-environment Research, Journal of Sediment Research, International Journal of Water and Environmental Management, Journal of Water Resources Management, Int. Journal of Hydrologic Processes, International Journal of Ecology & Development and International Journal Environment and Waste Management.

Ghosh, S.

Reviewed research article for the Journal of Structural Engineering, ASCE.

Reviewed project report submitted to the BRNS, DAE, India.

Reviewed PhD thesis from IIT Madras.

Reviewed & examined Master's theses from College of Engineering (Pune), VJTI (Mumbai), and SP College (Mumbai).

Served as the local host professor for Prof. DL Johnston, President, University of Waterloo, Canada at the IITB Golden Jubilee event of the International VC Conclave in January, 2008.

Served as an external expert member of DUPC, College of Engineering, Pune.

Served as an external expert member of DPPC (Structural Engineering), College of Engineering, Pune.

Served as an external expert for PhD interviews in VJTI, Mumbai.

Gupta, K.

Member and Convener, Core group for the preparation of National Guidelines on Urban flood disaster management, National Disaster Management Authority (NDMA), Delhi.

Member, Expert committee for preparation of Manual on Urban Drainage, Ministry of Urban Development, Government of India.

Member, Expert Committee on Mumbai Disaster Management Plan, Bombay Municipal Corporation, Mumbai.

Ghosh, S.

Reviewed papers for Journal of Hydrology, Water Resources Management, Journal of Earth Systems Sciences, Journal of Hydrologic Engineering, ASCE, Journal of Computing in Civil Engineering, ASCE, Journal of water Resources Planning and Management, ASCE, Journal of Hydraulic Engineering [Indian Society for Hydraulics], Geography and Regional Planning Journal, Journal of Hydroinformatics, Journal of Ocean and Climate Systems in 2008-09.

Juneja, A.

Reviewer of papers in (i) Geotechnical Testing Journal, ASTM, American Institute of Physics, NY; (ii) Journal of Materials in Civil Engineering, ASCE; (iii) Geotechnical and Geological Engineering, Springer Science.

Reviewer of papers in international conferences (i) International Foundation Congress & Equipment Expo 09, Geo-Institute of ASCE; (ii) 12th International Association for Computers Methods and Advances in Geomechanics.

Core Member ATC-18 on Deep excavations and Mega Foundations of International Society of Soil Mechanics and Geotechnical Engineering (June 2008 onwards).

Jangid, R.S.

Reviewer for research papers of ASCE Journal of Structural Engineering, Soil Dynamics and Earthquake

Engineering, Journal of Sound and Vibration, Wind and Structures, Advances in Structural Engineering-An International Journal, Engineering Structures, International Journal of Solids and Structures and Finite Elements in Analysis

Editorial Board Member, The Open Ocean Engineering Journal.

Editorial Board Member, The Open Construction and Building Technology Journal.

Independent Director, ETC Network Limited.

Janga Reddy, M.

Reviewed papers for Journal of IEEE Transactions on Evolutionary Computation, Journal of Hydrologic Engineering (ASCE), Journal of Computing in Civil Engineering (ASCE), Hydrological Processes Journal, Water Resources Management Journal, Irrigation & Drainage Journal, ISH Journal of Hydraulic Engineering, Journal of Civil Engineering (Institution of Engineers, India).

Jothiprakash, V.

Co-opted Member Indian Society for Hydraulics Pune.

Reviewed PhD and MS theses from IIT Madras and Anna Unvierstiy Chennai.

Kant, T.

Member: National committee of IUTAM, Engineering science committee of IASc, BW&C of NITIE, AICTE, IITs/IISc selection committees, High-rise committee of Government of Maharashtra, Editorial boards of Computer Modeling in Engineering Science (CMES), Structural Engineering and Mechanics (SEM), International Journal for Computer Methods in Engineering Science and Mechanics (IJCMESM) and Advances in Civil Engineering.

Chairman: AICTE-NBA accreditation committees.

Reviewer: IJCMESM, CMES, Journal of Sound and Vibration, Computational Mechanics, Computers and Structures, PhD theses of IISc, IITKgp, IITM, VNIT-Nagpur, Patna University and Pune University.

Singh, D.N.

Editorial Board Member-International Journal of Geotechnical Engineering.

Editorial Board Member—Geotechnical Testing Journal, ASTM International.

Editorial Board Member— Geomechanics and Geoengineering (Taylor & Francis).

Editorial Board Member— Korean Society of Civil Engineering (KSCE) Journal of Civil Engineering ·

Editorial Board Member— Geomechanics and Engineering (GAE), An International Journal of Computational and theoretical Geomechanics, Foundation Engineering, Engineering Applications, Site Characterization.

Reviewed Technical papers for several international journals.

Reviewed project proposals for: Georgian National Science Foundation · Technology Foundation, Utrecht, The Netherlands, Department of Science & Technology, DST, New Delhi.

Faculty Members and their Specializations

1. K.M. Bajoria

Structural engineering: Computer aided design, Non-linear analysis, Nuclear structures.

2. P. Banerji

Structural engineering: Earthquake analysis, Risk assessment, Artificial neural networks, Nuclear structures.

3. Sauvik Banerjee

Structural engineering: Structural and solid mechanics, Ultrasonic wave propagation in solids, Non-destructive quality evaluation of composites, Structural health monitoring, Dislocation mechanics, Multiscale materials modeling.

4. N.K. Chandiramani

Structural engineering: Nonlinear dynamics, Stability and control, Solid mechanics.

5. D. Choudhury

Geotechnical engineering: Geotechnical Earthquake Engineering, Earth retaining structures, Slope Stability, Anchor, Pile, Bearing capacity problems, Earth Dams, Seismic effects on Reinforced Soil-Wall, Dynamic Soil-Structure interaction problems, Tsunami resistant design of waterfront structures, Seismic behavior of Landfills, Seismic Ground Characterization, Behavior of Subgrade Soil under Cyclic railway and airways loads, Centrifuge Modeling, Fundamentals of soil behaviour for fine grained soils, DDL theory.

6. M.C. Deo

Ocean engineering: Random data analysis using artificial intelligence techniques, Neural networks, Genetic programming, Model trees, Locally weighted learning, Support vector machines, Soft computing, Data mining, Statistical and stochastic analysis, Hydrology (Random data analysis using soft computing tools)

7. Y.M. Desai

Structural engineering: Wind induced vibrations, Computational mechanics, Nonlinear analysis, Finite elements, Parallel computing, Fiber reinforced polymer composites, Composites in construction.

8. D.M. Dewaikar

Geotechnical engineering: Offshore foundations, Ground improvement, Seepage.

9. S.L. Dhingra

Transportation systems engineering: Modeling, Simulation, Economics, Environmental impact assessment, GIS, Expert systems, Artificial intelligence, Genetic algorithms, Fuzzy set theory.

10. T.L. Eldho

Water resources engineering: Groundwater flow, pollutant transport, remediation – numerical & experimental investigations Computational fluid dynamics – Incompressible viscous flows, shallow water flow, estuary dynamics, pollutant transport Watershed management – applications of numerical models, Geographical Information Systems, Remote sensing.

11. Alok Goyal

Structural engineering: Base isolation systems and energy absorbing devices, Earthquake analysis and design, Liquid storage tanks, Bridges, Vibration control of structures, Service life assessment of buildings.

12. Siddhartha Ghosh

Structural engineering: Performance-based seismic design, Reliability-based seismic design, Plastic design of steel structures, Life cycle cost analysis of buildings.

13. Subimal Ghosh

Water resources engineering: Uncertainty modeling, Water resources systems, Hydroclimatology.

14. Kapil Gupta

Water resources engineering: Urban water supply systems, Urban drainage, Urban water infrastructure management, Flood Protection structures, Computational fluid dynamics, Optimization, Environmental impact assessment, Water quality analysis and modeling, Constructed wetlands, Urban disaster management.

15. M. Inamdar

Structural engineering: Solid mechanics, Cellular adhesion and motility, Mechanics of soft materials, Dissipation in structural and mechanical systems.

16. R.S. Jangid

Structural engineering: Structural mechanics, Structural dynamics and earthquake engineering, earthquake-resistant design, Base isolation for a

seismic design of structures, Seismic isolation of bridges and liquid storage tanks, Non-classically damped system, Vibration control using tuned mass dampers.

17. A. Juneja

Geotechnical engineering: In-situ and laboratory engineering properties of soil, Numerical and physical modeling in geotechniques, Earthwork, Ground improvement.

18. V. Jothiprakash

Water resources engineering: Water resources systems analysis, Reservoir operation, Policy issues, Multi-objective analysis, Stochastic hydrological modeling, Irrigation water management.

19. Tarun Kant

Structural engineering: Solid mechanics, Plates, Shells, Fiber reinforced polymer composite laminates, Higher order theories, Thermal stresses, Transient dynamic techniques, Finite elements, Numerical techniques, Polymer composites in construction, Composite mechanics, Computational mechanics.

20. J.N. Mandal

Geotechnical engineering: Geosynthetics for civil engineering construction.

21. T.V. Mathew

Transportation systems engineering: Traffic flow modeling and simulation, Transportation network optimization, control and management.

22. Dasaka S. Murty

Geotechnical engineering: Site investigation, Stability of shallow and deep foundations, Reliability based design, Ground improvement, Landfill engineering and modeling of soil and rock.

23. B.S. Pani

Water resources engineering: Diffusion of jets and plumes, Multiple diffusers, Offshore pipelines, Scour problems, Cooling water structures.

24. Pankaj K. Porwal

Structural engineering: Solid and structural mechanics, Impact strength of soft fibrous body armors, Micromechanics and reliability of composites, Statistical strength of twisted fiber bundles, Nanoscale adhesion.

25. E.P. Rao

Remote sensing: Remote sensing applications to water resources, Runoff modeling, Water distribution systems optimization.

26. K.V. Krishna Rao

Transportation systems engineering: Travel demand modeling, Evolutionary algorithms, Neural networks and GIS in transport planning, Traffic design and analysis.

27. K. Gopal Rao

Remote sensing: Digital image processing (DIP) of multispectral, thermal and microwave data, Digital elevation modelling (DEM), Geographic information systems (GIS), Artificial neural networks (ANN), Applications of RS, GIS, DEM and ANN in hydrology.

28. A.K. Rastogi

Water resources engineering: Groundwater flow modeling of aquifers, Ground water quality modeling.

29. Manne Janga Reddy

Water resources engineering: Water resource systems, Evolutionary computation for single and multi-objective optimization, Stochastic hydrology, Soft computing applications in hydrology, Climate change impacts on watersheds, water resources and agriculture, Design and performance evaluation of drip and sprinkler irrigation systems, Application of remote sensing and GIS tools in watershed development and management, Precision agriculture and developing decision support systems for water resources management.

30. D.N. Singh

Geotechnical engineering: Environmental geotechnics, Radioactive waste disposal, Solid waste utilization, Geotechnical centrifuge modeling.

31. Ravi Sinha


Structural engineering: Earthquake engineering, Vibration control and isolation, Structure rehabilitation and condition monitoring, Disaster management.

32. G. Venkatachalam

Geotechnical engineering: Finite element analysis, Digital image processing, Digital terrain modeling, Centrifuge, Numerical and GIS modeling of landslides.

33. B.V.S. Viswanadham

Geotechnical engineering: Centrifuge modeling, Soil reinforcement, Ground improvement, Environmental geotechnics-waste materials' behaviour, waste containment systems.



Computer Science & Engineering

Introduction

The Computer Science and Engineering Department at IIT Bombay is the largest Computer Science and Engineering Department in the country with a vibrant teaching and research program. The department consists of 36 faculty members and one adjunct faculty, 80 Ph.D. students, 200 M.Tech. students, 168 undergraduates and 25 office staff members. One new faculty member, Prof. Ganesh Ramakrishnan, joined the department this year.

The year saw more than 25 researchers visiting the department to give talks and interact with faculty, students and research groups. Faculty members of the department were involved with hosting two international conferences and two workshops at IIT Bombay. Thirteen students of the department were recipients of different fellowships for their academic programs. Two new research groups took shape over the last year, GRC (GCC Research Centre) and SynerG (Systems and Network Research Group). Various research activities of the department were recognised nationally and internationally at conferences and workshops and through awards and press coverage.

Academic Programmes

Degrees Awarded

B.Tech.	:	34
M.Tech.	:	51
Ph.D.	:	5
Dual Degree	:	18

Fellowship Details

1. Infosys fellowship for Ph.D. students: 6
2. Bell Labs fellowship for Ph.D. students : 1
3. Vijay Vashee fellowship for M.Tech & DD students
M.Tech. :2 Dual Degree:3 Total: 5
4. Microsoft Research India Fellowship for PhD students: 1

R&D Activities

Sponsored Research Projects

Sponsored Research Projects	:	94
New	:	14
Ongoing	:	68
Completed	:	12
Faculty Involved	:	28

Project Title	Agency Name	Status (New/Ongoing/Complete)
“Development of North East Wordnet”	Ministry of IT	New
“Evolution and Development of Sanskrit WordNet”	Ministry of Human Resource Development	New
“Enhancement of Integrated Logistics Management Systems (ILMS), Its Adaptation to Linux based J2EE Architecture and the Development of a Generalized K”	Aeronautical Development Agency	Ongoing
“Development of Tool for Formal Verification of VHDL based Data and Control Dominated Designs used in Safety Critical Systems”	Board Of Research In Nuclear Sciences	Ongoing

Project Title	Agency Name	Status(New/Ongoing/Complete)
“Tetherless Human Interface for Simulators (THISS)”	Defence Research & Development Organisation	Ongoing
“Euro-India ICT Co-Operation.”	European Commission	Ongoing
“Research and Deployment of Next Generation Metro Networks ? Roadmap for Carrier Ethernet and 100 Gigabit Ethernet “	Agilent Technologies, Usa	Ongoing
“Semantic Linkage Between The Web, Intranet and Wikipedia: Discovery and Exploitation in Search and Aggregation.”	HP Labs.	Ongoing
“Context-Sensitive Query Redressal Service using Mobile Process Work flow.”	Nokia	Ongoing
“Open - Source Code for 3D Visuals.”	Defence Research & Development Organisation	Ongoing
“Research Collaboration on Mobile and Wireless Systems, with Microsoft Research India (MSRI)”	Microsoft Research Lab India Pvt. Ltd.	Ongoing
“Real Time Multiple Sensors To Track Multiple Targets Projected on a Screen.”	Defence Research & Development Organisation	Ongoing
“Information Aggregation from Tables on the Web”	Yahoo Inc	Ongoing
“2008 IBM FACULTY AWARD.”	Intenational Business Machines Corporation.	Ongoing
“Analyzing Programs Manipulating Recursive Data Structures.”	Microsoft Research Lab India Pvt. Ltd.	Ongoing
“Development & Evolution of Sanskrit Word-Net”	Central Institute of Indian Languages	Ongoing
“Rural Connectivity and Applications,Wireless Communications and Networking”	Tata Teleservices Ltd., Mumbai	Ongoing
“Design and Development of a Real Time Operating System (RTOS) for Safety Critical Application”	BARC	Ongoing
“Extending Framework for WFS-based Interoperability of GIS Sources.”	Department of Science & Technology	Ongoing
“Re-Designing the Farmer-extension-agricultural Research/Education Continuum in India with ICT- Mediated Knowledge Management”	Indian council of Agricultural Research	Ongoing
“IBM FACULTY AWARD / Building a Self-aware and Self-tuning Distributed System using Queuing Theoretic and Control Theoretic Approaches”	IBM Corporation	Ongoing

Project Title	Agency Name	Status(New/Ongoing/Complete)
“IBM FACULTY AWARD/ Iburg Based Instruction Selection in GCC”	IBM	Ongoing
“IBM FACULTY AWARD, Prof. P Bhattacharya/ Integrating Indian Language Processing Resources and Tools and Semantic Search Capabilities with the UIMA,..”	IBM Corporation, New York.	Ongoing
“IBM Faculty Award/ Supratik Chakraborty/ Approximate Search and Coverage Based Verification Techniques for Flattened Circuits with Locally Specified...”	IBM Corporation., USA	Ongoing
“Microsoft Award/Soumen Chakrabarti/ Scalable Annotation, Search & Aggregation of Semistructured Graph and Text Data Models.”	Microsoft Corporation	Ongoing
“Media Lab Asia/Galla - Low Cost Retail Management System.”	Media Lab Asia	Ongoing
“aAQUA Mini-Context sensitive information to farmers.”	Nokia India Pvt. Ltd	Ongoing
“Microsoft India Distinguished Research Award / Linguistic Data Management of Indian Language Resources.”	Microsoft Research India, Bangalore	Ongoing
“Large Scale Application Development and Knowledge Dissemination in Natural Language Processing and Text Mining (HP Labs, Bangalore)”	HP Labs, Bangalore	Ongoing
“Setting up a TePP Web Portal at IIT Bombay”	Technology Info. Forecasting & Assesment Council	Ongoing
“Intelligent Power Grid Initiatives in India.”	IBM	Ongoing
“Formal Verification of Akash Onboard Process.”	Defence Research & Development Organisations	Ongoing
“Research Support for INAE Young Engineer Awardees”	Indian National Academy of Engineering	Ongoing
“Cross Lingual Information Access (CLIA) System”	Ministry of Communications & Information Technology Consortium Leader: IIT Bombay	Ongoing
“Development of Indian Language to Indian Language Machine Translation System (IL-IL MT) : Consortium Leader : IIIT Hyderabad.”	Ministry of Communications & Information Technology	Ongoing
“English to Indian Languages Machine Translation (E-IL-MT) - Consortium Leader - CDAC , PUNE.”	Ministry of Communications & Information Technology	Ongoing

Project Title	Agency Name	Status(New/Ongoing/Complete)
Book on “Data Flow Analysis : Theory and Practice”	Taylor and Francis Group, LLC., . USA	Ongoing
“Entity and Relation Types in Web Search: Annotation, Indexing and Scoring Techniques Award Number: 15196”	Microsoft Corporation	Ongoing
“Integrating Entities, Types and Relations into Search: Annotation, Indexing and Scoring Techniques.”	International Business Machines Corporation	Ongoing
“IBM Faculty Award for Research Work in the Area of Autonomic Computing”	International Business Machines Corporation, USA	Ongoing
“Crop Disease Forecasting Services and Expert Crop Advisory to Farmers Over Information Kiosk Networks.”	PAN ASIA ICT (Asian Media for Information & Communication Center, Singapore)	Ongoing
“IBM Faculty Award of Prof. S. Sudarshan”	IBM Corporate Technology, Ny	Ongoing
“Architectural Information Extraction From Object Oriented Sources in R/O. Shri. Shakeb Sagher, B.tech. Student”	IBM India Pvt. Ltd., Pune	Ongoing
“PH.D Proj. of Dharamendra Yadav “CCS & Its Application. Modelling”	IBM India Pvt. Ltd., Pune	Ongoing
“Metamodelling & Architecure “	IBM India Pvt. Ltd., Pune	Ongoing
“Formal Verification of Software Systems “	Microsoft India (R&D) Pvt.Ltd., Hyderabad	Ongoing
“Formal Verification of Large State Transition Systems”	General Motors India Pvt. Ltd., Bangalore	Ongoing
“E-Outreach”	Technology Info. Forecasting & Assesment Council	Ongoing
“TCS-IIT BOMBAY Laboratory for Intelligent Systems.”	Tata Research Development & Design Centre, Pune	Ongoing
“Analysis and Design of Wireless, Mobile and Multiservice Communication Networks.”	MHRD	Ongoing
“Special Manpower Development Programme for VLSI Design and Related Software (SMDP-II)”	Department of Electronics	Ongoing
“Building Check-Dams for Drinking Water: A Teaching and Research Initiative.”	Donation	Ongoing
“Improving GCC Ports of ABACUS and ANUPAMA”	DRDO	Ongoing

Project Title	Agency Name	Status(New/Ongoing/Complete)
“Financial Assistance For Research Project Entitled “Ontology Based Framework For Integration Of Geographic Information”.	DST	Ongoing
“Association For Computing Machinery - International Collegiate Programming Contest - IBM Canada Ltd”	IBM Canada Ltd	Ongoing
“Time Category in Computer Science and Engineering Sept., 03DT004”	Donation	Ongoing
“Partial Redundancy Elimination”	Indo-US Collaboration	Ongoing
“A Service-Oriented Architecture for Anonymous Remote Computing (ARC) on Internet”	Indo-US Collaboration	Ongoing
“Centre for formal Design and Verification of software”	BRNS	Ongoing
“Network Security Lab (M/s.Nevis Networks India Pvt. Ltd., Pune)”	Sponsored by Private Organisations	Ongoing
“Developmental Informatics”	Sponsored by Private Organisations	Ongoing
“Multimodal Participatory Content Repository for the Education of Rural Children”	Sponsored by Private Organisations	Ongoing
“Ibm Faculty Awards-IBM Global Services India Pvt.Ltd”	Sponsored by Private Organisations	Ongoing
“Financial Assistance for Research Project Entitled “Enabling Web-based Workflow Over Object Oriented GIS Models for NRDMS”.	Department of Science & Technology	Ongoing
“Open Source Software”	IBM Global Services India Pvt.ltd., B’lore	Ongoing
“Ekalavya project”	Sponsored by Private Organisations	Ongoing
“A Methodology and Tool to Determine Application Topology and Component Resource Needs of Distributed Enterprise Applications-Intel Corporation”	Intel Corporation	Ongoing
“Exchange of Ideas on Data Mining and Data Cleaning Projects-Microsoft Resaerch”	Microsoft Research	Ongoing
“Methodology and Milldeware for Application Integration (M/s.Larsen & Toubro Infotech Ltd.)”	Sponsored by Private Organisations	Ongoing

Consultancy Projects

The department undertook 21 jobs generating Rs.1,19,96,704.

The total number of faculty involved was 15.

Extension Activities

Conferences and Workshops Organized by the Department

A two-day workshop by Yahoo on Hadoop was held on August 9-10, 2008 at the F.C.Kohli Auditorium, Rekhi Building, IIT Bombay. The workshop addressed on issues designers and programmers need to consider in developing applications in Hadoop.

IBM Technology Day, organized by IBM and IIT Bombay, on September 27, 2008.

IBM organized an IBM Technology Day on September 27, 2008, in collaboration with IIT-B. The objective of this event is to bring researchers and practitioners from academic institutions and industry together, and discuss recent research problems and industry pain points.

COMAD 2008, International Conference on Management of Data

The 14th COMAD was held from December 17-19, 2008, at IIT Bombay, Powai, Mumbai, India. Similar to previous years, COMAD 2008 's scope included not only traditional database areas but also add emphasis on Web, Information Retrieval and Data Mining. Prof.N.L.Sarda and Prof.S.Sudarshan were the conveners.

Summer workshop on Ontology, NLP, IE and IR

Conducted a **Summer Workshop on Ontology, NLP, Personalization and IE/IR** sponsored by HP Labs, Bangalore on 16-18th July, 2008. The workshop faculty consisted of renowned experts in their respective fields. Prof.Pushpak Bhattacharyya was the convener:

The ANTS 2008, IEEE International Symposium on Advanced Networks and Telecommunication Systems, was held in the commercial and entertainment capital of India - Bombay - on December 15-17, 2008. Prof.Ashwin Gumaste was the Convener of the symposium

Broadband networks are witnessing a convergence in both technologies and delivered services. Next-generation services require unified and scalable technologies spread across the network protocol layers facilitating a converged service model across all partitions of the network. Advanced integrated systems and network platforms have benefits in terms of deployment cost as well as the ability to provision new services.

Motivated by the tremendous success of the first ANTS (2007) event which highlighted advances in systems and networking, the theme of IEEE ANTS 2008 was on communication systems and networking technologies for **Realizing converged ubiquitous broadband connectivity**. To achieve this goal, the symposium featured a technical program of previously unpublished papers, tutorials, talks and panels on relevant topics bringing together experts from academia, industry, government and the user community who are involved in the research, design, development, deployment, regulation and application of communication and networking technologies. The symposium covered technologies that would facilitate broadband connectivity - **both wire-line and wireless** - and covered advances in the service, networking, transport and user equipment domains.

The CAN Workshop was held on 14th Feb. 2009. CANBUS is an increasingly popular bus protocol which is fast emerging out of the factory automation domain and appearing in the automobile domain, embedded in variety of machines and now also in the aerospace industry. CANOpen provides standardized software development methods and profiles. Systematic standards help the user to integrate different manufacturers devices in project and help keep costs down through standard profiles for a variety of application domains.

The workshop was held on Sat. 14th Feb. 2009.

Continuing Education Programme

The following courses were offered under CEP.:

Introduction to DBMS

Advanced Programming in C++

Establishing and operating A Business Incubator

Emotional Intelligence in IT Project Management

Real-Time Operating Systems

Introduction to Robotics

Software Performance Engineering

Marketing Mantra for Techno Entrepreneurs

Skill Development for Post Production Activity in eLearning

Abstractions and Pattern Oriented Design

Effective Teaching/Learning Computer Programming

Visitors to the Department

Dr. Kaladhar Voruganti (Technical Director, NetApp ATG at Sunnyvale, California). He delivered a lecture on "Top Five Disruptive Trends in the Storage Industry."

Dr. Saketha Nath, (Post Doctoral Fellow, Technion Institute Israel). He delivered a lecture on "Robust Classification for Large Datasets: A Chance-Constraint Approach."

Prof. Ramkrishna Akella (University of California, Silicon Valley Center). He delivered a lecture on “ Active Relevance Feedback Algorithms for Information Retrieval.”

Dr. Yves Deswarte (Research Director of CNRS, France). He delivered a lecture on “Privacy-Enhancing Technologies for the Internet.”

Prof. Ramesh Jain (University of California, Irvine). He delivered a lecture on “EventWeb: The next disruptive evolutionary stage in WWW.”

Dr. Julian M. Bass (Debre Birhan University in Ethiopia). He delivered a lecture on “Developing ICT Skills in Ethiopia.”

Prof. Kesav Nori (Executive Director, Tata Consultancy Services). He delivered a lecture on “Should Computing be Limited by the Computer?.”

Richa Singh (West Virginia University). She delivered a lecture on “Recognizing Altered Faces Due to Aging and Disguises.”

Mayank Vatsa (West Virginia University). He delivered a lecture on “Level-3 Friction Ridge Pattern Analysis.”

Dr. Shonali Krishnaswamy (Monash University, Australia). She delivered a lecture on “Mobile Data Mining - From Theory to Applications.”

Dr.Parag Chaudhuri (MIRALab, University of Geneva). He delivered a lectuer on “Character Animation – A View-Dependent Approach.”

Dr. N. C. Narendra (IBM India Research Lab, Bangalore) He delivered lectures on “SOA Reference Architecture and Modeling Methodologies and Context Aware Web Services.”

Dr. Srivatsan Laxman (Microsoft Research Labs, Bangalore). He delivered a lecture on “Generative Models for Frequent Pattern Mining.”

Prof. Kamal Lodaya (The Institute of Mathematial Sciences, Chennai). He delivered a lecture on “Temporal Logics for Verification: What is the complexity?.”

Dr. Krzysztof W’cel and Monika Kaczmarek (Poznan University of Economics, Poland). He delivered a lecture on “Business Process Management meets Semantic Web Technologies - Semantic Business Process Management on the Example of the SUPER Platform.”

Prof. S. Muthu Muthukrishnan (Google). He delivered a lecture on “ Internet Ad Algorithms: Insights and Directions.”

Dr. Andrei Broder (Yahoo! Research). He delivered a lecture on “Query Understanding using Web Relevance Feedback.”

Prof.Dhruv Mubayi, (Department of Mathematics, Statistics and Computer Science, Univ. of Illinois at Chicago). He delivered a lecture on “Coloring H-free Hypergraphs.”

Dr. Arun Swami (Google). He delivered a lecture on “Google’s mission is to organize the world’s information and make it universally accessible and useful.”

Prof. David Kotz (Dartmouth College in Hanover NH). He delivered a lecture on “Security through measurement for wireless LANs.”

S. Keshav(University of Waterloo). He delivered a lecture on “Design Principles for Robust Opportunistic Communication.”

Prof. Andrea Asperti (University of Bologna, Italy). He delivered a lecture on “Optimal Reduction of Lambda Expressions.”

Ms. Nutan Limaye, Research Fellow (Institute of Mathematical Sciences, Chennai). She delivered a lecture on “Bi-Connected Planar Graph Isomorphism in Log-Space.”

Ms. Nutan Limaye, Research Fellow(Institute of Mathematical Sciences, Chennai). She delivered a lecture on “Interplay Between Language Classes and Complexity Classes.”

Prof. Andrew J. Ko(University of Washington). He delivered a lecture on “Debugging Reinvented: Asking and Answering Why and Why Not Questions about Program Behavior.”

Ramesh Raskar (Media Lab, MIT). He gave a talk on ”Imaging Research at MIT Media Lab.”

Dr. Ashish Darbari (University of Southampton, UK). He delivered a lecture on “Symbolic Simulation Based Transient Fault Injection.”

Prof. Rahul Mangharam (University of Pennsylvania). He delivered a lecture on “Networked Cyber Physical Systems and Highlights of Ongoing Work at the Embedded Real-Time Systems Lab at Upenn.”

Dr. Ganesh Ramalingam (Microsoft Research India). He delivered a lecture on “Logical Concurrency Control from Sequential Proofs.”

Invited Lectures

National

Sharat Chandran

“Spatial Data Structures for Graphics” *Silver Jubilee Workshop Talk* at CSE, IIT Kharagpur, October 2008.

“Visibility Map for Global Illumination in Point Clouds”
Fr.Agnel Institute, Mumbai.

Bhattacharyya, Pushpak

“Resources for Semantics Extraction” at University Polytechnic De Madrid, June 5, 2008.

“The Cross Lingual Information Access Consortium Project of India” at the *First Workshop of the Forum for Information Retrieval Evaluation (FIRE)*, Kolkata, Dec 12-14, 2008.

“Word Sense Disambiguation in a Trilingual Setting” at *Indo-UK Workshop on Artificial Intelligence*, IIT Madras, Dec 9, 2008.

Umesh Bellur

Keynote speaker at the Redhat Service Oriented Architectures Summit, Mumbai, India, Dec 2008.

International

Dhamdhare D. M.

“New results in partial redundancy elimination using eliminatability-paths,” CS Department, University of New South Wales, Australia, September 2008

Krithi Ramamritham,

“Tracking Dynamics Using Sensor Networks: Some Recurring Themes”, Keynote talk, *10th International Conference on Distributed Computing and Networking* Jan 2009 (*ICDCN 2009*)

Conferences/Symposia (Participated/ Papers Presented)

National

Farida Umrani, Sridhar Iyer and Malati Baru,

“Computer science education for elementary school students: Curriculum development and implementation,” *Digital Learning Track, eIndia 2008 (poster)*, Delhi, India, July 2008.

Sridhar Iyer, C. Vijaya Lakshmi, Malathy Baru and Usha Viswanathan,

“Project OSCAR: Open Source Courseware”, *Digital Learning Track, eIndia 2008*, Delhi, India, July 2008.

Sharat Chandran and Biswarup Choudhury,

“Images: a new computer graphics primitive”, *Techvista* October 2008.

Sharat Chandran and Rhushabh Goradia,

“GPU-based Global Illumination of Point Models using Fast Multipole Method”, First Prize. *Techvista* October 2008.

International

Vipul Shingde, Gurulingesh Raravi, Prakhar Goyal, Ashish Gudhe and Krithi Ramamritham,

“Merge-by-Wire: Algorithms and System Support”, *RTSS2008: The 29th IEEE International Real-Time Systems Symposium*, Barcelona, Spain, December, 2008.

Shweta Shah, Kannan M.Moudgalya and Krithi Ramamritham,

“Feedback Control of Internet Applications Involving the Tracking of Dynamic Data”, *17th International Federation of Automatic Control (IFAC) World Congress* July 2008.

Sayali Kulkarni, Amit Singh, Ganesh Ramakrishnan and Soumen Chakrabarti,

“Collective annotation of Wikipedia entities in Web text”, *15th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, SIGKDD 2009*, Paris, France

Somnath Banerjee, Soumen Chakrabarti and Ganesh Ramakrishnan,

“Learning to rank for quantity consensus queries”, *32nd Annual International ACM SIGIR Conference on Research and Development in Information Retrieval, SIGIR 2009*, Boston, Massachusetts, USA

Anup Kumar Chalamalla, Sumit Negi, L. Venkata Subramaniam, Ganesh Ramakrishnan,

“Identification of Class Specific Discourse Patterns” *ACM 17th Conference on Information and Knowledge Management (CIKM 2008)*, Napa Valley, California October 26-30, 2008

Sachindra Joshi, Ganesh Ramakrishnan, and Ashwin Srinivasan,

“Feature Construction using Theory-Guided Sampling and Randomised Search”, *18th International Conference on Inductive Logic Programming (ILP 2008)*, Prague, Czech Republic, September 10-12, 2008.

Ganesh Ramakrishnan, Sachindra Joshi, Sanjeet Khaitan, Sreeram Balakrishnan,

“Optimization Issues in Inverted Index-based Entity Annotation” *The Third International ICST Conference on Scalable Information Systems (Infoscale 2008)*, June 4-6, 2008, Napoli, Italy

P. Rathod, O. Dabeer, A. Karandikar and A. Sahoo,

“Characterizing the Exit Process of a Non-Saturated IEEE 802.11 Wireless Network”, *ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc)*, New Orleans, USA, May 2009.

S. Dalvi, A. Sahoo, and A. Deo,

“A MAC-aware Energy Efficient Reliable Transport Protocol for Wireless Sensor Networks”, *IEEE Wireless Communications and Networking Conference (WCNC)*, Budapest, Hungary, April 2009.

N. Athaide, A. Khan, D. Manjunath and A. Sahoo,

“Trie Partitioning in Distributed PC Based Routers”, *IEEE International Conference on Communication Systems and Networks (COMSNETS)*, January 2009.

M. Sharma, A. Sahoo, and K.D. Nayak,

“Channel Modeling based on Interference Temperature in Underlay Cognitive Wireless Network”, *IEEE International Symposium on Wireless Communication Systems (ISWCS)*, Reykjavik, Iceland, October 2008.

S. Chilukuri and A. Sahoo,

“DGRAM: A Delay Guaranteed Routing and MAC Protocol for Wireless Sensor Networks”, *IEEE International Symposium on World of Wireless, Mobile and Multimedia Networks (WoWMoM)*, Newport Beach, USA, June 2008.

Sunita Sarawagi, Vinay S Deshpande, and Sourabh Kasliwal,

“Efficient top-k Count Queries Over Imprecise Duplicates”, *12th International Conference on Extending Database Technology (EDBT)*, 2009.

Rahul Gupta and Sunita Sarawagi,

“Domain adaptation of information extraction models”, *Sigmod Record*, 2008.

Neha Singh and S Sudarshan,

“Concurrency Control in Distributed MRA Index Structure”, *14th International Conference on Management of Data, COMAD 2008*

Suresh Iyengar, S Sudarshan, Santosh Kumar, Raja Agrawal,

“Exploiting Asynchronous IO using the Asynchronous Iterator Model”, *14th International Conference on Management of Data, COMAD 2008*

Shruti Mahambre and Umesh Bellur,

“An Adaptive Approach for Ensuring Reliability in Event Based Middleware”, *Second Conference on Distributed and Event Based Systems*, Rome Italy, July 2008

Mitesh Khapra, Pushpak Bhattacharyya, Shashank Chauhan, Soumya Nair and Aditya Sharma,

“Domain Specific Iterative Word Sense Disambiguation in a Multilingual Setting”, *International Conference on NLP (ICON08)*, Pune, India, December, 2008.

Raghuvar Nadig, J. Ramanand and Pushpak Bhattacharyya,

“Automatic Evaluation of Wordnet Synonyms and Hypernyms”, *International Conference on NLP (ICON08)*, Pune, India, December, 2008.

Manish Shrivastava and Pushpak Bhattacharyya,

“Hindi POS Tagger Using Naive Stemming: Harnessing Morphological Information Without Extensive Linguistic Knowledge”, *International Conference on NLP (ICON08)*, Pune, India, December, 2008.

Rajat Mohanty, Sandeep Limaye, M. Krishna and Pushpak Bhattacharyya,

“Semantic Graph from English Sentences”, *International Conference on NLP (ICON08)*, Pune, India, December, 2008.

Abbas Malik, Christian Boitet and Pushpak Bhattacharyya,

“Hindi-Urdu Transliteration Using Finite State Transducers”, *Computational Linguistics (COLING08)*, Manchester, UK, August, 2008.

Debasri Chakrabarti, Hemang Mandalia, Ritwik Priya, Vaijayanthi Sarma and Pushpak Bhattacharyya,

“Hindi Compound Verbs and their Automatic Extraction”, *Computational Linguistics (COLING08)*, Manchester, UK, August, 2008.

Rajat Mohanty and Pushpak Bhattacharyya,

“Lexical Resources for Semantic Extraction”, *Lexical Resources Engineering Conference (LREC08)*, Marrakech, Morocco, May 26-June 1, 2008.

Sankaran Baskaran, Kalika Bali, Tanmoy Bhattacharya, Pushpak Bhattacharyya, Monojit Choudhury, Girish Nath Jha, Rajendran S., Saravanan K., Sobha L., and KVS Subbarao,

“A Common Parts-of-Speech Tagset Framework for Indian Languages”, *Lexical Resources Engineering Conference (LREC08)*, Marrakech, Morocco, May 26-June 1, 2008.

Uday P. Khedker and Bageshri Karkare.

“Efficiency, Precision, Simplicity, and Generality in Interprocedural Data Flow Analysis: Resurrecting the Classical Call Strings Method.” *International Conference on Compiler Construction (CC 2008)*, Hungary.

Sharat Chandran, A. Jog and Anant Madabhushi

“Classifying Ayurvedic Pulse Signals Via Consensus Locally Linear Embedding”, *Biosignals* January 2009.

Sharat Chandran, A. Shaji and D. Suter

“Manifold Optimisation for Motion Factorization”, Oral paper at *19th International Conference on Pattern Recognition (ICPR)*, December 2008.

Sharat Chandran and A. Joshi

“Arterial Pulse Rate Variability Analysis for Diagnoses”, 19th *International Conference on Pattern Recognition*(ICPR), December 2008.

“Multifractality In Arterial Pulse”, 19th *International Conference on Pattern Recognition* (ICPR), December 2008.

Sharat Chandran and A. Shaji

“Riemannian Manifold Optimisation for Non-rigid Structure from Motion”, *IEEE Computer Vision and Pattern Recognition Workshop on Nonrigid Shape Analysis and Deformable Image Alignment*. June 2008.

Sharat Chandran and Andrew Janowczyk

“Fast, Processor-Cardinality Agnostic PRNG with a Tracking Application”, *Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP)*, December 2008.

Sharat Chandran, R. Goradia and P. Ajmera

“GPU-based hierarchical Computations for View-Independent Visibility”, *Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP)*, December 2008.

Manoj Jain and Om P. Damani,

“English to UNL(Interlingua) Enconversion”, poster paper at *2nd Conference on Language and Technology*, CLT 2009.

Anoop Kunchukuttan and Om P. Damani,

“A System for Compound Noun Multiword Expression Extraction for Hindi “, *6th International Conference on Natural Language Processing, ICON* 2008.

Significant Awards/Distinctions

Prof. Pushpak Bhattacharyya was selected for the award IBM UIMA Innovation Awards for faculty for his proposal “Integrating Indian Language Processing Resources and Tools and Semantic Search Capabilities with the UIMA Platform”. The award amount is USD 15,000.

The paper by Dvijotham Krishnamurthy, Soumen Chakrabarti, and Subhasis Chaudhuri won the “Best Machine Learning Student Paper Award” at ECML/PKDD 2008.

Kameswari Chebrolu and Bhaskaran Raman’s paper was selected as one of the “Top Three Outstanding Papers” at IEEE INFOCOM 2008.

Prof. Deepak B. Phatak was listed as one of the top fifty powerful Indians.

Honorary Work**Diwan A.A.**

Reviewed papers for *Journal of Graph Theory*, *Discrete Mathematics*, *Discrete Applied Mathematics*, *Theoretical Computer Science*.

Faculty Members and their Specialization**1. Varsha Apte**

Software and Distributed Systems Performance Modeling Wireless Network Modeling and Analysis

2. Kavi Arya

Functional Programming Applications (Domain Specific Languages). Embedded Systems/ Parallel Programming Languages. Distance Learning.

3. D.B. Phatak

Data Base Management Systems, Software Engineering, System Performance Evaluation, Distributed Client Server Information Systems.

4. Umesh Bellur

Autonomic Computing of Distributed Applications, Adaptive & QoS aware Event Broker Networks, Functional and Architectural adaption in pervasive computing, Middle ware design for sensor networks, Object & Aspect oriented computing, Service oriented Computing

5. Pushpak Bhattacharyya

Natural Language Processing, Machine Learning, Web Knowledge Processing, Neural Nets

6. M.R. Bhujade

Hardware verification, Neural networks

7. S. Biswas

Parallel and Distributed Processing , Neural Nets , Architecture

8. Soumen Chakrabarti

Hypertext databases, Data mining

9. Supratik Chakraborty

Formal techniques for analysis, verification, validation of digital systems, Asynchronous timing analysis.

10. Sharat Chandran

Graphics, Computer Vision, Computational Geometry, Parallel Algorithms, Visualization, Medical Imaging

11. D.M. Dhamdhare

Distributed Algorithms, Programming Languages, Operating Systems, Optimizing Compilers

12. A.A.Diwan

Algorithms, Theoretical Computer Science

13. Ashwin Gumaste

Optical Networking, and Uncertainty Equilibriums in Business and Networking Environments

14. Sridhar Iyer

Mobile Computing, Distributed Systems, Educational Software.

15. R.K. Joshi

Object Oriented Systems, Distributed Systems, Software Architectures

16. Shashikant Kelkar

Software Engineering And Quality Assurance (Testing and Matrices)

17. Uday P. Khedkar

Programming Languages, Compilers, Data Flow Analysis.

18. Purushottam Kulkarni

Sensor and Wireless Networks, Distributed Systems and Data Dissemination. Developing solutions to problems in above areas for non-urban/rural settings.

19. Bernard Menezes

Information Appliances, Electronic Commerce, Java Security, Parallel Computing, Time Series Forecasting

20. G. Nagaraja

Machine Intelligence, Pattern Recognition,

21. Om P. Damani

Natural Language Processing

22. Krithi Ramamritham

Real time systems, Databases.

23. Bhaskar Raman

Computer networks, Wireless systems, Communication system design for developing regions

24. Ganesh Ramakrishnan

Statistical Learning Theory (Support Vector Machines, Kernel Machines, Radial Basis Functions), Statistical Language Modeling, Reasoning and Inferencing, Information Extraction

25. Abhiram G. Ranade (Head of the Department)

Algorithms and Combinatorial Optimization

26. Krishna Shankaran Narayanan

Formal Methods, Bio-inspired Computing

27. Anirudha Sahoo

Computer networks, Voice routing, Voice over IP, QoS in networks.

28. Amitabha Sanyal

Functional Programming, Compilers, and Programming Languages

29. Sunita Sarawagi

Data mining: integrating mining with relational DBMS, temporal mining, OLAP: integrating mining with OLAP, indexing multidimensional data, precomputation techniques., E-commerce: mining extensions, Extending relational DBMS, Wide-area distributed database systems

30. N.L.Sarda

Databases, Information Systems, Software Engineering

31. G. Sivakumar

Automated Reasoning, Logic Programming, Rewrite Systems, Networks, Distributed Systems

32. Milind Sohoni

Combinatorial Optimization, Mathematical Programming, Algorithms

33. S. Sudarhan

Main memory databases, Query processing and optimization

34. Sundar Vishwanathan

Algorithms, Combinatorics, Complexity Theory.

35. Kameswari Chebrolu

Architecture and protocol design in wired, wireless and sensor networks. Also interested in the development of appropriate technology.

36. Bharat Adsul

Formal methods in Concurrency, Logics and Games.



Earth Sciences

Academic Activities

The Department of Earth Sciences offers the following five academic programs. A new program, ***M.Tech.*** in ***Petroleum Geoscience***, was introduced in the Golden Jubilee Year 2007.

- (i) M.Sc. Applied Geology (2 years)
- (ii) M.Sc. Applied Geophysics (2 years)
- (iii) M.Tech. Geoexploration (2 years)
- (iv) M. Tech. Petroleum Geosciences (2 years)
- (v) Ph.D.

Student intake

Ph.D	:	14
M.Tech (Geoexploration)	:	15
M. Tech. (Petroleum Geoscience)	:	10
M.Sc. (Appl. Geology)	:	21
M.Sc (Appl. Geophysics)	:	10

Degrees Awarded

Ph.D	:	7
M.Tech	:	11
M.Sc. (Appl. Geology)	:	18
M.Sc (Appl. Geophysics)	:	7

The M.Sc. curriculum emphasizes on basic science while the M.Tech. (Geoexploration) program offers specializations in applied field mineral, groundwater, petroleum explorations. Schlumberger Asia Services Ltd. provides fellowships to two M. Tech. students.

The department signed an agreement with BG India under which two visiting faculty positions have been funded by the BG, India. BG, India provides also fellowships to two M. Tech. students of Petroleum Geoscience course and has provided grant for development of a laboratory.

The research activities in the Department are focused both on basic research as well as on the applied aspects, addressing the issues of national needs. The major research areas include natural history, hydrocarbon and mineral exploration, seismology, engineering geology and geothermal energy. As part of the ISRO sponsored moon mission program of the country, the faculty are participating in research projects on terrestrial analogues for planetary exploration. The DST approved a major project on national facility in geochronology. Research activities in the areas of seismology and natural hazards continued with support from various agencies.

R&D Activities

Sponsored Projects

Ongoing Projects (No.)	:	30
New Projects (No.)	:	11
Completed Projects (No.)	:	10
Faculty involved	:	15
Sanctioned outlay:		Rs. 7,15,74,165/-

Consultancy

No. of Jobs	:	23
No. of faculty involved	:	4
Income generated	:	Rs. 25,61,775/-

Sponsored research projects, both in pure and applied geology and geophysics, were carried out in the department. The research facilities in the department include XRD, ICP-AES, Cathodo-luminescence microscope, SEM-EDS, Laser Raman Spectrophotometer, UV-visible spectrophotometer, experimental hydrothermal system, fluorescence microscope, digital seismographs, gravimeter, compressive strength testing equipment, fluid-inclusion set up, digital image processing and GIS facilities and a computer lab with Sun Workstation.

Project Title	Sponsoring Agency	Status (New/ Ongoing/Complete)
“Facies, paleogeography and diagenesis of Cenozoic Carbonates, Kutch”	BG Exploration and Production India Limited	New Project
“Characterization of Bauxites from Kutchh area, Gujarat and their mineral beneficiation.”	Gujarat Mineral Research Development Society	New Project
Establishing A National Facility For 40 Ar - 39 Ar Geo-Thermochronology At The Indian Institute Of Technology, Mumbai.	Department Of Science & Technology	Ongoing
Financial Support To Carry Out R&D Project : Lithological Discrimination And Mineral Potential Mapping Of Mamandur Poly Metal Sulphide Zone, Tamil Nad	Department Of Science & Technology	Ongoing
Satellite Geoid/Gravity Modeling For Bathymetry Prediction And Rheology Along Carlsberg Ridge And Andaman Arc Region.	Indian Space Research Organisation/Department Of Space	Ongoing
Crustal Configuration And Active Tectonics Of The Andaman Arc -Sea Region Based On Integrated Geophysical Data Analysis.	Department Of Science & Technology	Ongoing
On The Application Of Wavelet Analysis To Identify Geomagnetic Jerks In The Long-Period Global Magnetic Observatory Data.	Indian Space Research Organisation/Department Of Space	Ongoing
SERC FAST Track - Young Scientist Scheme- Plutonism In Saurashtra, Northwestern Deccan Traps: Understanding Petrological Diversity And Magma Chamber P	Department Of Science & Technology	Ongoing
Volcanological, Chronological, Geochemical And Petrogenetic Evolution Of The Barren Island Volcano, India.	Department Of Science & Technology	Ongoing
Fourth Meeting Of The PIMC On Landslide Hazard Mitigation	Department Of Science & Technology	Ongoing
Schlumberger F/S. In R/O. Of Bhaskar Acharya & Ms. Aditi Sharma (Schlumberger Asia Services Ltd., Mumbai)	Schlumberger Asia Services Ltd.	Ongoing
GEOINDIA MEETING At Delhi During 17-19 December 2008.	Society For Sedimentary Geology.	Ongoing

New Infrastructure

1. Almeda XR Laser Raman Spectroscope
2. Thermal Emission Spectrometry setup
3. Sand Box Deformational Rig
4. Petrog point counter stage for grain counting
5. Electrical Resistivity Meter
6. Proton Precision Magnetometer

7. Cerchar abrasivity index apparatus
8. Fracture toughness apparatus
9. Bending strength apparatus
10. Blast vibration monitor

Visitors to the Department

Dr. Oleg Petrov, Director General, VSEGEI, Russia. He delivered a lecture on “Geological Mapping of Central Asia and adjacent areas and the Circumpolar Arctic”.

Prof. Mrinal K. Sen, University of Texas at Austin, USA. He delivered a lecture on “Acoustic daylight imaging - a new tool for seismic data analysis”.

Prof. Abinash Agrawal, Wright University, USA. He delivered a lecture on “Geochemistry of an Engineered Wetland and its application in the treatment of contaminated groundwater”

Dr. G. Shanmugam, Adjunct Professor, University of Texas at Arlington, USA. He delivered a lecture on “Recent Advances in Deep-Water Sedimentology: Implications for Petroleum Geology”.

Conferences (Participation/Papers Presented)

National

Jadav, G.N.,

The second meeting of Asian Current Research in Fluid Inclusions, IIT Karagpur.

Pandalai, H.S.,

The second meeting of Asian Current Research in Fluid Inclusions, IIT Karagpur.

International

Chandrasekharam, D.,

2nd International Conference on Arsenic in the Environment, Valencia, Spain, May 21-23, 2008.

Workshop for Decision Makers on Direct Heating Use of Geothermal Resources in Asia, Tianjin, China, May 11-18, 2008

Workshop on “Geothermal energy: resources and technology for a sustainable development, organized by International Centre for Science and high technology-United Nations Industrial Organization, Trieste, Italy, December 10-12, 2008.

Dutta, S.,

Presented a keynote lecture entitled “Biogeochemistry of prasinophycean algae, megaspores and chitinozoans as revealed by pyrolysis-gas chromatography-mass spectrometry” at *12th International Palynological Congress and 8th International Organization of Palaeobotany Conference*, 30th August-05th September, 2008 in Bonn, Germany.

“Did the Sporopollenin chemistry change through time?” at annual meeting of *Palaeontological Society of Germany*, 8-10 September, 2008 in Erlangen, Germany.

Patel, S.C.,

“Mineralogy and Geochemistry of Wajrakarur Kimberlites, Southern India”, at the *9th International Kimberlite Conference* held at Frankfurt, Germany during August 10-15, 2008.

Invited Lectures

National

Banerjee, S.,

“Microbial mat structures Preserved within the siliciclastic rock record” at IAS annual meeting Baroda, December 26-28th, 2008.

Dutta, S.,

“Biogeochemistry of palynomorphs as revealed by pyrolysis-gas chromatography- mass spectrometry” Birbal Sahani Institute of Paleobotany (BSIP), Lucknow, March 31st, 2008.

Jadav, G.N.,

“The role of Model-microscope in mineral characterization for mineral beneficiation”, *International Seminar on Mineral Processing Technology (MPT 2008)*, held at Trivandrum, April 22-24, 2008.

Pandalai, H.S.,

National Seminar on Ore-body Modeling, Udaipur

Pande, K.,

At the Geol Soc India Golden Jubilee celebration in July 2008

Saraswati, P.K.,

26th M R Sahni Memorial Lecture at the Palaeontological Society of India, Lucknow

International

Chandrasekharam, D.

“Low Enthalpy Geothermal Resources for Power Generation” *Workshop on Geothermal energy: resources and technology for a sustainable development*, organized by International Centre for

Science and high technology-United Nations Industrial Organization, Trieste, Italy , December 10-12, 2008.

Dutta, S.

“Biogeochemistry of prasinophycean algae, zoomorphs and megaspores as revealed by curie point pyrolysis-gas chromatography-mass spectrometry”
Helmholtz Centre Potsdam GFZ German Research Centre for Geosciences, D-14473 Potsdam, Germany, June 9, 2008.

Honorary work

Banerjee, S.

Editorial board, Journal of the Geological Society of India

Mathew, G.

Reviewed Papers for International Journal of Geology, International Journal of Tectonophysics, International Journal of Earth Science, International Journal of Remote Sensing

Pande, K.

Member: DST Fast Track proposal Committee
CSIR Member PAC Earth Atmosphere Ocean and Planetary Sciences
CSIR Net Committee member

Pandalai, H.S.

Member, Editorial Board, Journal of Mathematical Geosciences
Member, Selection Committee, UPSC Geologists Examination
Member, Sectional Scrutiny Committee, National Mineral Awards -2007

Reviewed Papers for International Journals: Journal of Mathematical Geosciences, Journal of Earth System Science, Journal of Asian Earth Sciences, International Geostatistics Conference, Asian Current Research on Fluid Inclusions

Saraswati, P.K.

Editorial Board: Journal of Petroleum Geology (Blackwell, UK), Indian Journal of Geology (Kolkata), Journal of Palaeontological Society of India (Lucknow)
Member, Expert Committee (WOS-A), DST
Member, Peer Review Group, Directorate General of Hydrocarbons

Faculty and their Specializations

1 **Santanu Banerjee**

Sedimentology, Basin Analysis

2 **Tapas Kumar Biswal**

Structural Geology and Precambrian Geology.

3 **E. Chandrasekhar**

Geo-electromagnetism and Geophysics.

4 **D. Chandrasekharam**

Geochemistry, Igneous Petrology, Geothermics

5 **Suryendu Dutta**

Organic Geochemistry, Petroleum Geology

6 **Gajananrao Narayanrao Jadhav**

Mineral Deposit Studies, Fluid Inclusions

7 **George Mathew**

Crystallography and Mineralogy

8 **G.Mohan**

Seismology, General Geophysics

9 **Soumyajit Mukherjee,**

Structural Geology

10 **H.S. Pandalai**

Ore Geology, Mining Geostatistics

11 **Kanchan Pande**

Isotope Geology, Geochronology, Geochemistry

12 **Suresh C. Patel**

Metamorphic Petrology

13 **Munukutla**

Exploration Seismology, Solid Earth and Exploration Geophysics

14 **D. Ramakrishnan**

Geomorphology and Remote Sensing

15 **Pratul K. Saraswati**

Micropalaeontology, Stratigraphy, Petroleum Geology

16 **Hetu. C. Sheth**

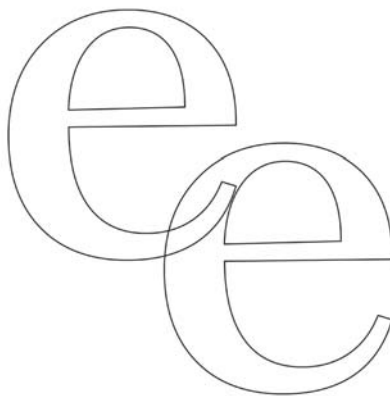
Igneous Petrology

17 **Trilok Nath Singh**

Engineering Geology, Rock Mechanics

18 **B.K. Sahu (*Professor Emeritus*)**

Sedimentology, Mathematical Geology, Mineral Deposit Modelling



Electrical Engineering

Introduction

The Department of Electrical Engineering has a dynamic faculty of 43 members with a focus on excellence in teaching and research. Research activities in the department span a wide range of areas of electrical engineering. The department has some of the best laboratory facilities in the country for research and teaching, which have been funded generously by MHRD and other funding agencies like D.I.T. Substantial funding has also been received for research projects of individual faculty members through government agencies, as well as many private companies, both national and international. The broad focus of graduate teaching and research is in the areas of Communications and Signal Processing, Microelectronics, Power Electronics & Power Systems, Control & Computing, and Electronic Systems. The undergraduate curriculum has been designed to broadly cover all major disciplines of Electrical Engineering, and also to give the student an opportunity to pursue a specific area of greater depth through proper selection of elective courses.

This has been a very active year for the department. More than 97 sponsored research projects, and 21 consultancy projects have been carried out in the department. The department conducted 24 CEP courses during this period. Our faculty and students published nearly 111 papers in conferences and more than 60 papers in refereed journals. The faculty members have also been doing a considerable amount of honorary professional work like editing prestigious research publications, reviewing research papers for leading national and international journals and reviewing PhD theses of other institutes.

The institute received approximately Rs. 50 crores from the Ministry of Communication & Information Technology for setting up a nanoelectronics facility. These efforts are spearheaded by the faculty of the department. This facility has recently been complemented by Applied Materials Inc., through a donation of three state-of-the-art semiconductor manufacturing tools with an estimated value of US \$ 3.5 millions.

Centre for Excellence in Nanoelectronics: The centre is aimed at promoting nanoelectronics research in India and is generously funded by DIT, Government of India, and IIT Bombay and Applied Materials Incorporated. The centre entered its fourth year in 2009 and has generated a number of patent disclosures and publications in high impact conferences like IEDM and journals like IEEE Transactions on Electron Devices, Applied Physics Letters and Nanotechnology Letters. The centre is being used by about 80 students and 20 faculty members from eight departments/schools/centers at IIT Bombay.

Indian Nanoelectronics Users Program (INUP): This program aims to open up the centre for excellence in nanoelectronics to researchers from across the country. In a first of its kind initiative, DIT has approved the funding for research by external users at the centre under the INUP program. INUP was started in September 2008 and 18 projects have been approved already which are at various stages of implementation. The average turnaround time for acceptance of proposals has been three weeks.

Bharti Centre for Communication: This centre has been set up on the fifth floor of Girish Gaitonde Lecture Hall Complex. The centre will undertake and promote research and development in the area of communication engineering. The centre was inaugurated on 23rd January, 2009, by Mr. Rakesh Bharti Mittal. Prof. Devang Khakhar, Director of IIT Bombay and Prof. Ashok Mishra, former Director of IIT Bombay graced the occasion. To mark the event, a workshop was arranged where four distinguished speakers gave lecture. The speakers were Dr. Girija Narlikar (Bell Labs Research, Bombay Arena, India), Dr. Sriram Jayasimha (Signion Systems), Dr. V. Ramasubramanian (Siemens Corporate Technology), and Dr. Venkat Padmanabhan (Microsoft Research India).

Academic Programmes

Degrees Awarded		
B.Tech.	:	40
M.Tech.	:	97
Ph.D.	:	15
Dual Degree	:	84
B.Tech.	:	42
M.Tech.	:	42

R&D Activities

Sponsored Research Projects

Sponsored Research Projects	: 112
New	: 20
Ongoing	: 77
Completed	: 15
Faculty Involved	: 34

A list of a few sponsored research projects is given below

Project Title	Sponsoring Agency	Status (New/ Ongoing/ Complete)
“Calculation of Transmission Loss based on Power Tracing”	Power Grid Corporation of India Ltd	New
“A Detailed Photoluminescence Investigation Of The Impact Of Annealing On Nano-Scale In(Ga) As/GaAs-Based Quantum Dot Heterostructures”,	Department of Science and Technology, India	New
“Nano-Scale Electronics For Silicon-Plus Platform”	Ministry of Communication and Information technology, India	Ongoing
“Development of Hardware and Software for Digital Real-time Simulator”,	Department of Information Technology	Ongoing
“Engineering and fabrication of proto model full spectrum Simulator (FSS)”	Department of Information Technology	Ongoing
“Synchronised Phasor Measurement Unit for Power System WideArea Measurements”	Department of Information Technology	New
“Power Electronics Circuit Simulation using SEQUEL”	National Mission on Power Electronics Technologies	Ongoing
“Design and Development of Wireless Sensor Networks for Real-Time Monitoring: AgriSens”	DIT	Completed
Hybrid Control and Fault Detection during re-entry of Reusable Launch Vehicles	ISRO	New
Control and optimization of pulsed laser deposition technique for growth of ZnO based materials and devices	DST	New
Performance Novel Analog and Mixed-Signal Custom Integrated Circuit (IC) Design, Modeling, Development and Test	IRCC	New
Optimization of Asymmetric Device Design and Circuits in VLSI Technologies	Infineon, Germany	Ongoing
Low-Power Fully Integrated Transmitter for Bio-Medical Personal Monitoring Devices	DST	New
Design and implementation of particle filter algorithms for underwater, multiple, and maneuvering target tracking	Naval Research Board	New

Consultancy Projects

The department undertook 21 jobs generating Rs.1,18,88,491/-. The total number of faculty involved was 13.

Patents

Kulkarni S. V.

A diagnostic method for determining deformations in a transformer winding, Indian Patent Application No. 1893/MUM/2007, filed on 27th September 2007, PCT applicatin No. PCT/In2008/000584, Filed on 11th September 2008.

M. Shrivastava, M. Shojaei Baghini, D. K. Sharma, V. R Rao,

“Nonvolatile Floating Gate Analog Memory Cell”, Indian patent application No. 2217/MUM/2008.

M. Srivastava, H. Gossner, V. R. Rao, M. Shojaei Baghini,

“Single Halo DeMOS transistor for robust ESD protection in advanced high voltage CMOS technology”, US patent application No. 12/188774, 2008.

M. Srivastava, H. Gossner, V. Ramgopal Rao, M. Shojaei Baghini,

“DeMOS Device realized using dual STI process,” US patent application No. 12/188802, 2008.

M. Shrivastava, H. Gossner, M. Shojai Baghini, V. R. Rao, C. Russ,

“An IGBT device with plugged-in SCR for robust ESD protection in FinFET technology”, US patent application No. 2008P52067 US.

Mayank Shrivastava, Harald Gossner, Rao Ramgopal V, M.Shojaei,

“Single Halo DeMOS for robust ESD protection in advanced high voltage CMOS”, United States Patent Application No. 12/188774, Docket No.INF 2008 P 51304 US, Filing Date: August 8, 2008

Mayank Shrivastava, Harald Gossner, Rao Ramgopal V, M.Shojaei,

“A DeMOS Device realized using dual STI process”, United States Patent Application No. 12/188802, Docket No.INF 2008 P 51311 US, Filing Date: August 8, 2008

Soumyo Mukherji, Rao Ramgopal V, Vibhor Khanna, Prasanth Shankar, Tushar Verma,

“Microheater Based Explosive sensor”, Indian Patent pending, 2008

Mayank Shrivastava, M.Shojaei, D.K.Sharma, Rao Ramgopal V,

“Indepedently Driven Double Gate (IDDG) Nonvolatile floating gate analog memory cell”, Indian Patent pending, 2008, Patent Application No 2217/MUM/2008, Filed on 15th October 2008

Raval Harshil Narendra, Tiwari Shree Prakash , Navan Ramesh Raju, Anil Kumar and Rao Ramgopal V,

“Method and device for determining ionizing radiation”, Indian Patent Application No 1927/MUM/2008, Filed on 11th September 2008

Manoj Joshi, Nitin Kale, S.Mukherji, R.O.Dusane, Rao Ramgopal V, Rakesh Lal,

“A novel dry method of surface modification of SU8 for immobilisation of biomolecules using hotwire induced pyrolytic process”, Indian Patent No.213504, March 25, 2008

Extension Activities

Kulkarni S. V.

Organizing Secretary: National Power Systems Conference (NPSC) held at IIT Bombay in December 2008.

Khaparde S.A.

Convener of 15th National Power Systems Conference Dec. 2008. The conference was hosted at IIT Bombay as part of our Golden Jubilee celebrations.

Chakrabarti S.

Four significant collaborations have been set up as mentioned below:

1. Prof. Nigel Browning, Dept. of Chemical Engineering and Material Science, University of California Davis, USA
2. Prof. Sanjay Krishna Center, for High Technology Material, University of New Mexico, USA
3. Dr. Tetsuya D. Mishima, Dept. of Physics and Astronomy, University of Oklahoma
4. Prof. Adrienne Stiff-Robert, Dept. of Electrical and Computer Engineering, Duke University, USA

Delivered a couple of lectures for a QIP (Quality Improvement Program) short-term course on “Overview of III-V Compound Semiconductor Device Technology” sponsored by AICTE from February 23rd to 28th, 2009. The venue was at IIT Kharagpur Kolkata Extension Center (HC Block, Sector-III, SaltLake City, Kolkata – 700106).

Visitors to the Department

Belur M.N.

Prof. Sanjoy K. Mitter, MIT, USA,
Prof. Vincent Blondel, University of Louvain, Belgium,
Prof. Iven Mareels, University of Melbourne, Australia

Dey B.K.

Sidharth Jaggi, CUHK, and Michael Langberg, Open Univ., Israel visited in for research collaboration in May 2008 and also gave talks in the department.

Chakrabarti S.

Prof. Sanjay Krishna, Associate Professor, Center for High Technology Material University of New Mexico, USA

D. Manjunath

Prof Ravi Mazumdar, University of Waterloo, Canada
Dr Alexandre Proutiere, Microsoft Research, Cambridge UK
Prof Ayalvadi Ganesh, Bristol University UK
Prof Rajesh Sundaresan, Indian Institute of Science.

M. C. Chandorkar

Prof. Po-Tai Cheng, National Tsing Hua University, Taiwan, (24-26 November 2008)

Conferences/ Symposia/ Workshops/ Seminars (Participated/Papers Presented)

National

Das Ipsita, C. R. P. G. Naveen, Yadav S. S., Shah N, Merchant S. N., Desai U. B.,

“WSN Monitoring of Weather and Crop Parameters for Possible Disease Risk Evaluation for Grape Farms - Sula Vineyards, A Case Study”, *Geomatrix, National Conference*, IIT Bombay, 28th Feb- 1st March, 2009, Mumbai, India

Priyadarshan, H.; Pillai, Harish K.

“Guaranteeing Wellposedness of LCS by modifying the LCP part using feedback”, *CISCON - 2008*, Udupi, November 2008.

International

Chandorkar M.C.

IEEE Industrial Electronics Society Annual Conference IECON-2008, Orlando, Florida, USA, 10-13 November 2008.

Patel, D.C., Sawant, R.R., Chandorkar M.C.,

“Control of Four-Leg Sinewave Output Inverter using Flux Vector Modulation”, *IEEE Industrial Electronics Society Annual Conference IECON-2008*, Orlando, Florida, USA, 10-13 November 2008.

Rao, Y.S., Chandorkar M.C.,

“Electrical Load Emulation using Power Electronic Converters”, *IEEE Region-10 International Conference*, TENCON-2008, Hyderabad, India, 18-21 November 2008.

Sawant, R.R., Chandorkar M.C.,

“Power Boundaries in Multifunctional Converter Control for Three-phase Four-wire Systems”, *IEEE Region-10 International Conference*, TENCON-2008, Hyderabad, India, 18-21 November 2008.

Rao, Y.S., Chandorkar M.C.,

“Electrical Load Emulation using Optimal Feedback Control Technique”, *IEEE International Conference on Industrial Technology*, Gippsland, Australia, 10-13 February 2009.

Chakraborty D

European Control Conference, Budapest, Hungary, August 23-26, 2009

17th Mediterranean Conference on Control & Automation, Thessaloniki, Greece, Jun 24-26, 2009.

5th International Conference of Applied Mathematics and Computing, Plovdiv, Bulgaria, August 12-18, 2008.

17th IFAC World Congress, Seoul, Korea, July 6-11, 2008.

13-th International Symposium on Dynamic Games and Applications, WrocBaw, Poland, 30th June-3rd July, 2008.

Suseendran J, N. Halder, S. Sengupta, Chakrabarti S. and T. D. Mishima,

“Optimized Stacking of Nanoscale InAs/GaAs Quantum Dots in Multilayer Heterostructures”, *2nd International conference on Frontiers in Nanoscience and Technology* (Cochin Nano 2009), Cochin, India. January 3-6, 2009.

Sengupta, S., Halder, N., Chakrabarti S., Herrera, M. and Browning, N. G.

“Investigation of the effect of varying dot ripening time on the structural and optical properties of Nanoscale InAs/GaAs Quantum Dots layer”, *2nd International conference on Frontiers in Nanoscience and Technology* (Cochin Nano 2009), Cochin, India. January 3-6, 2009.

Halder, N., Charthad, J. and Chakrabarti S.,

“TEM and PL Characterization of InAs-GaAs Bi-layer QDs”, *PHOTONICS 2008: The International Conference on Fiber Optics and Photonics*, New Delhi, India, December 14-17, 2008.

Charthad, J., Halder, N., Chakrabarti S., Miriam Herrera, Nigel D. Browning and C.R. Stanley,
 “A Detailed Investigation of the Effect of Ripening Pause on the Structural and Optical Characteristics of InAs/GaAs Quantum Dot”, *2008 Asian Conference on Nanoscience and Nanotechnology* (AsiaNANO2008), Biopolis, Singapore, November 3-7, 2008.

Prashanthi, K., Duttagupta, S.P., Chakrabarti, S. and Palkar, V. R.
 “C-V characteristics of multiferroic Bi_{0.7}Dy_{0.3}FeO₃ thin films directly integrated on <100>Silicon”, *53rd Magnetism and Magnetic Materials Conference*, Austin Texas, USA, November 10-14, 2008.

Prashanthi K., Chakrabarti S. and Palkar, V. R.
 “Integration of novel multiferroic thin films on GaN/ Sapphire and GaAs substrates for high frequency device applications”, *53rd Magnetism and Magnetic Materials Conference*, Austin Texas, USA, November 10-14, 2008.

Chakrabarti S., Halder, N., Charthad, J., Ghosh, S. and Tanley, C. R. S
 “Effect of Monolayer Coverage and Spacer Thickness on InAs/GaAs Bi-layer QDs grown at a reduced growth rate,” *ISCS2008, 35th International Symposium on Compound Semiconductors*, Europa-Park, Rust, Germany, September 21-24, 2008.

Chakrabarti S., Halder, N. and Stanley, C. R.
 “Optical and Structural Characterization of Coupled Multi-layer InAs/GaAs Quantum Dot Heterostructures Grown by Molecular Beam Epitaxy”, *IUMRS-ICEM 2008, International Conference on Electronic Materials*, Hilton Sydney, Sydney, Australia - 28th July to 1st August 2008.

Dey B. K.
 TPC member: IEEE Globcom WCS 2008, Comsware 2008, Tencon 2008, VTC 2009.

Dey Bikash, Shenvi Sagar Sidharth Jaggi, Michael Langberg,
 “Real” Slepian-Wolf Codes”, in *ISIT* 2008.

Dey Bikash K., Bhushan G. Jagyasi, Chander, Deepthi, Merchant, S. N., Desai, U. B.
 “MAAS: Multibit Adaptive Aggregation Scheme for Wireless Sensor Networks”, in *15th International Conference on Telecommunication*, 2008, ICT 2008, 16-18 June 2008, St. Petersburg, Russia.

Dey, B. K. Jagyasi, B. Chander, D. Desai, U. B. and Merchant, S. N.
 “Blind adaptive distributed detection in multi-hop wireless sensor networks,” in *WPMC* 2008.

Khaparde S.A.
 ISIT 2008, Toronto, Canada.

Prashanthi, K., Duttagupta, S.P., Chakrabarti, S. Palkar, V.R.
 “C-V characteristics of Multiferroic Bi_{0.7}Dy_{0.3}FeO₃ thin films directly integrated on <100>Silicon”, *53rd Annual Conference on Magnetism and Magnetic Materials* (MMM), November 10 - 14, 2008, Austin, Texas.

Prashanthi, K., Mandal, M., Duttagupta, S.P. and Palkar, V.R.
 “Effect of temperature on magnetic domain structure in multiferroic Dy substituted bismuth ferrite thin films”, *International Symposium for Research Scholars on Metallurgy, Materials Science & Engineering (ISRS)*, 10-12 December 2008, IIT Madras (awarded best paper prize in magnetic materials session)

Mandal, M., Prashanthi, K., Duttagupta, S.P. and Palkar, V.R.
 “Change in electric polarization with applied magnetic field in multiferroic Dy modified BiFeO₃ thin films”, *International Symposium for Research Scholars on Metallurgy, Materials Science & Engineering (ISRS)*, 10-12 December 2008, IIT Madras (awarded best paper prize in electronic materials session)

Prashanthi, K., Duttagupta, S.P. and Palkar, V.R.
 “Effect of La-substitution on magnetic and ferroelectric properties of Bi(1-x)LaxDy_{0.3}FeO₃ system”, *IEEE International Magnetics Conference (INTERMAG)*, 4-8 May 2008, Spain.

R. A. Thakker, M. Shojaei Baghini, Patil M. B.
 “Low-Power Low-Voltage Analog Circuit Design using HPSO,” *IEEE Int. Conf. on VLSI Design 2009* (Sister Conf. of DAC), pp. 427-432, India, Jan. 2009.

R. A. Thakker, C. Sathe, A. B. Sachid, M. Shojaei Baghini, V. Ramgopal Rao, Patil M. B.,
 “Automated Design and Optimization of Circuits in Emerging Technologies,” *IEEE ASP-DAC 2009* (Sister Conf. of DAC), pp. 504-509, Japan, Jan. 2009.

Vasi J.
 International Reliability Physics Symposium (IRPS), Phoenix, USA (April 2008)

Joshi Sanjay and Kulkarni, A. M.
 “Comparative Evaluation of Discrete Time Dynamic Models of TCSC”, *16th Power Systems Computation Conference*, July 14-18, 2008, Glasgow, Scotland

Joshi, P. M. and Kulkarni, S. V.
 “Transformer Winding Diagnostics Using Deformation Coefficient,” *IEEE PES General Meeting*, Pittsburgh, USA, 20-24 July, 2008, Paper No. 08GM0583.

Fernandes, B. G., Kulkarni, A. M., Kulkarni, S. V., and Khaparde, S. A.

“Power Engineering Laboratories at IIT Bombay.” *IEEE PES General Meeting*, Pittsburgh, USA, 20-24 July, 2008, Paper No. 08GM0409.

Chikku Abraham and Kulkarni S. V.

“FDTD Simulated Propagation of Electromagnetic Pulses due to PD for Transformer Diagnostics,” Paper 1569128887, *TENCON 2008*, Hyderabad, India, November 18-21, 2008.

Borkar, V.S. Das, D.J.A. Datta Banik and Manjunath, D.

“A Learning Scheme for Stationary Probabilities of Large Markov Chains with Examples,” INVITED PAPER in *Proceedings of the Allerton Conference on Communication, Computing and Control*, Sept 2008.

Yangcheng Huang, Kannan, G., Bhatti, Saleem., Merchant, S. N., and Desai, U. B.

“Route Duration Statistics of Proactive Ad-hoc Networks Routing Protocol”, *Wireless Telecommunication Symposiums WTS*-April 2008, California, USA

Sarath Gopi; Kannan, G.; Chander, Deepthi; Merchant S. N. and Desai, U. B.

“PULRP: Path Unaware Layered Routing Protocol for Underwater Sensor Networks”, *International Conference on Communications ICC-2008*, Beijing, China- May 2008

Biradar, G.S., Merchant, S.N., Desai, U.B.

“Constrained Blind Adaptive Multiuser Detector for DS-CDMA UWB in Multipath Channels”, *IEEE International Symposium on Spread Spectrum Techniques and Applications (ISSSTA'08)*, Bologna, Italy, Aug. 2008

“An Adaptive MMSE-RAKE Receiver for DS-CDMA UWB Multipath Channel”, *International Conference on Wireless Personal Multimedia Communications Symposium (WPMC'08)*, Lapland, Finland, Sept. 2008.

“Performance of Constrained Blind Adaptive DS-CDMA UWB Multiuser Detector in Multipath Channel with Narrowband Interference”, *IEEE Global Communication Conference (GLOBECOM'08)*, New Orleans, USA, Nov-Dec. 2008.

Shah N., Desai U. B., Das Ipsita, Merchant S. N. and Yadav S. S.,

“Deploying Wireless Sensor Network (WSN) for calculating Evapotranspiration and Leaf wetness for Grape-Fields in Nasik”, 14th Annual International Sustainable Development Research Conference, September 21-23, 2008, New Delhi, India

Ojha, Ravi Shankar, Kannan, G., Merchant, S. N. and Desai, U. B.

“On Optimal Transmission Range for Multihop Cellular Networks”, *IEEE Global Communication Conference, Globecom*- Nov 2008, New Orleans, USA

Sarath Gopi, Kannan, G., Merchant, S. N. and Desai, U. B.

“E-PULRP: Energy optimized Path Unaware Layering Routing Protocol for Underwater Sensor Networks”, *IEEE Global Communication Conference, Globecom*-2008, New Orleans, USA

Sharma, G. V. V., Ganwani, Vijay, Desai, Uday B. and Merchant, S. N.

“Performance Analysis of Maximum Likelihood Detection for Decode and Forward MIMO Relay Channels in Rayleigh Fading”, *IEEE Wireless Communication and Networking Conference (WCNC)*, April 2009.

Sachid, A. B., Srivastava, M., Thakker, R. A., M. Shojaei Baghini, Sharma, D. K.; Patil, M.B., V. Ramgopal Rao,

“Technology-Aware Design (TAD) for Sub-45nm CMOS Technologies”, *Intel AAF 2008*, Taiwan (Received the best research paper award in circuit design category) .

Dave, M., M. Shojaei Baghini and Sharma, D. K.

“A Process Variation Tolerant, High-Speed and Low-Power Current Mode Signaling Scheme for On-chip Interconnects”, *IEEE GLSVSLI*, 2009, USA.

Krishna, S.R. R.; M Shojaei-Baghini, Mukherjee J.

“CURRENT-MODE CMOS PIPELINED ADC”, *IEEE Eurocon 2009*, St Petersburg, Russia, May 2009

Jainwal, Kapil and Mukherjee Jayanta,

“Phase Noise Reduction in CMOS LC Oscillators Using Tail Noise shaping and Gm3 Boosting”, *IEEE ICECE Conf*, Dhaka, Bangladesh Dec 2008.

Pal, Debasattam; Belur, Madhu N.; Sinha, Subhrajit; Pillai, Harish K.

“New results in optimal quadratic supply rates”, *IEEE CDC 2008*, Cancun, Mexico, December 2008.

A. B. Sachid, M. Srivastava, R.A. Thakker, M. Shojaei Baghini, D. K. Sharma, M.B. Patil, Rao Ramgopal V.,

“Technology-Aware Design (TAD) for Sub-45nm CMOS Technologies”, *Intel Asia Academic Forum 2008*, 20-22 Oct 2008, Taipei, Taiwan (received the best research paper award)

Seena.V., Kale, Nitin, Nag, Sudip, Joshi, Manoj, Mukherji, Soumyo, Rao, Ramgopal V.

“Development of a polymeric microcantilever platform technology for biosensing applications”, *5th International Conference on Smart Materials, Structures and Systems*, July 24-26, 2008, Bangalore

Patil, P. B., Shevgaonkar, R.K.

“Spectral Characteristics of Defects in Photonic Crystals,” *International Conf. On Fiber and Photonics*, Photonics, 2008, Delhi, Dec.2008.

Pawar, Sanjay S., Shevgaonkar R. K. and Karandikar, Abhay

“Experimental Demonstration of Discrete Sources SAC-OCDMA System”, *International Conference on Fiber and Photonics, Photonics 2008*, Delhi, 2008.

Sandhya C., U. Ganguly, K.K. Singh, P.K. Singh, C. Olsen, S. M.Seutter, R. Hung, G. Conti, K. Ahmed, N. Krishna, Vasi, J. and S.Mahapatra,

“Nitride Engineering and the effect of interfaces on charge trap flash performance and reliability,” *International Reliability Physics Symposium (IRPS)* (2008).

Hariharan, V.; Thakker, R.; Patil, M. B.; Vasi, J. and Rao, V. R.

“Closed form current and conductance model for symmetric double-gate MOSFETs using field-dependent mobility”, *2008 Workshop on Compact Modeling (WCM-2008)* (2008).

Sandhya C, U. Ganguly, K.K. Singh, C. Olsen, S. M. Seutter, G. Conti, K. Ahmed, Krishna, N., Vasi, J. and Mahapatra, S.,

“The effect of bandgap of the nitride storage node on performance and reliability of charge trap flash,” *15th International Symposium on the Physical and Failure Analysis of Integrated Circuits (IPFA 2008)*, Singapore (2008).

Hariharan, V., Thakker, R., Patil, M. B., Vasi, J. and Rao, V. Ramgopal,

“Closed Form Current and Conductance Model for Symmetric Double-Gate MOSFETs using Field-dependent Mobility and Body Doping”, *2008 NSTI Nanotechnology Conference and Trade Show*, Boston, Massachusetts, USA (2008).

Invited Lectures

National

Kulkarni S. V.

Lectures on “Engineering Electromagnetics” and “Computational Electromagnetics: Research Trends and Applications” at Gogte Institute of Technology, Belgaum (13th May 2008).

“Challenges and Strategies in Transformer Design” at Crompton Greaves Limited (26th September 2008)

“Engineering Electromagnetics” at K. K. Wagh College of Engineering, Nasik, (27th September 2008)

“Distributed Generation” at IEEE Chapter and Jadavpur University (14th November 2008)

“Challenges in design of modern transformers: onerous conditions and failure modes” at Doble Company (24th November 2008)

“How to conduct research”, at K. K. Wagh College of Engineering, Nasik, (12th February 2009)

“Electromagnetic and coupled field computations” at VJTI, Mumbai (14th February 2009)

“Transformer Insulation System” at a Workshop on High Voltage and Insulation Technology at VJTI, Mumbai

A set of four lectures on transformers at a *Workshop on Transformer Design and Diagnostics* at NIT Hamirpur (March 14-15, 2009)

Maryam S.B.

SMDP course on Mixed-Signal VLSI Design, Goa Engineering College (March 2009).

CEP Course on Analog and Mixed-Signal VLSI Design, IIT-Bombay (August 2008).

Rajababu V.

‘Particle filters in target tracking’ at NSTL, Vishakapathanm (September, 2008)

Chakrabarti S.

“Molecular Beam Epitaxial Growth and Characterization of Nano-scale In(Ga)As/GaAs based Quantum Dot Heterostructures,” *SEMI-NANO*, University of Calcutta, Calcutta, India (June 13-14 2008).

Date, A.W.

“Simulation Technique in Manufacturing and Service Industries,” K. K. Wagh Institute for Engineering Education and Research, Nashik (January 4, 2008).

International

Rao, Ramgopal.V

Fourth DST-NIAS Workshop Dimensions Of Nanotechnology: Science, Technology, Business And Society, Organised by National Institute of Advanced Studies, J.R.D. Tata Auditorium, 9-13 February 2009, Indian Institute of Science, Bangalore, Feb 9-13, 2009 (Invited Talk)

Advanced International workshop on Nanoscience and Technology, Feb 23-27, 2009, Chennai

Applied Materials India, Jan 27, 2009 (Short course on VLSI Technology)

Workshop on Nanotechnology, Nirma University, Jan 19, 2009 (Keynote address)

International Conference on Nanoscience and Nanotechnology, NanoAfrica 2009, Pretoria, South Africa, February 1-4, 2009. (organized by the South African National Nanotechnology Initiative (SANi) and National Centre for Nano-Structured Materials (NCNSM), February 1-4, 2009 (Keynote address)

4th DST Advanced School on Nanosciences and Technology, Organized by the S.N.Bose National Centre for Basic Sciences in association with the Saha Institute of Nuclear Physics and Indian Association for the Cultivation of Science, Kolkata, January 12-January 21, 2009

a. International Conference on MEMS (ICMEMS 2009), Indian Institute of Technology (IIT) Madras, Chennai, INDIA, January 3-5, 2009

b. International Conference on Computational Methods in Engineering and Sciences, Hyderabad, January 8-10, 2009 (Keynote address)

c. Maxim Corporation, Sunnyvale, USA, Dec 18, 2008

d.. International Electron Devices Meeting (IEDM), The Annual Technical Meeting of the IEEE Electron Devices Society, San Francisco, CA, USA, December 15 – 17, 2008 (Session Chair)

e. International Conference on ‘Functional Materials: Controlled Synthesis, Discrete Molecular Processes and Engineering’, IIT Madras, Chennai, India, November 27-29, 2008

f. Texas Instruments, Bangalore, Nov 14, 2008

IEEE Electron Device Society Distinguished Lecture, Calcutta, Nov 18, 2008

Guest lectures at the School of Materials Science & Engineering, Nanyang Technological University (NTU), Singapore (Aug 5-9 & Nov 2-7, 2008)

BIOZEAL ‘08, National College Auditorium, Mumbai, Oct 10, 2008 (Keynote address)

Society of Defence Technologists (SODET), Hotel Windsor Sheraton & Towers, Bangalore, Aug 25, 2008 (Keynote address)

“Workshop on Explosive Detectors”, July 28-29, 2008, IIT Bombay

Applied Materials Corporation (AMAT), Bangalore, July 15, 2008

5th International Conference on Smart Materials, Structures and Systems, July 24-26, 2008, Indian Institute of Science, Bangalore

Consiglio Nazionale delle Ricerche (CNR) (Italian National Research Council), June 23, 2008, Naples, Italy

Università della Calabria, Arcavacata di Rende (CS), Italy, May 7-June 30, 2008

Italy-India Forum for the opportunities of cooperation in Biotechnology & Nanotechnology, 21-22 April 2008, Taj Westend, Bangalore (Special Plenary lecture)

3rd Nanotechnology Conclave, Organized by the Confederation of Indian Industry (CII) jointly with the Nomura Research Institute (NRI) Japan and the Tamil Nadu Technology Development & Promotion Centre, March 19-20, 2008, Hotel Le royal Meridian, Chennai (Invited Plenary talk)

a. Workshop on Science-Society Interface in Emerging Technologies, Jointly organized by the Energy and Resources Institute (TERI) & NISTADS, March 27-28, 2008, New Delhi (Invited plenary talk)

b. Short course, BRNS Basic Sciences School on ‘Condensed Matter Interface with Chemistry and Biology’ March 3-14, 2008, organized by BARC & the Homi Bhabha Centre for Science Education, Mumbai

c. Symposium on BioNanotechnology & Pharmaceuticals, March 13-14, 2008, Organized by the Centre for Cellular & Molecular Biology (CCMB), Hyderabad in association with the Discovery Park, Purdue University (Invited talk)

d. National Science Day-2008 Celebrations, Shivaji University (Popular Lecture)

Shevgaonkar R. K.

“Photonic Crystal Devices for Optical Communication,” *International Con. of Fiber and Photonics*, Photonics 2008, Delhi, Dec. 2008.

Significant Awards/ Distinctions

Chakraborty D

Recipient of the “IFAC Foundation Young Authors Support Programme”, awarded *in the* 17th IFAC World Congress, Seoul, Korea, July 6-11, 2008.

Karandikar A.

Prof. Karandikar’s work on Segment Protection is being proposed for incorporation in a new communications standard: IEEE 802.1 Qay.

Manjunath D.

“S.V.C Aiya Memorial Award for Excellence in Telecom Teaching”, from IETE, Jan 2009.

M. Shojaei Baghini

Co-recipient of the best research paper award in circuit design category.

A. B. Sachid, M. Srivastava, R. A. Thakker, M. Shojaei Baghini, D. K. Sharma, M.B.Patil, V. Ramgopal Rao,

“Technology-Aware Design (TAD) for Sub-45nm CMOS Technologies”, Intel AAF 2008, Taiwan (Received the best research paper award in circuit design category).

Rao V.R.

a. Fellow, Indian Academy of Sciences (IASc), Bangalore (Indian Academy of Sciences)

b. 2008 ‘The Materials Research Society of India (MRSI)-ICSC Superconductivity & Materials Science Prize’ (presented at the 19th Annual General body meeting of the MRSI by Dr. R.A.Mashelkar, President, MRSI)

Vasi J.

India Semiconductor Association’s “Technovisionary Award 2008”

Honorary Work

Chakraborty D

Reviewer for European Control Conference, Budapest, Hungary, August 23-26, 2009

Reviewer for American Control Conference, Seattle, Washington, USA, June 11 - 13, 2008

Reviewer for International Journal of Control

Reviewer for IETE Journal of Research

Reviewer for SIAM Journal on Applied Mathematics
Session Chair: Faults and Estimation, 17th IFAC World Congress, Seoul, Korea, July 6-11, 2008.

Gadre V.M.

Reviewed papers for IEEE Signal Processing Letters; Sadhana Academy - Proceedings in Engineering Sciences; Institution of Engineers, India.

Dey B.K.

Associate editor for “International Journal of Information and Coding Theory” from Inderscience Publishers

Reviewer

IEEE Trans. on Electron Devices (2008 and 2009)

Asian Solid State Circuit Conference (2009)

IEEE IEDST (2009)

IEEE Telcon (2008)

Rao V.R.

Editor, IEEE Transactions on Electron Devices (IEEE T-ED Editorial Board)

Member of the International Electron Devices Meeting (IEDM) technical subcommittee “Characterization, Reliability, and Yield”, (2008 & 2009)

Editor, IETE Journal of Education (since August, 2008)

Consulting Editor, ICFAI Journal of Nanotechnology

Member, Editorial Board, The Open Applied Physics Journal (OAP) (a peer reviewed international Open Access journal) & “Recent Patents in Electrical Engineering”, (Bentham Science Publishers)

Distinguished Lecturer (DL), IEEE Electron Devices Society (EDS) (IEEE-EDS Distinguished Lecturer Program)

Member, Nano Applications and Technology Advisory Group (NATAG), NANO MISSION, Department of Science & Technology (DST), Govt. of India (2008-2012)

Member, Advisory Committee, Shanti Swarup Bhatnagar Prize for Engineering Sciences, CSIR, Govt of India (2008-)

Member, Core committee, National Semiconductor Vision 2020, Indian Semiconductor Association (ISA)

Member, Programme Advisory Committee (PAC), Bio-medical Engineering, Department of Science & Technology (DST), Govt. of India (since 2008)

Member, Programme Advisory & Review Committee (PARC-4), National Programme on Micro and Smart Systems (NPMASS), Govt. of India

Vasi J.

Member, Scientific Advisory Committee to the Cabinet

Faculty Members and their Specializations

1. Vivek Agarwal

Power Conversion, Modelling and simulation of power electronic systems, EMI problems in Power Electronics, Microprocessor based control of A.C. Drives

2. S.D. Agashe

Control theory, Network theory, Speech analysis and Synthesis

3. Prakash R. Apte

MicroElectroMechanical Systems(MEMS), Quality and Reliability, Taguchi and TRIZ Methodologies

4. Madhu N. Belur

Systems & Control theory, Behavioral theory of Systems and Control, Optimal control, Numerical aspects, Hybrid systems

5. A.N. Chandorkar

Analog and Mixed signal VLSI Design, Ultra-Thin Gate insulators for VLSI Technologies, High-K Dielectrics for VLSI Technologies (Nano Electronics), RF VLSI Design, Radiation Hard MOS Technologies, Communication/DSP based System and chip Design, Semiconductor Device modelling and Reliability Simulation Tools, Memory Testing, Analog and Mixed signal Test and Fault simulation, Accelerated Device Testing and Reliability, Modelling, High Power semiconductor Devices, Power Electronic Systems, Optically Switched Microwave components, Sensors, Microelectronics System Packaging

6. Prasanna Chaporkar

Resource allocation in wired/wireless networks, algorithms, control of queues and stochastic systems.

7. K. Chatterjee

Utility friendly converter topologies, Power Factor Correction techniques, STATCOM, Switched Mode Rectifiers, Electronic Ballast, Control of Electric Drives

8. Subhasis Chaudhuri

Multimedia, Computer Vision, Image Processing, Pattern Recognition, Biomedical Signal Processing.

9. D. Chakraborty

Optimal Control, Differential Games, Nonlinear Feedback Theory, Control of Biological Systems and Diseases.

10. S. Chakrabarti

Growth, Fabrication and Characterization of III-V and II-VI compound semiconductor materials and devices. Devices of interest include Infra Detectors and Arrays, Lasers, UV-VIS LEDs, Solar Cells, HEMTs and MOSFETs

11. M.P. Desai

VLSI design and design automation, Graph theory and combinatorics, Circuits and systems

12. U.B. Desai

Signal Processing, Wireless Communication (Multiuser Detection), Adaptive Signal Processing, Image and Video Processing Wavelets, Biomedical Signal and Image Processing, Artificial Neural Networks

13. Bikash Kumar Dey

Error correcting codes, wireless communication, signal processing

14. Siddhartha P. Duttagupta

Microelectronics

15. B.G. Fernandes

Switch-Mode Rectifiers, Switch-Mode Power Supplies, Soft switching Techniques for SMPS, Permanent magnet machines and Electric Drives, Power electronic circuits and applications, Electrical machines, Solid state drives, Active filters, Microcontroller application in drives

16. V.M. Gadre

Communications and signal processing with emphasis on multiresolution and wavelet based methods.

17. Abhay Karandikar

Communication Network, Quality of Service Guarantees in Internet, Telecommunication switching, Digital communication

18. S.A. Khaparde

Deregulation in Power Industry: optimal bidding, and congestion management, Object Oriented Power System Analysis, Controlled series compensation using SSSC, Harmonic Distortion in Distribution systems, Design and Operation of small tidal power plant, Modelling and Design of transformer

19. Anil Kottantharayil

CMOS device physics, characterization, modelling and technology

20. A.M. Kulkarni

Power System Dynamics, Flexible AC Transmission Systems, HVDC Transmission Systems

21. S.V. Kulkarni

Transformer Design and Analysis, Electromagnetic and Coupled Field Computations, Efficient Finite Element Method Computations, Power Engineering: Distribution Automation and Distributed Generation, High Voltage Insulation Design

22. Vishwesh Kulkarni

Nonlinear control, biosystems, sensor networks

23. Girish Kumar

Microstrip antennas and arrays, Broadband antennas; Microwave integrated circuits; EMI/ EMC; RF communication circuits.

24. Souvik Mahapatra

Flash EEPROMs, SONOS, Nanoparticle storage, NBTI and Hot carrier degradation in MOSFETs, High-k gate dielectrics

25. D.Manjunath

Computer and Communication Network Protocols, Systems and Algorithms Performance Modeling, Queueing Theory and Simulation, Stochastic Systems

26. S.N.Merchant

Signal Processing, Adaptive Signal Processing

27. Jayanta Mukherjee

RF VLSI Design, Testing, Noise Modeling, Analog VLSI

28. H.Narayanan

Building large scale circuit simulators, Combinatorial optimization including submodular function theory, Large scale system partitioning.

29. Prem C. Pandey

Speech & Signal Processing, Biomedical Signal Processing and Instrumentation, E l e c t r o n i c Instrumentation, Embedded Electronic System Design

30. M. B. Patil

Semiconductor device modelling for circuit simulation, Semiconductor device simulation, M i x e d - m o d e circuit simulation

31. Sachin Patkar

Combinatorial optimization, Algorithms Design and Analysis, Graph Theory, Geometric Design and Graphics

32. H. K. Pillai

Control theory; Behavioural theory of Systems; Multidimensional systems; optimal control; Coding theory; Optimization techniques.

33. Richard Pinto

Microelectronics

34. V. Ramgopal Rao

Nanoelectronics, Circuit and System Design Considerations with Emerging CMOS Technologies (Multigate MOSFETs, Single Halo MOSFETs etc.), Physics, Technology and Characterization of Sub 100 nm CMOS devices, CMOS Reliability Characterization (plasma damage, radiation, hot-carrier), Bio-MEMS

35. Preeti S. Rao

Speech and Audio Signal Processing, Digital Signal Processing, Coding of speech at low bit-rates

36. D. K. Sharma

MOS device modeling, VLSI design and technology. Microelectronics - technology and device characterisation and mixed signal design

37. Girish P. Saraph

RF Electronics & Wireless Communications, High Power Microwave Sources and Radars, Communication Networks, Fiber Optics & Optical Networks

38. R.K.Shevgaonkar

Fibre Optic Communication; Photonics; Non-linear fibre optics; Antennas; Image Processing; Radio Astronomy; Wireless Communication

39. Maryam Shojaei

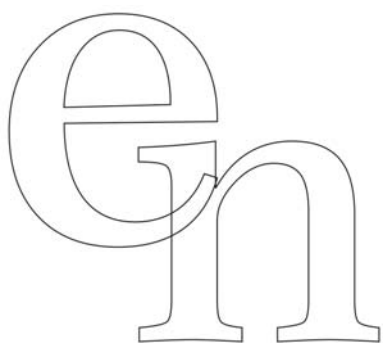
Analog and Mixed-Signal Circuit Design, VLSI, Circuit Design Optimization, EDA/CAD for Circuit Design

40. S.A.Soman

Power System Analysis, Restructuring of Power Systems, Power System Protection, Optimization, Object Oriented Design, Computational Methods

41. Juzer Vasi

Physics and technology of CMOS devices Nanoelectronics.



Energy Systems Engineering

Introduction

IIT Bombay offers an interdisciplinary course in Energy Systems Engineering (ESE) leading to M.Tech. and Ph.D. degrees. The programme is aimed at providing high quality innovators/engineers with an understanding of energy systems, who can contribute meaningfully to the nations energy sector. It is expected that rapid growth of the energy sector and the challenges imposed by energy resource constraints will need specially qualified engineers with ability to understand and analyze energy systems. The Energy Systems Engineering programme at IIT Bombay was initiated in 1981. About 345 alumni of the programme are currently working in various positions in industry and research institutes.

The course is interdisciplinary in nature and students and faculty members are drawn from diverse engineering (energy, mechanical, chemical, electrical, civil, etc.) and science (physics, chemistry etc.) disciplines. During the programme, the students are exposed to core areas of energy management including energy auditing; energy systems modeling and analysis; and non-conventional energy sources. In addition, students take elective courses in their areas of specialization. The programme also has an option of specialization in nuclear power in interaction with Atomic Energy Regulatory Board (AERB). The Department of Energy Science and Engineering programme interacts with the industry, research institutions and policy makers for developing and promoting efficient and clean technologies in the country. These interactions are in the form of consultancy and sponsored projects, seminars and workshops.

The programme is well recognized by the industry with fellowships and sponsorships from Forbes Marshall, ONGC, AERB, Cummins and the Ministry of New and Renewable Energy. Forbes Marshall and the AERB offer sponsorships attached to placement in their

respective organizations. In the 2008 batch, 24 students were admitted to the M.Tech. programme, nine to the Ph.D. programme, nine to the M.Sc.-Ph. D. Dual Degree programme, and 20 students were admitted to the B.Tech.- M.Tech. Dual Degree programme. In this year two new faculty members joined the group, namely, Dr. Rajesh Gupta and Dr. Sagar Mitra, and one Post Doctoral Fellow Dr. Meril Mathew.

The department celebrated Energy Day on 21st March 2009 at the Institute Auditorium in SOM building. About 200 delegates from various industries and organizations attended the research presentations of the final year graduating DESE students.

Academic Programme

Dual Degree Programme (B.Tech.-M. Tech.)

A fresh batch of 20 students for Dual Degree Programme was admitted in July 2008.

Student Intake:

B.Tech	-	20
M.Tech	-	24
Ph.D.	-	9
M.Sc.	-	9

Degrees Awarded:

M.Tech.	-	30
Ph.D.	-	5

New courses: EN 110 Energy Engineering Fundamental

Minor courses: EN 410 Energy Management
EN 301 Introduction to Renewable Energy Technologies

Scholarships:

AERB	:	2
Forbes Marshall	:	1
Eco-Axis	:	2

Special Initiatives

DESE Industry Partnership Scheme 2008

Objective:

IIT Bombay has upgraded its Energy Systems Engineering programme into a new Department of Energy Science and Engineering (DESE). In the Golden Jubilee year of the Institute, DESE started a new Dual Degree programme, namely, B.Tech. in Energy Engineering and M.Tech in Energy Systems Engineering. The objective of Industry Partnership Scheme is to build strong industry linkages with this programme.

The partnership would imply

- Involvement with the programme – providing feedback on curriculum
- Occasional talks / discussion – Industry perspective
- Facilitating student internships / Company visits
- Providing challenging projects / tasks to the students

Industry Partners:

Applied Materials	Industry Representative Dr. Madhusudan V. Atre President
Atomic Energy Regulatory Board (AERB)	Dr. Om Pal Singh, Secretary AERB & Director, Information & Technical Services Division
Bharat Heavy Electricals Limited (BHEL)	Dr. Sukul Lomash General Manager (CEPD)
Bharat Petroleum Corporation Ltd (BPCL)	Mr. S. Mohan (Director (HR)
Cummins India Limited	Mr. Vilas V. Chinchankar (General Manager)
Engineers India Limited (EIL)	Dr. S. Banik General Manager (CEPD)
	Shri. H S Vohra General Manager (HMTD)
Forbes Marshall	Mr. D. K. Kuvalekar General Manager
Indian Oil Corporation Ltd. (IOCL)	Mr. Anup Kacker Dy. General Manager (Coordn.)I/C
	Dr. R. K. Malhotra Executive Director (R & D)

Larsen & Toubro
Limited (L & T)

Mr. G. K Sadekar
Head – Product &
Technology
Development Centre

National Thermal Power
Corporation Ltd.

Mr. D. M. R. Panda (Sr.
Faculty)
Power Management
Institute

Nuclear Power
Corporation of India
Ltd.

Shri. K. B. Dixit
Executive Director
(Engineering &
Procurement)

Reliance Energy

Dr. Uday Lajmi
Dean – Management
Education
(Training & Development)

Reliance Industries
Limited (RIL)

Shri. Bikash Kumar
(General Manager
(R&D) Solar Energy Group

Siemens

Dr. Peeush K. Bishnoi
(Program Manager)

Suzlon Energy Ltd.

Dr. Amit Chatterjee
(General Manager)

Tata BP Solar India Ltd.

Mr. Natarajan Mani
(Add. General Manager)

TATA Power

Dr. Avinash N. Patkar
Chief Sustainability Officer
and Head
– Corporate Safety, Health
and Environment

TCE Consulting
Engineers

Limited Mr. J. P. Haran
(Sr. Vice President)

Thermax Limited

Dr. R. R. Sonde
(Executive Vice President)

PAN IIT Solar Initiative

A technical meeting under the name “PAN IIT Solar Initiative” was organised in the department in the month of January. The participants for the event were faculty and research scholars from the seven IITs, and a few dignitaries from DST and MNRE. The various faculties from all the seven IITs presented their work related to solar photovoltaic and solar thermal, which showcased their past projects, ongoing research work and future projects to be taken along with their own expertise in the solar PV and solar thermal technologies.

During the discussion it was decided to have two break-out sessions – one consisting of Solar PV group and one consisting of Solar Thermal group. IIT Bombay participated in both the break out sessions. It was decided in the Solar PV break-out session to set up a solar photovoltaic power plant which would come up with consortiums between all the seven IITs, the DST and the MNRE. Participation of industry partnership was also thought of in the discussion.

Energy Day 2009

Background

Energy Day is celebrated as the annual event of the department in the month of March. The purpose of this event is solely to provide a platform for presenting the research work being carried out by the final year M.Tech and Ph.D. students to the industry, academia and society with an intention to invite feedback about the work, create a greater involvement between the industry and academia and also to understand the research needs of the industry. Such a feedback is important to give a more practical than theoretical outlook to the projects and to invoke confidence in the student about the importance of the work. In this way, Energy Day provides a forum for intermingling of thoughts between people associated with different facets of activities related to the production and use of renewable energy and energy efficiency. This year the Energy Day was celebrated on March 21st 2009.

Highlights of Energy Day 2009

Energy day 2009 was inaugurated by Shri V.P. Raja, Chairman, Maharashtra Electricity Regulatory Authority (MERC). In the inaugural address, Shri Raja stressed on the linkage between economic growth and energy requirement to achieve these growth targets in the near future. He then remarked on the need of impetus to energy research in the country. Prof. Juzer

Vasi, Deputy Director, IIT Bombay, highlighted the progress of the department from an interdisciplinary programme to a full-fledged Department of Energy Science and Engineering, which is only one of its kind in India. The book of papers – PAPYRUS – was next released at the inaugural session proceedings, followed by a brief presentation on the departmental activities and its vision by Prof. Rangan Banerjee, Head, DESE. A total of 315 people from industry, NGO's, academic institutions, and various research organizations attended in the Energy Day.

Energy Day'09 was sponsored by Petroleum conservation research association (PCRA) and Centre for Wind Energy Technology (C-WET). The deliberations of the event were carried out in four technical sessions chaired by prominent personnel from the industry. There were 26 presentations made by 22 M.Tech. and 4 Ph.D. students. The presentations were categorized into the following groups:

- Power System and Distributed Generation
- Renewable Energy Systems
- Applied Power Electronics and Electrical Machines to Energy Systems
- Improvement in Conventional Energy Systems

There was also a Panel discussion on 'Energy and Economic Development in India'.

R&D Activities

Sponsored Research Projects

Sponsored Research Projects	
Ongoing	: 13
Completed	: 2

Project Title	Sponsoring Agency	Status (New/ Ongoing/ Complete)
End-Use Efficiency – Industrial	International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria	Ongoing
Development Benefits of Clean Energy in India	The Wood Hole Research Center, U.S.A., Hewlett Foundation	Completed
Development of low concentration PV systems	IIT Bombay	Ongoing
Solar Cells using poly-Si and epi-Si films	AMAT, USA	Ongoing
Centres of Excellence in Nanoelectronics (IIT Bombay and IISc Bangalore)	Department of Information Technology MCIT, Government of India	Ongoing

Project Title	Sponsoring Agency	Status (New/ Ongoing/ Complete
Design & Development of V-Trough(2 Sun) Concentrator System	MNRE	Ongoing
Cost-effective integrated V-trough flat Photovoltaic (PV) modules	DSIR	Ongoing
“Development of Efficient and Cost-Effective Electrocatalysts for Oxygen Reduction Reaction (ORR) in Low Temperature Fuel Cells”	DST	Ongoing
“Development of electrocatalysts for low temperature fuel cells”	IRCC	Ongoing
“Nanomaterials For energy Applications Training Program”	CSIR	Completed
Electrification of Village Kolha using Vegetable Oil and Biogas	Cummins India Foundation	Ongoing
Studies in Underground Coal Gasification for Indian Coals	ONGC	Ongoing
Projects in Cummins Engine Research Facility	Cummins India Limited	Ongoing
State of the Art Review of Global Research and Development in Polygeneration Facilities for the production of Liquid Fuels and Chemicals for Co-generation of Power through IGCC route and the Bio-refinery Concept	MNRE	Ongoing

Extension Activities

Neergat Manoj

Organized Ten days' International workshop on “Nanotechnology for energy applications” December 01-12, IITB, Powai, Mumbai.

Banerjee Rangan

Organised one week Continuing Education Programme on Energy Management, November 24-28, 2008, IIT Bombay.

Solanki Chetan Singh

Organised Two days Continuing Education Programme on Energy Management, November 03-04, 2008.

Visitors to the Department

Dr. Libby Wayman,

Solar Turbine Group, delivered a lecture on “Solar Micro-Generator”. (August 8th, 2007)

Prof. S. Neogi,

School of Energy Studies, Jadavpur University, delivered a lecture on “Intelligent Building and Approach for Energy Efficiency”. (August 27th, 2007)

Dr. rer.net,

Dipl.-Ing Andreas Hornung, Scientist, Forschungszentrum Karlsruhe GmbH, delivered a lecture on “Pyrolysis of Biomass for Synthetic Fuels”. (September 4th, 2007)

Dr. John P. Holdren,

Harvard University, delivered a lecture on “Meeting the Intertwined Challenges of Energy, Environment and Development”. (October 11th, 2007)

Dr. Sameer Maithel,

Director, Greentech Knowledge Solutions (P) Ltd., delivered a lecture on “Career opportunities in Energy Sector”. (October 12th, 2007)

Dr. Peeush K. Bishnoi,

Program Manager “Siemens Energy Portfolio & Imperatives”. (January 21st, 2009)

Dr. Tapas Kumar Mallick,

Mechanical Engineering, EPS Heriot-watt University, Edinburgh, UK delivered a lecture on “Solar Photovoltaic Research: Challenges and Opportunities”. (April 2nd, 2008)

Dr. H. N. Sharan,

President, Dasag Energy Engineering Ltd., Seuzach, Switzerland, “Decentralised Power Generation: Experience of DESI Power.” (January 30th, 2009)

Dr. Manaswita Bose,

Reliance Industries Ltd., delivered a lecture on, “Segregation Mechanism in a Vibrated Granular Bed”. (September 24th, 2008)

Dr. Ravi Upadhye,

ARU Associates, delivered a lecture on “Science and Technology Gaps in UCG”. (November 24th, 2008)

Dr. N. Sonwalkar,

IITB Alumni, delivered a lecture on, “Molecular Dynamics of Energy Materials and Interfaces”. (September 24th, 2008)

Conferences/ Symposia/ Workshops/ Seminars (Participated/Papers Presented)

National**Manoj Kumar M. V.**

“Participated in the *International Congress on Renewable Energy – ICORE 2008*”, held on October 16-17, 2008, at Chennai, Tamilnadu.

Manoj Kumar M. V., Banerjee R.,

“Design of Isolated Power Systems for Village Electrification,” *National Conference on Energy Security for Rural Development – ESRD 2009* held on March 26, 2009, Gandhigram Rural University, Gandhigram, Dindigul, Tamilnadu

Chowdhary, V.A., Solanki, C. S.

“Study on VOC and contact resistance of the Ni/Cu front contact for c-Si solar cells to be used at low concentration levels”, *PVSEC 18 International Conference*, Kolkata, 19-23 January 2009.

Rane M.; Chhabra D, Banerjee R.,

“Industrial DSM for Indian Power Sector,” *International Conference on Energy and Environment (EnviroEnergy 2009)* held during March 19-21, 2009, Taj Chandigarh, Chandigarh, India.

International**Ghosh P, Kamoji M.A., Kedare S.B., Prabhu S.V.,**

“Model testing of single and three stage modified Savonius rotors and viability study of Savonius pump rotor systems”, *Proceedings of 6th International Energy Conversion Engineering Conference (IECEC)*, Cleveland, 2008

Bansal, V. and Bandyopadhyay, S.

Targeting for Cogeneration Systems”, *11th Conference on Process Integration, Modeling and Optimisation for Energy Saving and Pollution Reduction (PRES 2008)* in conjunction with *18th International Congress of Chemical and Process Engineering (CHISA)*, Praha, Czech Republic, August 24-28, 2008.

Desai, N. B. and Bandyopadhyay, S.

“Process Integration of Organic Rankine Cycle”, *11th Conference on Process Integration, Modeling and Optimisation for Energy Saving and Pollution Reduction (PRES 2008)* in conjunction with *18th International Congress of Chemical and Process Engineering (CHISA)*, Praha, Czech Republic, August 24-28, 2008.

Varghese, J. and Bandyopadhyay, S.

“Targeting and Integration of Total Site”, *11th Conference on Process Integration, Modeling and Optimisation for Energy Saving and Pollution Reduction (PRES 2008)* in conjunction with *18th International Congress of Chemical and Process Engineering (CHISA)*, Praha, Czech Republic, August 24-28, 2008.

Panchal, K., Rai, D. K., Solanki, C. S.

“Electrical characterization of Si-QD/SiNx multilayer prepared using HWCVD”, *PVSEC, 18 International Conference*, Kolkata, 19-23 January 2009.

Bassi, R., Neergat, M., and Banerjee, R.

“An Improved Microbial Fuel Cell Design”, *17th world hydrogen energy conference (WHEC)*, June 15-19, 2008, Brisbane, Queensland, Australia.

Varadharajan, A., Venkateshwaran, W. S., Banerjee R.,

“Energy Analysis of Biodiesel from Jatropha,” *10th World Renewable Energy Congress (WRECX)* held during July 19-25, 2008, Glasgow, Scotland, United Kingdom.

Aghalayam, Preeti, Sateesh, D., Naidu Ramesh, Mahajani Sanjay, Ganesh Anuradda, Sapru, R.K., Sharma, R.K.

“Compartment Modeling for Underground Coal Gasification Cavity”, *Pittsburgh Coal Conference*, 29th Sept.-2nd Oct. 2008, Pittsburgh, USA.

Invited Lectures

National

Bandyopadhyay, S.

“Process Integration and Process Modification and Application of Process Integration: Design of Renewable Energy Systems” at the School of Energy & Environmental Studies, Devi Ahilya Vishwavidyalaya, Indore, January 10, 2009.

Banerjee Rangan

“Engineering Education in India,” *INAE Seminar on Agenda for Reforms in Engineering Education* at the ISAC Auditorium, Bangalore on February 23, 2009.

“Energy, Materials and Nanotechnology,” *International Workshop on Nanotechnology for Energy Applications* at IIT Bombay, December 1, 2008.

“Research in Energy and Environmental Change: An Indian Perspective,” *Workshop of RCUK India office* on October 21, 2008.

“Clean Technology Landscape in India,” *TIE CleanTech SIG Mumbai Event*, Renaissance Hotel in Mumbai, October 8, 2008.

“Biomass Power,” *National Symposium on Power for Sustainable Development 2008*, College of Engineering Pune, September 26, 2008.

Nayak, J. K.

“Solar Thermal Energy” at P. D. University, Gandhinagar, November 2008.

Solanki Chetan Singh

“Application of Solar Energy” at Rotary Culb, Hiranandani, Mumbai in June 2008.

“Impact of Energy Generation and Conservation of Environment” at NITK, Suratkal Manglore in 21st July 2008.

International

Banerjee Rangan

“Renewable Power Generation in India: Establishing Feasible Targets,” *International Institute for Applied Systems Analysis (IIASA)*, Laxenburg, Austria, June 4, 2008.

“Modelling of Energy Systems,” *Ecole Polytechnique Federale de Lausanne (EPFL)*, in Switzerland, June 9, 2008.

Neergat Manoj

“Non Conventional Energy Sources”, *Biozeal 2008*, October 12, 2008, Thadomal Shahani Engineering College, Bombay, Maharashtra.

“Electrochemical Energy Conversion”, June 5, 2008, Calicut University, Kerala.

Solanki Chetan Singh

“Si quantum dots for solar cell applications” at Sungkyunkwan Advanced Institute of Nanotechnology, Sungkyunkwan University, South Korea in Aug 2008.

“Si quantum dots for solar cell applications” at 18th *PV Science and Engineering Conference*, Kolkata Jan 2009.

“Silicon quantum dots for solar cell applications”, *PVSEC 18 International Conference* Kolkata, 19-23 January 2009.

Significant Awards/ Distinctions

Panchal, A. K.; Rai, D.K.; Solanki, C. S.

Best poster award in 18th PV Science and Engineering (PVSEC) conference for paper titled as Electrical Characterization of SI-QD/SINX Multilayer Prepared Using HWCVD in the category of Photovoltaic with nano-composites and other new concepts.

Honorary Work

Banerjee Rangan

Convening Lead Analyst (CLA) and Executive Committee member of the Global Energy Assessment (GEA), *International Institute for Applied Systems Analysis (IIASA)*, Luxembourg, Austria.

Associate Editor, *International Journal of Sustainable Engineering*.

Associate Editor, *Energy for Sustainable Development*, *The Journal of the International Energy Initiative*.

Nayak, J. K.

Member, Expert committee for Solar Thermal Energy, MNRE Reviewers for Journals such as *Energy*, *SESI Journal*.

Faculty Members and their Specializations

1. Santanu Bandyopadhyay

Process Integration, Industrial Energy Conservation

2. Rangan Banerjee

Energy Efficiency and Management, Energy Modelling, Hydrogen Energy

3. Anuradda Ganesh

Energy and Chemicals from Biomass and Coal, IC Engines, Alternate Fuels

4. P. C. Ghosh

Polymer Electrolyte Fuel Cell, Hydrogen generation and storage

5. S. B. Kedare (Adjunct)

Concentrating Solar Collectors, Industrial thermal hybrid systems

6. J. K. Nayak

Passive solar architecture, Solar thermal, Energy Conscious Building

7. Manoj Neergat

Fuel cells, Electrocatalysis, and Bio-fuel cells

8. Ramesh Shah

Fuel cells, Hydrogen, Compact Heat Exchangers, Automotive Air-Conditioning

9. Pratibha Sharma

Hydrogen Storage, Thin films, Amorphous Semiconductors, Ion Irradiation, Chalcogenides

10. Chetan S. Solanki

Solar Photovoltaics, Thin film solar cells, PV concentrators, Carbon Nano tubes (CNT's)

11. Rajesh Gupta

Photovoltaics, Infrared Thermography

12. Sagar Mitra

Nanostructured Materials, Lithium ion Batteries, Hybrid vehicles, Electrochemical Energy storage, Electrochemistry of Nanomaterials, Electrochemistry of Semiconductors

Associated faculty

Department of Mechanical Engineering

14. S. L. Bapat

Cryogenics, Vapour Absorption Refrigeration Systems, Stirling Cycle

15. A. W. Date

Numerical Fluid Flow and Heat Transfer, Appropriate Technology

16. J. B. Doshi

Nuclear Reactor Theory, Nuclear Reactor Safety, Analytical Methods in Engineering

17. U. N. Gaitonde

Thermodynamics, Heat Transfer, Thermal Engineering, Power Plant Engineering

18. Kannan Iyer

Nuclear Reactor Safety, Thermal – Hydraulics, Applied Numerical Methods

19. P. P. Parikh

Biomass Gasification, IC Engines (**Professor Emeritus**)

20. S. V. Prabhu

Flow Metering, Gas Turbine Blade Cooling, Two Phase Flow and Heat Transfer

21. Milind V. Rane

Waste Heat Recovery, Absorption Refrigeration, Heat Pumps, Energy Conservation

22. Atul Sharma

Computational Fluid Flow and Heat Transfer

23. A. Sridharan

Two-phase Heat Transfer, Experimental Heat Transfer

24. S. P. Sukhatme

Heat Transfer and Energy (Professor Emeritus)

25. R. P. Vedula

Convective Heat Transfer for external and internal flows

Department of Electrical Engineering

26. Vivek Agarwal

Power Conversion, Modelling of power electronic systems, μ P control of A.C. Drives

27. M. C. Chandorkar

Electrical drives, Power electronic, Power quality

28. Kishore Chatterjee

Power Factor Correction, STATCOM, Electronic Ballast, Control of Electric Drives

29. B. G. Fernandes

Electrical Machines, Power electronic circuits and applications

30. S. A. Khaparde

Deregulation in Power Industry: optimal bidding, congestion management, Power Systems

31. A. M. Kulkarni

Power System Dynamics, Flexible AC Transmission Systems, HVDC Transmission

32. S. V. Kulkarni

Transformer Design and Analysis, Distribution
Automation and Distributed Generation

33. S.A. Soman

Power System Analysis, Restructuring of Power
Systems, Power System Protection

Department of Chemical Engineering

34. Preeti Aghalayam

Underground Coal Gasification, Surface Reaction
Mechanisms, Automotive NO_x Control

35. Sanjay Mahajani

Reaction Engineering and Catalysis, Multifunctional
Reactors, Computational Fluid Dynamics

36. R. K. Malik

Process modeling, simulation, energy integration

37. Chandra Venkataraman

Aerosols and climate; Air pollution; Toxicity / risk
assessment

Department of Aerospace Engineering

38. K. Sudhakar

Multidisciplinary Design Optimisation

**Department of Metallurgical Engineering and
Material Science**

39. Rajiv O. Dusane

Synthesis & characterization of amorphous and
microcrystalline thin films

**Centre for Environmental Science and Engineering
(CESE)**

40. Virendra Sethi

Combustion Aerosols, Energy and Environment

**Centre For Technology Alternatives in Rural Area
(CTARA)**

41. Anand B. Rao

Energy and Environment, Climate Change, Carbon
Capture and Sequestration

42. Narendra G. Shah

Small Scale Renewable Energy Applications and
Agro-based Industrial Development

h s Humanities & Social Sciences

Introduction

The Department of Humanities and Social Sciences plays a distinctive and significant role in an institute where the ethos of science and technology prevails, the utmost. It is believed that science and engineering are, by their very nature, humanistic and socially derived enterprises. In other words, the world now is vehemently looking forth for establishing a proper linkage between a technologically progressive and ethically strong society. Therefore, there is a need for relating the science and technology education to liberal arts and social sciences. Right from its inception, IITs, in the country, have strived for fulfilling the above philosophy of ideal education. The commitment to imparting a more holistic education distinguishes IITs from other institutions.

To elaborate, the Department of Humanities and Social Sciences is a facilitator in an institute of Technology, fostering awareness and knowledge of the nature of human inquiry, the socio-economic human conditions, and a thoughtful application of science and technology to attain sustainable development. The Department pledges itself to help the Institute to become a true world leader in teaching and research by nurturing an atmosphere of creativity, innovation and scholarship in its unending quest for excellence.

The department comprises faculty from five disciplines - Economics, English, Philosophy, Psychology, Sociology, and areas touching upon the Cell for Indian Science and Technology in Sanskrit (CISTS). The department, founded in 1958, has weaved the goals mentioned above into its teaching and research programmes. In recent years it has expanded and has a faculty strength of 35. In the last one year Prof. Ratheesh, Prof. Ramesh Bairy, Prof. Puja Padhi, Prof. Sarmistha Pattanaik, and Prof. Surajit Bhattacharyya have joined the department.

The department has well equipped computing facilities, which include several statistical packages. It has an adequately equipped Psychology laboratory.

Academic Programmes

The department participates in both the undergraduate and postgraduate teaching programmes of the institute.

UG Programme

The guiding principles for the teaching programme at the undergraduate level are:

- To combine Technical Education with General / Liberal Education with a view to provide complete education.
- To sensitize students to broader economic, social and humane issues that affect the professional and personal lives of the engineering and science students.
- To prepare the students not only for a specialized job, but also cultivate good intellectual habits, skills, and understanding that any educated person should have regardless of the kind of profession s/he undertakes.

The department endeavours for realizing these objectives by offering the following courses at the undergraduate level: One core course in Economics in the 1st semester, four introductory courses in Humanities and Social Sciences (English Literature, Philosophy, Psychology and Sociology) in the 3rd and 4th semesters, followed by a number of electives offered by the different constituent disciplines in the 7th and 8th semesters. Specialized faculty of the department is also participating in the teaching of a compulsory course on environmental studies offered for the B. Tech. students. A two-semester course in Remedial English is offered to the students of the Preparatory Course.

PG Programme

At the postgraduate level, the department participates in teaching courses for M.Tech./Ph.D. students (at the institute level) and offers full-fledged M.Phil. and Ph.D. programmes at the department level.

Participation in M.Tech. Programme

The department offers a large number of electives for M.Tech. students. It also offers communication skills as a compulsory course for both M.Tech. and Ph.D. students.

M.Phil. Programme in Planning and Development

A 4-semester interdisciplinary M.Phil. programme with specialization in Planning and Development was launched in July 1993. The programme with a theoretical-practical thrust provides the students with a holistic understanding of socio-economic reality and the role of technology. It also acquaints them with the various stages and levels of expertise involved in the formulation and implementation of development policies that can bring about a sustainable, stable, and desirable development. With such training that includes coursework, field visit and dissertation work, it is expected that the students completing this programme will become personnel with the requisite competence to contribute in the national, state and regional planning and developmental processes. There is a paucity of such personnel in India at present and the institute is contributing substantially in meeting this manpower requirement.

There are twenty five students pursuing the M.Phil. programme presently.

It is worthy of note that most of the students in the earlier batches who have completed their studies and obtained M.Phil. degree from this institute have got placements in the universities and in reputed and established commercial units and non-governmental organizations (NGOs). Also, many of them have

successfully pursued Ph.D. programme in the institute and elsewhere.

Ph.D. Programme

The Ph.D. programme in the department is generally discipline oriented and runs in five disciplines and areas related to the Cell for Indian Science and Technology in Sanskrit. There is also ample provision to do research in interdisciplinary areas. There are 60 regular, 20 external, 15 college teachers, 18 self-financing and 3 project staff candidates, who are currently enrolled in the Ph.D. programme.

In the year under review eight students of this department will be awarded Ph.D. degree. Since the inception of the Ph.D. programme in the department, 120 students have already obtained their Ph.D. degree from the Department and are well-placed in institutions like Reserve Bank of India, I.I.M. Calcutta, Bombay University, Central University, Hyderabad, and other I.I.T.s. They have made marks as excellent academicians and professionals in their respective fields of specializations.

Degrees Awarded

M.Phil.	: 14
Ph.D.	: 07

R&D Activities

The department currently has ongoing sponsored projects with a sanctioned outlay of Rs. 17, 84,000/-.

Sponsored Research Projects

Project Title	Sponsoring Agency	Project Status
Preparation of Translation and Mathematical Notes of the works of Nilakantha Somayaji	Indian National Science Academy	Ongoing
Development of Calculus in India: A Study on the work of Sankara Variyar.	National Academy of Sciences, India	Ongoing
Financial support for meeting on Integrated technology utilization for a block to be held on 2498.	Department of Science and Technology	Ongoing
Development and Evolution of Sanskrit Wordnet	Central Institute of Indian Languages.	Ongoing

Consultancy Project

The faculty undertakes consulting jobs on various development issues. The income generated in the period under review was approximately 42 Lacs. for four consulting jobs.

Extension activities

Conferences

International Conference on Language, Mind, and Social Construction held between 9-11 February 2009, Conveners Prof. Vikram S. Sirola and Prof. Ranjan Panda.

International Philosophy Day held on 19th November 2009, Convener Prof. Ratikanta Panda.

Brain Awareness Week in association with International Brain Research Organization (IBRO) France was organized on 16th March 2009, Convener Prof. Azizuddin Khan

Visitors to the Department

Prof. D.S. Hegde, Prof. & Dean Academic, NITIE, delivered a lecture on “The Current Financial Crisis: Genesis, Nature, and Implications for India and the Global Economy”

Prof. Ravi Ramamurthy, CBA Distinguished Professor of International Business and Strategy, and Director, Center for Emerging Markets, North Western University, delivered a lecture on “Why Study Emerging Market Multinationals?”

Dr. Brinda Bose, Fellow, Nehru Memorial Museum and Library, New Delhi. Delivered a lecture on “Feminism, Censorship, and Women’s Writing in South Asia.”

Conferences/ Symposia/ Workshops/ Seminars (Participated/Papers Presented)

National

Sebastian, C.D.

“Groundwork of Buddhist Morality and an Ethic in Praxis”, in the *All- India Seminar on “Religion and Morality”* on March 20-22, 2009, organized by Samvada: A Forum of Understanding Religion, held at Sri Udasin Karshni Vidya Bhavan, Haridwar.

Smita, S. and Ghadially, R.

“Work and Family Stressors, Social Support and Work-Family Conflict among Nurses” *National Academy of Psychology*, held during December 14-17, 2008 at the Indian Institute of Technology, Guwahati

Shastri, Sudha

Participated in the Seminar as an invitee of the Sahitya Akademi.

“New Arrivals: *The Barn Owl’s Wondrous Capers*, Graphic Novel” 3-day *Seminar on Subcontinental*

Writing in English: Borders, Border Theories and Crossing Borders, organised by the *Sahitya Akademi* in collaboration with IRIS (Jaipur), Jawahar Kala Kendra and the Dept of English, University of Rajasthan, from 20-22 September 2007.

Murthy, Nishevita and Sudha Shastri

“Imagined worlds are more potent than the real ones”: *Reading Lolita in Tehran*: The Reading Group as Community Narrative, at the *National Seminar on Community Narratives*, organised by IRIS (Jaipur), 15-16 March 2008.

Pattanaik, Sarmistha

“Environmental Knowledge System, Development and Culture”, *Silver Jubilee Celebrations of AICAS and National Conference on Cultural Diversity, Technology and Development*” held during February 15-17, 2009, at Ananthakrishnan Iyer International centre for Anthropological Studies (AICAS), Palakkad, Kerala

“Impact of Mining on Water and Human Health: The Case of Baitarani Ecosystem in Orissa” *Reader’s Workshop on Water and Health: South Asia Consortium for Interdisciplinary Water Resources Studies* held during February 25-27, 2009, at Hyderabad.

Participated as a Discussant of the paper “Saline ground water pockets in Mewat: Prevalence, Challenges and Solutions” by Dr. Lalit Mohan Sharma, *Reader’s Workshop on Water and Health: South Asia Consortium for Interdisciplinary Water Resources Studies* held during February 25-27, 2009, at Hyderabad.

Subuddhi, K.

“Science, Technology and Environmental Claim – Making: Social Construction of Environmental Problems”, in *XXXIV All India Sociological Conference*, organized by Indian Sociological Society, December 27-29, 2008

“ICTS for Rural Development in India: Governmental and NGO Initiatives towards E- Governance”, in *7th All India People’s Technology Congress*, organized by Forum of Scientists, Engineers and Technologists (Foset).

Khan, Azizuddin

Participated in National School on “*New Dimension to Nuclear Magnetic Resonance: From Molecules to Human Behavior*” at Indian Institute of Science, Bangalore, India from May 12- May 17, 2008.

Nath, R.K.

Participated in “*Humanities and Social Sciences Workshop*”, participated & developed Philosophy courses at ABV-Indian Institute of Information Technology & Management, Gwalior, held from 12th to 14th September 2008.

Malshe Milind

“Translation as Comparison; Comparison as Translation: Interface Between Translation Studies and

Comparative Literature” in *National Seminar on Comparative Literature*, Dr. Ghali College, Gadhinglaj, Kolhapur, January 2009

Malshe Milind and Mr. Vivek Bhat (Ph. D. Scholar, H & SS Dept)

“The Language-Dialect Conundrum: The Case of Marathi and Konkani” at the *30th All India Conference of Linguists* (26-28 Nov, 2008) held at Deccan College Post-Graduate & Research Institute, Pune.

Narayanan, K.

Chaired a Technical session at the *45th Annual Conference of the Indian Econometric Society* held at Guwahati, during January 2009.

Ramesh, Bairy T.S.

“Jaanta nahin meraa baap kaun hain!? Signposting the Karnataka Brahmin Trajectory in the Late Colonial Moment” at the Department of Humanities and Social Sciences, Indian Institute of Technology Bombay, March 25 2009.

Kulkarni, Malhar

“Derivation of Asmad and Yushmad in Jainendra Grammar”, *All India Oriental Conference*, Kurukshetra at 29th July 2009.

“The meaning of Genetive case according to BhattaMimamsa”, *30th All India Conference of Linguistics*, Deccan College, Pune, 26-28 November 2008.

“Theories of Synonymy and Homonymy in Sanskrit sources” in the *National Seminar on Lexicography* at the University of Hyderabad, Sept.2008.

“The concept of Pratyudaharana” with Tanuja Ajotikar at a *National Seminar held in memory of Acarya V.P.LImaye* at the T.M.V., Pune, 31st March 2009.

“The accent of the word “Paracah”” with Anuja Ajotikar, at a *National Seminar held in memory of Acarya V.P.LImaye* at the T.M.V., Pune, 31st March 2009.

“The concept of Shakti in Sanskrit Grammar” at the National Seminar on “The Concept of Shakti in Indian Culture” at Sathye College, Vile Parle, Mumbai on 14th February 2009 (paper read in absentia). 2. “Principles of Management in PancaMahakavyas” in a *National Seminar on Principles of Management in Sanskrit* at the Asiatic Society of Mumbai, 28th February 2008.

“Vowel + Vowel, Vowel + Consonant in Sanskrit” with Leena Hunnargikar, at the *National seminar on Computer aided research in the Traditional Shastras* at Tirupati on 14th Feb.2009.

“Problems of Editing Grammar Texts”, in the *National seminar on Manuscriptology* at the CASS, University of Pune, Pune, 19th February 2009.

Ramasubramanian, K.

“Calculus couched in Meta-language: A Journey into 15th Century Kerala” on *History of Mathematics: Its*

role in Science and Society organized by Indian Society for History of Mathematics, held at Manipur University, Imphal between December 19–21, 2008.

Panda Ratikanta

“Meanings as Socially Constructed” in the *Interlamination Conference* organized by The Dept. of H & S. S, IIT Bombay, February 2009.

George Siby

“Heidegger’s Hermeneutic Phenomenology of the Essence of Technology”, *Seminar on Hermeneutics of Philosophy, Politics and Culture*, organized by the Department of Philosophy, North Eastern Hill University, Shillong, 19-21 November 2008, and sponsored by ICPR, New Delhi.

Panda Ranjan Kumar

“The Freudian Unconscious: A Philosophical Exploration”, *National Seminar on Psycho-Philosophical Perspectives of Hypnosis*, held at M. S. University of Baroda, 9-11 January 2009.

Sebastian C.D.

“Groundwork of Buddhist Morality and an Ethic in Praxis “, in the *All- India Seminar on “Religion and Morality”* on 20-22 March 2009, organized by Samvada: A Forum of Understanding Religion, held at Sri Udasin Karshni Vidya Bhavan, Haridwar.

International

Panda Ratikanta

“Gandhi and Women Upliftment”, in the *International Conference on Democracy in Our Time: The Past and Future of the Enlightenment*, organized by the Forum on Contemporary Theory in collaboration with the Department of English, Banaras Hindu University, during 18-21 December 2008.

George Siby

“Porous Frontiers, Porous Faces: The Self as Opening towards the World”, *Second Biennial Conference of the International Global Ethics Association on Questioning Cosmopolitanism*, 26-28 June 2008, organized by the Institute for Citizenship and Globalization, Deakin University, Melbourne, Australia.

Invited to be part of Monash University’s International Strategic Initiative, “Internationalising Interreligious Studies” for its first sitting at Monash Sunway Campus in Kuala-Lumpur, Malaysia on 7-8 June 2009. The theme of the workshop is ‘The Other in Religion’.

Bhat P.R.

“Social Reality” in *International Conference on Language, Mind and Social Construction* 9th to 11th Feb. 2009 at IIT Bombay

Panda Ranjan Kumar

“Knowledge as Semantic Ability”, *International Seminar on Language: the Instrument of Knowing*, held at Dept. of Philosophy, University of Hyderabad, Hyderabad from 28 – 30 January 2009.

“Layers of Ontology”, *International Conference on Language, Mind and Social Construction*, held at Dept of Humanities and Social Sciences, Indian Institute of Technology Bombay, 9-11 February 2009.

Sebastian C.D.

“Buddhism, Philosophy and Science: Insights from Quantum Physics and Madhyamika Buddhism”, in *International Conference on The State of Buddhism, Buddhists and Buddhist Studies in India and Abroad*, held 02-04 January 2009 at Banaras Hindu University, Varanasi.

Ramasubramanian, K.

“Calculus in Prose and Poetry: Contribution of the Kerala School” at the *Human Empowerment Convention*, held at Chicago between Oct 31 and Dec.2, 2008.

Narayanan, K.

“Technology Sourcing and Internationalisation of IT firms from India” at an *international seminar* organized by the Academic Network for Development of Asia at Bangkok, Thailand during January 2009.

Chaired a Technical Session at the *International Conference of the Academy of International Business [AIB]*, held in June 2008 at Milan, Italy.

Murumkar S and Gupta M

“A study of reward preferences,” *Hawaii International Social Science Conference*, held during May 29-June 1, 2008 at Honolulu, Hawaii, USA

Parthasarathy D.

“Migrant, Diaspora, NRI: Bhojpuri Cinema and the Local in the Global”, *Workshop cum Seminar on “From Bombay to LA: The Travels of South Asian Cinema*, February 9-10, 2009, at Asia Research Institute, National University of Singapore, Singapore

“Museums, Myths, and Aesthetics: Of Technological Pasts and the Present”, *International Conference on Heritage in Asia: Converging Forces and Conflicting Values*, January 8-10 2009, at Asia Research Institute, National University of Singapore

“Embodying Modernity, Consuming the Body: Reductionist Science and Commodification of the Body in Weight Loss Campaigns”, *First International Conference on Popular Culture and Education in Asia*, December 11 – 13, 2008, at Hong Kong Institute of Education, Hong Kong

“Planning in/for Time-Space: Perspectives from Mumbai, India”, *5th Great Asian Streets Symposium*, December 5-7, 2008, at National University of Singapore, Singapore.

Shubha,R.; Bhattacharya, T.;Gupta, M.; and Parthasarathy, D.

“Making sense of suffering: A study of spirit possession in healing centres” *19th International Congress of the International Association for Cross-Cultural Psychology (IACCP)*, July 27-31, 2008, at Bremen, Germany

“Spirit possession: Professional perceptions and lay experiences”, *29th International Congress of Psychology*, June 20-25, 2008, Berlin, Germany

Murthy, Nishevita, and Shastri. Sudha

“Miniatures and the Ottoman Empire in Orhan Pamuk’s *My Name is Red*” at the Workshop on The Nation: Narratives & Community organized by the Centre of Excellence for National Security (CENS) in Singapore on 2nd March 2009.

Nath, R.K.

“Cartesian View on Artificial Intelligence” in the *International Conference on Language, Mind and Social Construction*, held at Department of Humanities and Social Sciences, IIT Bombay, Mumbai, in association with ICPR, New Delhi, from 9th to 11th February 2009.

Subuddhi, K.

“Communicative Practices and Green Activism Strategies for Green Solidarity and Transnationalization in the Post-Cold Era’ in the *International Conference of the Greening of Industry Network* on a theme entitled: ‘Sustainable Ecosystem and Social Stewardship’, June 15-17, 2007, in Wilfred Laurier University, School of Business and Economics, Waterloo, Ontario, Canada and

“Strategic Global Frames: Structures of Communicative Discourses and Green Activism”, in the *World Forum of Sociology on Sociological Research and Public Debate* September 5-8 2008 organized by the International Sociological Association (ISA) at the University of Barcelona, Barcelona, Spain.

“Discursive Network and the Social Construction of Political Identity and Difference, in *International Conference on “Language, Mind and Social Construction”*, Department of Humanities and Social Sciences, Indian Institute of Technology Bombay, Mumbai India, Monday 9th to 11th February, 2009.

Ramanathan, A.

“Economic Valuation of Improved Eco-system Services of KoL Wetland” at the *International Conference on Eco-system Services - Using Science and Decision Making in Dynamic Systems*. December 8-11, 2008 held by University of Florida at Naples. FL, USA.

Bhattacharyya, Surajit

“Impact of Futures Introduction over Spot Prices”, at the *International Conference on Business and Finance (ICBF)*. IBS Hyderabad, ICFAI Business School. January 9- 10 2009.

Saxena Arunima and Bhattacharyya Surajit

“Impact of Futures Introduction over Spot Prices” at the *International Conference on Business and Finance (ICBF)*. IBS Hyderabad, ICFAI Business School. January 9- 10 2009.

Talwar, Neelima

“The Case For Science-Drama: A Historiographic Perspective” in the *11th International Conference of*

International Society for the Study of European Ideas held in Helsinki from July 28 to August 2, 2008.

Khan, Azizuddin

“Event- and Time-based Prospective Memory: An Experimental Investigation” at the *International Congress of Psychology 2008*, Berlin, Germany from July 20-25, 2008.

Poster Presentation “Temporal Aspects of Prospective and Retrospective Memory”, at the *International Congress of Psychology 2008*, Berlin, Germany from July 20-25, 2008.

Kulkarni Malhar

“Verbal Roots in Sanskrit WordNet”, *2nd International Sanskrit Computational Linguistics Symposium* held at University of Brown, Providence, USA, May 2008.

“Franz Kielhorn’s thoughts on the structure of the Kasikavrtti”, *International Conference on the History of Language Sciences*, Potsdam, Germany, August, 2008.

“A Web-Concordance of Prakirna Prakasa on Jatisamuddesa of Vakyapadiya”, *3rd Sanskrit Computational Linguistics Symposium*, University of Hyderabad, Hyderabad, Jan. 2009.

Workshops

Khan Azizuddin

India@75, Confederate of Indian Industry (CII) at Nashik and Pune from October 20-22, 2008.

Kulkarni Malhar

Organised a workshop of verbal morphology (passive construction) at the Abhyankarashastri Pathashala, Pune, in March 2009.

Organised a one day workshop on “Prayoga” at the Department of Sanskrit and Prakrit Languages, University of Pune, Pune, 28th March 2009.

Invited Lectures

National

Khan, Azizuddin

Current Trends in Memory Research”, *XVI Annual Conference Bombay Psychological Association*, S.N.D.T Women’s University, Mumbai, March 24, 2009.

Malshe, Milind

“Lectures on Modern Aesthetics “ at the Faculty of Fine Arts, the M S University of Baroda (December, 2008)

“Language and Literature” at the Refresher Course, at the Academic Staff College and the Dept of Marathi, University of Pune, (November, 2009)

Conducted a “Translation Workshop” by the Anuvaad Suvidha Kendra of the Sane Guruji Rashtriya Smarak Trust (March, 2009)

Ramanathan, A.

“Research for Development & Planning”, Department of Econometrics, School of Economics, University of Madras. 18th March, 2009.

Narayanan, K.

The valedictory address at the National Conference on Trade and Poverty held at Bharatidasan University, Trichy.

Resource person to speak at the IEG-LSE joint workshop on Climate Change and Adaptations, held in New Delhi during November 2008.

Delivered the Presidential address at the annual international conference of the Academy of International Business India Chapter held in August 2008 at I.I.M. Indore.

Kulkarni Malhar

“Lectures on Sarada Script” at Parle College, September 2008..

“Lectures on Sarada Script” at University of Mumbai, October 2008.

“Lecture on Sarada Script” at Mahila Sangh College, October 2008..

Lectures on “The Grammar of Panini” at the University of Hyderabad, Sept. 2008.

Guest of Honour at the National Seminar on “Computer aided research in the Traditional Shastras” at Tirupati on 14th Feb. 2009.

“Current Trends in Sanskrit Computational Linguistics” at the 2day workshop organized at the Bhandarkar Oriental Research Institute, Pune, on 24th February 2009.

“Thoughts on Translation in the Sanskrit Tradition” at a 2 day workshop organized by Sane Guruji Rashtriya Smarak, Vadakh, Maharashtra on 30th March 2009.

Ramasubramanian, K.

“Need for the Advent of Calculus in India”, BMS Engineering College and Sri Tirunarayana Trust, Bangalore, held on August 30, 2008.

International

Parthasarathy, D.

“Social and Environmental Insecurities in Mumbai: Developing a Sociological Perspective on Vulnerability”, Centre for Non-Traditional Security Studies, Rajaratnam School for International Studies, Nanyang Technological University, Singapore, October 17, 2008.

“The City as Event: Cityhood, Agency, Heterotopias”, South Asian Studies Programme and Asia Research Institute, National University of Singapore, Singapore, April 22, 2009.

Ramasubramanian, K.

“Colloquium talk on Nýlakan tha’s Planetary Model: An approach to Keplerianplan-etary motion by the study of planetary latitudes” at Brown University

organized by the Department of Applied Mathematics, on November 4, 2008.

Special Talk on “Infinite series in Kerala Mathematics: Logic behind its generation and termination” given as a part of the Seminar series in Logic and Games at the City University of New York. (CUNY) on December 7, 2008.

Lecture on “Calculus in Prose and Poetry” organized by University of Dublin, Ireland on April 22, 2009.

Significant Awards/Distinctions

Ramasubramanian, K.

Conferred the prestigious award of Maharshi Badarayan Vyas Samman by the President of India in recognition of the outstanding research work done by him to the process of synergy between modernity and tradition. The award is given to young scholars of Sanskrit in the age group of 30 to 40 years, who have made a breakthrough in the interdisciplinary studies.

Parthasarathy, D.

Member, Task Force on Microfinance in Maharashtra, Government of Maharashtra

Member, Board of Studies, Department of Social Work, Amrita University

Visiting Senior Research Fellowship, Asia Research Institute, National University of Singapore, Singapore, 2008-09

Khan Azizuddin

Awarded Cousin's Center Global Outreach Award (2009) by the American Psychosomatic Society, Marriott Downtown, Chicago, IL USA.

German Academic Exchange Service (DAAD) Fellowship to attend ICCL Summer School on Computational Logic and Cognitive Science at Technische Universität Dresden, Germany from 24th August – 6 September, 2008

Selected as Young Scientist at International Congress of Psychology 2008, Berlin, Germany from July 20- 25, 2008.

Malshe Milind

Received three awards for Marathi book on Modern Literary Theory (co-author Prof Ashok Joshi): Anushtubh Award (Mumbai), Apte Vaachanaalaya Award (Ichalkaranji), and Prof R. S. Jog Award (Pune)

Narayanan, K.

Nominated by the Government of India to attend the Intergovernmental Panel on Climate Change [IPCC] special meeting on Extreme Events held during March 2009 at Oslo, Norway.

President of Academy of International Business – India Chapter.

Member, Expert Committee on Climate Change Impacts in India, Government of India.

Member, Executive Council, The Indian Econometric Society.

Kulkarni Malhar

Moraya puraskara from the Municipality of Pimpri-Chinchwad, Nov. 2008.

Honorary Work

Gupta M.

Subject Expert, Indian council of Social Science Research, New Delhi.

Member, Board of Studies, Narsee Monjee College of Management, Mumbai.

Parthasarathy, D.

Reviewed papers for Security Dialogue, October 2008; Contributions to Indian Sociology, May 2008; Science, Technology and Society, December 2008

Ghadiyally R.

Served as an Expert on the Selection Committee for the *J.N. Tata Endowment for Postgraduate Studies Abroad*. Mumbai 4th. June 2008.

Served on the Editorial Board. *Pakistan Journal of Women's Studies*, 2008.

Served as an External Reviewer for a Project. University of Lethbridge, Lethbridge. Canada. October 2008

Padhi Puja

Editorial Board of International Journal of Economic Research

Malshe Milind

Member, Research & Recognition Committee, Department of English, SNDT University, Mumbai.

Member, Board of Studies in Humanities, VNIT, Nagpur.

Narayanan, K.

Member, Advisory Board, Environmental Studies Centre, Yashwantrao Chavan Academy of Development Administration [YASHDA], Pune, since March 2005.

Member, Board of Studies, Department of Environmental Sciences, Pune University.

Appointed as a Reviewer for the contributions to the Working Group II on the Vulnerability and Adaptation to Climate Change”, to Intergovernmental Panel on Climate Change [IPCC] – international body dealing with global climate change concerns.

Kulkarni Malhar

Member of the Regulating Council of the Bhandarkar Oriental Research Institute, Pune.

Honorary Professor, M.M. Abhyankarshastri Pathashala, Pune.

Member, Examination Council, Vedashastrottejaka Sabha, Pune.

Member of the Steering Committee, 3rd International Sanskrit Computational Linguistics Symposium held at Hyderabad January 2009.

Honorary Director, M.M.Dr. P.V.Kane Institute of Post Graduate Studies and Research at the Asiatic Society of Mumbai.

Member of the Organising Committee, 2nd International Sanskrit Computational Linguistics Symposium, held at Brown University, USA, MAY 2008.

Chaired a session at the International Conference on the History of Language Sciences, Potsdam, Germany, August, 2008.

Faculty Members and their Specializations

Economics

1. L.M. Bhole

Money, Banking and Finance, Economic Systems, Gandhian Thought.

2. A. Ramanathan

Managerial Economics, Applied Econometrics, Monetary Economics.

3. P.L. Trivedi

Monetary Economics and International Finance.

4. K. Narayanan

Industrial Economics, Multinationals and Technology Transfer, Industry –

Environment Linkages, International Trade, Applied Econometrics.

5. Haripriya G.S.

Natural resource and environmental economics, Water resource Economics, Green Accounting, Environmental Policy.

6. Puja Padhi

Financial Economics, Monetary Economics

7. Surajit Bhattacharyya

Macro Economics, Industrial Economics, and Corporate Investment

English

1. M.S. Malshe

Modern Critical Theory, Aesthetics, Linguistics and English Language Teaching.

2. Neelima Talwar

Indian and Western Drama, Modern Literature, Creative Writing, Literature/Drama and Contemporary Media, Conscientization method for Language Teaching.

3. Sudha Shastri

Novel, Victorian Studies, Postmodern Literature and Intertextual theory

4. Vaijayanthi Sarma

Syntactic theory, First language acquisition, Linguistic deficits, Language processing, Conservation of endangered languages (especially Dravidian minority languages)

5. Ratheesh Radhakrishnan

Masculinity studies, gender, Feminist Theory, Film History and Theory, Culutural Studies, 19th and 20th Century Literatures

Philosophy

1. P.R. Bhat

Philosophy of Language, Contemporary Western Philosophy, Meta-Ethics.

2. C.D. Sebastian

Buddhism, Classical Indian Philosophy, Comparative Religion, Comparative Philosophy, Vedanta Philosophy

3. Vikram Singh Sirola

Analytic Philosophy, Contemporary Western Philosophy

4. Ranjan K. Panda

Philosophy of Mind, Analytic Philosophy

5. Ratikanta Panda

Wittgenstein's Private Language, Argument: A Re-examination Argument in Philosophy of Language

6. Siby K. George

Continental Philosophy

7. Rajakishore Nath

Philosophy of Artificial Intelligence, Philosophy of Mind, Cognitive Science

8. Pravesh Jung Golay

Contemporary Western Philosophy

Psychology

1. Rehana Ghadially

Stress Management, Women's Studies/Psychology, Gender Roles

2. Meenakshi Gupta

Social Psychology, Organizational Behaviour, Human Resource Development

3. T. Bhattacharya

Health and Clinical Psychology, Psychosomatic disorders, Stress & Coping, subjective well-being, ergonomics, cross-cultural personality

4. Pooja Purang

Organizational Behaviour, Culture and Ethics in Organizations, HR issues, Personality

5. Azizuddin Khan

Cognitive Psychology, Clinical Psychology, Neuro Psychology, Ergonomics, Event Related Potential

6. Mrinmoyi Kulkarni

Social Psychology, Fertility, Health Behaviours, Role of Psychology in Development

Sociology

1. K. Subuddhi

Technology and Development; Political Sociology; Environmental Sociology; Rural Sociology; International and Global Sociology.

2. R. Robinson

Religion and Social Movements, Sociology of Contemporary India, Social Change, Family and Kinship.

3. D. Parthasarathy

Development Studies, Agricultural Sociology, Law and Governance, Urban sociology, Socioeconomic impact assessment, Vulnerability and Adaptation to Climate Change, Caste and Ethnic Conflicts.

4. Kushal Deb

Urban Sociology, Ethnicity and Multiculturalism Sociological Theory, Sociology of Development

5. Sarmistha Pattanaik

Social aspects of Environment, Social and Environmental Movements, Environmental Politics with a focus on Social inequality and Natural Resource Conflicts especially in Rural India, Issues of livelihood and problems of marginalized class and Political Ecology.

6. Ramesh Bairy

Social Stratification; Contemporary Caste; Religious Institutions

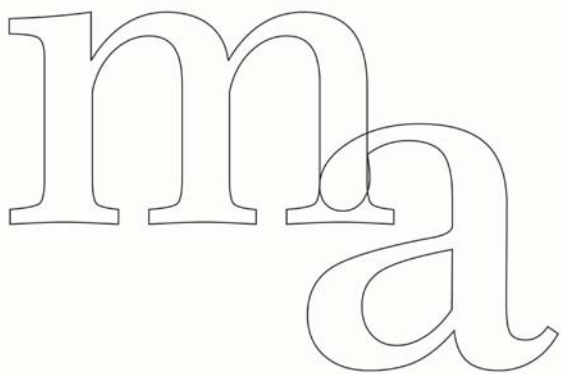
Cell for Indian Science and Technology in Sanskrit (CISTS):

1. Malhar Kulkarni

Sanskrit language, Paninian Grammar, Philosophy of language, Aesthetics in Sanskrit Texts

2. K. Ramasubramanian

Astronomy (Jyotisha), Mathematics (Ganita), Logic (Nyaya-sastra), Philosophy (Advaita-Vedanta), Meta-Physics, Self-development, Application of Non-linear Dynamics.



Mathematics

Introduction

The year witnessed excellent contributions and achievements of faculty and students in research, interaction with industry and national and international institutes, universities and organizations, and extended educational activities beyond the departmental academic programmes.

Several faculty members received awards and fellowships: Prof. U. K. Anandavardhanan was awarded the INSA medal for Young Scientists (2008), Prof. M. K. Keshari was selected for the BOYSCAST Fellowship for 2008-09, Prof. Neela Nataraj was awarded the IIT Bombay Excellence in Teaching Award (2008) and Prof. J. K. Verma was elected a fellow of the National Academy of Sciences, India (2008).

As a part of Golden Jubilee celebrations, Prof. John Coates, (Cambridge University, U.K.), Prof. S. R. S. Varadhan (Abel Laureate, Courant Institute of Mathematical Sciences, New York) and Prof. Manjul Bhargava (Cole Proze winner) visited the Institute and delivered public lectures and colloquia.

Faculty strength; Names of new faculty members

Current faculty strength is 40. New faculty members who joined the department in different capacities are:

- (1) Prof. Manjul Bhargava (Distinguished Guest Professor)
- (2) Prof. Amitava Bhattacharya (Adjunct faculty), Prof. Kishore Marathe (Visiting Professor)
- (3) Prof. Dipendra Prasad (Adjunct Faculty)
- (4) Prof. Ganesh Ramakrishnan (Adjunct faculty)
- (5) Prof. Eric Wambach (Visiting assistant professor)

Infrastructural development

To accommodate more students due to the increase in OBC quota, all classrooms have been equipped with dual desks. All classrooms have been equipped with data projectors. The computeres in UG and PG labs have been upgraded. A cluster has been created for parallel computing in the PG lab.

Academic Programmes

Student Intake

Ph.D.	:08
M.Sc. (MA)	:17
M.Sc.(ASI)	:20

Degree Awarded

Ph. D.	:04
M.Sc. (MA)	:09
M.Sc. (ASI)	:18

Besides the teaching of mathematics courses in the B. Tech. programmes, the department offers M.Sc. and Ph.D. programmes. It has two distinct M.Sc. programmes: M.Sc. in Mathematics and M.Sc. in Applied Statistics and Informatics. Starting from this year the department offers Minor programmes in Mathematics and Statistics for B.Tech. students. In addition, the department has a research programme leading to Ph.D. degree.

R & D Activities

Continuing with its tradition, the department has further augmented its basic research, focusing in contemporary areas of fundamental, developmental and strategic importance, applied and interdisciplinary research and productive collaboration with industries and reputed R & D organizations. The collaborating R & D institutions/organizations include: TIFR, IISc, ISI, ONGC, Institute of Mathematical Sciences, Brunei University (U.K), Florida Technical University (USA), Colorado School of Mines (US), Humboldt University (Germany), CNRS-IML, Marseille (France), INSA, Toulouse (France), Univ. St-Etienne (France), l'Université Pierre et Marie Curie, Paris (France), Vilnius University, Lithuania, Emory University, US, French Naval Academy, Universität Bielefeld, Germany, and nodal organizations such as CSIR, DAE, DBT, DST, for scientific exchange of ideas. In order to fulfill the broad objectives of research activities, steps are taken to ensure that the theoretical bases in emerging areas are strengthened, interdisciplinary problems requiring

mathematical solutions are identified, interaction between Indian and overseas scientists are facilitated, local talents are well nurtured through lecture series and instructional workshops. During this year, the department organized two year-long programmes, a few distinguished lecture series, one international conference, one national symposium, one mini workshop in Geometry and Topology, two international workshops, several study group meetings in Statistics, several CEP courses and one instructional school. This year the department has witnessed a steady increase in the number of quality publications.

Sponsored Research Projects

Sponsored Projects	
Ongoing	: 07
New	: 02
Completed	: 02
Faculty Involved	: 11
Consultancy	
Jobs	: 01
Faculty Involved	: 02

Project Title	Sponsoring Agency	Status
Accelerated Refinement Schemes for Computation of Eigenelements of Integral Operators with Singular Kernels Using Wavelet Galerkin Methods	Dept. of Science and Technology	Completed (July 22, 2008)
Establishing the Analytic Properties of Automorphic L-functions	IRCC	Completed (December 10, 2008)
Extension and Web Implementation of PROPAINOR for Ab-initio Prediction & Computational Function Elucidation of 3-D Structure of Proteins.	Department of Biotechnology	Ongoing
The Oldroyd Model of Viscoelastic Fluids :Theoretical and Computational Studies.	Department of Science and Technology	Ongoing
Theoretical and Computational Studies of the Kelvin Voigt Model of Visco-elastic Fluids	Dept. of Science and Technology – Indo Brazil	Ongoing
Factorization of Period Integrals	IRCC	Ongoing
Fast Marching Method for Monotonically Propagating Fronts in An Inhomogeneous Moving Fluid.	IRCC	Ongoing
Instrumentation assisted Decision Support System deploying Data Mining Techniques for Pulse Examination & Diagnostics (Nadi Pariksha)	Ministry of Information Technology	Ongoing
Homogenization and Defect Structures	IRCC	Ongoing
Identifying the Most Successful Combination Dose in a Phase I/II Clinical Trial	IRCC	New
Reductive groups and related structures	IRCC	New
Consultancy Projects		
Validation of Application Credit Scoring Models	Tata Motors Finance Ltd.	New

Extension Activities

Conferences:

Workshop and International Conferences on Computational PDEs – 2008 (organizers – Baskar S., Neela Nataraj and A.K. Pani) as a part of Year long programme on computational PDEs.

Workshops:

Instructional School on Modern Theory of Partial Differential Equations, June-July, 2008. (organizers- Baskar S., Sivaji Ganesh S., Pani A.K.) as a part of Year long programme on computational PDEs

Mini Workshop in Geometry and Topology, 16 —31 Jan 2009 (A.R. Shastri) as a part of Year long programme on Geometry and Topology.

Short-Term Courses:

Maxwell to Yang-Mills (Kishore Marathe)

A Sequence of Lectures on Foliation Theory (A.R. Shastri)

CEP Courses:

Fourth CEP Workshop on Mathematics for Economics, Commerce and Management, April 14-27, 2008. (Inder K. Rana)

First CEP “professional Development and Technology Orientation” programme for Secondary math teachers, May 26-30, 2008. (Inder K. Rana)

Second CEP course on Professional Development & Technology Orientation, December 7-9, 2008. (Inder K. Rana)

Visitors to the Department:

- (1) R. Alexandre, E’cole Navale delivered a lecture on “Boltzmann Equaton”.
- (2) R. B. Bapat, ISI Delhi delivered a lecture on “Sperner’s Lemma and Bandwidth “.
- (3) Mikhail Borovoi, Tel Aviv University, Israel, delivered a lecture on “Abelian Galois Cohomology of Reductive groups”.
- (4) Aldric L. Brown, Universiy College London, UK. delivered a lecture on “Best uniform approximation by finite dimensional spaces of continuous functions from 1853 to 2009”.
- (5) Kashinath Chatterjee, Visva Bharati University, Santiniketan
- (6) Amartya K. Dutta, ISI, Kolkata delivered a lecture on “Structure of Algebras which are locally A’ in co-dimension one”.

- (7) Rui Loja Fernandes, Instituto Superior Tecnico, delivered a lecture on “Integrability of Lie Brackets”.
- (8) G. Lyubeznik, University of Minnesota, USA, delivered a few lectures on “Recent Progress on Local Cohomology”.
- (9) Stefan Kukulies, University of Duisberg-Essen, Germany, delivered a few lectures on “On Shimura Curves in the Schottky Locus”.
- (10) R. Parimala, Emory University, USA
- (11) Piotr Pragacz, Institute of Mathematics Polish Academy of Sciences Warsaw, Poland, delivered a lecture on “Bezoutians, Euclidean Algorithm and orthogonal polynomials”.
- (12) Marek Ptak, University of Agriculture in Krakow, delivered a lecture on “the reflexivity and hyper reflexivity of Toeplitz operators”.
- (13) R. R. Simha, TIFR , Bombay(Retd) delivered a lecture on “A Simple Topological Invariant with Interesting Applications”.
- (14) Maria Zeltser, Faculty of Mathematics and Natural Sciences Tallin University, Estonia, delivered a lecture on “Hahn properties and Potent matrices”.

Conferences / Symposia / Workshops / Seminars (Participated / Paper presented)

National

Anandavardhanan, U. K.

23rd Annual Conference of the Ramanujan Mathematical Society, Indian Institute of Technology Kanpur, Kanpur, 19-21 May 2008.

Workshop on Arithmetic Geometry, Indian Institute of Technology Guwahati, Guwahati, 22-30 September 2008.

Workshop on Harmonic Analysis and PDE, Indian Institute of Science, Bangalore, 5-13 December 2008.

74th Annual Meeting of the Indian National Science Academy, New Delhi, 10-11 January 2009.

Garge Shripad M.

ISI workshop on group theory, Bangalore (May 12-31, 2008)

Conference on “Quadratic forms, linear algebraic groups and Galois cohomology”, Hyderabad (December 30, 2008 -January 4, 2009)

Classification of algebraic groups, IISER Pune (March 9-12, 2009)

Ghorpade, S. R.

Presented a keynote address “Development of Calculus”, *Orientation Programme in Mathematics for Kendriya Vidyalaya Teachers and Principals*, held during April 2008, at the Zonal Institute of Education and Training, Bhandup, Mumbai.

A series of four lectures “Hardy-Ramanujan-Rademacher Formula for the Number of Integer Partitions”, *NBHM Advanced Instructional School on Complex Analysis*, held during June-July 2008, at Bhaskaracharya Pratishthana, Pune.

“Higher Weights of Linear Codes Associated to Grassmann Varieties”, *Symposium on Coding and Cryptography, Mathematical Sciences Section of the 96th Indian Science Congress*, held during January 2009, at North-Eastern Hill University, Shillong, Meghalaya.

“Primitive Polynomials, Singer Cycles, and Integer Sequences”, *HRI International Conference in Mathematics (HRI ICM)*, held during March 2009, at Harish-Chandra Research Institute, Allahabad.

Keshari, M. K.

“Cancellation of projective modules over affine algebras”, at *RMS Meeting*, IIT Kanpur, May 19-21.

Raghunathan Ravi

“What is Number Theory” at the *first CEP workshop on Professional Development and Technology Orientation*, IIT Bombay, May 26-30, 2008.

Rana Inder K.

“On Teaching and Learning Calculus”, *Plenary talk in CMET 2008, Conference on Math Education and Technology*, DPS Delhi, August 2008

Sabnis, S.V.

Two lectures on “Basics of Probability and Statistics” at the *first CEP Workshop on Professional Development and Technology Orientation*, IIT Bombay, May 26-30, 2008.

Shastri, A. R.

“Irreducibility of Product of manifolds,” *International Workshop and Conference on Surface Mapping Class Groups and Related Topics*, June 16-28, 2008, at NEHU Shillong.

Sivaji Ganesh Sista

Participated in *International Conference on Nonlinear Dynamics*, Indian Institute of Science Bangalore, July 2008.

Participated in *Workshop on Harmonic Analysis and Partial Differential Equations*, Indian Institute of Science Bangalore, December 2008.

Verma, J. K.

“Mixed Volumes and Mixed Multiplicities”, *Annual Meeting of Ramanujan Mathematical Society*, May 2009, IIT Kanpur.

“On the Chern Number of An Ieal”, *Annual Meeting of the Indian Mathematical Society*, December 2008, University of Allahabad.

International**Anandavardhanan, U.K.**

Représentations p-adiques des groupes p-adiques, Institut de Mathématiques de Jussieu, Paris, 7-12 July 2008.

Mukhopadhyay, S.

“Optimization in a Multivariate Generalized Linear Model Situation,” *7th World Congress in Statistics and Probability*, held during July 2008 at Singapore.

Presented a poster “Minmax Robust Parameter Design,” *Recent Advances in Methods and Applications (DEMA2008)*, held during August 2008 at Cambridge, UK.

Rana Inder, K.

“Teaching a Large Class in Technological Setting,” *International Congress in Math Education July 2008, Mexico*.

“Developing an Activity based Matlab Workshop for Middle School,” *International Congress in Math Education July 2008, Mexico*

Participated in “Workshop for middle school Teachers on the concepts of Areas and Parameters”, ATCM 2008, December 2008, Bangkok.

Verma, J. K.

“Mixed volumes of polytopes and Bernstein’s Theorem”, *Indo-Brazil Symposium in Mathematics*, August 2008, Rio-de-Janeiro (Brazil).

Invited Lectures**National****Anandavardhanan, U. K.**

“Distinguished Representations and Local Root Numbers”, *23rd Annual Conference of the Ramanujan Mathematical Society*, Indian Institute of Technology Kanpur, Kanpur, 19-21 May 2008.

“Cuspidal Families – I & II”, *Workshop on Arithmetic Geometry*, Indian Institute of Technology Guwahati, Guwahati, 22-30 September 2008.

“Symmetric Spaces and Multiplicity Questions”, *Workshop in Harmonic Analysis and PDE*, Indian Institute of Science, Bangalore, 5-13 December 2008.

Baskar, S.

“Fast Marching Method for Monotonically Propagating Fronts in An Inhomogeneous Moving Fluid”, *Symposium on Nonlinear Evolution Equation* from April 18 – 19, 2008, IISc Bangalore.

“Kinematic Conservation Laws: Application to Sonic Booms”, *National seminar on Analysis*, differential equations and applications, The Maharaja Sayajirao University of Baroda during January 30-31, 2009

Garge Shripad M.

“Solvable algebraic groups over a general field”, *ISI Workshop on Group Theory*, Bangalore (May 12-31, 2008)

“As Easy as ABC”, Pune University (March 9, 2009)

“On the Borel-Siebert theory”, *Classification of Algebraic Groups*, IISER Pune (March 9-12, 2009)

Ghorpade, S. R.

“Linear Algebra: Geometric, Topological and Arithmetic Aspects”, The M. S. University of Baroda, Vadodara, Gujarat, October 2008.

“Primitive Polynomials, Matrix groups, and Cryptography”, Indian Institute of Technology, Guwahati, Assam, January 2009.

Joshi, R R

Six Lectures Series on “Advanced Applications of Neural Networks in Protein Structure Function Modeling”, DBT sponsored program on “Bioinformatics and Biotechnology”, BIC, Univ. of Poona, Pune. Feb. 2009.

Two invited talks at National Workshop on Impact of Statistical Techniques in Pharmaceutical Research. Changa Institute, Anand, Jan. 2009.

(i) Classification & Regression Trees in Clinical Trials.

(ii) A Novel Application of Nonparametric Statistics in Bioinformatics.

Raghunathan, Ravi

“How (we think) Google works”, NISER Bhubaneswar, February 19, 2009

“The distribution of prime numbers”, IMA Bhubaneswar, February 20, 2009

“How (we think) Google works”, IMA Bhubaneswar, February 21, 2009

Ranjan, Akhil

Two lectures in “Instructional Workshop on Differential Geometry”, Department of Studies in Mathematics University of Mysore (June 16-25, 2008)

Two lectures in “Workshop on Topology and Geometry of Foliations”, Indian Statistical Institute, Kolkata (Nov 24-Dec 6, 2008)

Sabnis, S. V.

“Statistical Modeling Based on Brand Preference Data” at *Fractal Analytics*, Mumbai, August 7, 2008.

Sharma, V. D.

“Mathematical Modelling in Engineering Sciences” to the Mathematics Faculty and PG Students under the *Distinguished Colloquium Series* at the North Maharashtra University (2008).

“Nonlinear Hyperbolic System of PDEs” at the *National Seminar on Analysis, Differential Equations and Applications* held at the Department of Mathematics, M.S. University, Baroda (2009)

International**Athavale Ameer**

“Quasimilarity-invariance of joint spectra for certain subnormal tuples” at the *Conference SWOT08 (Small Workshop in Operator Theory 2008)* in Krakow, Poland, from June 28, 2008, to July 1, 2008

Ghorpade, S. R.

“Schubert Varieties, Linear Codes and Enumerative Combinatorics”, *Seminari de Geometria Algebraica*, Universitat de Barcelona, Barcelona, Spain, April 2008.

“Recent Progress on the Weight Hierarchy of Grassmann and Schubert Codes”, *Séminaire Arithmétique et Théorie de l'Information*, Institut de Mathématiques de Luminy, Marseille, France, May 2008.

“Geometry of Subspaces of A Vector Space and Applications to Coding Theory”, *Sophus Lie Seminar*, held during May 2008, at Universitetet i Tromsø, Tromsø, Norway.

“Maximal Linear Sections of Grassmann Varieties”, *Seminar in Algebra and Algebraic Geometry*, Universitetet i Oslo, Oslo, Norway, June 2008.

“Graphs with Maximum Sum of Squares of Degrees and Codes Associated to Grassmann Varieties”, *Kolloquium*, Christian-Albrechts Universität Kiel, Kiel, Germany, June 2008.

“Some Interactions between Algebraic Geometry and Coding Theory”, *Seminar i Algebraisk Geometri och Talteori*, Chalmers University, Gothenberg, Sweden, June 2008.

“Introduction to Grassmann Varieties and Associated Codes”, Technical University of Denmark, Lyngby, Denmark, June 2008.

Invited talk “Primitive polynomials, Singer cycles, and LFSRs”, *12th International Conference on Arithmetic, Geometry, Cryptography, and Coding Theory (AGCT-12)*, held during March-April 2009, at the Centre Internationale de Rencontres Mathématiques (CIRM), Luminy, Marseille, France.

Verma J. K.

“Mixed Multiplicities and Mixed Volumes”, *Colloquium* at University of Pernambuco, Recife (Brazil), August 2008.

Significant Awards and Distinctions**Anandavardhanan, U. K.**

INSA Medal for Young Scientist, Indian National Science Academy, 2008.

Keshari, M. K.

BOYSCAST Fellowship 2008-09

Nataraj Neela

Excellence in teaching award, 2008.

Verma J. K.

Elected Fellow of National Academy of Sciences, India (2008)

Honorary Work

Anandavardhanan, U.K.

Reviewer for MathSciNet.

Reviewer for Zentralblatt MATH.

Athavale Ameer

Reviewed two research papers for *Mathematical Reviews* and refereed 1 research paper for the *Journal of the London Mathematical Society*.

Baskar, S.

Resource person in the Study group meeting on industrial problems, 2009.

Garge Shripad M.

Reviewer for Zentralblatt MATH.

Ghorpade, S. R.

Member, Council of Editors, *Resonance*.

Member, Editorial Board, *International Journal of Information and Coding Theory*.

Expert Member, Board of Studies in Mathematics and the Faculty of Science, The M.S. University of Baroda, Vadodara, Gujarat.

Member, Selection Committee, Shyama Prasad Mukherjee Fellowship of UGC-CSIR, National Chemical Laboratory, Pune, July 2008.

Referee for a NBHM Postdoctoral Fellowship, National Board for Higher Mathematics, August 2008.

External Examiner for the Ph.D. thesis and viva, Panjab University, Chandigarh, September 2008.

Member, Selection Committee for Mathematics Faculty, College of Engineering, Pune, December 2008.

Joshi, R. R.

Reviewer for "Proteins: Structure, Function, Bioinformatics" and "Chemical Biology & Drug Designing".

Statistics expert for review of projects submitted to DST and DBT.

Statistics/Bioinformatics (Data Mining) expert in selection committees for appointment of Professors in two Indian Universities.

Kulkarni, R. P.

Refereed papers for international journals, Refereed Doctoral Thesis.

Mukhopadhyay, S.

Reviewed papers for Journal of Statistical Theory and Practice, August 2008

Reviewed papers for Special Volume of Statistics and Applications in honor of Professor Aloke Dey, September 2008

Reviewed papers for Journal of Statistical Planning and Inference, February 2009

Reviewed papers for Journal of Applied Statistics, March 2009

Reviewed papers for 1st IIMA International Conference on Advanced Data Analysis, Business Analytics and Intelligence, February 2009

Nataraj Neela

Reviewed papers for the journals listed below:

Journal of Computational and Applied Mathematics
Int. Journal of Comp. Math.

Australian & New Zealand Industrial and Applied Mathematics Journal (ANZIAM)

Pai, D. V.

Examiner, Ph.D. thesis, IIT Kharagpur.

Examiner, Ph.D. thesis, IIT Kanpur.

Member, P.M.M.C., D.S.T., for *C.M.C.(Centre of Mathematical Sciences)*, at Pala, Kerala .

Member, P.M.M.C., D.S.T. for *Core Group Support extended to Mathematical Sciences* of Banaras Hindu University (BHU).

Member, Advisory Committee, U.G.C., SAP, Phase 1, Department of Mathematics, Sardar Patel University, Anand, Gujarat.

Member (one of the ten Visitor's nominees), *Court of NEHU, Shillong*.

Associate Editor, *Asian European Journal of Mathematics*, World Scientific Publishers, London and Singapore.

Raghunathan Ravi

Reviewer for Mathematical Reviews (Mathscinet)

Ranjan Akhil

Examined an M.Phil thesis for Univ. of Mumbai.

Sabnis, S. V.

Reviewed one article for Calcutta Statistical Association Bulletin.

Sharma, V. D.

Examined Ph.D. Theses from Calcutta Univ and Bharthiar Univ (TN).

Reviewed papers for Zentralblatt (Germany) and Math Rev (USA).

Served as a member of the selection committee for Faculty recruitment at IIT Kgp, IIT Patna and NIT Warangal.

Verma, J.K.

Member, Board of Trustees of Bhaskaracharya Institute of Mathematics, Pune.

Member, Editorial Board, Ramanujan Mathematical Society Lecture Notes Series

Secretary, Advanced Training in Mathematics Schools, NBHM.

Faculty Members and their Specializations

1. Anandavardhanan, U. K.
Number Theory

2. Athavale, Ameer
Functional Analysis

3. Baskar, S.
Hyperbolic Conservation Laws: Theory, Numeric and Applications

4. Bhargava, Manjul
Number Theory

5. Bhattacharya, Amitava
Combinatorics

6. Das, Ashish
Design of Experiments

7. Garge, Shripad M.
Number Theory, Linear Algebraic Groups

8. Ghorpade, Sudhir R.
Algebraic Geometry, Combinatorics

9. Joshi, Kapil D.
Topology, Discrete Mathematics

10. Joshi, Rajani R.
Computational Biology, Biostatistics and Bioinformatics

11. Keshari, Manoj Kumar
Commutative Algebra (Projective modules)

12. Kulkarni, Ravi S.
Differential Geometry

13. Kulkarni, Rekha P.
Numerical Functional Analysis, Spline Theory

14. Limaye, Balmohan V.
Functional Analysis, Numerical Analysis, Spectral Approximation

15. Mahajan, Swapneel
Geometry and Topology

16. Marathe, Kishore
Mathematical Physics

17. Mukhopadhyay, Siuli
Statistics

18. Nataraj, Neela
Finite Element Methods

19. Pai, Devidas V.
Functional Analysis, Approximation Theory, Set-valued Analysis

20. Pani, Amiya K.
Numerical Analysis, Partial Differential Equations, Industrial Mathematics

21. Prasad, Dipendra
Number Theory

22. Puthenpurakal, Tony J.
Commutative Algebra

23. Raghunathan, Ravi
Automorphic forms, Number Theory

24. Ramakrishnan, Ganesh
Computer Science

25. Raman, Preeti
Number Theory

26. Rana, Inder K.
Harmonic Analysis, Mathematics Education

27. Ranjan, Akhil
Differential Geometry

28. Sabnis, Sanjeev V.
Reliability Theory, Industrial Statistics

29. Sharma, Vishnu D.
Quasilinear Hyperbolic Systems of PDEs/ Nonlinear Waves

30. Shastri, Anant R.
Algebraic Geometry, Algebraic Topology

31. Singh, Balwant
Commutative Algebra

32. Sista, Sivaji Ganesh
Partial Differential Equations

33. Sivasubramanian, S.
Combinatorics

34. Srinivasan, Gopal K.
Partial Differential Equations

35. Srinivasan, Murali K.
Combinatorics

36. Subramanyam, A.
Statistical Inference, Geostatistics

37. Sureshkumar, K.
Stochastic Differential Game Theory, Mathematical Finance.

38. Vellaisamy, P.
Applied Probability, Statistical Inference, Industrial Statistics

39. Verma, Jugal K.
Commutative Algebra

40. Wambach, Eric
Number Theory

me Mechanical Engineering

Introduction

The Department of Mechanical Engineering is the second largest in terms of number of faculty (42) and students. The department has been constantly striving to improve its achievements in both manpower training and research and resetting its goals keeping in view the current national needs. During the year under review, actions have been taken to further upgrade some of the existing laboratories, e.g., Strength of Material, Refrigeration and Air Conditioning, Heat Transfer, I.C. Engine, Workshop Practice Lab, etc. Further, initiatives have been taken to set up laboratories on rapid prototyping and CFD.

The department's annual function, "Radiance 2009", was organized on 15-16 March 2008 under the banner of Mechanical Engineering Association to foster fellowship amongst the members of the mechanical engineering fraternity, to bring experts from industry and academia on a common platform for exchanging thoughts and ideas, to provide a window for presentation of creative abilities of students, to enable entertainment and learning through arrangement of invited lectures and workshops, and to bring out challenges and opportunities in mechanical engineering. About 1100 students and faculty from within and outside the institute participated.

Research activities have been encouraging in the areas of thermal hydraulics, refrigeration, air conditioning, cryogenics, heat and mass transfer, CAD/CAM, modeling of manufacturing process, mechatronics, MEMS, nanotechnology, smart structure and materials, structural health monitoring, fracture mechanics, etc. Four applications for new patents have been granted. Many awards and fellowships have been bestowed on the faculty including Fellow of American Society of Mechanical Engineers, Fellowship of Institution of Mechanical Engineering (IMechE), UK., "Dr. P. K. Patwardhan Technology Development Award of IIT" and "Prof A Jaganmohan Award for Professional Development", "K C Panthaki Award" and "H. D. Govindraj Memorial Award" for the best research papers. The whole faculty have contributed as before to national R & D programs of DAE, ARDB, ISRO,

DRDO, AERB, DIT, DST, BARC and ONGC, industrial consultancy activities, continuing education programs (CEP), national and international journals, and conferences.

Academic Programme

Students Intake

B.Tech	-	53
Dual Degree	-	15
M.Tech	-	88
Ph.D.	-	23

Degrees Awarded

B.Tech	-	49
Dual Degree	-	42
M.Tech	-	57
Ph.D.	-	15

The department offers formal degree programmes leading to B.Tech., M.Tech., and Ph.D. It also offers the dual-degree programme.

At the M.Tech level, there are three specialisations:
Thermal and Fluids Engineering
Design Engineering
Manufacturing Engineering

At the Dual-Degree level also there are three specialisations:
Computer-Aided Design and Automation
Computer-Integrated Manufacturing
Thermal and Fluids Engineering

R and D Activities

Sponsored Research Projects	:	39
New	:	10
Ongoing	:	27
Completed	:	02
Faculty Involved	:	15

Main Areas of R & D Activity

- Development of computational model for large water cooled nuclear reactors and analysis of transients using the model developed.
- Gas Dynamics, Electronics Cooling, Heat Transfer Enhancement
- Research activities in the area of Gas Dynamics include development/implementation of numerical schemes for the simulation of a variety of compressible flow phenomena including shock-structure interactions, hypersonic flow over re-entry vehicles, shock-density interface interactions, shock wave and related phenomena at rarefied conditions/microscales, etc. The activities in the area of Electronics Cooling include design and development of novel cooling solutions for the next generation high heat flux processors using traditional approaches, investigation of two-phase flow and heat transfer in microchannel heat sinks, and a fundamental study of synthetic-jet based electronics cooling. A sponsored project from MHRD is completed in the area of Electronics Cooling

dealing with some of the techniques mentioned above, while one project sponsored by DIT is ongoing. A new project, sponsored by ISRO, is initiated to investigate behavior of kerosene-based nanofluid for internal convective heat transfer enhancement.

- Two Phase Flow and Heat Transfer
- Fire dynamics, Two Phase Flow and Heat Transfer, Jet impingement heat transfer, Flow metering, Gas turbine blade cooling
- Welding Science and Technology, Process Modeling
- Refrigeration & Cryogenic Engineering
- Particle based simulation of fluids and plasmas, generation of particles in IC Engines and plasma based methods, using particles to develop novel fluids.
- MEMS, Mechatronics, Microstereolithography, Nonlinear control
- Crack propagation through elastic-plastic materials
- Dynamic fracture and component health monitoring
- Casting design and simulation, Bio-CAD/CAM, Product Lifecycle Engineering.

Project Title	Sponsoring Agency	Status (New/ Ongoing/ Complete
“Thermal Management in Microelectronics Packaging: Development of Cooling Solutions for the Next Generation Microprocessors”	MHRD	Completed Project
“Development of a Robust Weld Pool Simulation Model by Integrating Heat Transfer Analysis and Multivariate Optimization”	DST	Completed project
“Surface-Induced Mechanical Energy Dissipation in MEMS Resonators “	IRCC	Ongoing Project
“Modeling and Measurement of Contact Conductance Between Two Structural Components”	BRNS	Ongoing Project
“Finite Element Modeling & Simulation of Spherical-Indentation Test”	IGCAR	Ongoing Project
“Development Of A 3-D Space-Time Kinetics Model For The Analysis Of Light Water Reactors”	AERB	Ongoing Project
Synthetic Jet Based Cooling for High Heat Flux Electronic Components: A Novel Approach	DIT	Ongoing Project
“Experimental Optimization of confined air Multiple Jet Impingement on a smooth and Rough Flat Plate”	ISRO	Ongoing Project

Project Title	Sponsoring Agency	Status (New/ Ongoing/ Complete
“Measurement of cooling air pressure drop and heat transfer of stationary turbine blade cooling passages”	GTRE	Ongoing Project
“Design, Development & Testing Of Multihole Averaging Pitot Probe Design, Development & Testing Of Multihole Averaging Pitot Probe”	Minco Industries Pvt. Limited	Ongoing Project
“Heat Transfer Augmentation By Vortex Generators On Jet Impinging Curved Surfaces”	ARDB	Ongoing Project
“Experimental and numerical investigation into fatigue ratcheting behavior of pressurized piping components”	BRNS	Ongoing Project
“Development of Two Stage Pulse Tube Cryocooler for 20K using linear Compressor”	BRNS	Ongoing Project
“Design and Development of Moving Magnet Type of Linear Compressor for Cryocoolers”	I.I.T. Bombay	Ongoing Project
“Development of a Mixed Refrigerant J-T Type Cryocoolers”	DST	Ongoing Project
“Hybrid Layered Manufacturing – Phase II”	DIT	Ongoing Project
“Lattice Boltzmann Method based simulation for a row of fixed and moving cylinders”	DST	Ongoing Project
“Synthetic jet based cooling for high heat flux electronic components: A novel approach”	DIT	Ongoing Project
“Design and Development of a Process for Nano-Engineered Particles”	DST	Ongoing Project
“Demonstration and assessment of economic viability of new energy efficient and less polluting brick making technology (vertical shaft brick kiln)”	Government of Maharashtra	Ongoing Project
“Level Set Method Based 3D Transient Simulation Of Steam Water Stratified Developing Flow And Conjugate Heat Transfer In A Horizontal Pipe With A Nuclear Fuel Rod”	BRNS	Ongoing Project
“Lattice boltzmann method based simulations for a row of stationary and moving cylinders”	DST	Ongoing Project
“Study of Fluid Dynamics Of Interfaces With And Without Mass Transfer”	BRNS	Ongoing Project
“Numerical Investigation Of Fluid Flow And Heat Transfer Characteristics In Wavy Channels”	IRCC	Ongoing Project
“Study and Development of Technology for Nano-polishing of Single Crystal Semi-spherical Cavity and Fabrication of Micro-metallic Fluidic Structures”	BARC	On going project

Project Title	Sponsoring Agency	Status (New/ Ongoing/ Complete
“Analysis of machined surface quality of Inconel 718 in milling operation”	ARDB	Ongoing project
“Design and Development of Stirling Engine for Net 1.5 kW _e Electrical Output”	MNRE	Ongoing Project
“Identification of Chaos in Slosh and Sliding Mode Control of Slosh using 2DOF Slosh Rig”	ISRO	Ongoing Project
“Development of Micro-Cantilever-based Sensors for the Detection of Vapours of Explosive Chemicals”.	DST	Ongoing Project
‘OrthoCAD Network Centre for Endo-Prosthetic Skeletal Reconstruction Systems’	GOI	On-going
“Study and Optimization of DI Engine performance running on Jatropha bio-diesel blend and straight vegetable oil (SVO)”	VRDE (DRDO)	New Project
“Development of Kerosene based nano fluid for enhancement of internal flow forced convective heat transfer”	ISRO	New Project
“A Level Set Based Cartesian Grid Method For Moving Boundary Computations And Its Application To Bio-Fluid Simulation Of Fish-Like Locomotion”	DST	New Project
“Generation of 3D Microstructures on Metallic Surfaces using Excimer Laser Micromachining”	ISRO	New Project
“Modeling and Development of Novel EDM Variants for Micromachining”	DST	New Project
“Development of High Aspect Ratio Micro-components at High Speeds using Microstereolithography System for 3D Microfabrication”	DST	New Project
“Computational Modeling of Laser-Assisted Mechanical Machining at Micro and Macro Scales”	IRCC	New Project
“Engineered Surfaces for Biomedical Applications”	ISRO	New Project
“Design for Manufacture of ELR Mechanism of Safety Belts, Bond Safety Belt “	IITB	New Project
“Flexible Reconfigurable Fiber Laser Systems for Micro-scale Materials Processing”	DST	New Project

Consultancy Projects

The department undertook 14 jobs generating Rs. 1,74,21,000.

The total number of faculty involved was 8.

Patents

Patent on “Decoupling of approximate horizontal and vertical movement of end effector of robotic arm while

maintaining its orientation using only revolute joints.” Being discussed with IIT-B patent attorney. :
Inventors: Guha, A. G, C. Amarnath, B. Seth and Abhay Kharade

Provisional patent awarded for “Laser-Assisted Mechanical Micro-milling Process and Machine”
Inventors: Singh, R. K., Mukund Kumar and Shreyes N. Melkote

“A method for tracking of planar movement of multiple objects” (1278/MUM/2003) Indian Filing
Inventors: Seth, B. S.

“A mechanical device for harvesting energy from joint movement” (1167/MUM/2008) - jointly Inventors:
Seth, B. S., S. Ahmed.,

Indian Patent No 225128 granted (sealed) on 31 October 2008. “Stirling cooler” (Application No 299/MUM/2006) Dated 02 March 2006
Inventors: Bapat, S. L.

Visitors to the Department

Dr. Rajiv V. Dubey

Professor and Chair, Department of Mechanical Engineering, Director, Center for Assistive and Rehabilitation Robotics Technologies, University of South Florida. He gave a lecture on “Current and Future Research at Center for Assistive and Rehabilitation Robotics Technologies”.

Mr. Manfred Süßer

Cryogenic Engineer, Institut für Technische Physik, Forschungszentrum Karlsruhe, Germany. He delivered a seminar on “Cryogenic temperature measurement”

Dr Suman Chakraborty,

Associate Professor, ME Dept, Indian Institute of Technology - Kharagpur. She delivered a seminar on “Microfluidics and Microscale Transport Processes: Some Challenges, Recent Developments and Open Questions”

Dr. Karali Patra

Study on Different Strategies for Soft Computing-based Drill Wear Monitoring using Multiple Sensors/HIFU based image guided neurosurgery

Dr. Mahesh Kitey,

Post-Doctoral Research Associate, University of Illinois, Urbana-Champaign, IL, USA. He delivered a seminar on “Dynamic fracture in heterogeneous material and multilayer materials system”

Prof. S S Babu

Dept. of Industrial Welding and Systems engg., Ohio University, USA. He delivered a seminar on “Integrated Process Modeling of Joining - Role of Material Model”

Dr. Frank Park

Professor, School of Mechanical and Aerospace Engineering Seoul National University, Korea. He gave a lecture on “Creating Natural Robot Movements”

Dr Paul Unwin,

PhD Managing Director, Stanmore Implants University College London

Extension Activities

Guha, A. G.

Conducted a 5-day CEP course titled “Computer Aided Engineering” along with Prof. Atul Sharma and Prof. P. Seshu

Seth, B. S.

Lecture on “Terrestrial Robots,” in CEP course on Low Cost High Technology Automation (Convenor Prof N Ramakrishnan), August 6, 2008.

Presentation on Knee Prostheses & Energy Harvesting in IITB Collaborative Research Forum on Engineering of Medical and Therapeutic Devices, (Convenor Prof B. Ravi), Feb 18, 2009.

Gandhi, P.S.

“MEMS Design, fabrication and characterization”, May, 08. Convener: P.S. Gandhi.

A lecture on “Micro-Nano Electromechanical Systems”, in the CEP “Nanotechnology for Energy Applications” Dec 08. Convener: N. Manoj.

Conferences/ Symposia/ Workshops/ Seminars (Participated/Papers Presented)

National

Kiran, D. V., Basu, B., Shah, A. K., Mishra, S. and De, A.

Three-dimensional Heat Transfer Modeling of Tandem Submerged Arc Welding Process”(2009), *National Welding Conference (NWS 2009)*, Mumbai, India.

Prabu, B., Gaikwad, S. and De, A.

Three-dimensional Thermo-mechanical Modeling of Friction Stir Welding Process” (2009), *National Welding Conference (NWS 2009)*, Mumbai, India.

Bag, S. and De, A.

Development of A Transport Phenomena Based Numerical Model for GTAW Process Using FEM” (2009), *National Welding Conference (NWS 2009)*, Mumbai, India.

Ahluwalia, Dheeraj., Meena, Ramkesh., Joshi Suhas S.

“Development of Excimer Laser LIGA for 3D Microstructure Fabrication”, *Second International and 23rd AIMTDR Conference*, December 15-17, 2008, held at I.I.T., Madras (India)

Negi, Aditya., Joshi, Suhas S.

“Modeling of Cutting Forces in Micro-end Milling Operation”, *Second International and 23rd AIMTDR Conference*, December 15-17, 2008, held at I.I.T., Madras (India)

Rajinikumar, R., Suesser, M., Narayankhedkar, K.G., Krieg, G., Atrey, M. D.

“Temperature Measurement Using Fiber Bragg Grating Sensors For Superconducting Magnets”, *Twenty-Second National Symposium on Cryogenics (NSC-22)* during December 4-6, 2008, Indian Institute of Science, Bangalore

Tendolkar, M. V., Narayankhedkar, K. G., Atrey., M. D.

“Orientation Studies On Single Stage, Inline, Stirling Type Pulse Tube Refrigerator”, *Twenty- Second National Symposium on Cryogenics (NSC-22)* during December 4-6, 2008 , Indian Institute of Science, Bangalore.

Mehta, Rohit., Bapat, S.L., Atrey, M.D.

“Theoretical Analysis Of A Sorption Based J-T Cryocooler”, *Twenty- Second National Symposium on Cryogenics (NSC-22)* during December 4-6, 2008 , Indian Institute of Science, Bangalore.

Mishra, S., Bapat, S. L., Atrey, M.D.

“Preliminary Experimental Results On Moving-Magnet Compressor”, *Twenty- Second National Symposium on Cryogenics (NSC-22)* during December 4-6, 2008, Indian Institute of Science, Bangalore.

Sarkar, M., Atrey, M. D.

“Experimental Investigations On 80 K Stirling Type Coaxial Pulse Tube Refrigerator”, *Twenty- Second National Symposium on Cryogenics (NSC-22)*, Indian Institute of Science, Bangalore.

“Modeling Of Inertance Tube Pulse Tube Refrigerator Using Electrical Circuit Analogy”, *Twenty- Second National Symposium on Cryogenics (NSC-22)* during December 4-6, 2008, Indian Institute of Science, Bangalore.

Mohanta, L., Atrey, M.D.

“Performance Comparison Of The Pulse Tube Refrigerator Using Straight And Stepped Pulse Tubes”, *Twenty- Second National Symposium on Cryogenics (NSC-22)* during December 4-6, 2008, Indian Institute of Science, Bangalore.

“Phasor Analysis of Pulse Tube Refrigerator Using Cfd Analysis And Isothermal Model”, *Twenty- Second National Symposium on Cryogenics (NSC-22)*, Indian Institute of Science, Bangalore.

Patunkar, P.P., Atrey, M.D

“Theoretical Analysis Of Pulse Tube Cryocooler Using Gas Mixture As Working Fluid”, *Twenty- Second*

National Symposium on Cryogenics (NSC-22) , Indian Institute of Science, Bangalore.

Thaokar, C., Atrey, M.D.

Presented a paper “High Frequency Pulse Tube Refrigerator for 100K” , *Twenty- Second National Symposium on Cryogenics (NSC-22)* during December 4-6, 2008, Indian Institute of Science, Bangalore.

S. Jagan Mohan, Bapat, S. L., Atrey, M. D.

“Performance Analysis Of A Moving Coil, Opposed Piston Linear Compressor”, *Twenty- Second National Symposium on Cryogenics (NSC-22)* , Indian Institute of Science, Bangalore.

Dhuley, R., Atrey, M. D.

Presented a paper “Design Guidelines For A Thermoacoustic Refrigerator” , *Twenty- Second National Symposium on Cryogenics (NSC-22)* during December 4-6, 2008, Indian Institute of Science, Bangalore.

Walimbe, N.S., Narayankhedkar, K. G. , Atrey, M.D.

Presented a paper “Comparison of Mixed Refrigerants Thermodynamic Property Data Predicted at low Temperatures using Aspen With Experimental Results”, *Twenty- Second National Symposium on Cryogenics (NSC-22)* during December 4-6, Indian Institute of Science, Bangalore.

Mehta, S., Naik, H. B., Desai, K. P., Atrey, M.D.

“Theoretical Model for Thermoacoustic Devices”, *Twenty- Second National Symposium on Cryogenics (NSC-22)* during December 4-6, Indian Institute of Science, Bangalore.

Desai, S., Desai, K. P., Naik, H. B., Atrey, M.D.

“Effect Of Flow Straightner On The Performance Of The G-M Type Pulse Tube Cryocooler”, *Twenty-Second National Symposium on Cryogenics (NSC-22)* during December 4-6, Indian Institute of Science, Bangalore.

Karunakaran, K.P., Suryakumar S.

“Arc-Based Hybrid Layered Manufacturing (ArcHLM)”, *Invited Lecture in ELITEX 2008* organized by Department of Information and Communications Technology, January 17-18, 2008, India Habitat Centre, New Delhi.

Deshmukh S.P., Bhole K., and Gandhi P.S.

“Indigenously Developed Microstereolithography System: Design, Analysis and Development” *2nd Bangalore Nano Conference*, 11th– 13th December, 2008, Bangalore.

Gandhi P.S. and Deshmukh S.P.

“A Novel Microstereolithography System: Design, Analysis, and Development,” *International*

Conference on MEMS, 3-5th Jan 2009, IIT Madras, Chennai.

Pendalwar S., Bhandarkar U.V., Prabhu S.V.

“Heat Transfer Augmentation in Internal Flows for Turbulent Flow using Nanofluids ” at the *IISc Centenary- International Conference on Advances in Mechanical Engineering (IC-ICAME)*, held during July 2-4, 2008, at the Indian Institute of Science, Bangalore.

Honkalaskar V.H., Bhandarkar U.V., Date A.W.

“Energy Planning of a Tribal Village by Enabling Local Natural Resources Methods ” at the *National Conference on Energy Security for Rural Development (ESRD 2009)* held on March 26, 2009, at the Rural Energy Center, Gandhigram Rural University, Gandhigram, Dindigul.

Kadav K.V., Bhandarkar U.V., Date A.W.

“Understanding Technology Choice for Power Generation Through Analytical Hierarchy Process (AHP)”, at the *National Conference on Energy Security for Rural Development (ESRD 2009)* held on March 26, 2009, at the Rural Energy Center, Gandhigram Rural University, Gandhigram, Dindigul.

Jain V., Bhandarkar U.V., Biswas B., Pithawa C.K.

“Accurate Estimation of Electromagnetic Parameters using FEA for INDUS-2 RF Cavity” at the *Indian Particle Accelerator Conference 2009 (InPAC09)*, held during February 10-13, 2009 at the Raja Ramanna Center for Advanced Technology, Indore.

Bapat, S. L., Kedare, S. B.

“Stirling engine”, in *National Workshop on Solar Thermal Power Generation* sponsored by Ministry of New and Renewable Energy, Government of India, New Delhi [Organised by Department of Energy Science and Engineering, on April 28, 2008, Indian Institute of Technology, Bombay].

Kedare, S. B., Bapat, S. L.

“Paraboloid Dish for Stirling Engine”, in *National Workshop on Solar Thermal Power Generation* sponsored by Ministry of New and Renewable Energy, Government of India, New Delhi [Organised by Department of Energy Science and Engineering, on April 28, 2008, Indian Institute of Technology, Bombay]

Shendage, D. J., Kedare, S. B., Bapat, S. L.

“Design and Development of Stirling Engine”, Papyrus – Book of Papers, “Energy Day 2009”, on March 21, 2008 (Technical session IA), Department of Energy Science and Engineering, Indian Institute of Technology, Bombay, pp 10-12.

Powle, U. S.

Participated in the *Thirty Fifth National Conference on Fluid Mechanics and Fluid Power*, held during December 11-13, 2008 at PES Institute of Technology, Bangalore.

Ravi, B.,

Presented an invited lead paper “Bridging the Digital Divide in Casting Simulation Technology,” *57th Indian Foundry Congress*, held during February 13-14, 2009 at Kolkata.

International

Joshi S. S.

“Metal Cutting Research in India: Macro to Micro Transition”, *58th CIRP General Assembly*, August 24-30, 2008 held at University of Manchester, UK.

Chaudhari, M., Puranik, B. P., Prabhu, S. V., Agrawal, A.

“Heat Transfer Enhancement with Synthetic Jet Impingement”, *International Conference on Advances in Mechanical Engineering (IC-ICAME)*, Bangalore, July 2008.

Chaudhari, M., Verma, G., Puranik, B., Agrawal, A.

“Near-field Measurements and Cavity Design of Synthetic Jet”, *38th AIAA Fluid Dynamics Conference*, Seattle, USA, paper no. 2008-4068, 2008.

Dabade Uday A., Bhanuprasad V.V., Joshi Suhas S., Ramakrishnan P.

“Effect of Machining on Work Hardening Characteristics of Powder Metallurgy Processed Al/SiCp Metal Matrix Composites”, *International Conference and Trade Exhibition*, PM – 09, February 16-18, 2009, Goa, India

Raghuram, M.G.V.S., Joshi Suhas S.

“Modeling of Material Removal Phenomenon in Magnetic Abrasive Polishing”, *International Association for Computer Methods and Advances in Geomechanics*, 1-6 October 2008, organized by I.I.T. Bombay at Goa, India.

Karunakaran, K.P., Suryakumar S.

“Rapid Manufacturing of Metallic Objects”, Invited Lecture in *3rd International Conference on Advances in Manufacturing Technology (ICAMT 2008) for Young Engineers*, February 6 - 7, 2008, Chennai.

“Rapid Manufacturing of Metallic Objects”, Poster Session in *Second Indo-American Frontiers of Engineering (IAFOE)*, February 29 - March 1, 2008, Irvine (USA).

Karunakaran, K.P.

“Rapid Manufacturing of Metallic Objects”, *Colloquium for Humboldt Fellows and Awardees in the Engineering Sciences in India*, New Delhi, Oct 31 – Nov 2, 2008.

Karunakaran, K.P., Shringi, R., Bernard, A., Shah, M., Arrazola, P.J.

“Process Modeling for Optimization of Complex Machining”, *Proceedings of the 12th CIRP International Conference on Modeling of Machining Operations*, San Sebastian, May 7–8, 2009.

Gandhi P.S. and Duggal A.

“Active Stabilization of Lateral and Rotary Sloss in Cylindrical Tanks”, *Proc. of IEEE international conference on industrial technology*, 10-13 February 2009, Victoria Australia.

Kurode Shailaja, B. Bandyopadhyay and Gandhi P. S.

“Sliding Mode Observer for Sloss-State Estimation in a Moving Container”, *Proc. of IEEE international conference on industrial technology*, 10-13 February 2009, Victoria Australia.

Karande S., Nataraj P.S.V., Gandhi P.S., and Deshpande M.

“Control of Parallel Flexible Five Bar Manipulator using QFT”, *Proc. of IEEE International conference on industrial technology*, 10-13 February 2009, Victoria Australia.

Apte, P., Seth, B., Karhade, O. and Chiluveru, S.

“An Opto-Thermo-Mechanical MEMS Sensor for Direct Thermal Imaging”, *AVS 55th International Symposium and Exhibition*, October 19-24, 2008, Boston, MA, USA

Sharma, A. and Paramane, S. B.

“Computer Aided Flow Visualization of Laminar Vortex Shedding Process behind a Stationary, Rotating and Rotationally Oscillating Circular Cylinder at $Re=100$ ”, *Int. symposium on Fluid Days*, held on Dec. 31 2007 to Jan. 1, 2008, at JNCSAR, Bangalore

Paramane, S. B. and Sharma, A.

“Numerical Investigation of Heat and Fluid Flow across a Rotating Circular Cylinder Dissipating Uniform Heat Flux in 2-D Laminar Flow Regime”, *ICHMT International Symposium on Advances in Computational Heat Transfer*, held on May 11-16, 2008, at Marrakech, Morocco.

Saxena, I., Joshi, S.S., Agrawal, A.

A Study of Fabrication of Micro-filters by Excimer Laser Micro-machining, 8th Asia Pacific Conference on Materials Processing, Guilin-Guangzhou, China, June 15-20, 2008.

Subburaj, K., Ravi, B.,

“3D Shape Reasoning for Identifying Anatomical Landmarks,” *International CAD Conference*, held during June 23-27, 2008 at Orlando, Florida, USA.

Invited Lectures**National****Doshi, J. B.**

“Advances in Coupled Thermal Hydraulics Neutron Kinetics Model for Large Nuclear Reactors”, “BRNS-INS Theme Meeting on Multiphysics Modelling for Current and Future Nuclear Reactors”, BARC, Mumbai-400085, 3-4 November, 2008

Professor S C Bhattacharyya Memorial Lecture, 23-24 August 2008, 24th National Convention of Mechanical Engineers, Institution of Engineers (India), Ranchi, India.

Sridharan, Arunkumar

“Heat Transfer,” *Heat Transfer as part of a CFD course*, organized by VJTI, Matunga, Mumbai, December 30, 2008 and January 1, 2009.

De, A.

“On-line temperature monitoring and thermal modeling of friction stir welding of dissimilar aluminum grades”, *National Workshop on Environmentally Cleaner Welding Process*, Sponsored by Ministry of Environment and Forest, Govt. of India and organized at Annamalai University, Chidambaram, Tamilnadu, INDIA), 17th - 18th April, 2009.

Atrey, M. D.

“Cryocooler Technology at IIT Bombay”, *Workshop on Cryogenics and Low Temperature Physics*, 20-21 March, 2009, Deptt of Physics, Univ of Hyderabad, Hyderabad

“Recent Developments in Cryocooler Technology at IIT Bombay”, *Twenty- Second National Symposium on Cryogenics (NSC-22)* during December 4-6, 2008, Indian Institute of Science, Bangalore -560012

“J.-T Cryocoolers for Thermal Imaging”, *National Seminar on Emerging Technologies of Thermal Imaging*, September 5-6 2008 at Sathyabama University, Chennai.

Karunakaran, K.P., Suryakumar, S.

“Rapid Product Development & Manufacturing”, Keynote speech on “Engineers Day”, Institution of Engineers (India), Mumbai, Sep 12, 2007.

“Arc-Based Hybrid Layered Manufacturing (ArcHLM)”, *ELITEX 2008* organized by Department of Information and Communications Technology, January 17-18, 2008, India Habitat Centre, New Delhi.

“Rapid Manufacturing of Metallic Objects”, in *3rd International Conference on Advances in Manufacturing Technology (ICAMT 2008) for Young Engineers*, February 6 - 7, 2008, Chennai.

Karunakaran, K.P.

“CNC Hardware”, *Computer-Aided Manufacturing*, SVNIT, Surat, June 27, 2008.

“Virtual Machining”, *Computer-Aided Manufacturing*, SVNIT, Surat, June 27, 2008.

“Rapid Product Development”, Keynote speech on *Computer-Aided Engineering*, SVNIT, Surat, June 30, 2008.

Agrawal, A.

“Gas flow in microchannel,” Department of Mechanical Engineering, Indian Institute of Technology, Kanpur, India, February 17, 2009.

Gandhi, P.S.

“Micro-Nano Electro-Mechanical Systems (MEMS and NEMS)”, *FEA Training Event* by Finite to Infinite Ltd., Pune, Aug 08.

Seth, B.

“Hopping Robots,” Motilal Nehru National Institute of Technology, Allahabad, UP, February 20, 2009.

Sharma, Atul

“A Series of Lectures on CFD”, *A Short Term Course on Computational Fluid Dynamics* organized by IIT Bombay Golden Jubilee Extension Center, Gujarat, L. D. Collage of Engineering, Ahmedabad, May 5 -9, 2008.

“CFD: Basic and Application”, *CEP Course on Computational Fluid Dynamics Analysis in Chemical Engineering*, Department of Chemical Engg., IIT Bombay, July 9, 2008.

“A Series of Lectures on CFD”, *AICTE Sponsored Short Term Training Programme on Computational Fluid Dynamics: Basics and Applications*, Sardar Vallabhbhai National Institute of Technology, Surat, July 10, 2008.

“CFD: Basic and Application”, *CEP Course on Rapid Product Development and Rapid Manufacturing*, Department of Mechanical Engg., IIT Bombay, July 23 and October 1, 2008.

“A Series of Lectures on CFD”, *CEP Course on Computational Fluid Dynamics for the industry of the Future*, Mumbai, August 7 and New Delhi, August 8, 2008.

“A Series of Lectures on CFD”, *CEP Course on Computer Aided Engineering*, Department of Mechanical Engg., IIT Bombay, November 17 -21, 2008.

Bapat, S. L.

Key Note address, “Present Energy Scenerio and some innovative ideas”, *National Seminar on Emerging Trends in Mechanical Engineering*, Vallabh Vidyanagar, March 20-21, 2009

Ravi, B.

“Intelligent Design and Simulation of Metal Casting,” VJTI, Mumbai, February 17, 2009.

“Collaborative Innovation: Technologies, Methods and Examples,” *Confederation of Indian Industry*, Mumbai, December 16-17, 2008.

“Made in My India: Collaborative Innovation in Manufacturing and Medical Industry,” *Eureka*, Goa, November 16, 2008.

“Rapid Development of Automotive Castings,” *INAE Frontiers of Engineering Conference*, Chennai, October 24-25, 2008.

“Systems Approach to Rapid Casting Development,” *National Seminar on Aluminum Diecasting*, Aluminum Association of India, Chennai, October 17, 2008.

“e-Foundry: Online Casting Simulation and Design for Manufacturability,” *Conference on Total Engineering*, Analysis and Manufacturing Technologies, Indian Institute of Science, Bangalore, September 22-24, 2008.

International

Joshi, S. S.

“Design and Fabrication of Micro-filters using Excimer Laser Micromachining”, *Fourth India – Japan Joint Seminar on Micro/Nano Manufacturing*, at Symboisis Institute of Technology, Pune, February 12-15 2009.

Karunakaran, K.P.

“Optimization of NC Programs through Geometric Simulation and Process Modeling”, Special Lecture, Escuela Politécnica Superior de Mondragon Unibertsitatea, Spain, on Dec 10, 2008.

“Optimization of NC Programs through Geometric Simulation and Process Modeling”, Special Lecture, University of Basque Country, Spain, on Dec 11, 2008.

“Optimization of NC Programs through Geometric Simulation and Process Modeling”, Special Lecture, Ecole Centrale de Nantes, France on Dec 15, 2008.

“Rapid Manufacturing of Metallic Objects”, Guest Lecture, Ecole Centrale de Nantes, France on Dec 19, 2008.

“Rapid Manufacturing of Metallic Objects”, *National Conference on Advances in Mechanical Engineering (NCAME09)*, Rajiv Gandhi Institute of Technology, Mumbai, January 16, 2009.

Gandhi, P.S.

“A New 2D Focused Laser Spot Scanning System for Microstereolithography: Analysis and Experimental Results” Dept of Mechanical Engineering, University of Queensland, Australia, Feb 16, 09.

“A New 2D Focused Laser Spot Scanning System for Microstereolithography: Analysis and Experimental Results” Dept of Mechanical Engineering, Monash University, Australia, Feb 17, 09.

Ravi, B.

“Orthopaedic Implant Development and Surgery Planning,” Drexel University, Philadelphia, USA, July 2, 2008.

“Computer-aided Tumor Prosthesis Development and Surgery Planning,” University of Illinois, Urbana-Champaign, USA, June 17, 2008.

“Tumor Prosthesis Development and Surgery Planning,” Johns Hopkins University, Baltimore, USA, June 3, 2008.

Significant Awards/ Distinctions**Maiti, S. K.**

Elected as a Fellow of American Society of Mechanical Engineers, December 2008.

De, Amitava

Recipient of K C PANTHAKI award for the best paper on welding of non-ferrous metals for the research paper entitled “Probing Void Formation in FSW of 10 mm Thick Similar and Dissimilar Aluminum Alloys” - B. Prabu and A. De (2008) 1214 - 1220, at the *International Conference on Welding (IIW IC - 2008)*, organized by Indian Institute of Welding (IIW) in association with International Institute of Welding, 8th - 9th January, 2008, Chennai, INDIA.

Recipient of H. D. Govindraj Memorial Award for the Best Research Paper for the paper entitled “Three dimensional heat transfer modeling of laser beam welding using adaptive volumetric heat source and GA based optimization of absorption coefficient” - S. Bag and A. De (2008) 139 - 145, at the *International Conference on Welding (IIW IC - 2008)*, organized by Indian Institute of Welding (IIW) in association with International Institute of Welding, 8th - 9th January’ 2008, Chennai, INDIA.

Joshi S. S.

“Dr. P. K. Patwardhan Technology Development Award of IIT Bombay for Development of Tool-based Micromachining for Development of Micro-components”, IIT Bombay, March 2008

Sarkar, M., Atrey M. D.

Best paper award for “Experimental Investigations on 80 K Stirling Type Coaxial Pulse Tube Refrigerator”, *Twenty- Second National Symposium on Cryogenics (NSC-22)* during December 4-6, Indian Institute of Science, Bangalore

Atrey, M. D.

Awarded Fellowship of Institution of Mechanical Engineering (IMechE), UK, October 2008.

Bhandarkar, U. V.

“Prof A Jaganmohan Award for Professional Development”, Department of Mechanical Engineering, IIT Bombay, March 2008

Bapat S.L.

Member, IIT Indore Cell

Member, Academic Council of IIT Gandhinagar and IIT Indore.

Ravi, B.

Chaired two technical sessions at 57th Indian Foundry Congress, Kolkata, January 13-15, 2009.

Member, Editorial Advisory Board, Journal of Biofabrication and Rapid Prototyping (appointed in 2008).

Honorary Work**Pawaskar, D. N.**

Reviewed papers for The Journal of the Institution of Engineers (India), 2008.

Doshi, J. B.

Serving on the Editorial Board of the Journal, “Nuclear Engineering and Technology” published by the Korean Nuclear Society.

Maiti, S. K.

1. Chaired a Session in ‘All India Seminar on Mapping Excellence towards Global Competitiveness’, 16 October, 2008, Institution of Engineers (India), Mahalaxmi, Mumbai.
2. Member of Selection Committee for Faculty, S P Institute of Technology, Andheri (West), Mumbai, May 2008.
3. Member of Advisory Committee for Selection of CSIR Young Scientist Award, 2008, in Engineering Sciences, CSIR, New Delhi, July 2008.
4. Serving as a Member of the Maharashtra State Level Committee for Clarifying Issues Regarding Autonomy of Govt. and Govt. Aided Engineering Institutes, February 2009 onwards.
5. Reviewed papers –
J. Sound and Vibration (1)
Journal of Mechanics and Physics of Solids (1)
Mechanical Systems and Signal Processing (1)

Puranik, B. P.

Reviewed a journal paper for IEEE Transactions on Components and Packaging Technologies, February 2009.

Sridharan, A. K.

Panel member for selection of candidates for Kishore Vagnyanik Protsahan Yojana (KVPY).

Gandhi, P.S.

Reviewed papers for IEEE Transactions on Control Systems Technology, American Control Conference, Transactions on Education.

De. A. K.

Editorial Board Member of the journal Science & Technology of Welding and Joining, Maney Publishing for Institute of Materials, UK.

Reviewer for the journals Optics and Lasers in Engineering, Scripta Materialia, AWS Welding Journal, Metallurgical and Materials Transactions A & B, ASME J Mfg Sc & Engg, J Heat Transfer, Materials and Design, Journal of Materials Engineering and Performance.

Member of Welding General Selection Committee (MTD11), Bureau of Indian Standards.

Life Member of The Indian Institute of Welding.

Member of IIW-ANB Examiners' Panel for The Indian Institute of Welding.

Joshi, S. S.

Reviewed papers for Transactions of ASME, Journal of Manufacturing Science and Engineering, International Journal of Machine Tools and Manufacture, Materials Science and Engineering A, Machining Science and Technology, Journal of Materials Processing Technology, Journal of Institution of Mechanical Engineers (U.K.), Journal of Engineering Manufacture, Journal of Manufacturing Processes, Computational Materials Science, International Journal of Advanced Manufacturing Technology, International Journal of Precision Engineering and Manufacturing

Serving as Associate Editor of 'Transactions of ASME, Journal of Manufacturing Science and Engineering (2000-2010).

Atrey, M. D.

Reviewed papers for *National Conference on Refrigeration & Air Conditioning*, January 2009.

Reviewed Technical papers for Journals from *The Institution of Engineers (India)*, June 2008.

Evaluated proposal under *Technopreneur Promotion Programme (TePP)*, of DSIR/TIFAC, Delhi, July 2008.

Guha, Anirban

Reviewed papers for Textile Research Journal.

Reviewed paper for The Open Textile Journal.

Reviewed "Kinematics and Dynamics of Machinery"

by Robert L. Norton for McGraw Hill Education.

Reviewed a proposed book on Engineering Drawing for Oxford University Press India.

Agrawal, A.

Reviewed papers for International Journal of Heat and Mass Transfer, International Journal of Heat and Fluid Flow, ASME Journal of Heat Transfer, ASME Journal of Manufacturing Science and Technology, Journal of Geophysical Research, Optics and Lasers in Engineering

Bhandarkar, U.V.

Reviewed papers for ASME Journal of Manufacturing Science and Engineering

Seth, B.

Serving Guest Editor, Issue on: "Neural Networks and Fuzzy Logic for Modelling and Control of Mechatronic Systems", International Journal of Modelling, Identification and Control.

Reviewed one (1) paper for Engineering with Computers, Volume 24, Number 2, June 2008 (Editor: Professor Mark S. Shephard)

Reviewed two (2) papers for 13th National Conference on Mechanisms and Machines (NaCoMM07), IISc, Bangalore, India, December 12-13, 2007.

Sharma, A.

Reviewed papers for ASME Journal of Heat Transfer: 2 Papers (1. July '08 and Jan. '09), Computers and Fluids (April '09) and International Journal Heat and Fluid Flow

Prabhu S.V.

Reviewed papers for International journal of heat and mass transfer, Experimental thermal and fluid sciences, International journal of thermal sciences, Journal of enhanced heat transfer, AIAA Journal of thermophysics and heat transfer.

Bapat S.L.

Reviewer of Sponsored Project Proposals from DST
Reviewed papers for National Conference in Cryogenics

Ravi, B.

Reviewed four Ph.D. Theses (as external examiner) for University of Mumbai, Mumbai; Jadavpur University, Kolkata; Visveshvaraya Technological University, Belgaum; and I.I.T. Kharagpur; and one M.S. Thesis from University of Cape Town, S. Africa (in 2008).

Faculty Members and Their Specializations

1. S. L. Bapat

Multi-layer cryogenic insulation, Stirling cycle miniature cryocoolers & liquifiers. Use of gas mixtures

in Stirling Coolers, Food Freezing, Vapour Absorption Refrigeration System.

2. A. Agarwal

Turbulent flows, Interaction of bluff-body wakes, Flow in microchannels, Experimental and numerical techniques

3. C. Amarnath

Robotics, Synthesis and Analysis of Mechanisms, Computer Aided Design

4. M. D. Atrey

Cryogenics, Refrigeration, Pulse Tube, Stirling Coolers

5. P. G. Awate

Modelling and Optimizing in Flexible Manufacturing Systems, Industrial Scheduling and Knowledge Based Systems, Management of Inventories and Capacities in MRP, JIT and Related Systems

6. A. S. Babu

Modelling and analysis for optimization and simulation of business processes and MRP, JIT, FMS and GT related manufacturing systems; Quality and assurance technology; ERP, Supply chain management; Productivity management and Entrepreneurship

7. U. V. Bhandarkar

Heat Transfer & Thermodynamics, Low Pressure Plasmas

8. M. S. C. Bose

Mechanical Metallurgy, Fatigue and Failure Analysis, Design Engineering, Automobile Engineering

9. A. W. Date

Numeric Fluid Flow and heat transfer, Appropriate Technology

10. P. P. Date

Mechanical Metallurgy, Sheet Metal Forming and Material Testing, Forming Processes and Tools, Materials Testing, Forming Processes and Tools, Materials used in Metal Forming

11. A. De

Welding and other joining processes, Finite Element Method, Numerical Modelling of Manufacturing Processes, CAD/CAM

12. J. B. Doshi

Nuclear Reactor Theory, Nuclear Reactor Safety, Analytical Methods in Engineering

13. P. S. Gandhi

Non-linear Dynamical Systems and Control, Micro Electro Mechanical Systems

14. U. N. Gaitonde

Thermodynamics, Heat Transfer, Thermal Engineering, Cooling of Equipment, Power Plant Engineering

15. A. Guha

Neural Networks in Textiles

16. H. Hirani

Lubrication, Friction, Wearing, Bearing Design, Design Methodology, Bearing Dynamics, Active Magnetic Bearing

17. K. K. Issac

Synthesis of Mechanisms, Dynamics of Machines, Optimal Design of Mechanical Systems, Robotics

18. K. N. Iyer

Nuclear Reactor Safety, Thermal-Hydraulics, Applied Numerical Methods

19. S. D. Jog

Political economy, General Management, Finance, Engineering Basic Practice and Communications

20. S. S. Joshi

Machining of Composite Materials, Computer-aided Modelling Machining and Nanomachining, Surface integrity and mechanical characterization

21. K. P. Karunakaran

CNC, Computer Graphics, Genetic Algorithms, Manufacturing Automation, Rapid Prototyping and Tooling

22. S. Kulkarni

Computational Mechanics

23. D. N. Manik

Vibration, Noise Control and Mechatronics

24. S. K. Maiti

Stress Analysis, Fracture Mechanics, FEM, BEM, Smart Structures, NDT

25. K. G. Narayankhedkar

Refrigeration, Air Conditioning, Cryogenics, Food Preservation

26. S. S. Pande

Intelligent CAD/CAM, Computer Graphics, CNC, Computer Aided Process Planning, Tool Design

27. D. N. Pawaskar

Solid Mechanics, MEMS, Fatigue, Fracture in Solids, Optimization & Design

28. Mrs. U. S. Powle

Fluid Mechanics, Fluid Machinery, Vacuum Engineering

29. S. V. Prabhu

Fire Dynamics, Two phase flow and heat transfer, Flowmetering, Gas turbine blade cooling, Jet Impingement cooling, Vertical Axis Wind Turbines, Heat exchangers

30. B. P. Puranik

Experimental Fluid Mechanics, Gas Dynamics, Thermal Hydraulics

31. N. Ramakrishnan

Low Cost Automation, Computer Integrated Manufacturing, Manufacturing Automation, Tool Engineering, Non-Traditional Manufacturing Processes

32. M. V. Rane

Waste Heat recovery Systems, Absorption Refrigeration System, Heat Pumps, Compact Milk Pasteurizers, Dryers, Energy Conservation, Alternate Energy Resources

33. B. Ravi

Casting design and simulation, Bio-CAD/CAM, Product Lifecycle Engineering.

34. P. Seshu

Stress and Aibration Analysis, FEM, Computer-Aided Simulation, Smart Structures, Active Vibration Control

35. B. Seth

Multi-domain Dynamic System Modelling and Control, Robotics, Energy Regeneration.

36. A. Sharma

Computational Fluid Flow & Heat Transfer

37. A. K. Sridharan

Two Phase Heat Transfer & Fluid Mechanics

38. H. R. Srirangarajan

Non Linear Vibration, Machine Dynamics, Strength of Materials

39. S. Suryanarayanan

Automatic Control, Mechatronics, Wind Energy, Intelligent Transportation Systems, Active Flow Control

40. R. Singh

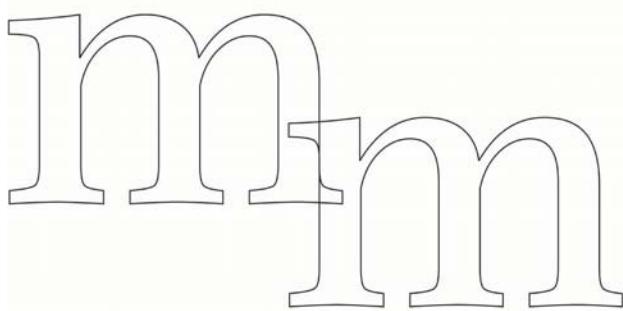
Laser assisted mechanical micromachining, Functional characterization of precision finished surfaces, Development and modeling of precision and hybrid machining processes, Manufacturing of biomedical implants and devices

41. V. G. Ukadgonker

Solid Mechanics, Elasticity, Fracture Mechanics, Computer Aided Solutions, Pressure Vessel Design

42. R. P. Vedula

Convective Heat Transfer for External and Internal Flows



Metallurgical Engineering & Materials Science

Introduction

Materials development has always been the backbone of overall growth of any society. The most obvious examples of this are: steels, ceramic & composite materials for space vehicles; electronic materials for high performance computers; optical fibers for communication technology. In order to fulfill the societal and national needs, the research activities of the Department of Metallurgical Engineering and Materials Science span the whole spectrum of materials such as iron and steel, advanced ceramics, electronic materials and polymers. Semiconductor thin films, magnetic materials, composites, advanced ceramics, polymers and blends, metal forming and joining, physical metallurgy are some of the areas where we have made significant contributions. A new dimension has been added to these activities with research on 'Nanomaterials' and 'Biomaterials'. The department has several projects in all these areas sponsored both by national and international agencies.

The department has a total of 27 faculty members with sufficient support staff to perform teaching and research activities. The department runs both undergraduate (B.Tech.) and postgraduate (M.Tech. and Ph.D.) programs, including a Dual Degree program which gives B.Tech. & M.Tech. degrees after five years. Currently the department has a total of 66 graduate students (M.Tech. & Ph.D.) and 14 research staff working on various projects.

Execution of the research plans requires both personnel and facilities. The department has made considerable progress in acquiring as well as developing state-of-the-art facilities for both materials processing and characterization. Some of the materials processing facilities include

- Multichamber cluster tool unit for Semiconductor thin film processing
 - Electro-slag Refining
 - MOCVD
 - Microcompounder & extraction
 - Plasma spray
 - Tape casting
 - Horizontal continuous casting
 - Pulsed laser deposition
- and some of the materials characterization facilities are

- SEM/EDAX
- XRD with high temperature
- DSC/DTA
- OIM/SEM/XRD (National facility)
- Mechanical Testing systems
- FTIR, UV-Visible, AAS
- Surface area analyzer
- Microscopes
- Magnetic measurements unit and various others.

In addition to these, access to institute facilities such as TEM, E-SEM, FTIR, NMR, ESCA is also available.

During the Golden Jubilee Year, the department took steps to enhance its academic activities – both in teaching and research. To facilitate high quality research, various highly sophisticated tools have been installed and commissioned. One of the most desired equipment, namely, the Rolling Mill, has also been installed.

The Research Scholars Symposium saw a participation of more than 180 research scholars from all over the country.

Academic Programme

The new M.Tech. programme in Steel Technology was successfully launched and the first batch of sponsored students from the Steel Industry have completed their first year at the institute. The department also forms an important part of the new cross- departmental M.Tech. course in Materials, Manufacturing and Modelling – the other departments being Mechanical Engg. & Mathematics. This course will have 25 industry- sponsored candidates and five from the open-category students.

Overall, the department is marching ahead with full vigour achieving excellence in education, research & technology developments.

Degrees Awarded

B.Tech	:	41
Dual Degree	:	28
M.Tech	:	16
Ph.D.	:	13

R & D Activities

The department has been successful in attracting new funds to the extent of Rs.10 crores over the last five years. Additionally, the faculty members are involved in giving consultancy to various industries which concern improvement in industrial processes and production. Technology transfer to the industry in different areas has also taken place over the years.

On the research and development front, the Department has received various research grants from the Government of India funding agencies. Also, more than a dozen global industries visited the department for collaborative research. These include Dow Chemicals, Corning, Bosch, Siemens, Tata Steels, Sterlite,

Applied Materials, among many others. A few visits have culminated in sponsored research such as those from Applied Materials, Corning, Dow Chemicals etc., while a few others are in the pipeline. A number of papers have been published in international and national journals as well as a large number have been presented at various conferences. A few patents have been accepted as well. An amount of Rs. 3,81,00,415/- was received towards sponsored projects.

Sponsored Research Projects

Sponsored Research Projects	: 74
New	: 13
Ongoing	: 47
Completed	: 14
Faculty involved	: 23

Project Title	Sponsoring Agency	Status (New/Ongoing/Completed)
“Development of High Efficiency HIT (Heterojunction with Intrinsic Thin Layer) Solar Cells”.	MNRE	Ongoing
“Confined Crystallization of Polyamide 6 in Multiphase Polymer System involving Carbon Nanotubes”	DST	Ongoing
“Indo-Japan Cooperative Programme (DST-JST)2007-Joint Project entitled “ Multi disciplinary research on micro batteries for Information Technologies”	DST	Ongoing
“SERC FAST Track Scheme - Self Assembled Monolayers of End Functionalized First And Second Generation Dendrimers and Macrocycles Towards Ion Recognition”	DST	Ongoing
“Upgradation of The Existing 2-D Dynamic Thermo-Chemical Model Developed by IIT Bombay”.	NML	Ongoing
“Development of Barium Titanate Based Ferroelectric Material For Micro-Electronic Applications : Phase –II”	DRDO	Ongoing
“Smart Materials: Development of High Temperature Shape Memory Alloys For Environmentally -Friendly Aero-Engines”.	UKIERI	Ongoing
“Develop, Study Performance and Ageing Characteristics for Solid Oxide Fuel Cell Based On LSCF (La _{0.6} Sr _{0.4} Co _{0.8} Fe _{0.2} O ₃) Composite Cathode, LSGM”	NMRL	Ongoing
National Seminar on “25th Annual Meeting of the Polymer Processing Society Held During March 01-05, 2009”	DST	Ongoing

Project Title	Sponsoring Agency	Status (New/ Ongoing/ Complete
“Inorganic-Organic Hybrid Coatings”	Dow Chemical	Ongoing
“Nano-technology for Enhanced Utilisation of Native - Phosphorous by Plants and Higher Moisture Retention in Arid soils”.	ICAR	Ongoing
“Drag Reduction using Water -Soluble Polymer”	Dow Chemical	Ongoing
“Development and Study of Nonconventional -inorganic Coatings and Snap Coatings Based on Nanoparticles and Rare Earth for Corrosion Protection	Naval Research Board	Ongoing
“Role of Flyash in Minimizing Corrosion in Reinforced Concrete Structure”.	Min. of Water Resources	Ongoing
“Recrystallization Modeling in Steel: A Phase Field Approach”	Tata Steel	Ongoing
“A National Facility for Texture and Orientation Imaging Microscopy”	DST	Closed
“Gold Plating on Aluminium Alloy 2024 and Magnesium alloy AZ 31 B for Space Applications”.	ISRO	Closed
“Development of Polypropylene Composites for Electronic Packaging Applications”.	Reliance Ind. Ltd.,	Closed

Consultancy Projects

The department undertook 80 jobs generating Rs. 48,64,367/-. The total number of faculty involved was nine.

Extension Activities

Conferences

Khanna, A.S.

International Symposium on Surface protective Coatings, Feb. 25-28, 2009, Cidade de Goa,

Short-term courses

Khanna, A.S.

A short course on Paint Coatings, inspection & Quality Control, through SSPC, Acre's Club, Chembur Bombay

CEP courses

Malhotra, S.N.

Course on “Paints, Coatings, Inspection and Quality Control” was conducted during August 25-29, 2008. The course was well attended. Thirty candidates (including 14 from ONGC) participated in the course.

Visitors to Department

Prof. Peter Hodgson,

Deakin University, Australia, delivered a talk on “Nanostructural Engineering and Microstructure Characterisation of Modern High Strength Steels”.

Prof. A.L. Greer,

Head, Dept. of Materials Sci. & Metallurgy, University of Cambridge, delivered a talk on “Metallic Glasses – a New Era for Control of Properties in Alloys”

Prof. J.H. Driver,

Ecole de Mines, St. Etienne, France, delivered a lecture titled “Boundary Mobilities During Recovery of Binary Al-Mn Alloys”

Dr. Petra Pötschke,

Sven Pegel, Leibniz Institute of Polymer Research Dresden, Dresden, Germany, delivered a talk on “Use of Multiwalled Carbon Nanotubes Predispersed in Polyethylene for Incorporation of Nanotubes into Thermoplastic Polymers”.

Prof. Dr. Ing. Wolfgang Bleck,

Aachen University, delivered a talk on “The Search for the Optimum Steels”

Conferences/ Symposia/ Workshops/ Seminars (Participated/Papers Presented)

National

Bhargava, P.

Participated in the *National Conference on High performance Materials by Powder Metallurgy for Automotive and Engineering Industry and the 35th Annual technical Meeting of the PMAI*, held on February 16 – 18th 2009, at Panjim, Goa.

Participated in the *Third National Conference on Frontiers in Engineering* October 24-25, 2008, Chennai

Subasa C. Sahoo, Bohra, M. Shiva Prasad, Venkataramani, N. Misra, D. S. Krishnan, R.

“Growth of Cobalt Ferrite Thin Film by Pulsed Laser Ablation” *Digests of SSP Symposium DAE*, Dec. 2008.

International

Tiwari, A.N.

“Preparation and Properties of MA SiC_p-Al Alloy Matrix Composites” by Amit Kumar and A.N. Tiwari, *International Conf. on High Performance Materials by Powder Metallurgy for Automotive and engineering Industry and 35th ATM of PMAI (PM-09)* held during Feb. 16-18, 2009 at Panjim, Goa.

Bobby Kannan M. Raja V.S.

“Enhancing Stress Corrosion Cracking Resistance in Al-Zn-Mg-Cu Alloy through Inhibiting Recrystallization”, *17th European Conference on Fracture*, Brno, Czech Republic, September 2-5, 2008.

Winzer, N.; Atrens, A.; Dietzel, W.; . Raja V.S.; Song, G.; Kainer, K.U.

“A Mechanistic Understanding of Stress Corrosion Cracking of Mg-Al alloys”, *17th European Conference on Fracture*, Brno, Czech Republic, September 2-5, 2008.

Shirish Bali, C.; Raja, V.S. ; Kain, V.

“Effect of low temperature sensitization on igscc behaviour of type 304l and type 304ln ss in oxygenated high temperature water”, *Proc. 17th international corrosion congress*, Oct 6-8, 2008, Las Vegas, USA, Paper No. 2911, pp1-13

Saravanan, P.; Raja, V.S.

“Corrosion Behavior of Plasma Immersion Nitrogen ion Implanted Mn Containing Austenitic Stainless Steel”, *Proc. 17th International Corrosion Congress*, Oct 6-8, 2008, Las Vegas, USA, Paper No. 3099, pp 1-

“Effect of Molybdenum on Phase Formation and Corrosion Behavior of Plasma Immersion Nitrogen Ion Implanted Austenitic Stainless Steel” Gordon, *Conference: Corrosion – Aqueous*, July 20- 25, 2008, NH, United States

“Synthesis and consolidation of yttria stabilized zirconia (YSZ) nanocrystalline powders,” at the *2nd Bangalore Nano International Conference*, December 11th – 13th, 2008, Bangalore.

Khanna, A. S.

Dual Fusion Bond Epoxy Coatings for Rebars in Concrete Structures”, *6th International Conference on Surface and Protective Coating (SSPC 2009)*, Feb. 25-28, 2009, Cidade – de – Goa, p 66-77

Pipeline Integrity – Control by Coatings *6th International Conference on Surface and Protective Coating (SSPC 2009)*, Feb. 25-28, 2009, Cidade – de – Goa, p 104-110 and *Second Canada-India Workshop on Integrity Management Plan*, September 25-26, 2008, Calgary, Alberta, Canada.

Pipeline Integrity – Through Cathodic Protection”, *Second Canada-India Workshop on Integrity Management Plan*, September 25-26, 2008, Calgary, Alberta, Canada.

Invited Lectures

National

Dusane, R.O.

“Hot Wire Chemical Vapor Deposition: a Versatile Tool With Great Potential for Next Generation Thin Film PV,” *18 International Photovoltaic Science and Engineering Conference*, Jan 2009

Prabhu, N.

“Introduction to Metallurgy and Materials Science” in *Three-day Technical Program on Metallurgy for Practicing Non-Metallurgists*, organized by Indian Institute of Metals, Mumbai Chapter, September 25-27, 2008.

“Metallurgy to Materials Science and Engineering” in *Three-day short course on Introduction to Metallurgy*, organized by Indian Institute of Metals, Mumbai Chapter, July 31-August 2, 2008.

Venkataramani, N.

“Studies on rf Sputtered and Pulsed Laser Ablated Nanocrystalline Ferrite Thin Films”, *National Conference on Spintronic and Magnetoelectronic Materials and Devices (NCSMMD)* during January 8 -10, 2009 at Toshali Sands, Puri, Orissa, India.

Bhargava, P.

“Particulate Materials Processing and applications”, *Workshop on New Horizons in Engineering Materials*, D J Sanghvi College of Engineering, Vile Parle, Mumbai, June 2008.

“The Missing Links in Science, Technology, Engineering and Product Development: A Materials Perspective,” *Third National Frontiers of Engineering*, Organized by Indian National Academy of Engineering (INAE) and IIT Madras, Chennai, October 2008.

Raja V.S

“Corrosion Control in Ships”, *Transtech 2009*, Tolani Maritime Institute, March 20, 2009.(keynote talk)

“Corrosion Research in Materials Development”, National Institute of Technology Karanataka, Surathkal, March 13, 2009.

“Corrosion Research: Understanding the Role of Microstructures”, *3rd Roundtable on Indo-US Perspectives in Science and Technology*, National Institute of Advanced Studies, Organised by ONR Global, IISc and NIAS, March 4-5, 2009.

“Corrosion Control Through Materials Selection”, Periyar Maniammai University, Vallam, Thanjavur, Feb. 10, 2009.

“Teaching and Research- A personal experience”, *Oriental program for College Teachers*, organized by SVN College, Madurai, Feb.10-13, 2009.

“Essence of Corrosion and its Control: from Laboratory to Industry”, *8th Int. Oil & Gas Conference (PetroTech-2009)*, New Delhi, India 11-15 January 2009- (Distinguished Speaker)

Om Prakash

“Superconductivity: Basics and Applications,” in *Materials Camp for Mumbai Junior College Students* (for Promotion of Sciences), Mumbai, 13th April 2008.

Khanna, A.S.

“Surface Engineering & role of Thermal Spray”, Key-note Lecture, *WTS – 2009*, April 23-24, IIT Bombay

“Innovation in Corrosion Management and Case Studies”, *1st Corrosion Management Summit*, Nov. 11-12, 2008, Intercontinental hotel, Mumbai

Bahadur, D.

“Shaping and Functionalization of Magnetic Nanoparticles for Energy Applications,” *Joint India-US Workshop on Scalable Nanomaterials for Enhanced Energy Transport*, Conversion and Efficiency at JNCASR, Bangalore on 19th -21st August 2008.

“Smart Magnetic Particulars for Multifunctional Bio Applications” *Seminar on Nanotechnology* at Fr. Conceicao Rodrigues College of Engineering, Mumbai, 11-12th Sept, 2008.

“Self Organization and Shape Forming of ZnO Nano Crystals”, *JNC Research Conference on Chemistry of Materials* held at Alleppey, Kerala, 27-29th Sept. 2008.

“Shape Forming, Photomagnetic and Magnetic Hyperthermia Studies of Ferrite Nanoparticles Synthesized through SHS Process”, *Indo-Russian Workshop on SHS* held at Material Research Centre, Indian Institute of Science, Bangalore, India, 27-29th Nov’2008.

“On Targeted Drug Release and Hyperthermia Through Nanostructured Magnetic Materials,” *2nd Bangalore Nano 2008 Conference* during 11th to 13th December 2008 at Ashoka Hotel Bangalore.

“Magnetic Nanoparticles for Diagnostic and Related Applications” at *National Workshop on Nanosensors and Devices* held at IIT Delhi, on 22-23rd Dec 2008.

“Multifunctional Magnetic Nanoparticulates for Cancer Therapy” at *Workshop on Magnetic Nanomaterials and their Applications (MNTA-2009)* held at S. N. Bose National Centre for Basic Sciences, Kolkata on 27th-28th January 2009.

“On some Bio Medical Applications of Nanohybrids” at *Symposium on Nanomaterials and their Applications (SNMA 2009)* held at Fergusson College, Pune, on 5th-6th March, 2009.

International**Bahadur, D.**

“Self-Assembled Layered Nano Materials,” *International Conference on Material Science-2008(ICMC-08)* held at BARC, Mumbai 400085, on 2-6 December 2008.

“Layered Nano Materials: Some New Directions”, *International conference on Molecules and Materials: New Directions* during 4-6 December 2008 at JNCASR, Bangalore.

“Targeted Drug Delivery and Hyperthermia For Cancer Therapy Using Magnetic Nanoparticulates”, *International Conference on Recent Trends in Nanostructured Materials and their Application (ICRNM-2008)* held at Dept. of Physics, Osmania University, and Hyderabad on 19-20th Dec. 2008.

“Self Assembled, Anisotropic Structures and Optical Properties of ZnO Nano Crystals,” *International Conference on Transport & Optical Properties of Nanomaterials* held at University of Allahabad on January 5-8, 2009.

“Simultaneous Heat And Chemotherapy for Cancer Using Nano Structured Magnetic Materials,” the *Second Iran-India Joint Conference on Nanotechnology*, Isfahan, Iran, 5-7 May, 2009

“Nanostructured Ceramics For Biological Applications,” *Workshop on Instrumental Analysis and Imaging Nanosized Materials as Part of Second Iran-India Joint Conference on Nanotechnology*, Isfahan, Iran, 5-7 May, 2009

“Recent Trends In Multifunctional Magnetic Nanoparticulates for Biomedical Applications”, *International Seminar & Workshop on Medical and Pharmaceutical Nanotechnology: Latest Developments, Practical Considerations and Applications* held at Triuchirappali, Tamil Nadu, on 25-26th Sept. 2008.

Significant Awards/ Distinctions

Bhargava, P.

“Excellence in Teaching Award, IIT Bombay,” IIT Bombay, September 2008.

Raja, V.S.

Excellence in Teaching Award, IIT Bombay

Bahadur, D.

Awarded life time achievement award in 41st Annual function of SWAJAN for the research work related to cancer therapy using nano structured magnetic materials, Mumbai, 2008.

Bhargava, P.

Member, Editorial Board, Journal of Materials Engineering Innovation

Member, Editorial Board, Transactions of Indian ceramic Society

Raja, V.S.

Member Editorial Board,, *Recent Patents on Corrosion Science*, Bentham Open.

Student Award

S.T. Vagge

Best PhD thesis award by NACE International India Section for the thesis “Effect of Strontium on electrochemical corrosion behavior of galvanized coating in the deformed and un-deformed conditions”, 2008 guided by Prof. V.S. Raja.

Ajit Bhaskar Bhandakkar

Best M.Tech. thesis award in Corrosion Science titled “Processing and Corrosion Studies of Metal Matrix and Polymer Matrix Composites” under supervision of Prof. R.C. Prasad sponsored by Oil and National Gas Corporation Ltd., in recognition of meritorious contribution to the field of Corrosion Science and Technol-

ogy. The award was presented in the NACE International Gateway India Section as a Corrosion Awareness Award 2007-08.

Honorary Work

Dusane R.O.

Was a member of INDO-CANADIAN Bilateral programme in Nano-Science and Nanotechnology. Delivered talks at Waterloo, Alberata and Montreal Universities.

Reviewer: Jour. Non –Crystalline Solids, Thin Solid Films, Applied Surface Science

Editorial Board: The Open Surface Science Journal.

JEE Special vigilance duty

Member, Institute Stationery Committee

Coordinator, Program committee for M.Tech. in Materials Manufacturing and Modeling

Bhargava, P.

Reviewed papers for Transactions of the Indian Ceramic Society, Advances in Applied Ceramics

Member National Organizing Committee, National Symposium on Science and Technology of Glass and Glass Ceramics (NSGC-08), Mumbai, October 2008

Mishra, S.

Reviewed papers for the journal - Science and Technology of Welding and Joining, December 2008.

Om Prakash

Continued to act as a Referee for Indian Journal of Engineering and Materials Science.

Khanna, A.S.

Member Editorial Board –

Indian Journal of Chemical Technology, NISCAIR, New Delhi.

Ship Technology, Institution of Naval Architecture
Materials Chemistry & Physics, Elsevier Publication
Journal of Surface Coatings & Technology

Raja V.S

As Panel Member for International Corrosion Education 17th International Corrosion Congress, Las Vegas, Nevada, United States, October 06-10, 2008

Bahadur, D.

Invited member of project Advisory committee of DST on Materials, Mining and Mineral Engineering

Invited member of DAE XI plan committee on specialist group on materials science & technology

Invited member of the Council of Mater. Res. Society of India, 2008-2011.

Invited member of the editorial advisory board of the Bull. of Mater. Sci.

Invited member of editorial board of "ICFAI University Journal of Nanotechnology"

Faculty Members and their Specialization

1. D. Bahadur

Magnetic materials, Electronic ceramics, Glass ceramics, Bioceramics.

2. N.B. Ballal

Process Analysis, Iron & steel making, Process modeling, Heat & mass transfer.

3. Bhargava P

Near Net Shape forming of ceramics, Ceramic foams, Gel casting, Rheology of suspensions, Industrial ceramics.

4. Arup R. Bhattacharyya

Polymer blends, carbon nano-tubes, polymer composites

5. R.O. Dusane

Thin film elemental semi-conductors and alloy systems processing and characterization, Thin film photo voltaic and opto-electronic devices, Nano-Engineering of thin films and surfaces.

6. P. Gopalan

Magnetoresistor materials, High temperature fast-ion conducting phases, Materials in energy storage.

7. B.P. Kashyap

Deformation behaviour and microstructural evolution in materials during creep and superplasticity.

8. N.K. Khosla

Instrumentation and control, Mineral processing, Extractive metallurgy, Materials preparation and characterization.

9. A.R. Kulkarni

Ionically conducting materials, Dielectrics & multilayers, Glass and Glass ceramics, Impedance spectroscopy, Electrical composites.

10. A.S. Khanna

High temperature corrosion, High temperature coatings, Paint coatings, Rebar & concrete coatings, Oil & gas corrosion.

11. S.N. Malhotra

Thermodynamics, Corrosion of metals and alloys, Corrosion/erosion related failures, Paint and electrodeposited coatings, electro-metallurgy.

12. Mishra Saurabh

Computational materials science, Transport phenomena, Welding, Grain growth, Optimization.

13. K. Narasimhan

Metal forming, Mechanical behaviour, Simulation and validation.

14. N. Prabhu

Physical metallurgy, Phase transformation, Electron microscopy, Structure-property relationships.

15. G.V. Prabhugaonkar

Design and selection of materials, Fracture mechanics, Non-destructive testing and evaluation, Corrosion prevention, nano-composites.

16. Om Prakash

Electronic ceramics and laves alloys design, Processing and characterization.

17. R.C. Prasad

Fatigue, Fracture, Failure analysis of materials, Environment assisted corrosion, NDE, fracture mechanics & integrity assessment.

18. T.R.S. Prasanna

Synthesis and Processing of Oxide and Sodium Ion Conductors, Materials for energy generation and storage, Superconductors.

19. Prita Pant

Mechanical behaviour of thin films, Dislocation dynamics simulations. Modelling and experiments to study novel shape memory materials.

20. I. Samajdar

Thermomechanical Processing, Texture Analysis, Microscopy.

21. R.S. Srinivasa

Semiconductor heterostructures and devices, Sensors, Surface engineering, Chemical vapour deposition.

22. R. Raman

Welding, Plasma Spray Coating, Corrosion, Metal Finishing, Fractal approach to Metallurgical & Corrosion processes.

23. Raja V.S.

Aqueous corrosion, Failure analysis, Protective coatings, Metallurgy of corrosion.

24. A.N. Tiwari

Composite materials, Mechanical alloying, Wear, Heat treatment.

25. S. Vitta

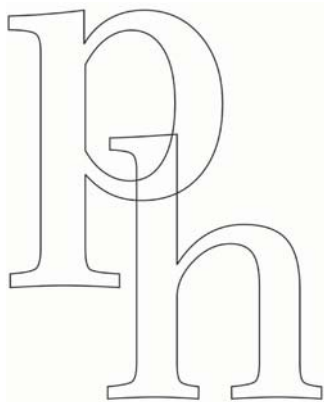
Solidification, Artificial structures, Superconductors, Structure Property Correlation

26. N.N. Viswanathan

Modelling and simulation, Transport phenomena, Process metallurgy and iron and steelmaking.

27. N. Venkataramani

Magnetic materials, Thin films structure property correlations in nanocrystalline systems, Scanning probe microscopy.



Physics

Introduction

The department offers a 4-year B.Tech. programme in Engineering Physics and a 2-year M.Sc. programme in Physics. From the academic session 2005-2006, the department has also started two new dual degree programmes, namely, B.Tech.-M.Tech. in Engineering Physics and M.Sc.-Ph.D. in Physics. The department also offers an active and sought-after Ph.D. programme, in which over 50 research students are currently enrolled. The department has about thirty active faculty members and a large number of research associates who undertake cutting edge research on various active fields in physics from Nano Sciences to

High Energy Particle Physics. It also has state-of-the-art laboratory facilities to support the research work in the fields.

Degrees awarded:

B.Tech.	:	25
M.Sc.	:	19
Ph.D.	:	09

Dual Degree:

M.Sc.	:	07
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R& D Activities

List of Sponsored Projects :

Title	Sponsoring Agency	Status
Synthesis and Property Optimization of Specific Advanced Magnetic Materials	(GEITC, Bangalore)	Ongoing
Investigation of the Role of Defects in Giving Rise to Ferromagnetism in GaN and ZnO Based Dilute Magnetic Semiconductors	DST	Ongoing
Novel Magnetic Ground States of Low-dimensional Systems	IFCPAR	Ongoing
NMR Study of Spin-liquid States in Novel Magnetic Systems	DST	Ongoing
Recrystallization Modeling in Steel: A Phase Field Approach	Tata Steel Ltd., Jamshedpur.	Ongoing
Design and Development of a Mode-locked Fiber Laser	CSIR	Completed
Study of Laser Action in Photonic Crystals	BRNS	Ongoing
“Tunable and Multi Wavelength Fibre Laser for Fibre Optic Applications”	DIT	New

Title	Sponsoring Agency	Status
Some Studies in Spin Dependent EP and PP Scattering Processes at High Energies	BRNS	Ongoing
Quantum Chromodynamics : Structure of the Hadron	DST Fasttrack	Ongoing
Project on the Fabrication Tailoring of Materials for Photonics Application with Ultrafast Lasers	Principal scientific advisor to Prime Minister	New
Quiver Gauge Theories from Dimer Model Approach.	Research Paper Award Scheme, IRCC, IIT Bombay.	Ongoing
Statics and Dynamics of Low Dimensional Disordered Systems.	Indo-French center for promotion of advanced research.	Ongoing

Conferences (Participated/ Papers Presented)

National

Ghosh Aditi ; Nair Viswas; Venkitesh Deepa and Vijaya, R.

“Actively Mode-locked Erbium-doped Fiber Laser at 10 GHz”, *National Laser Symposium (NLS-2008)*, New Delhi, Jan 7-10, 2009

Kedia Sunita; Vijaya, R. ; Ray, A.K.; and Sinha Sucharita ,

“Effect of photonic stop band on the emission of Rhodamine dye”, *National Laser Symposium (NLS-2008)*, New Delhi, Jan 7-10, 2009 (Selected for the Best Poster award by Indian Laser Association)

Venkitesh Deepa

“Demonstration of a broadband source based on a filter-less fiber laser”, *National Laser Symposium (NLS-2008)*, New Delhi, Jan 7-10, 2009 (Selected for the Best Thesis award by Indian Laser Association)

International

Mukhopadhyay, G

“Scattering of EM Waves by Small Magnetic particles” by Gautam Mukhopadhyay G and Shruti Puri at the *Particles 2008, Particles Synthesis, Characterization, and Particle-Based Advanced Materials*, 10-13 May, '08, Orlando, Florida, USA.

Poster on “Magnetic Nanoparticles in a Colloidal Fluid” by Saurabh Sharma, Gautam Mukhopadhyay and Pragati Mukhopadhyay at the *Particles 2008, Particles Synthesis, Characterization, and Particle-Based Advanced Materials*, 10-13 May, '08, Orlando, Florida, USA.

Paper (oral) on “Magnetic Nanoparticles of Ellipsoidal Shape in Colloids” by Gautam Mukhopadhyay, Shruti Puri and Saurabh Sharma at the *82nd Colloid & Surface Science Symposium*, 15-18 June, '08, NC State University, Raleigh, NC, USA.

Poster on “Scattering of Electromagnetic Waves by small Magnetic Ellipsoidal Particles” by Shruti Puri S and Gautam Mukhopadhyay at *SPIE Conference on Plasmonics : Metallic Nanostructures and their Optical Properties VI*, 10-13 August '08, San Diego, CA, USA.

Vijaya, R.

“Multiple Bragg diffraction in polymeric photonic crystals” by Rajesh V.Nair and R. Vijaya, *PHOTONICS 2008*, Abstract p.no.85, New Delhi, Dec. 14-17, 2008,

“Solvent Effect on Polarizability and First Hyperpolarizability in Para-nitro Aniline” by Diksha Makwani and R.Vijaya, *PHOTONICS 2008*, Abstract p.no.247 New Delhi, Dec. 14-17, 2008.

“Broadband Output from An Actively Mode-locked Fiber Ring Laser” by Deepa Venkitesh, Aditi Ghosh and R. Vijaya, *PHOTONICS 2008*, Abstract p.no.280, New Delhi, Dec. 14-17, 2008. (Selected for the Outstanding student paper presentation by IEEE-LEOS; certificate of excellence and Cash Prize)

“Study of Brillouin Amplifier Characteristics Towards Optimized Conditions for Slow Light Generation” by Aditi Ghosh, Deepa Venkitesh and R. Vijaya, *PHOTONICS 2008*, (selected for Best Student presentation), Abstract p.no.188, New Delhi, Dec. 14-17, 2008.

“Infiltrated and Inverted Photonic Crystals with High index contrast” by Sunita Kedia and R. Vijaya,

PHOTONICS 2008, Abstract p.no.145, New Delhi, Dec. 14-17, 2008.

Mukherjee, A.

“Chiral Odd GPDs in Transverse and Longitudinal Position Spaces” at *18th International Spin Physics Symposium (Spin 08)*, University of Virginia, Charlottesville, USA, October 6-11 (2008).

Invited Lectures

National

Dhar, S.

“GaN:Gd: opportunities for application in spintronics, and optoelectronics”, *DRDO Golden Jubilee Seminar on Emerging Technology Gallium Nitride: Epitaxial Growth, Characterization and Device Applications*, GAETEC, Hyderabad, 13th June 2008

Dhar, S.; Toshali Sands, Puri

“Origin of colossal magnetic moment in Gd doped GaN”, *Homi Bhabha Centenary DAE-BRNS National Conference on Spintronic and Magnetoelectronic Materials and Devices*, from 8th to 10 January, 2009

Ramadevi, P.

“Dimer Models and Quiver Gauge Theories.”, *Indian Strings Meeting ISM08*, Pondicherry, December 2008

Yajnik, U.

“Does Supersymmetry Breaking Determine Parity Breaking? - A Cosmological Perspective”, at *IMSc Chennai*, October 29, 2008

“Two themes in topological stability”, *Theoretical Physics Seminar Circuit*, at *IMSc Chennai*, February 25, 2009 and *CHEP, IISc Bangalore*, March 02, 2009

Vijaya, R

Talk on “Polymer Nanophotonics” at the *National Seminar on Photonic Polymers: Materials, Devices and Applications*, Apr. 3-4, 2008, *BITS-Pilani*

Lectures on “Third-order Nonlinear Optics and Introduction to Nanophotonics”, at the *Workshop on Photonics*, *IIT Bombay, Mumbai*, 26-30 Aug. 2008

“Introduction to Lasers I and II”, *SPIE Student Chapter*, *ISP, CUSAT, Cochin*, Sept. 6, 2008,

Venkitesh Deepa and Vijaya, R.

“Design of A Filter-less Tunable Fiber Laser”, *Indo-UK Workshop*, Sept 2-5, 2008, *International School of Photonics*, *CUSAT, Cochin*

“Functionalized Photonic Crystals”, *PHOTONICS 2008*, New Delhi, Dec. 14-17, 2008

“Nanophotonics A Promising Approach for Optical Integrated Circuits”, *Pan-IIT Research Symposium (PIRS 2008)*, Chennai, Dec. 19-20, 2008

“Filter-less Tunable Fiber Lasers”, *National Laser Symposium*, New Delhi, Jan 7-10, 2009

International

Mukherjee, A.

“Spectral Analysis of Gluonic Pole Matrix Elements”, *Theory Seminar at Jefferson Lab*, Newport News, USA, June 2008

“Gluonic Pole Matrix Elements”, *Nuclear Theory Seminar* at Brookhaven National Laboratory, Upton, New York, USA, June 2008.

“Spectral Analysis of Gluonic Pole Contributions for Fragmentation”, at *Transversity 2008*, Ferrara, Italy, May 2008.

Ramadevi, P.

“Chern- Simons Field Theory Invariants and Topological Strings”, *CERN*, Geneva

Yajnik, U.

“Cosmology with Spontaneously Violated Parity at Low Scale”, at *International Workshop on Parity and CP Symmetries*, *AS-ICTP Trieste, Italy*, July 4-9, 2008

Vijaya, R.

“SPIE Visiting Lecture on “The fascinating world of Lasers”, *Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences*, Nov.23 (2008)

Mukhopadhyay, G.

“Scattering and Absorption of EM Radiation by coated Ellipsoidal Nanoparticles,” at *CNSI (California NanoSystems institute) Seminar Series*, on 3rd June, '08, *CNSI, UCLA, LA, USA*.

Visitors to the Department

Prof. Klaus Ziegler,

Institute of Physics, University of Augsburg, Germany, delivered a seminar on “Disorder Physics in atomic mixtures” on April 8, 2008

Dr. Punit Parmananda,

Morelos State University, Mexico, visited the department and delivered a seminar on “Chaotic Synchronization: Simulations & Experiments” on April 23, 2008

Dr. Amit Apte,

TIFR, Bangalore, delivered a seminar on “Lagrangian data assimilation and model error” on May 7, 2008

Prof. David Tong,

Univ. of Cambridge, UK, visited the department and delivered a seminar on “From Quarks to Quantum Gravity” on July 30, 2008

Dr. Divya Sharma,

Strasbourg, France, gave a talk on “Probing Protein Fluorescence Dynamics through Ultrafast Spectroscopy” on August 1, 2008

Dr. A. Thamizhavel,

TIFR, Mumbai, visited the department and delivered a seminar on “Crystal growth of rare-earth intermetallic compounds” on September 17, 2008

Dr. G. Venkateswara Pai,

Technion, Israel, delivered a seminar on “Magnetic Phases of Overdoped Manganites” on October 1, 2008

Dr. Prashant Gade,

Pune University, delivered a seminar on “Persistence in spatially extended dynamical systems” on October 15, 2008

Prof. J. Maharana,

IOP, Bhubaneswar, delivered a seminar on “String Cosmology” on September 18, 2008

Dr. Ramdas Ram – Mohan,

Dept. of Physics, Worcester, delivered a seminar on “Designing Magnetic Sensors with Enhanced Geometric Magneto-resistance” on November 5, 2008

Dr. Samindranath Mitra,

Asst. Director, Physical Review Letters, visited the department and gave a talk on “50 years of PRL – moving Physics Forward” on November 11, 2008

Prof. Ravinder K. Jain,

Univ. of New Mexico, visited the department and gave a talk on “Advance in Materials & fiber for High Power Mid IR fiber lasers” on January 1, 2009

Dr. Anupam Singh,

Univ. of California, visited the department and gave a talk on “Applications of Field Theory to problems in Phase transitions” on December 18, 2008

Prof. C.G. Kim,

Dept. of Materials Engg., National University, South Korea, visited the department on January 9, 2009

Dr. Uday Khankhoje, California Inst. of Technology, USA, visited the department and delivered a seminar on “Semiconductor Cavity Quantum Electrodynamics” on February 9, 2009

Dr. S.M. Yusuf, BARC, Mumbai, gave a talk on “Magnetic ordering in low dimensional spin systems” on March 18, 2009

Workshop

A five-day workshop from 26-30 August, 2008 on “Photonics”, sponsored by Education and Outreach grant from SPIE, USA and the Department of Science and Technology, Govt. of India, was organised by the department. Prof. R. Vijaya was the co-ordinator.

Workshop on “High Energy Physics” sponsored by DST, New Delhi was organised during 9-28 February, 2009. The workshop was co-ordinated by Prof. B. K. Nandi.

Workshop on “Advanced Magnetic Materials and Application” sponsored by Indo-US Science & Technology Forum (IUSSTF) was organised during 1-4 March, 2009 and was co-ordinated by Prof. K.G. Suresh

Significant awards and distinctions**Sain, A.**

BUTY foundation award from Indian Physics Association for work on “Soft Condensed Matter Physics Involving Polymers and Biological Systems”.

Das, D

Excellence in Teaching Award from IIT Bombay (2008). Satyamurthy Award, from Indian Physics Association (2009).

Honorary Work**Mukherjee, A.**

Referee for Phys. Lett B

Mahajan, A.

Referee for PRL and PRB

Vijaya, R.

Membership Development Officer of IEEE-Comm Soc (Mumbai chapter)

Ph.D. and M.S. thesis examiner for different universities / institutes Referee for Indian and International journals

Yajnik, U.

Honorary member of the Governing Body, “Eklavya”, Bhopal

Ramadevi, P.

Referee, Mathematical Reviews Journal

Faculty members and their Specialization

Experimental Condensed Matter Physics

1. S.N Bhatia

Low Temperature physics, High T_c super-conductivity, CMR and GMR magnetic materials

2. A.V.Mahajan

Superconductivity, magnetism in quasi I-D chains

3. S.S.Major

Semiconducting thin films, organic multilayers and nanostructures

4. D.S. Misra

CVD diamond thin films, Carbon nanotubes and related nanostructures

5. N.Namboodripad

Thermal properties of materials, specific heat and thermal conductivity

6. Shiva Prasad

Magnetic properties of bulk materials and thin films, magnetic multilayers, nanomaterials, magnetic recording.

7. C.V.Tomy

Superconductivity (Vortex Dynamics and new materials), CMR magnetic materials

8. K. G. Suresh

Soft magnetic materials, magnetic alloys

9. M.Senthilkumar

Magnetic thin films and multi layers

10. S.Dhar

GaN Nanostructures & Dilute Magnetic Semiconductors

Condensed Matter Theory

11. M.Aslam

Synthesis of nanostructures, magnetic and functional oxide nanoparticles, sensors and biosensors

12. G.Mukhopadhyay

Mean field theory of magnetic materials, nanostructures and nanomaterials

13. D.K Ghosh

Hubbard model calculations, Magnetism, Quantum Computing

14. A. Shukla

Electronic structure calculations in semiconducting and polymeric materials

15. P.P. Singh

Electronic structure of ordered and disordered alloys - ab-initio and molecular dynamics calculations

16. I.Dasgupta

Electronic Structure of Strongly Correlated Systems, Magnetism, Superconductivity.

17. S. S. Jha

Theoretical Condensed Matter Physics, Quantum Computing

18. A. Sain

Biophysics, Statistical Physics

19. D. Das

Statistical Physics

Optics, Lasers and Spectroscopy

20. B. P Singh

Non linear optics, Ultrafast photonics

21. T.Kundu

Laser spectroscopy, Non linear optics

22. R. Vijaya

Fibre optics and photonic bandgap materials

23. K. Rustagi

Non linear optics

Atomic, Molecular and Nuclear Physics

25. R. Varma

Relativistic Heavy Collisions and Hadron Physics

26. P. Das

Nuclear reactions and high spin states

27. B.K. Nandi

Relativistic Heavy Collisions

Atomic and Nuclear Physics Theory

28. S. H Patil

Elementary particles and applications of Quantum Mechanics to atoms, molecules and nuclei

29. Y.K. Gambhir

Relativistic nuclear theory

High Energy Physics

30. U.A. Yajnik

Baryogenesis in early universe, quantum field theory

31. S. Umasankar

Neutrino Physics, Phenomenology

32. P. Ramadevi

String Theory

34. Asmita Mukherjee

QCD spin physics.

35. Nayantara Gupta

Ultra-high Energy Cosmic Rays, Gamma Rays,
Gamma Ray Bursts

36. Punit Parmananda

Nonlinear Dynamics and Chaos Theory

37. Pradeep Sarin

Experimental High Energy Particle & Nuclear
Physics & Experimental Gravitational Wave
Physics.



Shailesh J. Mehta School of Management

Introduction

Since its establishment in 1995, the Shailesh J Mehta School of Management has emerged as a significant player in management education in the country. The school functions as a self-funding entity, and also contributes a significant and growing addition to the institute corpus. This year was marked by a further strengthening and consolidation of the academic programmes of the school. Particularly, the school started a General Management Program for Technical Professional in the Fall Semester with the Hughes Net Global Education.

The school currently has 19 full-time, four adjunct, three visiting faculty members. The follow six new faculty members joined the school this year:

- Prof. Indrajit Mukherjee
- Prof. Pankaj Dutta
- Prof. Rahul Patil
- Prof. Varadraj Bapat
- Prof. Dinesh Sharma
- Prof. Hans Huber

Dr. Raj Hirwani and Dr. Kamal Sharma joined as adjunct faculty members in the school.

The following joined as full time visiting faculty members and interacted with faculty and students of the school.

- Prof. Jayant Kanitkar
- Prof. Ravi Sharma
- Prof. Douglas Young

This year the school infrastructure in the form of computing facilities and library and information resources was augmented considerably. Five new faculty offices were added. The school received a special grant from Dean (RM) to upgrade the school infrastructure. Computer-aided classroom (for 40 students) with thin-client technology was developed while video conferencing facility was added to the seminar room.

The school started a B.Tech. Minor in Management in this academic year. The school in association with NITIE and ISDSI organized the second ISDSI

international conference in January 2009. The school also organized many other academic events such as continuum series where leaders from the globe participated. In addition, the school conducted management development programs and consultancy assignments to increase the interactions with the industry.

The school plans to start a Certificate program in Supply Chain Management in the April 2009 with the Hughes Net Global Education.

Academic Programme

The school runs a full-time Master of Management program to develop professionals who manage the business activities in a dynamic environment in which technology is a key determinant of organizational success. The school also offers both full-time as well as external PhD programs to develop future cutting edge researchers. The school has started B. Tech. Minor in Management from this year. In the 2008-09, the school awarded both Master of Management and Ph.D. degrees as shown in the following table.

Degrees Awarded

M.Mgt.	: 53
Ph.D.	: 03

The school developed two courses for the B.Tech. minor program. The total number of scholarships awarded in 2008-2009 for Master of Management programme is 30 + 20. The total number of scholarships awarded in 2008-2009 for the Ph. D. Programme is 16, including two Shailesh J Mehta Endowment Scholarship and three AICTE National Doctoral Fellowship, One QIP Research Scholarship, one IRCC Partial Financial Support, and one UGC Junior Research Fellowship.

Mr. Mengist Hailemariam Tadesse, Univeristy of Ethiopia, joined the school as a doctoral student and took various courses.

Campus placement for the batch 2007-2009 was conducted in the Spring 2009 semester and all the students have now been placed. The Table below summarizes this year's placement statistics for the Master of Management program.

No. of Companies participated	60
Batch Size	72
Highest salary (Domestic)	INR 21.08 L
Avg. Salary (incl. International)	INR 10.61 L
Avg. Salary (Domestic)	INR 10.28 L
Lowest Salary	INR 6.00 L

R&D Activities

Sponsored Research Projects

Sponsored Research Projects	: 16
New	: 02
Ongoing	: 11
Completed	: 03
Faculty Involved	: 07

Project Title	Sponsoring Agency	Status (New/Ongoing/Completed)
“Fuzzy Decision-making Approach to Production-inventory Problems in the Context of Supply Chain Management”	IRCC	New
“Technology-gap in Indian Industries – Analysis in the post-1991 era”	IRCC	New
“Sustainable Management of Water Resources in City of Mumbai”	IRCC	Ongoing
“Development Of Creative Commons-India”	Private Organizations	Ongoing
“AIB-India [International Business]”	Private Organizations	Ongoing
“Capacity Creation in IP Education and Research”	MHRD	Ongoing
“An Agent-based Approach to Network Competition and Sustainable Growth in Indian Air Transport”	IRCC	Ongoing
“Research and Training in Technology Management”	DSIR	Ongoing
“IPR Chair”	MHRD	Ongoing
“Development of Decision Support System for Project Scheduling Using Meta-Heuristics (R&D)”	MHRD	Ongoing
“Research and Training in Supply Chain Management”	SISL	Ongoing
“International Collaboration Projects”	Wadhwani Foundation	Ongoing
“IPR Cell”	IRCC	Ongoing

Project Title	Sponsoring Agency	Status (New/Ongoing/Completed)
“New Entrepreneurial Model For Health Care”	Wadhwani Foundation	Complete
“Opportunities in Entrepreneurship in Aviation Management”	Wadhwani Foundation	Complete
“Comparative Study of Statistical Models and Neural Network Models”	CSIR	Complete

Extension Activities

SJMSOM, NITIE and ISDSI organized the second ISDSI 2009 conference on Decision Sciences in Global Enterprise Management in January 2009. More than 100 delegates participated in this conference from the globe.

The school was invited to participate as a facilitating institution to develop Maharashtra Vision as part of India@75 project undertaken by CIL.

CONTINUUM, the rolling seminar series, is a premier event at the school. The seminars aim to cover the latest trends in management by inviting eminent speakers from business and academia. Each of these seminars focuses on issues and challenges faced by a specific management function and aims at drawing insights from the knowledge and experience of the speakers. The seminars are well attended by delegates from different organizations, our distinguished alumni, and students from various Business Schools and from other departments of IIT Bombay. Continuum series also feature various competitions among students, like, case study contests, paper presentations and business games.

One of the important co-curricular activities in SJMSOM is Continuum - a series of one-day seminars on topical issues in business and management.

These seminars are addressed by leading industry experts and professionals and provide an excellent opportunity for students not only to learn about issues and solutions, but also for networking with senior executives. This year students organized the following seminars:

Finance Continuum was held at Shailesh J Mehta School of Management on August 9, 2008. Indian financial system is gearing up for a radical change. As a part of its evolution process, Indian financial sector and professionals must acquire these skills and knowledge to ‘*manage growth in these challenging times*’ which is the central theme of Finance Continuum 2008, at Shailesh J Mehta School of Management, IIT Bombay

HR Continuum was held at Shailesh J Mehta School of Management on August 10, 2008. Effective management of Human Resources (HR) increasingly is being seen as positively affecting performance in organizations, both large and small. As a result, the HR profession is seen as one of the strategic assets of the company. The HR profession has grown from one that acts as a support function to one that is a strategic function like the other functions of an organization. HR Continuum 2008 would revolve around the central theme: “*HR’s Role in Organizational Restructuring: The Case of M&A*”

The **Consulting Continuum** held on March 14, 2009 explores myriad aspects across sectors, by initiating discussions on issues at the forefront of the consulting profession. . The Consulting Continuum 2009 witnessed a series of lectures and a panel discussion on the theme “*Hard Times Come Hand in Hand with Opportunities: A Consultant’s Perspective*”. The theme of the event was centred on the role of consulting firms in transforming challenges to opportunities.

Systems Continuum held on March 15, 2009, explores different aspects of Information Technology and Information Systems in business by initiating discussions on cutting edge topics. The Systems Continuum 2009 witnessed a series of lectures and a panel discussion on the theme “*IT: Driving the next generation business processes*”. The theme signifies how existing business processes would be modified through the latest developments in IT.

Management Development Programmes through Continuing Education and Quality Improvement Programme, IIT Bombay

Sr. No.	Title of the programme	Coordinator
1	Management of Technology and Innovation	Prof. Karuna Jain
2	Certificate Programme in Management for the Executives of Godrej Group of Companies	Prof. S.N. Rao
3	Finance for Engineers	Prof. S.N. Rao
4	5th Batch of Certificate Programme in Marketing and Human Resource Management at a) New Delhi b) Mumbai	Prof. S. Bhargava
5	R & D Management	Prof. Karuna Jain
6	Project Management Dubai	Prof. Karuna Jain
7	Creativity and Innovation for Crompton and Greaves	Prof. Anand Kusre
8	Cross Cultural Management	Prof. Karuna Jain
9	General Management Programme for Technical Professionals with Hughes Net Global Education	Prof. Karuna Jain

Visitors to the Department

1. International Visitors

- Prof. Michael Gregory, Head, Institute for Manufacturing and Manufacturing and Management Division, Dept of Engg., University of Cambridge

2. SJMSOM Seminar Series

- Mr. Owen Berkeley-Hill, an independent consultant, UK
Topic: "Lean Management" on February 18, 2009.
- Prof. Ravi Sharma, a visiting professor, NTU Singapore
Topic: "Interactive Digital Media" on February 27, 2009.
- Prof. Douglas Young, a visiting professor, Montana State University, Bozeman, Montana (U.S.)
Topic: 'Economic Growth and Regional Inequality' on March 5, 2009.
- Ms. Vandana Mamidanna, a Patent Attorney from Duncan Bucknell Associates
Topic: "IP Policy Strategies for Academic Institutions" on March 19, 2009
- Mr. Duncan Bucknell, an IP Strategist, Patent and Law Attorney, Duncan Bucknell Company, Australia
Topic: "IP Business Models" on October 7, 2008.

- Mr. Hemendra Kishore Varma, the founder director of 5S institute January 23rd, 2009 on "5S".
- UBS Team
 - James Yip - APAC Campus Recruiter
 - Eron Sunando - APAC IT Chief of Staff
 - Sanjay Kothari - Executive Director IT Equities (UBS Japan)
 - Navin Gupta - Equities Research (UBS Mumbai)
 - Balaji Srinivasan - Head of IT Applications (UBS Hyderabad ISC)
 - Chhavi Bajaj - Campus Recruiter (UBS Hyderabad ISC)
- Michael Brinker, Partner, Deloitte Consulting
- Mr. Harsha Kapoor, Head, Analytics Consulting, TSMG
- Mr. Udyan, Head, IT, Marico Ltd
- Mr. Raja, Global eProcure
- Mr. Jitendra Marchino, VP, JP Morgan Chase, Futures & Options
- Mr. Shiv Kumar (Alumnus -Som, 199 batch), SCM Consultant and Ex- GM, Operations, Glenmark.

Conferences/ Symposia/ Workshops/ Seminars (Participated/Papers Presented)

National

Bapat, V.B.

“Case Study on Infrastructure Finance w.r.t. Reliance Infrastructure Ltd.”, *IES finance conference* held on February 2009.

“Accounting Standards: compliance and disclosures by Indian companies” at *XXXIst All India Accounting Conference and International seminar on accounting education and research* organized by Indian Accounting Association (December 2008)

Mukundan, R., Jain, K.

“Embracing Innovation in Patent Prior Art Management – The Need of the Hour for Emerging Countries”, *R&D Management Conference 2008 on Managing the new genre R&D: Indian Perspective*, held during December 6-7, 2008 at CSIR Delhi, Delhi

Jain, K., Bharadwaj, S., Joshi, S.V. Rao, D.S.

“Technology Commercialization: A Case Study”, *R&D Management Conference 2008 on Managing the new genre R&D: Indian Perspective*, held during December 6-7, 2008 at CSIR Delhi, Delhi

Kathuria, V.K.

“Location Choice of Firm – Policy or Infrastructure?” Conference on *Corporate Sector, Industrialization and Economic Development*, Organized by ISID Delhi, March 27-28, 2009.

“Foreign Direct Investment and R&D: Substitutes or Complements – A case of Indian Manufacturing after 1991 reforms” (jointly with S. Sasidharan) presented in a *National Seminar on Teaching of Economic Theory and Finance at Post-graduate level* organized by Department of Econometrics, University of Madras, Chennai, January 30, 2009.

International

Bapat, V.B.

“Factors and Practices of Effective Corporate Governance” at *UGC sponsored International symposium on evolving development perspective in the context of globalization* at Somaiya College (February 2009)

Tadesse, M.H., Jain, K.

“A Framework for Measuring Supply Chain Performance in Aviation Industry”, *2nd International Conference on Decision Sciences in Global Enterprise Management*, held from January 3-5, 2009 at IIT Bombay, Bombay ISDSI 2009

Mukherjee, I.

“Effects of Varied Process Constraint Conditions on performance of a Simulated Annealing algorithm for a Multi-stage, and Non-linear Multi-response Optimization Problem”, *International Conference on*

Decision Sciences in Global Enterprise Management, IIT Bombay, 2009, pp 327-339.

Paliwal, M., Ananthakumar, U.

“A Comparative study of Neural Networks and Regression Technique using Simulation”, in *AIB-India and CIMER International Conference on Globalization and Emerging Economies*, held during 11-13 August 2008, at Indian Institute of Management Indore, India.

Huber, H.

Participated in *8th International Conference on Cellular Automata for Research and Industry*, ACRI 2008, Yokohama, Japan, September 23-26, 2008

Participated in *NECSI Complex Systems Winter School 2009*, MIT, Cambridge, USA, January 5 - January 23, 2009

Velayuthem, A., Jain, K.

“Management of Intellectual Property in IIT Bombay: A Case Study” in *International Conference on Knowledge Management*, held during February 26 - 27 2009 at IMT Ghaziabad, Ghaziabad

Jain, K.

Participated in *Deans' Conclave at the Strategic Management Society India Conference* held at Indian School of Business, Hyderabad, December 14, 2008

Jain, K., Hirwani, R.R.

“Effect of Liberalization on Industrial R&D: Case of Indian Chemical Industry” in *International Conference on Liberalizing Research in Science and Technology: Studies in Science Policy*, held during February 4-6 2009 at IIT Kanpur, Kanpur.

Jha, S. K., Mukundan, R.

“Intellectual Property As A Measure of Firm's Innovativeness for Public Goods”, in *International conference on WTO, India & Trade Strategy*, held during December 26-27, 2008 at IIM Kozhikode, Kerala, India.

Kathuria, V.K.

“Entry Choice of Indian Multinationals – A transaction Cost Analysis” presented at the *UNU-WIDER project workshop titled Southern Engines of Global Growth: Africa and CIBS* held at the Rand Merchant Bank, Sandston, Johannesburg, South Africa, September 5-6, 2008.

“Environmental cost of using top-soil for brick making – A case study from India”, the *16th Annual Conference of European Association of Environmental and Resource Economists (EAERE)* held at the School of Business, Economics and Law, Gothenburg University, Sweden, June 25-28, 2008.

“Foreign Direct Investment and R&D: Substitutes or Complements – A case of Indian Manufacturing after 1991 reforms” (jointly with S. Sasidharan) presented in *Sanjaya Lall Programme for Technology and Management for Development (SLMPTD)* Conference of the Department of International Development, University of Oxford, Oxford, May 29-30, 2008.

Mishra, T.

Participated in “*Lindau Nobel Laureate Meeting in Economic Sciences - 2008*”, Germany

Rao, K.V., Sonar, R.M., Ramamritham, K.

“A study on adoptability of new Mobile based Applications and Services in Emerging Economies in Indian context”, *International Conference on Emerging Economies*, IIM Indore on 11-13 Aug, 2008.

Rao, K.V., Sonar, R.M.

“Farmers’ Needs and the Use of Mobile Services & Applications: A Study on Indian Pilots”, *International Conference on Knowledge Management and Intellectual Capital 2009*, IMT Ghaziabad on 26-27 Feb., 2009.

Invited Lectures

National

Jain, K.

Chaired the Session on ‘Valorization of new genre R&D’ during *R&D Management Conference 2008* at New Delhi, December 7, 2008

“Teaching of Innovation Management to MBA Students”, IISc Bangalore, March 20, 2009

Kathuria, V.K.

“What determines locational choice of firm – Policy or Infrastructure?” at the Centre for Multi-disciplinary Research (CMDR), Dharwad, Karnataka on January 22, 2009.

“Informal Regulation of Pollution”, National Centre for Agricultural Economics and Policy Research (NCAP) training programme organized by Indira Gandhi Institute of Development Research (IGIDR), Mumbai on September 18, 2008.

“Environmental Cost of using Top soil for Brick making”, National Centre for Agricultural Economics and Policy Research (NCAP) training programme organized by Indira Gandhi Institute of Development Research (IGIDR), Mumbai on September 18, 2008.

Rao, S. N.

“Behavioral Finance”, at the Indian Institute of Capital Markets, Navi Mumbai on February 22, 2009 and March 26, 2009

“Security Analysis and Portfolio Management”, at the National Institute for Industrial Engineering, Mumbai on January 2, 2009, January 6, 2009 and March 20, 2009

“Money and Capital Markets” at the GIDC ROFFEL Business School, Vapi on February 7, 2009, March 21, 2009 and March 28, 2009

International

Jain, K.

Participated as a panelist in the conference on “*Intellectual Property Management Education and*

Research”, organized by the Worldwide Academy of the World Intellectual Property Organization (WIPO) in cooperation with the Ministry of Human Resource Development Government of India, and the Institute of Management Bangalore (IIMB), at Bangalore, December 8 - 9, 2008

Significant Awards/ Distinctions

Ananthakumar, U.

Member, Editorial Board, *International Journal of Business Performance and Supply Chain Modeling*.

“Best Teacher in Management Award”, IIT Bombay, September 2008.

Jain, K.

Best Teacher in Operations Management by 16th Business School Affaire & Dewang Mehta Business School Awards, 2009

President, Indian Subcontinent Decision Sciences Institute

Member, Academic Advisory Committee, National Institute of Financial Management

Jha, S. K.

Member, Editorial Board, *International Journal of Indian Culture and Business Management*

Best Paper Award “Intellectual property as a measure of firm’s innovativeness for public goods”, *International conference on WTO, India & Trade Strategy*, held during December 26-27, 2008 at IIM Kozhikode, Kerala, India.

Patil, R. J.

Vice President, Indian Subcontinent Decision Sciences Institute (Programs and Meetings) 2009-2010

Honorary Work

Ananthakumar, U.

Reviewed papers for *Journal of Applied Statistics*, January 2009.

Reviewed papers for *IEEE International Conference on Industrial Engineering and Engineering Management*, held during 08-11, December 2008 at Singapore.

Reviewed papers for *International Conference on Decision Sciences in Global Enterprise Management* held during 3-5 January 2009 at IIT Bombay.

Huber, H.

Reviewed papers for *Transportation Planning and Implementation Methodologies for Developing Countries*, TPMDC 2008, December 3-6, 2008, IIT Bombay.

Jain, K.

Ph.D. Thesis evaluated for “Service Quality Perceptions of Patients and Attendants in Indian Hospitals” by Ms. P Padma, IIT Madras

Ph.D. Thesis evaluated for “Performance Measurement: A Case of Government Funded Indian R&D Organizations”, by Ms. Jyoti Bhat, IIT Delhi

Reviewed papers for *International Conference on Decision Sciences in Global Enterprise Management* held during 3-5 January 2009 at IIT Bombay.

Kathuria, V.K.

Reviewed Paper for World Development, *Journal of International Development and Environment and Development Economics Journal*.

Reviewed papers for International Conference on Decision Sciences in Global Enterprise Management held during 3-5 January 2009 at IIT Bombay.

Mukherjee, I.

Reviewer of International Journal of Advance Manufacturing Technology

Reviewer of International Journal of Manufacturing Technology and Management (IJMTM)

Reviewed papers for International Conference on Decision Sciences in Global Enterprise Management held during 3-5 January 2009 at IIT Bombay.

Patil, R. J.

Reviewed papers for International Conference on Decision Sciences in Global Enterprise Management held during 3-5 January 2009 at IIT Bombay.

Rao, S. N.

Member, Journal Review Panel, Vikalpa

Member, Journal Review Panel, European Journal of Finance

Rao, S.V.D.N.

Member of the International Advisory Council, Global Finance Forum, Switzerland.

Member of the Banking and Finance Committee, Indian Merchants Chamber, Bombay.

Member of the Board of Studies in Economics, NMIMS University, Mumbai.

Sonar, R. M.

Reviewed papers for journals of IIMB Management Review, NICMAR- Journal of Construction Management.

Faculty Members and their Specializations

1. Anand Patwardhan

Vulnerability and adaptation to global change, Technology policy, Economics and regulation of information and communication technology

2. Atanu Ghosh

Strategic management, Services Marketing, Relationship Marketing, Supply Chain Management Product Launch and Brand Building

3. Dinesh Sharma

Marketing Strategy, Market Research

4. Gajendra K. Adil

Operations Management and Decisions Sciences

5. Hans Huber

Network Competition, Complex Systems, Strategic Transformation, Aviation Management

6. Indrajit Mukherjee

Quality Engineering and Management

7. Karuna Jain

Operations Management, Technology and Innovation Management, Supply Chain Management, Project Management.

8. Pankaj Dutta

Operations Research, Inventory Management, Supply Chain Modeling, Project Management, Fuzzy Optimization

9. Rahul Patil

Operations Management, Supply Chain Management, Stochastic Optimization, Innovation Diffusion

10. Rajendra Sonar

Hybrid Intelligent Systems, Artificial Intelligence and Business Applications, Knowledge-Based Systems, Business Intelligence

11. Shivganesh Bhargava

Prediction of Performance, Organizational Wrongdoing, Reward Preference in Indian Organizations, Managing of Human resources in Technical Institutes

12. Sagar Narayan Rao

Mergers and Acquisition, Financial Engineering, Security Analysis and Portfolio Management, Corporate Finance, Capital Markets and International Finance

13. Sanjaya Sing Gaur

Relationship Marketing (CRM), Selling Skills, Events Marketing, Product and Brand Management, Marketing Audit, Marketing Strategy and Development of Marketing Attitude and Orientation

14. S.V.D. Nageswara Rao

Corporate Finance and Capital Markets

15. Shishir Kumar Jha

Copyright, Digital Economy, International Business

16. Trupti Mishra

Environmental Economics, Productivity and Efficiency Studies

17. Usha Ananthakumar

Statistical Pattern Recognition, Statistical Inference, Applied Multivariate Analysis, Statistical Quality Control

18. Varadraj Bapat

Managerial Accounting, Financial Accounting and Cost Accounting

19. Vinish Kathuria

Industrial Economics, Economics of Industrial and Urban pollution

Distinguished Guest Professors

1. Dr. Jahar Saha

Operations Research

Adjunct Faculty

1. Dr. S.A. Kelkar

Industrial and Operations Engineering, Software Engineering And Quality Assurance (Testing and Matrices)

2. Dr. Kamal Sharma

Managerial Effectiveness Skills, Technology Forecasting and Assessment

3. Dr. Raj Hirwani

Patent Analysis, Intellectual Property Rights

4. Mr. A.T. Kusre

Management of New Ventures

Full time visiting faculty

1. Prof. Jayant Kanitkar

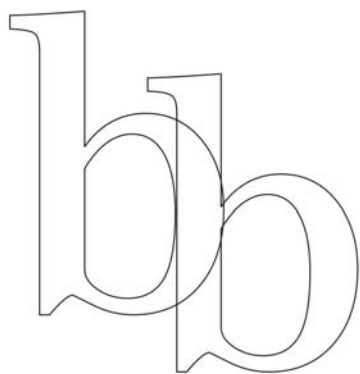
Quality Management

2. Prof. Ravi Sharma

Information Technology

3. Prof. Douglas Young

Economics



Biosciences & Bioengineering

Introduction

A General Overview of Departmental Activities:

The School of Biosciences and Bioengineering comprises mainly four areas representing Biotechnology, Biomedical Engineering, Chemical Biology, and Biochemical Engineering. The school aims to create an ambience for the smooth pursuit of scholarly activity in research and education, towards creating an international impact in the bio-related areas and endeavours to produce the leaders of tomorrow in this field. With the formation of the School of Biosciences and Bioengineering, there has been a great impetus to research in the Biosciences at IIT Bombay.

Faculty Strength:

Core Faculty	: 15
Adjunct Faculty	: 04
Associate Faculty	: 21
Distinguished Guest Professor	: 02

Names of new faculty members:

Prof. Samir Maji

Prof. Sanjeeva Srivastava

Prof. Santanu Kumar Ghosh

Important MoUs and Collaborations:

Parimal & Pramod Chaudhari Cell Culture Laboratory was inaugurated on 13th February 2009.

Infrastructural development:

Fluorescence spectrophotometer

Handheld Raman Spectrometers

Computer server

Major activities proposed:

A proposal to start a Dual Degree M.Sc.-Ph.D. program in Biotechnology was submitted.

Academic Programmes

Academic Activities, Including Degree Programmes

The academic program currently consists of the M.Sc. Biotechnology (DBT-supported), the M.Tech. Biomedical Engineering and the Ph.D. program. The M.Tech. program of the School is unique in that it provides an entry point for a medical doctor (MBBS) to work together with engineering students and get an engineering (M.Tech) degree. This program is extremely popular with doctors, and, like the M.Sc. program, draws very large pool of applicants. The institute has boosted this academic activity by funding four new scholarships in the School, and a few more are being added.

The academic program of the school has been running successfully and a review of achievements over the years has shown positive trends both in terms of students career profile and the utility and quality of the prescribed courses. Extensive interactions with groups in Electrical Engineering, Chemical Engineering, Aerospace Engineering, Computer Science, Chemistry and Mathematics synergistically augment the facilities of these laboratories making them truly unique in the country.

Degrees Awarded

M.Sc.	: 11
M.Tech.	: 18
Ph.D.	: 15

Student Exchange Programme:

Ayesha Chaudhary, doctoral student (CSIR-SRF), worked as a Research Assistant with Professor Pekka Hänninen and Dr. Harri Harma at the Laboratory of Biophysics, University of Turku from 15th of May to 15th of August 2008.

R&D Activities

Main areas of R&D Activity

Biotechnology, Biochemistry and Molecular Enzymology, Bioelectricity; Bioinformatics, Biointerfaces, Biomaterials, Biomedical Optics (Tissue Spectroscopy and Imaging), Bionanotechnology, Biosensors, Biostatistics, Computational Biology, Drug Delivery, Glycobiology, Instrumentation, Medical Signal Processing, Natural Products, Nerve-muscle Transmission, Non-invasive Diagnostic Tools, Prokaryotic Biology, Rehabilitation, Synthesis of Bioactive Molecules, Synthetic Polymer Chemistry, Tissue Engineering, Yeast Molecular Biology

A General Overview of R&D Activities, Including the Incomes Received from Sponsored Research and Consultancy Projects

Major focus has been to boost the research activity through funded research proposals from agencies like DBT, DST, BRNS, ADA, CSIR, FIST, Media Labs, and the like. We are also vigorously pursuing individual donors and institutions. Infrastructure building in this field is extremely expensive due to the need for superb equipment and facilities, the need to remain constantly

updated, and the constant need for consumables, some of which can be frightfully expensive. Only a school that is well endowed can attract the best faculty, students and researchers to itself and keep them motivated and productive to deliver the Bio School's stated mission of making an impact on health care delivery. This is our endeavor at IIT's BioSchool.

The School has been involved in interdisciplinary research in the Biological Sciences aimed at finding solutions to the emerging needs of the Indian population. It has a unique admixture of students and faculty from the Engineering, Medical, Biological and Physical Sciences. Its curricula have served as a model for several programs that have been developed in the country.

Sponsored Research Projects

Sponsored Research Projects	: 57
New	: 06
Ongoing	: 41
Completed	: 10
Faculty Involved	: 11

List of sponsored research projects

Project Title	Sponsoring Agency	Status (New/Ongoing/Complete)
"Development of Anti-Malarial Therapeutics Based on Chemically Modified Small Interfering RNAs"	Deptt. of Biotechnology	New Project
"Population Heterogeneity in <i>Saccharomyces Cerevisia</i> : Causes and Consequences of Phenotypic Variation"	Board of Research In Nuclear Sciences	New Project
"Urease and Cresol-red Immobilized Nanoengineered Alginate Microspheres as Sensors for Urea Monitoring"	Indian Council of Medical Research	New Project
"In Vivo Choice of Translation Initiation Sites (TISA) in the Human Malaria Parasite <i>P. Falciparum</i> "	Board of Research In Nuclear Sciences	New Project
"Financial Assistance for Malaria Meeting, to be held during March 3-5, 2009 at I.I.T. Bombay"	Jawaharlal Nehru Centre for Advanced Scientific Research	New Project
"International Symposium on Emerging Areas in Biotechnology and Bioengineering Dt. 26th- 28th February 2009"	Labindia, Johnson & Johnson , Eco Chemie	New Project

Project Title	Sponsoring Agency	Status (New/Ongoing/Complete)
“Development of Anti-Malarial Therapeutics Based on Chemically Modified Small Interfering RNAs”	Deptt of Biotechnology	New Project
“Population Heterogeneity in Saccaromyces Cerevisia: Causes and Consequences of Phenotypic Variation”	Board of Research In Nuclear Sciences	New Project
“Urease and Cresol-Red Immobilized Nanoengineered Alginate Microspheres as Sensors for Urea Monitoring”	Indian Council of Medical Research	New Project
“Effects of Protein Kinase CK2 on Microtubule Dynamics and Cell Cycle Progression: Implications in Cancer Chemotherapy”	Council of Scientific & Industrial Research	Ongoing Project
“Polymer Optical Waveguide Biosensors”	Department of Bio-Technology	Ongoing Project
“Computational Investigations into the Mechanisms of Information Processing in Medium Spiny Projection Neurons in Relation to Reward Processing and Lea”	Department of Bio-Technology	Ongoing Project
“Development of Nanoparticulate Gelling Bio Materials for Traumatic Injuries to the Eye”	Defence Research & Development Organisation	Ongoing Project
“FtsZ as Antibacterial Drug Target”	Department of Science & Technology	Ongoing Project
“Agrobacterium Tumefaciens Mediated Transformation as a Tool for Targeted Mutagenesis in Aspergillus niger”	Department of Science & Technology	Ongoing Project
“Development of Nanoparticles and Nanovesicles for Delivery of Anticancer Drugs Through Inhalation Route”	Nicholas Piramal	Ongoing Project
“Rational Development of Molecular Tools for the Chemoenzymatic Synthesis of Complex Carbohydrates” “Production and the Characterization of Human ST3Gal”	Council of Scientific & Industrial Research	Ongoing Project

Project Title	Sponsoring Agency	Status (New/Ongoing/Completed)
“Microtubule Dynamics as a Screen for Discovering Anticancer Drugs : Roles of Microtubule Dynamics in the Spindle Function and Apoptosis”	Department of Bio-Technology	Ongoing Project
“Co-Immobilization in Nanoengineered Biopolymeric Carriers as Biosensors”	Department of Bio-Technology	Ongoing Project
“Regulation of Carbon & Nitrogen Metabolism in <i>Saccharomyces Cerevisiae</i> ”	Department of Science & Technology	Ongoing Project
“SERC FAST Track Scheme Entitled “ Novel Ultrathin Film Coatings for High Throughput Screening Systems”	Department of Science & Technology	Ongoing Project
“Ab Initio Quantum Chemical InvestigationsRecognition in Biological System”	Department of Science & Technology	Ongoing Project
“ <i>Pseudomonas Putida</i> CSV86: Hydrocarbon First or Sugar First”	Department of Science & Technology	Ongoing Project
“Comparison of Herbal Oil Surfactants for Therapy in Adult Respiratory Distress Syndrome”	International Foundation For Science, Stockholm	Ongoing Project
“Career Award for Young Teachers (Cayt) of Aicte to School of Biosciences & Bio Engg., IIT Bombay, Powai Mumbai-76”	AICTE	Ongoing Project
“Identification and Functional Characterization of Non-coding RNAs from the Human Malarial Parasite <i>Plasmodium falciparum</i> ”	DBT	Ongoing Project
“Studies of DNA Binding Properties of <i>Plasmodium Faciparum</i> TATA-binding Protein (PFTBP)”	DRDO	Ongoing Project
“The Role of MR(i19) in Pscudophal Differentiation <i>Cerevisiae</i> .” under WOS-A Scheme”	DST	Ongoing Project
“Biodegradation of Pesticide Carbaryl by Soil Microorganism”	DBT	Ongoing Project

Project Title	Sponsoring Agency	Status (New/Ongoing/Completed)
“Development of A Therapy for Reversal of Harmful Effects Environmental Toxi Chemicals on The Respiratory Systems”	DST	Ongoing Project
“Evaluation of the Interactions of Mycobacterium Surfactant System”	DST	Ongoing Project
“DAE YSRA Entitle Evaluation of Herbal Based Surfactants for Therapy In Meconium Aspiration Syndrome	KA == BRNS projects	Ongoing Project
“Development of Optoelectronic Devices for Detection of Water-Borne Pathogens”	Naval Materials Research Laboratory	Ongoing Project
“Swarnajayanti Fellowship Award”	DST	Ongoing Project
“Second Indian Protein Society Symposium at IIT B during 28 to 30 October 2004”	Sponsored by Private Organisations	Ongoing Project
“Enhancement of Benzaldehyde Biotransformation Project”	M/S.Emmellen Biotech Pharmaceuticals Ltd	Ongoing Project
“Studies on Immune Cell Signalling Mechanisms”	KA == BRNS projects commenced from year 1999-2000	Ongoing Project
“Financial assistance to the Biotechnology Centre(FIST Program)”	DST	Ongoing Project
Inter-Department Projects		
“Conversion of Cellulose and Hemi-cellulose into Sugars and Ethanol”	Council of Scientific & Industrial Research	Ongoing Project
“Prediction of the Kinetics of Competitive Metabolic Networks in Hydrocarbon Degrading Organisms : Development of A Structured Model and Experimental V”	Department of Bio-Technology	Ongoing Project
“Genomic Analysis of Microbial Resistance Mechanisms using Streptomyces Coelicolor As a Model System”	Department of Bio-Technology	Ongoing Project
“Development of “Micro-Cantilever based Sensors for the Detection of Vapours of Explosive Chemicals”	Department of Science & Technology	Ongoing Project

Project Title	Sponsoring Agency	Status (New/Ongoing/Completed)
“Exploration of Design and Fabrication of Sensors for Detection of Explosives”	Defence Research & Development Organisation	Ongoing Project
“Nanoengineered Bilirubin Biosensor”	Philips medical systems, Bangalore	Closed Project
“DBT Post Doctoral Fellowship”	DBT	Closed Project
“Novel Expression Systems”	CSIR	Closed Project
“Polysensors”	Sponsored by Private Organisations	Closed Project
“Herbal Oil Surfactant Therapy for Saving Premature Babies”	Sponsored by Private Organisations	Closed Project
“Blue Star - Novel Dye-ligand affinity systems (M/s.Ciba India Pvt.Ltd.)”	Sponsored by Private Organisations	Closed Project
“Characterization of Candida albicans Microtubules”	Indo-US Collaboration01IU007	Closed Project
Inter-Department Projects		
“CSIR research associate”	Council of Scientific & Industrial Research	Closed Projects

Consultancy Projects

The department undertook four jobs generating Rs. 3,26,450/-.

The total number of faculty involved was two.

Extension Activities

International Conference on “Emerging Areas of Biotechnology and Bioengineering” in February 2009 as a part of the Golden Jubilee celebration of the Institute. Prof. Dulal Panda – Convener, Prof. S. Mukherji – Co-convener

Visitors to the Department

Prof. R. Sankararamakrishnan, Department of Bioscience and Bioengineering, Indian Institute of Technology Kanpur. He delivered a lecture on “Protein-protein interactions in Bcl-2 apoptotic proteins: comparative MD simulations on Bcl-XL complexes.”

Dr. Vidita Vaidya, Department of Biological Sciences, Tata Institute of Fundamental Research, Mumbai, India. She delivered a lecture on “Neurobiology of Depression- A way to beat the blues?”

Dr. Surabhi Gupta, University of California Davis, Davis, USA. She delivered a lecture on “When Harry met Sally: Sperm Egg Fusion.”

Dr. Senthil Kumar Venugopal, Assistant Adjunct Professor, University of California Davis, USA. He delivered a lecture on “Liver injury and regeneration: Possible Therapeutic Approaches.”

Dr. Anamika Singh, Pharmacology and Toxicology, Institute of Pharmacy, University of Innsbruck. She delivered a lecture on “Role of Calcium channels in retinal signaling: Insights from congenital stationary night blindness type 2 (CSNB2).”

Dr. R. Swaminathan, Department of Biotechnology, Indian Institute of Technology Guwahati, Guwahati 781 039, Assam, INDIA. He delivered a lecture on “Anomalous spectra arising from ordered water AND Inhibition of lysozyme aggregation at alkaline pH.”

Arun Shanbhag, PhD, MBA, Assistant Professor, Harvard Medical School, Massachusetts General Hospital, Boston, MA 02114. He delivered a lecture on “Insights into Osteolysis: Bone Resorption around Joint Replacement.”

Dr. Dibyendu Bhattacharyya, Research Prof. Associate, Dept. of Molecular Genetics & Cell Biology, University of Chicago, Cummings Life Science Center,

Chicago. He delivered a lecture on “Intracellular Protein Trafficking.”

Dr. Amit Sengupta, MBBS,MD(OBGYN), Ph.D.(Biomed eng.-IITD), Consulting Obstetrician & Gynecologist (CHS), Mumbai & Adjunct Professor, Bio-medical Engineering, Centre for Biomedical Engineering (CBME), Indian Institute of Technology (IITD) & AIIMS, New Delhi, India. He delivered a lecture on “Reproductive-bioengineering and community development.”

Dr. Chandra Mohan, Technical head- EMD Biosciences. He delivered a lecture on “Cancer Stem Cells: Bad Seeds in Tumorigenesis.”

Anil K. Patri, Ph.D., Deputy Director, Nanotechnology Characterization Laboratory, SAIC-Frederick, Inc., National Cancer Institute at Frederick, NIH, USA. He delivered a lecture on “Cancer Nanotechnology: Translational Resources in Nanomedicine.”

Dr. Anand K. Bachhawat, Scientist F, Biochemistry & Yeast Molecular Biology, Institute of Microbial Technology, Chandigarh (INDIA). He delivered a lecture on “Glutathione and the gamma-glutamyl cycle: New insights from yeasts”

Dr. V. B. R. Murthy, Ph.D., I.F.S., Member Secretary, A.P. Biodiversity Board, Hyderabad. He delivered a lecture on “Carbon Finance and Biological Diversity Act.”

Prakriti Tayalia, Alumnus (B.Tech, Met. Engg. & Material Sci. IIT Bombay), Pursuing Ph.D. in Applied Physics & Bioengg., Harvard University, USA. She delivered a lecture on “Spatio-temporal control for in vitro cell migration and cancer vaccine studies via 2D and 3D microfabrication.”

Dr. Anindya Roy, Postdoctoral Research Fellow. Clare Hall laboratories, London Research Institute, UK. She delivered a lecture on “Repair of transcription blocking DNA damage and hereditary Cancer syndromes.”

Dr. Subhagata Chattopadhyay, Postdoctoral Research Fellow, Associate Lecturer (Level – ‘A’) ApuHC, School of Information Systems, Technology and Management, The University of New South Wales, Sydney, Australia. He delivered a lecture on “Medical Informatics.”

Dr. Tilak Jain, Postdoctoral research scientist, The Scripps Research Institute, La Jolla, CA 92037. He delivered a lecture on “Biochip for spatial-temporal electroporation of exogenous molecules into secondary cell lines and primary neurons.”

Dr. Kaushik Sengupta, Post-doctoral fellow, Northwestern University, Chicago. He delivered a lecture on “A Tale of Two IF Proteins – in health and disease.”

Dr. Satish Nair, Professor of Electrical & Computer Engineering, Professor of Biological Engineering, University of Missouri, Columbia. He delivered a lecture on “Modeling the fear circuit in mammals.”

Dr. Chaitanya Athale, BioMS Postdocotoral Fellow, Karsenti Lab, Cell Biology and Biophysics Unit, EMBL

Heidelberg, Heidelberg, Germany. He delivered a talk on “From Phenomenology to Mechanism: Modeling Microtubule Dynamics Gradient Patterns.”

Dr. Animesh Dhar, Associate Professor, KUMC Kansas City, KS & Research Biologist, VA Medical Center, Kansas City, MO. He delivered a talk on “Possible Pancreatic Cancer Treatment Strategies: Good, Bad and Ugly!”

Dr. Pankaj Alone (Ph.D), UC-Davis School of Medicine, Tupper Hall, USA 95616. He delivered a talk on “eIF2α’s Role In Translation Initiation and AUG Codon Fidelity.”

Dr. Sanjib Dutta, Post-Doctoral Associate, Department of Biology, MIT. He delivered a talk on “Understanding protein stability and protein-protein interaction specificity using high-throughput screening.”

Dr. Abdur Rahaman, Cornell University. He delivered a talk on “Remodeling the nuclear membrane.”

Conferences/Symposia/ Workshops/ Seminars (Participated/Papers Presented)

National

Chatterji B. P. and D. Panda

Oral presentation “Antiproliferative Mechanism of Action of [10-(3-hydroxy-4-methoxy-benzylidene)]-9(10H)- Anthracenone, A New Class of Anti-tumor Agent,” *Society of Biological Chemists (India), 77th Annual Meeting*, held during December 18-20, 2008, at IIT Madras, Chennai.

Sunil Kumar, T.N. Jayashri and Punekar N. S.

Oral presentation of “Functional Importance of K31 Residue in *Aspergillus Niger* Arginase OMG18 p.153,” in the *77th Annual meeting of Society of Biological Chemists* held during December 18-20, 2008, at IIT Madras, Chennai.

Dave Kashyap, Ahuja Manmeet, T.N. Jayashri, R. Anuradha and Punekar N.S.

Presented poster “Development of AGA as A Selection Marker to Transform *Aspergillus niger* BC33, p.57,” in the *77th Annual meeting of Society of Biological Chemists*, held during December 18-20, 2008, IIT Madras, Chennai.

International

Thanigaivel S. and Banerjee R.

“Nanocochleates for oral delivery of paclitaxel”, *International Conference on Biomaterials and Artificial Organs*, held during Nov. 23-25, 2008, at Nepal. Best Paper Award

Dyondi D., Bhonde R. R., Banerjee R.

“In situ gels for cartilage regeneration”, *International Conference on Biomaterials and Artificial Organs*,

held during Nov. 23-25, 2008, Nepal. Student Travel Award.

Singh J. K., Makde R. D., Kumar V. and Panda D.

“SepF Stabilizes FtsZ Protofilaments, Induces Bundling of FtsZ Protofilaments and Reduces GTPase Activity of FtsZ,” *22nd Annual Symposium of the Protein Society*, held during July 19-23, 2008, at San Diego, California.

Banerjee M. and Panda D.

“Curcumin inhibits cancer cell proliferation apparently by perturbing microtubule dynamics,” *48th Annual meeting of the American Society for Cell Biology*, held during December 13-17, 2008, at San Francisco, USA

Joshi Abhijeet

Presented poster “Layer by layer assembly on inorganic microparticles for enzyme encapsulation,” in the *XVI International Conference of Bioencapsulation* held during September 4-6, 2008, at Dublin, Ireland.

“Layer by layer nanoengineering on inorganic micro/nanoparticles for biosensor application,” in the *International conference of high tech materials* held during, February 11-13, 2008, at IIT Kharagpur.

Chaudhary Ayesha

Presented poster “Fluorescent Glucose Sensors: Effects of reagent encapsulation within dissolved core alginate-templated microspheres,” in the *International Conference on Fluorescence in Biology* held during March 16-19, 2009 at TIFR, Mumbai.

Dev Jayant Rahul

Presented poster “Effects of polyelectrolyte coating on DEXA release from nanoengineered alginate carriers,” in the *XVI International conference of Bioencapsulation* held during September 4-6, 2008, at Dublin, Ireland.

Presented poster *Meeting* “Dexamethasone release from uniform sized nanoengineered alginate microspheres,” in the *BMES 2008 Annual Fall* held during October 2-4, 2008, at St. Louis, MO, USA.

Swati, M.

Presented poster “Alginate microspheres comprising multilayered assemblies of cresol red and polyelectrolytes towards an optical urea biosensor,” in the *International Conference 8th IEEE on Nanotechnology* held during August 18-21, 2008, at Arlington, Texas.

Presented poster “Nanoengineered Optical Urea Biosensor,” *XVI International conference of Bioencapsulation* entitled held during September 4-6, 2008, Dublin, Ireland.

Invited Lectures

National

Panda Dulal

“Microtubule dynamics, mitosis and cancer chemotherapy”, *74th Annual Meeting of Indian Academy of Sciences* at IIT Delhi, during October 31st to 2nd November 2008.

“Interplay between mitosis and apoptosis: Dynamic spindle microtubules are attractive targets for cancer chemotherapy” *4th DAE-BRNS Life Sciences Symposium 2008* at BARC Mumbai, December 2008.

“Acetylation of tubulin is associated with microtubule stabilization and defective chromosome segregation leading to cell death”, *13th ADNAT Convention, Centre for Cellular and Molecular Biology*, Hyderabad, February 2009.

International

Panda Dulal

“Interplay between Microtubule Dynamics, Mitosis and Apoptosis,” in Monash university, Australia, October 2008.

“Assembly Dynamics of the Cytoskeleton: Functional and Therapeutic Implications,” *International Workshop on Biomaterials for Tissue Engineering and Biotechnology Applications (BTEB 2008)*, November 23-24, 2008

Banerjee, R.

“Tissue Engineering and Regenerative Medicine,” Plenary Lecture, *3rd Indo-Australian Symposium on Biomaterials*, Sydney 2009.

“Emerging Trends in Biological Research,” Keynote Address on *Nanomedicine, International Conference*, Bhuvaneswar, 2008.

Punekar, N.S.

“Novel dye affinity matrix library for protein chromatography, proteomics and scale up,” *CHI PepTalk Conference on Protein Purification & Recovery*, January 12-14, 2009, San Diego, USA

Significant Awards/Distinctions

Banerjee R

Felicitation Award by Society for Cancer Research and Communication for research achievements, 2008.

Punekar N.S.

Member, National Academic Committee 19th International Biology Olympiad – 2008. Academic Committee.

Member, Board of Studies in Biotechnology, Goa University, 2009-2012.

Fellow Maharashtra Academy of Sciences, 2007.

Srivastava Rohit

DST BOYSCAST Fellowship for the year 2008-09 for advanced training in Biomedical Engg at Vanderbilt University.

Bellare J.

Piercy Distinguished Visiting Professor at the University of Minnesota, USA

Fellow of the Indian National Academy of Engineering

Honorary Work**Panda D.**

Reviewed international journals such as Biochemistry and Biochemical Pharmacology.

Reviewed of 4 Ph.D. theses

Serving as a member of the DST program advisory committee on Biochemistry, Molecular Biology and Biophysics and as a member of the academic council of National Institute of Science Education and Research Bhubaneswar

Rao K.K.

Member, Biology sub-committee, Board of Research in Nuclear Sciences (BRNS)

BARC.

Member, Selection Committee, Biotech Industrial Training Programme, sponsored by Dept. of Biotechnology, N. Delhi (2008-2011).

Member, Institutional Biosafety Committee, BARC.

Member of Advisory Board, Institute of Biotechnology and Allied Sciences, Rajasthan

Banerjee R

Reviewer for Langmuir, Expert Opinions in Drug Delivery

Member, Editorial Board, ICFAI Journal of Nanotechnology, 2009 onwards

Founder Member, Society for Tissue Engineering and Regenerative Medicine, India 2008 onwards

Mukherji S.

Adhoc reviewer for multiple international journals

Phale P.S

Editor: Indian Journal of Microbiology

Reviewed grants for DST, DBT

Faculty Members and their Specializations**Core Faculty****1. Dulal Panda**

Cell biology, biophysics, protein structure-function, molecular medicine and mechanism(s) of action of antifungal, anticancer and antibacterial drugs

2. K. K. Rao

Cell biology; protein biochemistry; molecular biology; genetic engineering, prokaryotic gene regulation

3. N. S. Punekar

Microbial biochemistry; enzymology; metabolic regulation; secondary metabolism; metabolic engineering; nitrogen metabolism of fungi

4. P. J. Bhat

Eucaryotic gene expression; yeast molecular genetics; eucaryotic transcriptional regulation

5. R. Manchanda

Neuromuscular Physiology & Biophysics

6. G. Subrahmanyam

Protein phosphorylation gene regulation, molecular mechanism of signal transduction;

7. P. V. Balaji

Protein-carbohydrate interactions, molecular biology of glycosyltransferases; molecular modelin; docking and MD simulations

8. Soumyo Mukherji

Bioinstrumentation, Cardiovascular Physiology, Transducers and Biomedical Sensors, Biosensors

9. P. S. Phale

Aromatic hydrocarbon degradation, elucidation of metabolic pathways, molecular enzymology and kinetics, genetics engineering, bacterial physiology, Bio-surfactant production and its significance.

10. Rinti Banerjee

Biomaterials & Artificial Organs, Haemorheology & Biomedical Fluid Dynamics

11. Swati Patankar

Molecular parasitology and genomics applied to the malarial parasite *Plasmodium falciparum*

12. Rohit Srivastava

Fluorescent Biosensors, Nanoengineered Sensors, Controlled Release, Layer-by-Layer Assembly, BioMEMS

13. Samir Maji

To study the amyloid formation by protein/peptides in the diseases and functional amyloid perspective

14. Sanjeeva Srivastava

Proteomics, Systems Biology, Stress physiology and cellular responses

15. Santanu K. Ghosh

Understanding mechanism of faithful chromosome segregation during meiotic cell division.

Associate Faculty

16. Jayesh Bellare

Nanotechnology and micro-engineering; biomedical devices surfactants; Cryo-electron and optical microscopy

17. Santosh Noronha

Biochemical engineering, recombinant biotechnology, computational biology

18. H. S. Shankar

Biochemical Engg., vermiculture

19. A. K. Suresh

Biochemical Engg., multiphase reactions

20. K. V. Venkatesh

Biochemical and food engineering

21. P. Wangikar

Biothermodynamics; Biophysical Chemistry

22. S. Chaudhari

Medical Image & Signal Analysis

23. U. B. Desai

Medical Image & Signal Analysis

24. V. M. Gadre

Communication Engineering Control & Instrumentation

25. P. C. Pandey

Bioinstrumentation, Medical Image & Signal Analysis

26. A. Q. Contractor

Electrochemistry, Conducting polymers, Biosensors

27. S. Durani

Drug design; de nova Protein design; Enzyme catalytic principles; Active site characterization

28. Nand Kishore

Biothermodynamics; Biophysical Chemistry

29. Sambasivarao Kotha

Organic Synthesis; non-coded amino acids.

30. Anil Kumar

Bio Polymers

31. C. P. Rao

Electrochemistry, Conducting polymers, Biosensors

32. Y. U. Sasidhar

Molecular Biophysics; Protein folding.

33. A. K. Singh

Bioorganic chemistry; Photoreceptor membrane proteins; Photochemistry and photobiology.

34. Sumathi Suresh

Remediation of pesticides using biological & chemical methods. Biological treatment for removal of textile dyes, biodegradation of hydroxybenzoate and phthalates

35. Rajani R. Joshi

Computational Biology, Bioinformatics, Biostatistics

36. G. G. Ray

Ergonomics

Distinguished Guest Professor

37. G. Padmanaban

Malaria research

38. Dr. Hartmut Michel, Noble Laureate

Photosynthesis research

Adjunct Faculty

39. Dr. Vivek Soni

Biomaterials & Artificial Organs

40. Dr. Yash Lokandwala

Cardiovascular Physiology

41. Uday B. Sheorey

Multiphoton absorption in bio-tissue, laser – tweezer (intense electric fields at the focal plane), adaptive optics to improve/reduce the wavefront aberrations in retinal imaging.

42. S. Arunkumar

Computers in Biology and Medicine, Telemedicine, Intelligent systems and pattern recognition approaches to the analysis of medical and biological data



Centre for Environmental Science & Engineering

Introduction

The Centre for Environmental Science and Engineering (CESE) has a dynamic group of eleven faculty members with multi-disciplinary background and interests. Currently, the centre offers M.Tech. and Ph.D. programmes in Environmental Science and Engineering with a strong focus in teaching and research. The centre also offers institute core courses such as Environmental Studies (compulsory course in response to the Supreme Court directive) and Environmental Science and Engineering (elective course) for sensitizing undergraduate and graduate students across all disciplines towards the urgent need for protection and restoration of environment by adapting environment-friendly life style. In addition, five minor courses offering specialization in the area of Environmental Engineering for institute B. Tech students have been introduced by CESE in the year 2008. The above core and elective courses are unique and cover engineering and scientific aspects of environmental problems.

The postgraduate programmes and research activities of the centre are focused towards addressing the needs and challenges of major national agencies like MHRD, CPCB, SPCB, MNES, DBT, MoEF, CSIR, DST, AICTE, and international agencies like WB, USEPA. The centre has established strong links and collaborations with leading industries, academic institutions and national/international agencies by conducting sponsored research projects and offering consultancy and technical services. The research activities of the centre are supported by excellent experimental and computational facilities, competent and dedicated technical staff and high quality students. The centre is also actively engaged in organizing workshops, conferences and CEP courses which regularly attract participants from industries and governmental sectors.

CESE plans for major expansion of teaching and research activities in the near future. In the next few years the centre proposes to launch the two newly approved programmes (a) Post-B.Sc. dual degree programme with M.Sc. and Ph.D. in Environmental Science and Engineering and (b) Five year dual degree programme with B.Tech in Environmental Engineering

and M.Tech in Environmental Technology & Management. The centre also plans to increase the strength of existing M.Tech and Ph.D. programmes. Future direction includes active participation of CESE faculty members in web-teaching and internet communication to open opportunities for interacting with foreign students and establishing partnership with universities within and outside the country for collaborative teaching and research activities.

Academic Programmes

CESE currently offers M.Tech. and Ph.D. programmes in Environmental Science and Engineering with a strong focus in teaching and research.

Degrees Awarded

M.Tech.	: 15
Ph.D.	: 11

New Courses Launched: CESE launched six minor courses for undergraduate students during last year which are listed in the table given below. These courses are unique and cover engineering and scientific aspects of environmental problem.

Semester	Course Title and Number
Autumn	Water and Wastewater Engineering (ES 203) Municipal and Biomedical Waste Management (ES 303) Environmental Management (ES 401)
Spring	Environmental Chemistry (ES 204) Environmental Systems Modeling (ES 306) Industrial Pollution Prevention and Clean Technologies (ES 444) or Environmental Change and Sustainable Development (ES 658)

New Academic Programmes Approved in 2009:

- Post-B.Sc. dual degree programme with M.Sc. and Ph.D. in Environmental Science and Engineering
- Five year dual degree programme with B.Tech in Environmental Engineering and M.Tech in Environmental Technology & Management.

Scholarships: Information is provided in the table given below:

Category	Number of Students Admitted Under Each Programme in 2008	
	<u>M. Tech</u>	<u>Ph.D</u>
Institute Teaching Assistance (TA)	13	4
External sponsored College Teacher (CT) Industry	-	1
Project sponsored (PS)	2	3
UGC/CSIR/DBT / QIP/ CPHEO fellowship holders	4	2

Student Exchange Programme: Aren Welch from Yale University, USA under Full Bright Research Scholar Programme.

R&D Activities

CESE received research grants from various funding agencies such as CPCB, MNRE, CSIR, DST, DBT, DRDO and European Union. The details of research projects are given below.

Sponsored Research Projects	: 15
New	: 4
Ongoing	: 9
Completed	: 2
Faculty Involved	: 8

Project Title	Sponsoring Agency	Status (New/ Ongoing/ Complete)
“Surfactant Aided Biodegradation of Model NAPLs”	DST	New Project
“Sampling and Analysis Techniques for Bioaerosol Standardization and Field Evaluation of Airborne Endotoxins”	DST	New Project
“Development Of Two-Step Treatment Strategy For Effluent Generated From Agro Based Pulp And Paper Mills”	DST	Ongoing Project
“Collaborative Research and Technical Advice on Effluent Management”	Agave Industries (India) Pvt. Ltd	New Project
“Sponsorship for Research Related Activities”	Canlinx Logistics India Pvt. Ltd. Mumbai and Kartik Builders and Developers, Navi Mumbai	New Project
“Modification of UASB Reactor for Improved Wastewater Treatment”	DBT	Completed Project
“Development of Continuous Mode Arsenic Removal Technology for Drinking Water Based on Indigenous Zerovalent Iron”	DST	Ongoing Project
“Studies for Design of Systems for Removal of Tar and Particulate Matter from Producer Gas” (for IC Engine and Gas Turbine Application)	MNRE	Ongoing Project
“Characterisation, Source Identification And Apportionment of Atmospheric Particulate Matter”	DST	Ongoing Project
“High Temperature Gas Phase Synthesis & Characterization of Tailored Ultra Fine Powders : SERC Scheme”	DST	Ongoing Project
“Study and Optimization of DI Engine Performance Running on Jatropha Bio-diesel Blend and Straight Vegetable Oil (SVO)”	DRDO	Ongoing Project
“Dismantling of Vessels with Enhanced Safety and Technology <i>i.e.</i> DIVEST”	European Union	Ongoing Project

Project Title	Sponsoring Agency	Status (New/Ongoing/Complete)
“Cost Effective and Environmentally Sound Dismantling of Obsolete Vessels”	European Union	Completed Project
“Zero-Valent Metal Based Catalysts for Dehalogenation of AOX (Adsorbable Organic Halides) Compounds in Pulp and Paper Industrial Effluents”	CSIR	Ongoing Project
“Development of Reactors using Palladium Immobilized on Bacterial Cellulose for Remediation of Water Contaminated with Pentachlorophenol and Lower Chlorinated Phenols”	DST	Ongoing Project

Consultancy Projects

The department undertook seven jobs generating Rs. 4,35,87,920/-. The total number of faculty involved was three.

Patents

Sumathi Suresh and Upendra D. Patel

Patent Application Number: PCT/IN2008/000213

Entitled : “Reactor for Reductive Conversion Reactions Using Palladized Bacterial Cellulose” filed for PCT (international) patent through financial assistance provided by Department of Biotechnology, Govt of India, 2008 International Search Committee Report published (publication number: WO2008/122987)

Status : Patent approved for national phase filing.

Chaudhari S.

Patent Application No.2336/MUM/2008 dated 03/11/2008

Entitled: “An Improved Process for Water Treatment to Remove Arsenic Iron and Phosphate by Zero Valent Iron and A Reactor There for.”

Extension Activities

Sethi, V.

Organised an IIT B- USEPA (Office of International Activities, Washington DC) meeting to identify common research interests

Participated in the McDonnell meeting at Hong Kong in December 2008

Dikshit, A.K.

Organised QIP-cum-CEP Short Term Course on “*Environmental Management in Industries*”, IIT Bombay, October 13-17, 2008.

Karmakar, S.

Delivered three lectures in the CEP course on “Engineering Mechanics”, organized by Prof. D. Choudhury, Department of Civil Engineering, IIT Bombay. Organized at Government Polytechnic, Ahmedabad on April 24, 2008.

Delivered two lectures in the CEP course on “Hydrologic Impacts of Climate Change and Sustainable Development”, organized by Prof. R. Maity, Department of Civil Engineering, IIT Bombay on July 4-5, 2008.

Visitors to the Department

Ms. Medolina Caprusu, Legal Advisor (Maritime Activities), European Union Commission Head Quarters, Brussels, Belgium, visited the CESE for the discussions on “Solid and Hazardous Waste Pollution In Marine Environment” and also delivered lecture on “Legal Aspects of Hazardous Waste Management” on February 26, 2009..

Dr. Rane, University of Goa – as part of NAST INDO-US S&TF Centre activity – performed experiments for “Synthesis of Nano-Powders for Industrial Applications” during 19-25 October, 2008.

Mr. Michael Stahl, Mr. Ted McDonald, Mr. Bharat Mathur from USEPA visited CESE for identifying research interests for collaboration on 23rd Sept., 2008.

Prof. Pedro Alvarez, Rice University, Houston Texas delivered two lectures on “Principles and Applications of BTEX Bioremediation” and “Microbial Interactions with Fullerenes and Other Nanomaterials: Environmental Implications and Applications” in Feb., 2009.

Conferences/ Symposia/ Workshops/ Seminars (Participated/Papers Presented)

National

Patil, R.S. and Chitra, P.M.

Presented a paper “Contribution of the Transport Sector to Global Warming and Possible Mitigation Measures”, *National Workshop on Global Warming at Trivandrum*, India on 19– 21 January, 2009

Mishra, A. and Garg, A.

Participated in the *National Conference on Environmental Management: Watch Your Carbon Footprint* at K. J. Somaiya College of Science and Commerce, Vidyavihar, Mumbai on 23 -24 January 2009.

Singh, S.S; Dikshit, A.K.

“Treatment of Digested Distillery Spent Wash using Fungal Sequencing Batch Reactor”, *National Conference on Environmental Management*, K.J. Somaiya College of Science and Commerce, Mumbai, January 23-24, 2009.

Dikshit, A.K., Anjana, M.R.

“Treatment of Digested Distillery Spent Wash using Fungal Sequencing Batch Reactor”, *National Conference on Environmental Management*, K.J. Somaiya College of Science and Commerce, Mumbai, January 23-24, 2009

International

Sethi, V.

2nd International Symposium of Energy and Environment, McDonnell International Scholars Academy, Hong Kong, December 8-10, 2008

Mukherji, S., Parvez, S., and Venkataraman, C.

Participated in the 5th *SETAC World Congress*, organized by The Society for Toxicology and Chemistry, held on Aug 3-7, 2008, at Sydney, Australia, and presented a paper on “Toxicity Characterization of Hydrophobic Organic Compound Mixtures Based on Concentration Addition and Independent Action Models”.

Invited Lectures

National

Patil R.S.

“Air Quality : What? Why? How?”, American Int. School of Bombay. March 19, 2009.

Dikshit, A.K.

“Planning and Design of Radial Collector Wells: Three Case Studies”, Nirma University of Science & Technology, Ahmedabad, Sept 20, 2008.

Delivered talks on “Introduction to Water Pollution”

and “Role of Biotechnology in Water Pollution Control” at One Day Seminar on ‘Environmental Biotechnology’ organised by Thodomal Sahani Engineering College, Mumbai, 30th August, 2008.

“Waste Management: Scientific Soundness Prior to Implementation”, the Royal Norwegian Embassy, the Research Council of Norway and the SINTEF, Norway, at Shangri La Hotel, New Delhi, October 21, 2008.

“Four phases of Research on Tertiary Treatment of Distillery Wastewater at IIT Bombay”, NITK, Surathkal, January 10, 2009.

“Managing Solid Wastes in Cities”, IE (I), Mangalore Local Centre, January 10, 2009.

“EIA and ISO 14000 w.r.t. Carbon Foot Print”, K.J. Somaiya College, Mumbai, January 24, 2009.

Mukherji, S.

“Bacterial Degradation of Petroleum Oils for Enhanced Bioremediation and Treatment in Reactors”, *Workshop on Emerging Trends in Environmental Biotechnology*, Department of Chemical Engineering, NIT Surathkal, Srinivasnagar, Jan 12-14, 2009.

Karmakar, S.

Keynote presentation on “Assessing Vulnerability to Natural Hazards” at Pravara Rural Engineering College, Loni, Pune University, India on 26th Sept., 2008.

International

Sumathi S. and Vyjayanthi J. P.

“Application of palladized Bacterial Cellulose for Remediation of Recalcitrant Pollutants”, *3rd International Congress on Bioprocesses in Food Industries (ICBF) 2008 & 5th Convention of Biotech Research Society of India (BRSI) 2008* at Osmania University, Hyderabad, India held during 6th -8th November 2008.

Karmakar S.

“Systems Techniques and Uncertainty Modeling in Water Resources Management - Assessment and Optimal Selection of Alternatives for Floodplain Management: An Interval Programming Approach” at Department of Civil and Environmental Engineering, Nanyang Technological University, Singapore on 8th April 2009

Honorary Work

Asolekar S.R.

Member of the “Expert Committee” constituted by the Govt. of Maharashtra in October 2007; entrusted with recommending clearance for the High-rise Buildings after investigating environmental suitability of the tower-projects having more than 20 floors and taller than 70 meter height.

Member of the quasi-judicial Supreme Court Authority entitled “Dahanu Taluka Environmental Protection Authority” entrusted with the conservation of the eco-

fragile region of Dahanu Taluka and surroundings constituted by the Honorable Supreme Court of India since its inception i.e. March 1997.

Patil R.S.

Member, Program Advisory Committee in Atmospheric Sciences under SERC, DST, GOI, 2007-2010.

Member, Editorial Board, Asian Jnl. of Chemical and Environmental Research, 2007-2010.

Member, Editorial Board, Jnl of Scientific and Industrial Research, Published by NISCAIR, New Delhi, 2008-2010.

Reviewed two papers for Atmospheric Environment, Elsevier Publication, 2008-2009

Reviewed two papers for Jnl of Environmental Engineering and Science BC Canada, 2008-2009.

Reviewed one paper for Environmental Monitoring and Assessment, Elsevier 2008

Dikshit, A.K.

Reviewed papers for International Journal of Environment and Waste Management,; Journal of Geography and Regional Planning; Journal of Environmental Engineering (ASCE); Journal of Hazardous Materials; Bioresource Technology; Landscape and Urban Planning; Atmospheric Environment; Colloids & Surfaces Part A; Journal of Clean Technology and Environmental Policy; Waste Management; Environmental Modelling & Software; and Chemical Engineering Journal, April 2008-March 2009.

Member, International Program Committee (IPC) for the IASTED International Conference on *Applied Simulation and Modelling* (ASM 2008), Corfu, Greece from June 23-25, 2008

Member, International Program Committee (IPC) for the IASTED International Conference on Water Resource Management (Africa-WRM 2008), Gaborone, Botswana. September 8 -10, 2008.

Member, National Advisory Committee of SHILP'09: Second National Conference on Recent Trends in Civil Engineering, being organized by Civil Engineering Department, I.T., B.H.U., March 27 -29, 2009

Member, Advisory Committee for the Conference on Urban Infrastructure and Geoinformatics (*IGeoMap 2009*), to be held at IISc Bangalore, August 20 -22, 2009.

Member, Editorial Advisory Board, Journal of Environmental Science and Engineering, (Publishers: NEERI, Nagpur, India)

Member, Editorial Board, Journal of Environmental Science and Health, Part A (Publishers: Taylor and Francis Group)

Member, Editorial Board, Journal of Clean Technology and Environmental Policy (Publishers: Springer Verlag)

Sumathi S.

Associate editor for Journals published under Asian Network for Scientific Communication (since February 2007), Editorial Board member of: The Open Waste Management Journal, The Open Colloid Science Journal

Technical reviewer for the following journals: Bioresource Technology, Separation and Purification Technology, International Journal of Biomolecules; Journal of Colloid and Interface Science; Journal of Hazardous Materials, Indian Journal of Biophysics and Biochemistry, Journal of Scientific and Industrial Research,

Technical reviewer for Project proposals sponsored by Department of Biotechnology (DBT), Govt. of India, Ministry of Environment and Forests, Govt. of India, Rajiv Gandhi Science and Technology Commission, Mumbai, India.

Chaudhari, S.

Reviewed papers for International Journals, Environmental Science and Technology, Journal of Hazardous Materials, Journal of Environmental Engineering (ASCE), 2008- 2009.

Mukherji, S.

Reviewed papers for International Journals: Journal of Hazardous Materials, October, 2008; and February 2009; Environmental Technology, November 2008; J of Environmental Management, November 2008; Acta Biomaterialia, May 2008; and September 2008; Applied Biochemistry and Biotechnology, August, 2008; Chemosphere, August 2008; Bioresource Technology, July 2008.

Garg, A.

Reviewed papers for Journal of Hazardous Materials, Chemosphere and Water Environment Research in 2008-2009.

Member, Editorial Advisory Board, International journal of wastewater treatment and green chemistry.

Karmakar, S.

Reviewed papers for 1. ISH Journal of Hydraulic Engineering, 2. Journal of Flood Risk Management, 3. Advances in Water Resources, 4. Journal of Computing in Civil Engineering, ASCE

Faculty Members and their Specializations

**1. Shyam R. Asolekar
Professor & Head**

Hazardous Waste Treatment and Disposal Technologies

Treatment of Leachates and Industrial Wastewaters

Modeling of Environmental Systems (Lake, River, Ocean, Atmosphere)

Monitoring of Marine Pollution using Remote Sensing
Cleaner Production and Preventive Environmental Management.

2. Rashmi S. Patil

Air Pollution Dispersion and Receptor Modelling

Indoor Air Pollution and Exposure Assessment

Air Quality Monitoring and Management

Environmental Impact Assessment

3. Sudhir K. Gupta

Physico-chemical Processes for Water and Wastewater Treatment

Biological Systems for Wastewater Treatment including Removal of Priority Pollutants

Environmental Impact Assessment

Solid & Hazardous Wastes Management.

4. Virendra Sethi

Aerosol Science and Engineering

Air Quality Engineering

5. Anil K. Dikshit

Water and Wastewater Treatment Technologies

Urban Solid Waste Management

Environmental Systems Modelling and Optimization

Environmental Management and Impact Assessment

GIS Applications for Environment.

6. Sumathi Suresh

Microbiological Processes (Biodegradation/Biotransformation & Biouptake) for Treatment of Industrial Wastewater

Chemical Catalysis for Transformation and Degradation of Highly Persistent Pollutants using Zero-valent Metals, Bimetallic System and Immobilized Metals

Enzyme Mechanism and Action

Biotechnological Options for Cleaner Technologies.

7. Sanjeev Chaudhari

Water and Wastewater Treatment

8. Suparna Mukherji

Biodegradation and Bioremediation of Complex Organic Pollutants

Toxicity Evaluation of Complex Mixtures

Environmental Application of Nanomaterials

Sorption Phenomena

Sampling and Analysis of Bioaerosols

9. Anurag Garg

Environmental Engineering

Wastewater Treatment

Solid Waste Management

10. Subhankar Karmakar

Environmental and Water Resources Systems - Development of Optimization Models for Surface

Water Quality Control, Irrigation Water Management, Floodplain Planning and Management, Solid Waste Management

Uncertainty Modeling in Environmental Systems - Probabilistic Approach, Fuzzy Sets Theory and Interval Optimization

Water Conveyance Systems and Hydraulic Designs - Optimal Design of Water & Waste Water Conveyance Systems and Hydraulic Structures

Flood Risk Management - Flood Vulnerability analysis Using GIS, Multivariate Flood Frequency Analysis.

11. P.P. Parikh

Emeritus Fellow (AICTE)

C. Engines (Fuels, Alternate Fuels, Emissions, Dual-fuel and Bio-fuel Gas Engines)

Biomass Gasification (Design and Development of Gasifier and Gasifier Engine Systems, Qualifying Testing and Certification)



Introduction

The Industrial Design Centre (IDC) offers a two-year programme leading to Master of Design (M.Des.) degree in the areas of Product Design, Visual Communication, Interaction Design and Animation. The programme is meant to develop skills, knowledge and aptitude among students to become creative problem-solvers who can bring about innovation in the manufacturing and communication industries. At the end of their education they are expected to make a meaningful contribution to the industry and set new future directions. The two faculty members who newly joined the centre are:

K Ramchandran, Professor

Purba Joshi, Lecturer (Sr.Scale)

Degree Awarded:

M.Des. : 44

R&D Activities

Main areas of R&D activity

Ergonomics, Work Physiology, Setting up Standards of the Home Interior for the Elderly, Product Development for the Elderly, Behavioral Ergonomics.

Sponsored Research Projects

New : 5

Ongoing : 8

Faculty Involved : 6

Academic Programme

M.Des. in Product Design, Visual Communication, Interaction Design and Animation

Sponsored Research Projects :

Project Title	Sponsoring Agency	Status (New/Ongoing/Complete)
User Studies for Media and Entertainment (Nokia India Pvt. Ltd., Bangalore)	Nokia	New
Internet Applications on Mobile Phones in Developing Countries.	Nokia	New
GALLA - LOW COST RETAIL MANAGEMENT SYSTEM.	Media Labs Asia	Ongoing
“Conservation and Repurposing of Traditional Time based Media”	IRCC	Ongoing Projects
“Kaavad tradition of Rajasthan”	Ministry of Textiles	Ongoing Projects
“Sewn Narratives”	Kalaraksha	New Projects
“Storytelling Using Traditional and Digital Media”, IRCC, IIT Bombay	IRCC	Ongoing Projects with a traditional patua.

Project Title	Sponsoring Agency	Status (New/Ongoing/Complete)
“Development of Residential Standards for the Elderly”	Department of Science & Technology	New Projects
“Creating awareness among the students and their strategic involvement in product concept development”	Department of Science & Technology	New Project
Design for Improving Slum Businesses(Honeywell Technology Solutions Lab Pvt.Ltd.)	Honeywell Technology Solutions Lab Pvt.Ltd., Bangalore	Ongoing
ReDesign of Interaction of Air Defence System (Larsen & Toubro Ltd., Mumbai)	Larsen and Toubro Limited	Ongoing
Combat Vehicle Styling (M/s. Larsen & Toubro Ltd., Mumbai)	Larsen and Toubro Limited	Ongoing
Combat Vehicle Styling (Larsen & Toubro Ltd., Mumbai)	Larsen and Toubro Limited	Ongoing

Consultancy Projects

The department undertook 13 jobs generating Rs. 55,25,337.

The total number of faculty involved was 10.

Patents

Munshi, K

Frangible Modular Cabin for housing ILS at Airports

Extension Activities

Seminar

Research Methods - as inspirations for design One-day seminar at IDC, IIT Bombay on 8th November 2008

Workshops

Ray, G.G

Methodology in Ergonomics for ICAR Research Scientists, June 2–6, 2008, IDC, IITB.

Conduction of Ergonomics Workshop, Expo Pdi, Industrial Design Centre, IITB during September 12-13, 2008.

Poovaiah Ravi

National Educational Meet’ Roundtable meet to discuss introduction of Design as a subject in School Curriculum. February 6–7, 2009 at IDC, IIT Bombay

Short-term Courses

Ray, G.G

Conduction of Short term courses for the PG level, MIT Design School, Pune, May 19–23, 2008

Conduction of Short term courses for the UG level, MIT Design School, Pune, October 20–24, 2008

CEP Course

Joshi Anirudha

Tutorials on “Being Effective Through User Experience Metrics”, Mumbai, Pune, Bangalore, Hyderabad, Chennai January, February 2009

Monsoon Course on HCI 2008 IDC, IIT Bombay August 2008

Creative Thinking and Problem Solving (with Prof. AG Rao) Paypal, Chennai July 2008

Sadhu, N.

One hour lecture on Visual Ergonomics

Trivedi, K. and Rane Mandar

1-Day Workshop on “Corporate Identities of Public Sector Corporations: The need for Change” September 5, 2008 at IDC IIT Bombay

Rane Mandar under QIP

Curriculum Development Program (CDP)

A book on *Visual Order* (220 Pages)

Ray, G. G.

“Kinesiology and Ergonomics Course”, PG Diploma in Sports Science and Nutrition, SNDT Women’s University, Juhu.

Poovaiah Ravi

“Exposure to Communication Design for IT and Media Professionals”, 3-Day Workshop held during October 9-11, 2008

“‘ExpoPDi’ Exposure to Product Design and Innovation”, 3-Day Workshop held at IDC during September 11-13, 2008.

Design Degree Show Annual Exhibition of IDC

IDC organized the following events at IIT Bombay during June 9–11, 2008 and further at Nehru Centre, Mumbai, during June 13–15, 2008.

The following events were being organized as part of DDS 2008:

1. Exhibition of Student Projects
2. Student Project Presentations
3. IDC Animation/Film Screenings
4. Workshop on Design for High School Students
5. Seminars on Design Experience
6. Designers Meet

Design Degree Show (DDS) is the annual event, showcasing the design efforts at the Industrial Design Centre (IDC) at IIT Bombay. DDS is aimed at creating design awareness in society and simultaneously offers a platform for people to meet and interact, as a facilitator for new ideas to emerge and fruitful collaborations to materialize. A large number of public, students, entrepreneurs and representatives of various industries and media visited this exhibition. It is covered well by major newspapers, magazines and TV channels.

Typography Day 2009’

Typography day 2009 was organized by the MAEER’s MIT Institute of Design, Pune, and Industrial Design Centre (IDC) at the Indian Institute of Technology Bombay along with India Design Association (InDeAs) during February 23–24, 2009.

Mohanty Raja

Setting up a pottery and glazing infrastructure in the Ceramic Studio at IDC.

Conferences /Symposia/ Workshops/Seminars (Participated / Papers Presented)

National**Rao A. G.**

Conducted a one-day workshop on 21st January 08 for children from Municipal schools run by NGOs at NCPA. The programme was sponsored by Mohile Parikh Centre for Visual Arts.

Conducted two sessions on *bamboo craft* in a workshop for M P Council of Science and Technology during June 23 –25 2008 at Bankhedi, Hoshiangabad, MP.

Conducted a 4-day workshop in on “Art and Science of Golden proportion” for children in September ’08, organised by Pomagranate Workshop.

Made presentation on “Fun do Scool – Our Experiments in Design with Children,’ in *National Meet on Introducing Design and Innovation’ in School Curriculum* held at IDC on 7th of February 2009.

Conducted a 4-session *Workshop on 3D Thinking: bulding a Castle for children* in February 09.

Joshi Anirudha

Nikhil Welankar, Kirti Kanitkar, Anirudha Joshi; “Shree Ganesha: The First Phone for Illiterate Users”, *USID 2008* Bangalore; 2008

Munshi K

Participated in TIFAC- ONGC Seminar - *Use of Composite Materials in Oil & Marine Applications*, Mumbai – November 25, 2008

Participated in Conference on *Auto Design*, organized by SIAM (Society of Indian Automobile Manufacturers), Mumbai – January 19, 2009.

Sabnani Nina

Presented ‘Visualizing Identities’ in the Seminar on *Visual Narratives*, held on March 21st, 2009, at IDC, IIT Bombay

Presented ‘Mukand and Riaz’ at the conference *Mantles of Myth*, held in Jaipur on December 13th 2008

Book reading of ‘Mukand and Riaz’ at the *Bookaroo Festival for Children’s Literature* at Delhi during November 22 – 23, 2008

Ray, G.G

Paper Presented “Ergo-Design, An Integrated User Centered Approach Between the Ergonomists, Product Designers, Agricultural Engineers, and Manufacturers for Better Agricultural Tool Development”, and Participated in the *International Conference on Humanizing Work and Work Environment-2008*, held on December 21 - 24, 2008, at Vishwakarma Institute of Technology, Pune.

International**Rao, A. G.**

Presented a paper, “Craft as a Postmodern Venture: Bamboo craft experience”, as invited speaker in ‘P & D Design 2008’, *Conference on Design Research and Development*, held during October 8-11, at Sao Paulo, Brazil.

Made a presentation on “New frames to look at Craft” as an invited speaker in “*DesignEd Asia Conference 2008*”, held during December 8-15, at Hong Kong Polytechnic University,

Invited as “*Visiting Scholar to present a Lecture and conduct a one day workshop*,” by the School of Art, Design and Media of Nanyang Technological University, during March 12 to 18th, at Singapore.

Joshi Anirudha

“User Experience Metric and Index of Integration: Measuring Impact of HCI Activities on User Experience”; *International Workshop on the Interplay between Usability Evaluation and Software Development*, Pisa; 2008

Anirudha Joshi, Nikhil Welankar, Kirti Kanitkar, Riyaj Sheikh, Naveen BL;

“Rangoli: A Visual Phonebook for Low-literate Users”; *Mobile HCI 2008*, Amsterdam; 2008

Munshi K

Participated in the deliberations of the “*1st meeting of Hyundai Design Council*” at Hyundai R&D Centre in Korea -5 to 7 November 2008

Participated in the deliberations of the “*2nd meeting of Hyundai Design Council*”, at Hyundai R&D Centre in Korea -26 February 2009

Mohanty Raja

Attended the *International Conference on “Fine Arts in Egypt: 100 Years of Creativity*” in October 2008 and presented a paper titled, “Tribal, Traditional and Urban Art Practices : Contextuality and Transcendence.”

Participated in the *International Conference on “Archiving the Art Histories: Exigencies and Challenges in Pedagogy and Research*”, at Baroda in February 2009.

Ray G.G.

“Ergo-Design, an integrated user centered approach between the ergonomists, product designers, agricultural engineers, and manufacturers for better agricultural tool development”, and Keynote Address presented in the *International Conference on Humanizing Work and Work Environment-2008*, held on December 21 - 24, 2008, at the Vishwakarma Institute of Technology, Pune.

Rane Mandar

“Teaching visual relationship of type through family ties”, at the *International Typography Conference*, Palermo, Sicily, Italy

Invited Lectures**National****Joshi Anirudha**

“An Introduction to HCI”, *IEEE International Conference on Industrial and Information Systems*, IIT Kharagpur, December 2008.

“An Introduction to HCI”, Mastek, December 2008.

“Measuring User Experience Through Metrics”, *CAUE*, November 2008.

“An Introduction to HCI”, *Workshop on Project UNITE*, November 2008.

“*An Introduction to User Experience*”, Techcamp October 2008.

Munshi K

“Electrical Vehicles Development Issues”, at the *Conference on Sustainable Transport* at IIT Bombay – 26 September 2008

Sreekumar G V

Presented a case study : “Redesign of Chandamama magazine” at *Typography Day*, at M.I.T, Pune, March 2009.

Lectures on “Information Design and Typography” at *Expo VC* at IDC, IIT Bombay, November 2008.

International**Munshi K M**

Indian Auto Design Scene – an invited lecture to members of design and styling group at Hyundai R&D Centre in Korea – 5 November 2008

Significant Awards / Distinctions**Sabnani, Nina**

“Best Animation” award for Mukand and Riaz at the *International Video Film Festival*, Trivandram, Kerala. May 2008

Member, Advisory Board, Centre for Media and Cultural Studies, Tata Institute of Social Sciences, Mumbai

Ray G.G.

Chairman of the Ergonomics Division (PG15), Bureau of Indian Standard.

Honorary Work**Joshi Anirudha**

Review for CHI 2009

Interact 2009

Munshi K

Jury for “Plastindia Awards 2009”, Plastindia Foundation, Mumbai. – 19 / 26 December 2008

Chairman, Ph.D. viva voce at Dept. Of Civil Engineering, IIT Bombay – 30 December 2008

Ray G.G.

Served as the ergonomist specialist of the Quinquennial Review Team, Indian Council of Agricultural Research till April 2008.

Continued as the expert member of the DST, Science of Society Division, TIE Project Review Group.

Continued as the expert member of the DST, Science of Society Division, Women uplift Project Review Group.

Continued as the expert member of the DST, Science of Society Division, Women and Occupational Health Project Review Group.

Coordinator, Common Entrance Examination in Design (CEED) 2009, IITB

Continued as the Convener, Furniture Committee, IITB.

Continued as the member, Project Execution Group, IITGn.

Continued as the Question paper setter/ Practical Examination Jury, Department of Physiology, University of Kolkata .

Continued as member of the Expert Committee, Luce Brail Memorial Research Committee, National Association of Blinds, Mumbai

Faculty members and their Specialization**1. Athavankar UA**

Product Design,
Product Semantics,
Cognition and Imagery

2. Bapat V.P.

Product Innovation
Plastic Product Design,
Rapid Prototyping and Tooling,
Design for Manufacture

3. Chakravarthy B.K.

New Product Design,
Product Form & Aesthetics,
Innovation

4. Joshi Anirudha

New Media Design,
Internet, Multimedia,
Interaction Design

5. Joshi Purba

Product Computer Modelling
Product Design

5. Mohanty Raja

Basic Design, Print Media,
Illustration, Exhibition Design,
New Media

6. Munshi K.

Product Design,
Design Management and Design Tools

7. Poovaiah Ravi

Information Design
Interaction design
Experience Design,

8. Ramchandran K

Product Design
Automobile Design
Product Representations

9. R Sandesh

Product Design
Form Studies,
Craft Culture Design and Development

10. Ranade Shilpa

Animation,
Illustration

11. Rao AG

Product Design,
Basic Design,
Bamboo Craft, Creativity

12. Rao Sumant

Animation,
Illustration,
Special Effects

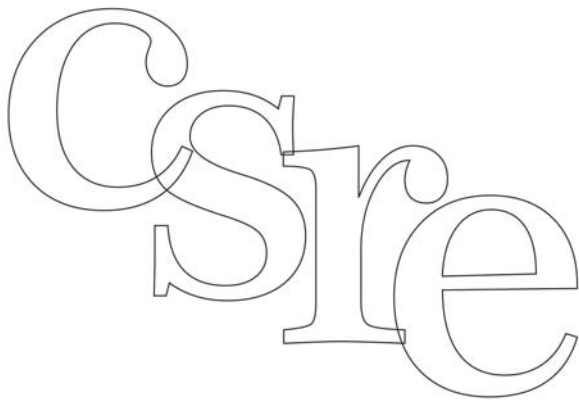
13. Ray G.G.

Workstation Ergonomics,
Automobile and Product Ergonomics.
Visual Ergonomics

14. Rane Mandar

Graphic Design

- 15. Sadhu N.**
Product Ergonomics,
Visual Ergonomics,
- 16. Sreekumar G.V.**
Typography,
Magazine Design,
Font Design,
Information Graphics
- 17. Nina Sabnani**
Animation,
Documentary cinema,
Illustration,
Visual Ethnography,
Storytelling
- 18. Trivedi K.**
Graphic Design,
Indian Design Traditions,
Exhibition Design.



Centre of Studies in Resources Engineering

Introduction

The Centre of Studies in Resources Engineering (CSRE) was established in 1976 at Indian Institute of Technology Bombay by the Ministry of Education and Social welfare. It was set up on the recommendations of the Council of IITs with the purpose of advancing the frontiers of science and giving the country breakthrough technology and programs for generating manpower required in the area of Natural Resources Engineering. The centre is well known for its work on applications of Satellite Data, GIS, GPS and Microwave Remote Sensing for Natural Resources Management. The Centre has started M. Tech and Ph. D. program on 'Natural Resources Engineering'. The second batch of 13 M. Tech (NR) students received their degrees in 2008 convocation. The Centre received several new projects sponsored by government and other scientific organizations such as DST, ISRO, DRDO, ONGC, etc.

Infrastructural facilities are strengthened with the addition of multi-functional sensor web-node/distributed sensing device 'Field Server' to the Agro Informatics Lab. Further, 22 additional floating licenses of ARCGIS V9.3 were procured for use across CSRE LAN.

The centre has accomplished significant progress in its activities of sponsored research and consultancy. The Resources Engineering Association (REA) and CSRE organized 'Geomatrix 09, a national conference from February 28 to March 01, 2009, providing a good platform for interaction between young researchers and leading experts on geo-spatiality in the Golden Jubilee year of IIT Bombay. Around 170 delegates participated and around 70 papers presented.

The centre has also contributed towards high resolution image analysis, hyper-spectral image analysis, and content-based image retrieval and educational content development. High resolution remotely sensed images present unique challenges to image analysis researchers as it requires new information extraction strategies that capture the spatial, textural, and spectral information present in these images. The center is also working on theoretical aspects of Geospatial technology such as Development of Efficient Algorithms, Dynamic Models and Multi Dimensional Data Handling, etc.

New Infrastructure

Multi-functional sensor web-node/distributed sensing device 'FieldServer' added to Agroinformatics Lab.

Twenty Two additional floating Licenses of ARCGIS V9.3 were procured for use across CSRE LAN

Significant Collaborations

Venkataraman, G.

Technical Collaboration with SASE (DRDO) and

Member of the core group for analysing MiniSAR data of Chandrayaan-1 mission

Rao, Y. S.

Collaboration is made with DEAL, Dehradun on SAR data for defence applications

International Visits

Adinarayana, J.

Visited Germany (University of Bonn & DLR); The Netherlands (ITC-Enschede & ISRIC, Wageningen) and Switzerland (ETH, Zurich) and UNU-EHS (Bonn)

Academic Program

Students Intake:

M. Tech : 14

Ph. D. : 09

Degrees Awarded

M. Tech : 13

The centre offers M.Tech and Ph.D. program in 'Natural Resources'. Presently, 11 faculty members including five scientists and engineers with expertise in various areas of remote sensing and resources engineering and allied subjects are involved. About nine students are admitted under Ph.D. program in the centre in the first batch. Further, the centre participates in basic and applied areas through sponsored research projects in frontier areas and offers expertise in the consultancy projects. A web/CD-ROM tutor for digital image processing for remote sensing is being prepared which is useful at M.Tech. level for students and course instructors.

R & D Activities

The R & D activities of the centre are in the areas of remote sensing, natural resources identification, development & management, and spatial data base systems and applications. Other areas of activities include:

- Remote sensing and GIS applications to hydrology, earth sciences including mineral exploration, terrain evaluation and land use planning, wetland and coastal investigation, desertification and drought monitoring, environmental management, landslide investigations.
- Microwave remote sensing of soil moisture and SAR Interferometry, training and Database development.
- Image data processing and analysis
- GIS software and Development
- Stratospheric Ozone and Trace Gases Assessment and Monitoring

- Development of multimedia educational content for digital image processing with emphasis on remotely sensed images.
- Ensemble classifiers, hyper spectral image analysis and high resolution image segmentation and classification.

The center continues to interact with the Department of Space, Govt. of India, through ISRO-IIT Bombay Space Technology Cell which sponsors research projects in the areas of remote sensing and space technology.

Sponsored Projects

New Projects	: 07
Ongoing Projects	: 17
Completed Projects	: 03
Faculty Involved	: 11

Consultancy Projects

New Projects	: 05 (25.54 lakhs)
Ongoing Projects	: 03 (50.01 lakhs)
Completed Projects	: 08 (25.35 lakhs)

Project Title	Sponsoring Agency	Status (New/ Ongoing/ Complete)
“Fast Sign-of-Laplacian-based Image Matching”	ISRO-IIT(B) Space Technology Cell”	New
“Geo-ICT and Sensor Network based Decision Support Systems in Agriculture and Environment Assessment”	Bilateral Cooperative Project (DST and Japan Science & Technology Agency)	New
“Development of Geo-gateway Software for Interchange of Spatial Data between Well-known GIS Formats”,	CAIR, DRDO, Bangalore	New
“Analysis of Hyperspectral Images with Applications to Agriculture”	ISRO-IIT(B) Space Technology Cell	New
“Methodology Development for Modelling and Monitoring Pollutant Plumes near Mahul Creek & Vashi Creek (CETP), using Remote Sensing & GIS techniques”	MPCB	New
“Wetland Mapping for Thane, Solapur and Goa”,	ISRO	New
“Development of Methodology for Generation of High Resolution Digital Terrain Model and Land/Show Cover Maps using Airborne LiDAR and Digital Photogrammetric Techniques”	DST	New
“Soil Moisture Mapping using ALOS PALSAR Polarimetric Data”	Japan Aerospace Exploration Agency (JAXA), Japan	Ongoing
“Hyperspectral Image Analysis with Applications to Agriculture”	ISRO-IIT(B) Space Technology Cell	Ongoing

Project Title	Sponsoring Agency	Status (New/ Ongoing/ Complete
“Methodology Development for Modelling the Propagation of Pollutant Plume & Estimation of Futuristic Impact on Coastal Ecology using Remote Sensing & GIS”	MMR-EIS, Mumbai	Ongoing
“NWIA: Goa Study”	Space Application Center	Ongoing
“Training and Services of GRAM++”	Self Sustained	Ongoing
“Assess the Impacts and Vulnerability of the Present Climate and Climate Change on the Three Most Vulnerable Coastal Districts in India and Formulate a Framework for Adaptation”	NATCOM -2 Project, Funded by MoEF in Collaboration with HSS Dept.	Ongoing
“GIS Based Rural Development Planning at District/Sub-district Level”	Ministry of Rural Development	Ongoing
“SAR Data Analysis for Snow Pack Characteristics and Glacier Movement Studies on Gangotri Glacier”	DST	Ongoing
“Snow and Glaciers Project”,	Space Application Centre (SAC)	Ongoing
“Land Cover Classification using SAR Polarimetric Techniques”	PRL, Ahmedabad.	Ongoing
“Study of Physical Process of Glaciers in Bhaga Sub-basin using Remote Sensing Techniques”	Department of Space	Ongoing
“Development of Drought Vulnerability Indices for Preparedness & Mitigation”	Ministry of Water Resources, Government of India, New Delhi	Ongoing
“Development of Methodology to Demarcate Snow Avalanche Susceptible Area and Path of Debris”,	Snow & Avalanche Study Establishment, Defense Research & Development Agency, Chandigarh	Ongoing
“Content Based Image Retrieval with Applications to Remote Sensing”	ISRO IIT(B) Space Technology Cell, IIT Bombay,	Ongoing
“Study on Snow Pack Characteristics Through Microwave Remote Sensing Techniques”	DST, New Delhi	
“An Integrated Technique for Monitoring Desertification Using Intelligent GIS”	Ministry of Environment and Forests (MoEF), Govt. of India	Ongoing
“GramyaVikas: a Distributed Collaboration Model for Rural Development Planning (a Geo-ICT Tool)”,	Technology Development, Extension & Training (TDET) Scheme, Department of Land Resources of the Ministry of Rural Development.	Ongoing
“Polarimetric SAR Data Processing for Classification and Point Target Data Detection”	DEAL, Dehradun	Completed
“Assessment of Drought and its Management Scenarios over Beko Watershed-A Decision Support System”,	Department of Science and Technology (DST), Govt. of India	Completed
“An Integrated Technique for Monitoring Desertification using Intelligent GIS”	Ministry of Environment and Forests, Govt. of India, New Delhi.	Completed

Extension Activities

Conferences / Workshops Organized:

National

Adinarayana, J.

2nd User Interaction Workshop GramyaVikas- a Distributed Collaboration Model for Rural Development Planning, July 02, 2008, CSRE, IIT Bombay

Brain Storming Workshop on 'GeoSense - GeoICT and Sensor Network based Decision Support Systems in Agriculture and Environment Assessment, November 23, 2008, Hyderabad

First National Conference on Geospatial Technologies - Geomatrix'09, Feb 28 to Mar 01, 2009 IIT Bombay

Inamdar, A. B.

Workshop on Recent Trends in Coastal and Marine Environment Research around Mumbai March 13, 2009 CSRE, IIT Bombay Supported by MPCB.

International

Adinarayana, J.

International Workshop on Geo-ICT and Sensor Network Technology and Applications, Aug. 24, 2009, Tokyo (co-organized with National Agricultural Research Center, Tsukuba)

Visitors

Dr. S. Ninomiya, M. Hirafuji, T. Kiura, T. Fukatsu and K. Tanaka, NARO/NARC Japan – in connection with Indo-Japan Bilateral Project and to deploy Field Servers in IITB for agriculture and environment assessment

Dr. Leisa Armstrong and a Team of 15 peoples from ECU University, Australia – to educate the activities on Geo-ICT in rural development in Agro-Informatics lab

Conferences / Symposia/ Workshops/ Seminars (Participated/ Papers Presented)

National

Adinarayana, J.

Participated in the *Workshop on Sensor Web Enablement*, June 02-03, 2008, Satyabama University, Chennai and India R&D Conference, FICCI, New Delhi, Dec. 22-23, 2008

Rao, Y. S.

Participated in *Symposium of Indian Society of Remote Sensing (ISRS)*, held at Nirma University

Campus, Ahmedabad, Dec. 18-20, 2008.

Mohan, B. K.

Participated in *National Convention of the Indian Society of Remote Sensing*, December 2008, Ahmedabad, organized by ISRO and Nirma University

Adinarayana, J.

“GramyaVikas – A GeoICT rural development planning tool for Field for online data assessment”, at the *Workshop on Sensor Web Enablement*, June, 02-03, 2008, Satyabama University, Chennai.

Sudharsan, D., Adinarayana J and Tripathy, A. K.

“Geo-information Service through Multi-Mode Approach for Rural Development Planning Using Open Source Geo-ICT Tools”, *7th All India People's Technology Congress*, February 06-07, 2009, Calcutta, pp 417-425.

Rao, Y.S., Sharma, S., Dyuti, T. and Choudury, A.,

“Analysis of Aqua AMSR-E L-3 Daily soil moisture product for soil moisture and flood mapping over Indian test areas”, *Symposium of Indian Society of Remote Sensing (ISRS)*, held at Nirma University Campus, Ahmedabad, Dec. 18-20, 2008.

Rao, Y.S.

“Free software for InSAR and DInSAR studies”, in *Symposium of Indian Society of Remote Sensing (ISRS)*, held at Nirma University Campus, Ahmedabad, Dec. 18-20, 2008.

Prajna, N.S., Mohan, B.K., and Rizvi, I.

“Automatic Extraction of Buildings From High Resolution Satellite Images”, *Annual Convention of Indian Society of Remote Sensing*, Nirma University, Ahmedabad, December 2009.

Farjana S. Birajdar, Samee Azmi, Arun B. Inamdar, Sushma Panigrahi, Patel, J. G., Murthi, T. V. R. and Singh. T.S.

“National Wetland Inventory and Assessment of Goa state Using Remote Sensing Techniques”, *GEOMATRIX*, at IIT Bombay, Feb 28-March 1, 2009.

Samee Azmi, Yatin Agarwadkar, Aliakbar Hathyari, Kaustubh Pawar, Arun B. Inamdar and Veena Rao, G. “Green Resource Mapping at IIT Bombay”, *GEOMATRIX-09*, at IIT Bombay, Feb 28-March 1, 2009.

Muhammed Sayeed, T. and Murti, M. V. R.

“Atmospheric ozone, carbon dioxide, methane and NO-NOx over Indian, arctic and antarctic regions with Atmospheric Chemistry Experiment Fourier Transform Spectrometer (ACE-FTS) data”, *GEOMATRIX-09*, IIT Bombay, Feb 28-March 1, 2009

Muhammed Sayeed, T. and Murti, M. V. R.

“Total stratospheric chlorine analysis above Indian region based on ACE-FTS data,” presented at *GEOMATRIX-09*, IIT Bombay, Feb 28-March 1, 2009

International

Venkataraman, G.

Participated in *IEEE IGARSS'08* from July 06-11, 2008

at Boston, Massachusetts,, USA

Attended *Third TerraSAR-X Science Team Meeting*, from 24-25 Nov, 2008 at DLR, Munich, Germany

Adinarayana, J.

IAALS/AFITA/WCCA2008 *Conference on Agricultural Information and IT*, Tokyo, Aug. 24-27, 2008.

International Workshop on Geo-ICT and Sensor Network Technology and Applications, Aug. 24, 2008, Tokyo *MapWorld Forum*, Feb. 10-13, 2009, Hyderabad.

Rao, Y. S.

Participated in *Int. Conference on Microwave 08, held at Jaipur*, Nov. 21-14, 2008 and

International Workshop On Cryosphere & Hazards For The Hindu Kush, Himalaya & Tibetan Plateau Kathmandu March 31–April, 02, 2008

Adinarayana, J., and Samee, A.

“Gramya Vikas - a GeoICT rural development planning tool as an aid for online data assessment”, *International Workshop on Geo-ICT and Sensor Network Technology and Applications*, 24.08.2009, Tokyo.

Venkataraman G, Singh Gulab and Kumar V.

“Snow cover area monitoring using multitemporal TerraSAR-X data”, *3rd TerraSAR-X Science Team Meeting*, DLR, Germany, 2008.

Vijay Kumar, G.Venkataraman, and Rao, Y.S.

“Study of Retreat and Movement of Himalayan Glaciers Using Spaceborne Repeat Pass SAR Data”, *American Geophysical Union*, Fall Meeting, San Francisco, USA, December, 2008.

Abhijat A. Abhyankar, Anand Patwardhan, Arun Inamdar

“Monitoring Changes In Rice Due To Tropical Cyclone Using Radarsat-1 SAR Data” *Asian Conference on Remote Sensing (ACRS 2008)*, Colombo, Sri Lanka, November 10-14, 2008.

Koteswara rao, Veeranki, Murti, M. V. R., Mombasawala, L. S., Raju, S. S. and Seetharami Reddy, B.

“Low Energy K α X-Ray Satellites of Phosphorous and its Compounds”, *European x-ray Spectrometry Conference EXRS-2008*, June 16-20, 2008, Organized by: Ruđer Bošković Institute, Zagreb, Croatia.

Invited Lectures

National

Adinarayana, J.

“Rural-Informatics in Decision Making, NIRD/NAIP Training Programme”, *National Institute of Rural Development*, Hyderabad, Feb. 10, 2009

Venkatachalam, P.

“GIS Principles in the QIP course on Recent Trends in Water Resources Systems Planning and Management” held during 03-07, Nov., 2008 at IIT

Bombay.

“GIS in Health Sector” February, 5, 2009 at Map World Forum, Hyderabad.

“GIS and its applications” at University of Pondicherry on 6th February 2009.

Mohan, B. K.

“Principles of Artificial Neural Networks in the QIP short term course on Soft Computing in Water Resources” Nov. 2008; Dept. of Civil Engineering, IIT Bombay, “Introduction to Object Oriented Image Analysis”, July 2008; Defence Electronics Applications Laboratory (DEAL), Dehradun

“Introduction to High Resolution Image Analysis”, January 2009, Centre for Artificial “Intelligence and Robotics (CAIR), Bangalore,

“Introduction to Geostatistics in GIS”, Jan. 2009, Centre for Artificial Intelligence and Robotics (CAIR), Bangalore.

“Introduction to Soft Computing”, July 2008, Maharashtra Institute of Technology (MIT), Pune

“Introduction to Hyperspectral Image Analysis”, Dec. 2008, QIP short term course organized by Department of Earth Sciences, IIT Bombay

Rao, Y. S

“SAR applications in snow cover mapping and analysis”, “Polarimetric SAR data processing and analysis” with lab demonstration, IIPS Dehradun, March 25, 2009.

International

Adinarayana, J.

“Geo-ICT in Rural Development Planning” delivered at the University of Bonn, DLR-Germany, ETH-Zurich, ISRIC-Wageningen and ITC-Enschede

Rao, Y. S.

“SAR Interferometry for Himalayan Glaciers Studies,” *International Workshop On Cryosphere & Hazards For the Hindu Kush*, Himalaya & Tibetan Plateau” Kathmandu 31 March – 02 April, 2008

Significant Awards and Distinctions

Venkataraman, G.

Academic Excellence Award of DRDO for the Year 2007 conferred on May 12, 2008, by the Honorable Prime Minister of India Dr. Man Mohan Singh at a function in DRDO HQ, New Delhi.

(Ms.)Venkatachalam, P.

National Geospatial Award for Excellence for the year 2007 conferred on December, 18, 2008 by Indian Society of Remote Sensing at its annual convention at Gandhinagar, Gujarat. The award consisted of Rs. 50,000/- in cash, a citation and a Medal.

National Geomatics Award for Technology for the year 2007 conferred on December 2008 by Indian Society of Geomatics at its annual conference at Dehradun, Uttarakhand. The award consisted of Rs. 25,000/- , a citation and a Medal.

(Both the awards are given in recognition of the contributions made to Geospatial technologies, and indigenous GIS software development.)

Adinarayana, J.

Elected as a Board Member of Asian Federation for Information Technology in Agriculture (AFITA); Editorial Member of the International Journal of Information Technology in Agriculture

Honorary Work

Adinarayana, J.,

Reviewed a paper for International Journal of Information Technology in Agriculture, December 2008.

Chairman for the conference and sessions of “Decision Support Systems and Farm Management, AFITA/ WCCA/IAALD Conference, Aug., 24-27, 2008, and Session II of the International Workshop on Geo-ICT and Sensor Network Technology and Applications, Aug, 24, 2008, Tokyo.

Session ‘Rural-Informatics and Rural Spatial Data Infrastructures, MapWorld Forum2009 Workshop on Geospatial for Rural Development, Feb., 24, 2009, Hyderabad.

Shyamala Mukherjee

Reviewed papers for the IEEE International Geoscience and Remote Sensing Symposium, 2009

Venkatachalam, P.

Member of REACH Monitoring Committee, TIFAC Centre of Relevance and Excellence in Environmental Geomatics, JNTU, Hyderabad

Member of the DOS and UGC appointed Committee to update and develop Curricula in Remote Sensing, GIS and GPS

Member, Editorial Board, Indian Journal of Geomatics

Mohan, B. K.,

Reviewed papers for Journal of remote sensing, 2008.

Faculty Members and Their Specialization

1. H. S. Pandalai

Head of CSRE and Professor of Department of Earth Sciences Ore geology, Mining and Geostatistics

2. J. Adinarayana

Agro-Informatics and Rural Development

3. S. S. Gedam

Stereo Image Analysis for Space borne images, GIS Applications, Digital Photogrammetry and Cartography, Global Positioning Systems for Surveying etc.

4. A. B. Inamdar

Coastalzone Management- Remote Sensing Applications.

5. M.V. Khire

Terrain evaluation , Landuse Planning, Wasteland Development , Monitoring Desertification and Run-off Estimation

6. B. Krishna.Mohan

Image Processing, High resolution image analysis, GIS, Multimedia educational content development for image processing

7. M. V. R. Murti

Remote Sensing Studies of Atmosphere and Trace gases; XRF and geo-chemical Methods of analysis

8. R. Nagarajan

Remote sensing and GIS applications to Natural Hazards-Landslides and Drought

9. Y. S. Rao

DEM Generation using Radar Interferometry(InSAR) Technology applications.

10. (Ms) .Shyamali Mukherjee

Computer Science and Engineering, Computer Vision and Graphics and Computational Methods

11. (Ms.) P. Venkatachalam

Development of Efficient Algorithms, Dynamic Models, Multi Dimensional Data Handling and Spatial Data Visualization for GIS Systems - Software Development and Remote Sensing.

12. G. Venkataraman

Spatial Modelling for Mineral Exploration, Microwave Remote sensing to the study of Glacier Characteristics.



Centre for Technology Alternatives in Rural Areas

Academic Programme

CTARA's second batch of 11 students (one sponsored) pursuing M.Tech. (Technology and Development) was inducted in July 2008. An organization 'Compatible Technologies' based in MN-USA has signed an MoU with IIT Bombay to sponsor one M.Tech. student per year for next five years. Another organisation 'Eco-Axis' based in India has sponsored one M.Tech. student. The programme continues to arrange minimum five field visits in a semester (typically one by each course instructor). The first year batch students successfully completed their 10 week field study (TD 609) at five different organizations. Experience from the feedback of the organizations where the students were placed as well as of the students themselves was gratifying. Another unique nature of the M.Tech. (TD) programme is that the students get to work on two different M.Tech. projects as a part of the curriculum. Two PhD students (Teacher's Category) have been admitted.

The first batch of M.Tech. (TD) is expected to graduate in August 2009

CTARA introduced a half semester course from Central Institute of Fisheries Education (CIFE) as a part of TD 612 on "Fisheries Technology & Development Opportunities". The course was taken by over 40 M.Tech. students from different departments of IIT Bombay.

R&D Activities

Narendra G. Shah

As a part of KVIC "Technology Interface Unit" project a 200 lit./day Bio-diesel plant has been installed and commissioned at the site of NGO (YMC-Tara) near Panvel, Dist. Raigad (MS). The unit will be run continuously for next three months to establish techno-economic feasibility. (Co-Investigators: Prof Mahajani, Chem. Engg.)

A new project on "Value Added Products from Potato Processing" has been initiated which aims at developing possible entrepreneurship using value added products from potato as a theme.

Anand B. Rao

"Demonstration and assessment of economic viability of new, energy efficient and less polluting brick-making technology (Vertical Shaft Brick Kiln – VSBK) in tribal block of Konkan region in western Maharashtra" – The project has been funded by RGSTC (Rajiv Gandhi Science & Technology Commission, Government of Maharashtra) - Rs. 34 lakhs over a period of three years. The work has begun and a research assistant (Mr. Pankaj Palande) joined on this project in autumn. We are looking forward to the construction of the kiln this year. (Co-Investigators: A W Date, U V Bhandarkar, V B Puranink , Mech Engg)

"Biomass-based decentralized clean energy – A potential solution to the energy problems in rural India: Study of starch-based biogas generation for rural energy needs" – The project has been sponsored by IRCC, IIT-Bombay. Experiments are in progress on the four working models of biogas plants and the preliminary results were presented at the National Conference on Energy Security for Rural Development – ESRD 2009, held at Gandhigram Rural University, Dindigul, TN 624302 on March 26, 2009.

Sponsored Research Projects

Project Title	Sponsoring Agency	Status (New/Ongoing/Complete)
“Technology Interface Unit”	KVIC-Mumbai	Ongoing
“Value Added Products from Potato processing”	CTI – MN USA	New
“Demonstration and assessment of economic viability of new, energy efficient and less polluting brick-making technology (Vertical Shaft Brick Kiln – VSBK) in tribal block of Konkan region in western Maharashtra”	RGSTC (Rajiv Gandhi Science & Technology Commission, Government of Maharashtra)	New
“Biomass-based decentralized clean energy – A potential solution to the energy problems in rural India: Study of starch-based biogas generation for rural energy needs”	IRCC	Ongoing

Visitors to the Department

Prof. M.S. Swaminathan, Director, M S Swaminathan Foundation, was invited as a distinguished guest speaker on 6th November 2008. He delivered Institute lecture on “Achieving Freedom from Hunger in an Era of Climate Change”.

Dr Ravi Chopra, Director, People’s Science Institute, Dehradun, was invited to deliver Institute Colloquium on 25th February 2009. He spoke on “People’s Science: Science of the People, by the People, for the People”.

Visitors (CTARA Seminar)

Prof. Girja Sharan, Centre for Management in Agriculture, Indian Institute of **Management, Ahmedabad**, “Management of Technology in Arid Areas (e.g. dew harvest, earth-tube-heat-exchanger coupled greenhouse, solcafe)”, July 24, 2008

Mr. Anand Kapoor, Shashwat, Manchar, Pune Dist., “Regional Development in the Context of Ambegaon Block”, July 30, 2008

Prof. Milind Dandekar, Dept. of Industrial & Production Engg., SGS Institute of Technology & Science, Indore, M.P., Mr. Harsh Chouhan, Shivganga Samagra Gram Vikas Parishad, Indore, M.P., Mr. Mahesh Sharma, volunteer working in Jhabua, M.P., “Integrated Rural Development – Jhabua, M.P. Experience”, August 1, 2008

Miss Bhavana Chilukuri, USA, “Teaching and Learning at Aghane: The Village experience”, August 12, 2008

Prof. K. V. S. Rama Rao (retired professor IIT Madras) “Education Initiatives in Rural Schools through ICT ? A Byrraju model”, September 17, 2008

Mr. V. S. N. Raju, Byrraju Foundation, Hyderabad, “Holistic Approach for Rural Transformation” The Byrraju way”, September 17, 2008

Prof. Venkatesh Athreya, Adviser, Food Security at the MSSRF, “Industrial Sector Policy in India: Pre and Post Reform Situation”, 24th September 2008

Prof. Sameer Prasad, University of Wisconsin at Whitewater, USA, “Developing Resilient Micro-Enterprise Operations in lieu of Supply Chain Disruptions”, Friday, January 16, 2009

Mr. Pawan, Alumni, IIT Bombay, Mr. Atul, Alumni, IIT Kharagpur, “Innovative use of Technology to bring Quality Education to Masses”, January 19, 2009

Dr. Prasad Modak, Executive President, Environmental Management Centre, India, “Sustainability Assessment of Technologies (SAT)”, February 2, 2009

Mr. Murthy Sudhakar, Alumni IIT, Kharagpur, “Bailing Out Bharat, Who and How”, February 9, 2009

Dr. Shyama V. Ramani, Senior Fellow, National Institute of Agricultural Research, France, “Where’s the Toilet Please? The evolution of the market for toilets for the poor in India”, February 24, 2009

Mr. Ninad Vengurlekar, Vice President, IL&FS Education and Technology Services Limited, Mumbai,

“100,000 Common Services Centres: Building a Sustainable Rural Development Model”, March 16, 2009

Mr. Dinesh Balsaver, Cooperative of Organic Farmers of India (COFI), Kamshet, “Organic Farming: An Opportunity for Improving Soil Quality and Farmer’s Income”, March 23, 2009

Mr. Rajiv Saxena (Int Dev design Summit, MIT, USA), “Smart Approaches to Development: Leveraging Business and Technology Innovation”, March 30, 2009

Conferences/ Symposia/ Workshops/ Seminars (Participated/Papers Presented)

National

Shah, N.G.

Das Ipsita, Naveen C, Shailendra S. Yadav, N. G. Shah, S. N. Merchant, U. B. Desai; “WSN Monitoring of Weather/Crop Parameters for Possible Disease Risk Evaluation for Grape Farms - Sula Vineyards, A Case Study”, *Geomatrix 09*, held during, February 28-March 1, 2009 at IIT Bombay.

Rao, A. B.

Participated in *Training on Carbon Revenues: A Source of Funding* – a workshop organized by Development Alternatives at New Delhi, November 4-6, 2008.

Date, A. W.

Presented a paper on “Introduction to CTARA”, *PANIIT Meet*, IIT Madras, Dec 11, 2008

International

Shah, N.G.

Shah N.G., Desai U B., Ipsita Das, Merchant S.N. and Shailendra Singh; “Deploying Wireless Sensor Network (WSN) for Calculating EVT and Leaf Wetness for Grape-fields in Nasik (India)”, *14th Annual International Sustainable Development Research Conference* held during September 21-23, 2008 at Delhi.

Wagle, S. M.

“*International Conference on Water Policy in South Asia*” held during December 17 – 19, 2008 at Colombo, Sri Lanka

Rao, A. B.

Participated in *Second International Symposium on Energy and Environment* organized by MAGEEP, Hong Kong, December 8-10, 2008.

Participated in *ESRC –ICSSR Workshop Environmental Sustainability and Climate Change* Organized by the London School of Economics (LSE) and Institute of Economic Growth (IEG), India International Centre (IIC), New Delhi, India, 16- 18th November 2008.

Invited Lectures

National

Rao, A. B.

“Carbon Capture and Sequestration” – guest lecture delivered to the students of SNDT, September 10, 2008.

“Global Warming and Clean Development Mechanism” – lecture delivered at a CEP organized by Prof. Rangan Banerjee, November 26, 2008

“Global Warming and Clean Development Mechanism” – lecture delivered at VJTI as part of their monthly lecture series, February 18, 2009.

“Climate Change: Threats and Opportunities” – lecture delivered at CIFE as part of their Science Day function, February 28, 2009.

Date, A. W.

“Appropriate Technology”, Invited talk, 3rd Foundation Day, Gharda Inst of Technology, Lavale, Ratnagiri

International

Rao, A.B.

“Clean Coal Initiatives in India”, presentation made at the working session titled *Clean Coal Utilization, Carbon Sequestration and Climate Change* during the *Second International Symposium on Energy and Environment* organized by MAGEEP, Hong Kong, December 09, 2008.

Significant Awards/Distinctions

Distinctions

Narayanan, N.C.

Board Member, South Asia Consortium for Interdisciplinary Water Resources Studies (SaciWATERS), Hyderabad, India.

Faculty Members and their Specializations

1. Narendra G. Shah

Agro-Food Industrial Development, Biomass Processing for Food and Energy

2. Anand B. Rao

Climate Change and CDM, Energy and Environment, Sanitation

3. Natarajan C. Narayanan

Water Policy, Governance and Conflicts, Interdisciplinary Research in Environment and Development (Political Ecology)

4. Subodh M. Wagle

Public Policy and Governance, Independent Regulatory Agencies, Infrastructure Reforms, Water Sector Regulatory, Urban Governance Reform



Centre for Research in Nanotechnology and Science

Introduction

The Centre for Research in Nanotechnology and Science (CRNTS) has been the nodal point wherein the efforts of about 40 faculty members the institute and affiliated to several departments are synergized. The centre houses a number of research equipment required for research in nano and makes them available to all. Thus as a common meeting point, it promotes interaction among faculty of different departments and promotes interdisciplinary research in nanoscience and technology.

During the year 2008-09, a new Ph.D. programme in Nanotechnology has been initiated and the first batch of candidates admitted. It is a unique interdisciplinary programme that warrants two research supervisors from preferably two different departments / centres for each Ph.D. candidate. The programme has also been designed to make it flexible to facilitate an interdisciplinary input of candidates.

Another milestone is the merger of the Sophisticated Analytical Instruments Facility with CRNTS, thereby bringing a large number of sophisticated analytical tools useful for research in Nanotechnology. It is envisaged that the collective pool of instruments will be better utilized with optimized manpower and provide advanced analytical research facilities to a broad spectrum of users from Universities, R&D laboratories, Industries and Educational Institutions.

New Research Facilities: Due to generous grants from the Department of Science and Technology through the SAIF scheme as well as the Nano mission, new sophisticated analytical instruments have been added. Two new state-of-the-art facilities, viz., Induction Coupled Plasma Emission Mass Spectrometer (ICP-MS) and Secondary Ion Mass Spectrometer (SIMS) are being installed in newly created laboratories. FTIR Imaging system and High Resolution Scanning Electron Microscope (FEG-SEM) with EDS & WDS will be added in the year 2009. A high resolution Field Emission Gun Transmission Electron Microscope (FEGTEM) with EDS is being installed.

ICP-MS is capable of trace multi-element analysis. ICP-MS has been finding applications in a number of different fields including mining/metallurgy, food sciences, medicine, natural water systems/hydrogeology, etc. A new clean laboratory has been constructed free of metallic components to enable ultra trace metal analysis. The system is capable of analyzing solid samples as well by laser ablation. SIMS has applications in metallurgy, semiconductors, geochemistry, geology, etc. SEM & FTIR Imaging also have various fields of applications in Academic, Industrial and Biomedical research. With financial support from the institute two clean rooms of class 10,000 were created. One is a Tissue culture room and another for Dip pen Lithography laboratory. With the funding from the Department of Science and Technology under the Nano mission Scheme, new research tools such as Dip pen Lithograph, FACS cell sorter and Laser direct writer for mask making were added.

Analytical Services : The centre had extended research and analytical support to academic community and researchers from across the country. During the last year researchers from 163 different academic institutions from across the country benefited from the facilities of the centre. Apart from academic users, 19 national laboratories and 110 industries were beneficiaries of the SAIF facilities. The centre has provided facilities for the analysis of 12,008 samples during the year 2008-09. The value of services provided is Rs.1,98,37,650/-

The centre has been contributing significantly to academic research at IIT Bombay. The number of users from various categories of users from IIT Bombay is given in Table-1 along with the value of services provided. Apart from these, the non-SAIF facilities such as Laser Raman Spectrometer, Dynamic light scattering particle size analyzer and Zeta Potential measurement units were used for characterizing nearly 2900 samples from the research community of IITB.

Table 2 provides information on samples analysed during the year 2008-09 and the earnings accrued to SAIF from external users.

R & D Activities

Research: There was significant research contributions by the faculty associated with Nanotechnology. More than 50 research papers were published in international Journals in Nanotechnology and Science. The following projects are ongoing at the centre:

Swedish International Development Agency (SIDA) sponsored project on “Waste Water Treatment and Management Characterization of Biosolids from UASB/ Activated sludge process/Fluidized Bed Process” (PI. Dr. C.S. Harendranath)

Department of Science and Technology-sponsored project under its Nanomission on “Centre for Nanotechnology”

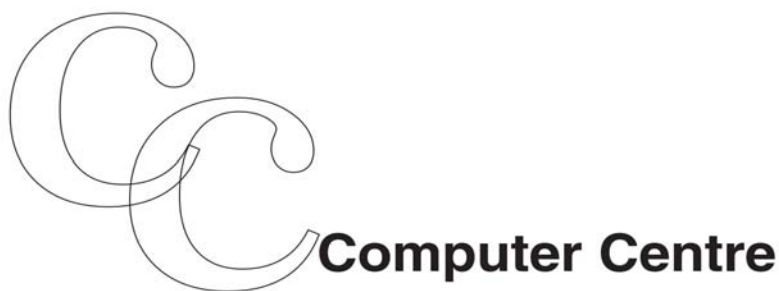
Table 1: Contribution of SAIF to Academic Research at IIT Bombay

Sr No.	Course	No. Of Users	No. Of Samples	Value of analysis (Rs.)
1	B.Tech	23	37	39300
2	D.D.	29	66	95300
3	M.Sc.	42	91	178360
4	M.Tech	92	531	804040
5	PH.D	371	4086	7191460
6	Post Doctoral Fellow	3	25	52600
7	Other (Faculty / Project Staff)	3	455	723160
Total		563	5291	9084220

Table 2: Samples analysed data for internal and external users

Type	Users	Samples	Value of services (Rs)
Internal	563	5291	90,84,220
External	497	6254	1,07,53,430
Total	1060	11545	1,98,37,650

Though the value of services is nearly Rs. 2.0 crores, the actual bills were heavily subsidized as per the norms of the funding agency; DST, and about Rs. 57.0 lakhs were accrued. The amount earned from the external users is being utilized for the operation and maintenance of the research facilities.



During the year in review Computer Centre continued to provide computational and network infrastructural facilities to the IIT Bombay user community.

Basic Infrastructure Issues

For last two years Computer Centre has been operating from various temporary locations. Currently the administrative office is operating from Room 243, 2nd Floor, Electrical Engineering department. There are two separate locations (in room SIC 101 in KRESIT building and Room 243 of Electrical Engineering) where the servers are located. These locations have severe space constraints. There are other infrastructural issues related to Electrical Power Supply and Airconditioning systems. Because of the curtailed infrastructure, Computer Centre has had to slow down in terms its growth plans and also had to close down some of the operating facilities. The USER HALL of Computer Centre has to be closed down because of unavailability of space. In order to provide partial relief to the space shortage, a third location on Electrical Engineering Annexe building is being planned.

Network and Connectivity

Computer Centre manages the IIT Bombay Campus Network. It is responsible for the intra-campus connectivity between the departments and also for connectivity of IIT Bombay to the outside world. In general, connectivity issues for machines inside individual departments is the responsibility of the department itself. The exception to this rule is main administrative department and the various central services departments such as Estate, Security, Hospital, Guest House etc. Hardware/Software maintenance and the network connectivity of the computers located inside such units is the responsibility of Computer Centre.

During the year, several activities have been initiated to reinforce the network infrastructure at IIT Bombay.

- Extension of the campus network facilities to new areas (mainly Type-I residential buildings both in Hill Side and Lake Side locations) has been started during the year and is in advanced stage of completion. As a parallel activity, the

infrastructure bottlenecks in the existing segments of the residential portion of the campus network are being identified so as to improve connectivity. Separate underground channels from Computer Centre to Hill Side and Lake Side residences are being laid out. These channels have conduits which can be used to easily lay additional underground cables as and when future requirements come up.

- Every year, the occupancy of rooms in students hostels is going up progressively. The number of network ports is being doubled. The existing network infrastructure is 5-6 years old and is mostly built using unmanaged switches. Complete revamp of hostel networks both in terms of active and passive components has been started during the year and is likely to be completed in the near future.
- During the year, the total Internet bandwidth for IIT Bombay campus users have been increased from 32 Mbps to 108 Mbps. In order to streamline the process of bandwidth purchase, Computer Centre now has established a panel of Internet Service Providers.

High Performance Computing Clusters

During the year, the existing computing clusters GALAXY and CORONA have been upgraded. Given the space constraint, these clusters continue to be housed in Aerospace Engineering and Chemistry department buildings respectively. The third cluster of 512 nodes is being setup in the ground floor of the Computer Science and Engineering department. The project is facing some infrastructural issues related to power supply but it is hoped that they will be overcome and the cluster will come into operation during coming year.

National Knowledge Network

IIT Bombay has joined the National Knowledge Network (NKN) during the year. Computer Centre operates the facility. This is a multi-gigabit network

initiative started by National Informatics Centre (NIC) to connect academic and Research organizations in India. Currently this network infrastructure is being used by CDEEP to conduct Distance Education Programs between IIT Bombay and IIT Gandhinagar.

Hardware/Software Infrastructure

Computer Centre has been entrusted the responsibility of procuring and maintaining the desktop systems hardware for administrative and service department staff of IIT Bombay. Till recently it also used to a major role in procuring desktop systems for the faculty members. From this year onwards the faculty PC procurement has been changed. Faculty members can now make their own purchases upto a limit of Rs.75000-00.

Computer Centre has been making efforts to encourage the use of OPEN SOURCE software both at the Operating Systems and at Applications level. Most of the basic infrastructural systems such as Electronic Mail, Web Hosting, Browsing, Proxy Servers, etc have been built using public domain software. As far as possible, day-to-day office activities are also being performed using public domain software. Most of the computers in the administrative sections of the Institute use some flavor of Fedora as the operating system. From time to time Computer Centre tries to conduct basic orientation programs for the users in various aspects of Linux Operating Systems and other Office software.

Computer Centre continues to mirror and archive various flavors of Linux Operating Systems on its anonymous FTP server so that the user community can install the Linux system of their choice and also keep up-to-date with the latest developments in the various application systems.

The institute continues to be a member of Microsoft Developer Network Academic Alliance (MSDNAA) software licensing program. This allows the user community to use most of the Microsoft software products in a non-production environment.

Software packages such as ANSYS, MATLAB, MATHEMATICA, MAPLE, and Libraries from Numerical Algorithm Groups (NAG), etc are available through site licenses administered by Computer Centre.

The logo for the Centre for Formal Design & Verification Software (CFDVS) features the letters 'cf' and 'vs' in a stylized, lowercase, outlined font. The 'c' and 'f' are connected, and the 'v' and 's' are connected. The letters are white with a black outline.

Centre for Formal Design & Verification Software

Introduction

The Centre was set up in April 1999, with the following broad objectives:

Carry out R&D activities towards building advanced tools and environments, based on formal methods for industrial scale safety-critical applications.

Create resources, develop expertise and provide consultancy for Independent Verification and Validation (IV&V) for safety-critical systems used in DAE and other similar organizations.

Provide education and training in Verification and Validation (V & V) of such systems

In March 2009, the Centre completed 10 years of its existence. Over these years, the centre has established itself as a national R&D centre in the area of V&V of high-integrity software and hardware. It has also attracted the attention of several leading researchers from abroad and from India, who have visited the centre, given talks, held discussion with the members of the centre and recently given unrestricted research grants. Several working professionals from other national centres (including DAE organizations) and private companies have expressed their interest in the activities of the centre and have sought expert assistance in V&V. These organizations include BARC (Mumbai), ADA (Bangalore), VSSC (Thiruvananthapuram), IGCAR (Kalpakkam), DRDL (Hyderabad), Texas Instruments India (Bangalore), Honeywell Software Solutions Lab. (Bangalore), General Motors (Detroit), Tata Consultancy Services (Pune) and Patni Computer Systems (Mumbai). The centre has successfully executed projects for some of these organizations, and has plans for taking up projects from other organizations in the future as well.

Academic Programme

Within IIT Bombay, the centre has attracted a number of students from different departments and interdisciplinary programmes. These include Computer Science and Engineering, Electrical Engineering, Reliability Engineering and Information Technology. There are currently 11 Ph.D. students who are affiliated to the centre. Nearly 50 M.Tech. and 2 M.S. students

from these departments have completed their Master's dissertation projects in the centre. Similarly, 50 B.Tech. students have taken up their B.Tech. projects in the centre over the past nine years.

The research and development activities of the centre have been consolidated over the past seven years. Besides case studies, a few in-house tools for V&V of high integrity software and hardware have been developed and have also been used in some of the industrial projects. The experience gained in these activities has led to plans for further improvement of these tools and new projects. The outcome of the various research and development projects has been reported in several international conferences, journals, technical reports, and student dissertations.

The research and development projects being carried out at CFDVS can be broadly classified in the following category:

1. Logic, Symbolic Simulation, Model checking and Theorem Proving
2. Trusted Translation Systems
3. Static Assertion Checking Tools
4. Tools and Techniques for GALS Systems and SoCs

R & D Activities

Ongoing

Development of ACE II

CESE : A Visual Formalism for Specification and Verification of SoCs

VEDAC and EXPERT : Modeling and Verification Tool-sets for GALS

Design and Analysis of High-Speed Interfaces for GALS systems

Slicing Tools for Synchronous Reactive Programs

Reachability Analysis in Timed Automata

Bounded Model Checking of IDL formulae

Optimizations for Automata-based Validity Checking of QDDC

Clock Reducing Approximations in Verification of Timed Automata

Symbolic Model checking with Additive Decomposition
Inductive Theorem Proving and Rewriting Techniques
Verification of Programmable Logic Controllers

Test derivation of Distributed Component-based Systems
Automatic Generation and Verification of Optimizers
Trusted Code Generators

Project Title	Sponsoring Agency	Status (New/ Ongoing/ Complete)
Visual Specification and Modeling of Distributed Systems	General Motors, Bangalore	Ongoing
Formal Verification of Akash onboard process	DRDL, Hyderabad	Ongoing
Feasibility Study of Formal verification of onboard Software	Vikram Sarabhai Space Centre, Trivandrum	Completed
Improving GCC ports of ABACUS and ANUPAMA,	ANURAG, DRDO Hyderabad	Completed
Formal Verification of Hardware Modules in ANAIO FPGA	Bhabha Atomic Research Centre, Mumbai.	Project under Discussion

Faculty members and their Specialisation

Participating Faculty:

1. G. Sivakumar

Head

Area of Interest: Logic and Automated Reasoning, Networks and Distributed Systems.

2. Supratik Chakraborty

Area of Interest: Formal methods in analysis/validation/ verification of digital systems, Asynchronous and concurrent systems, Timing Analysis.

3. Sridhar Iyer,

Area of Interest: Distributed Systems; Mobile computing; concurrency Analysis

4. S. Biswas

Area of Interest: Parallel and distributed Processing, Neural Nets, Architecture

5. A. Sanyal

Area of Interest: Functional Programming, Compilers and programming languages

6. U. Khedker

Area of Interest: Programming Languages Compilers, data flow analysis

7. Prof. Krishna S.,

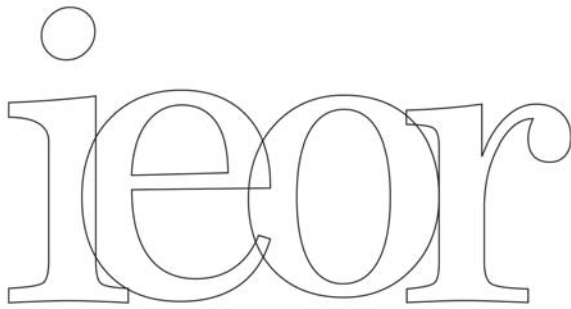
Area of Interest: DNA Computing, Membrane Computing, Grammar Systems, combinatorics on words, Formal Methods, Duration calculus and Logics of Time.

8. R. K. Shyamasundar

Area of Interest : Design, Specification and Verification Real-Time programs, Synchronous Programming Languages, Hybrid Systems, Concurrent Process Calculi, Concurrent Constraints, Logic Programming, Mobile Computing, Formal Methods, Distributed Computing, automated reasoning.

9. P. K. Pandya

Area of Interest : Logic, Concurrency, Programming Languages, Formal Methods and Software Engineering. Specific work has been on Duration Calculus, Refinement Algebra and CSP, Hoare Logics for Distributed Programs and Scheduling Theory.



Industrial Engineering & Operations Research

Introduction

Industrial Engineering and Operations Research (IEOR) at IIT Bombay is an interdisciplinary programme that offers Ph.D. and M.Tech. degrees. From the coming academic year, it will also offer a M.Sc.-Ph.D. dual degree in Operations Research.

IEOR now has five faculty members with a depth and breadth in capability that makes the programme unique in the country. Dr Vishnu Narayanan is the most recent addition to the group, joining as a faculty member in August 2008. Together with two associated faculty members in teaching and research and several faculty members involved in joint research, IEO is one of the strong groups in this area, nationally.

Apart from its continued research focus in several areas, IEO has expanded its course offerings to include new courses at the postgraduate level and has expanded its course offerings for undergraduate students across the institute.

The major activity proposed by the group is a dual degree M.Sc.-Ph.D. programme in Operations Research through JAM for students with background in Mathematics and Statistics. This will be a one of a kind programme in the country. This programme involves the formulation of eight new theory courses and two new laboratory courses.

Academic Programmes

IEOR offers M.Tech. and Ph.D. degrees. The current strength of Ph.D. students is eight and is on the rise in the last two years. The M.Tech. programme is among the popular ones across almost all streams in engineering.

Degrees Awarded in 2008

M.Tech.	: 11
Ph.D.	: 1

A new dual degree M.Sc.-Ph.D. in Operations Research has been approved. The first batch will be admitted in 2009-10.

A new course in Integer Programming: Theory and Applications has been offered which saw registration of more than 30 students. A new course, Networks, Games and Algorithms was of particular interest to doctoral students across the institute.

IEOR continues to contribute to undergraduate teaching, with an institute elective (topics in Operations Research), a core course for Mathematics students (Optimization) and contribution by faculty and students to the teaching of the institute level core course on Data Analysis and Interpretation.

IEOR has participated in the IITB-Monash Academy Ph.D. programme, with one doctoral student in the joint programme.

R&D Activities

The R & D activities of the IEO group span a variety of areas ranging from simulation to optimization and scenario analysis. The agencies range from government departments, research labs, private industry and private institutions.

Sponsored Projects

Project Title	Sponsoring Agency	Status
“Capacity Planning and Project Valuations”	Patni Computer Systems	New Project
“Synchronization of Multiresolution Hybrid Models for Supply Chain Analysis”	IRCC, IIT Bombay	Completed Project
“Design and Development of Distributed HybridSimulation Environment forSupply Chain Analysis”	DST	Ongoing Project
“Evaluation of Options for Sizing of Commercial Aircraft”	National Aerospace Laboratories, Bangalore	Completed Project
“Markov Decision Processes and Stochastic Games”	IRCC, IIT Bombay	Ongoing Project

Consultancy Projects

Apart from ongoing projects, the IEOR department undertook two new projects which earned a revenue of Rs 2,90,000.

IEOR faculty have also helped in curriculum design and related work for educational institutions in both the government and the private sector.

Extension activities

Ph.D. alumni from IEOR, current Ph.D. students, faculty and others met on 20 October 2008 at the concluding part of the Research Scholars’ Confluence, organized by IIT Bombay, as part of its Golden Jubilee celebrations. On this occasion, Dr. Jayan Moorkanat, Dr. Sajeev A. George and Dr. Attekh-ur-Rahman were the IEOR Ph.D. alumni who attended the event. Dr Siddhartha Sen Gupta of TCS, Mr. Milind Padalkar of Patni Computer Systems Limited, and Dr. Vivek N.Patkar were special invitees for the event.

Conferences/ Symposia/ Workshops/ Seminars (Participated/Papers Presented)

International

Hemachandra, N., Srinivas. S, and Narahari, Y.

“A Core and Shapley Value Analysis of Cooperative Bidding in Sponsored Search Auctions”, *Managing Complexity in a Distributed World 2008 (MCDES 2008)*, an IISc Centenary Conference of the Division of Electrical Sciences, May 27-31, 2008.

Singh, A. and Venkateswaran, J.

“Measure of Bullwhip Effect in Case of Generalized Demand Process Modeled As Moving Average MA (q) Time Series”, *12th Annual International Conference of the Society of Operations Management* at IIT Kanpur, December 19-21, 2008

Sharma, V. and Venkateswaran, J.

“Production Planning Approach in Finite-capacity Environment”, *12th Annual International Conference of the Society of Operations Management* at IIT Kanpur, December 19-21, 2008 (Received “best student paper” award)

Invited Lectures

National

Rangaraj, N.

“Application of Mathematical Programming to Railway Operations in India,” *DST Research Workshop on Optimization Techniques and Applications*, IIT Kanpur, September, 2008.

Honorary Work

IEOR faculty have been reviewers for Opsearch, Operations Research, IJPR, IEEE Transactions on Automation Science and Engg., Indian Journal of Pure and Applied Mathematics, Optimization Letters, European Journal of Operational Research, Journal of Systems and Software, European Journal of Industrial Engineering, International Journal of Flexible Manufacturing Systems, Applied Soft Computing,

International Journal of Production Economics, ISDSI 2009 and CASE 2009.

Narayan Rangaraj and **N. Hemachandra** have been Associate Editors for CASE2009.

Faculty Members and their Specializations

1. Vishnu Narayanan

Integer Programming, Convex Optimization, and Polyhedral Theory

2. K.S. Mallikarjuna Rao

Game theory, Mathematical Finance, Partial Differential Equations

3. Jayendran Venkateswaran

Modeling & Distributed Simulation (Discrete-event, System Dynamics), Integrated Supply Chain Analysis

4. N. Hemachandra

OR and its applications to Supply Chains, Financial Engg., Logistics and Communication Networks.

5. Narayan Rangaraj

Optimization and Operations Research, Logistics and Supply Chain Management, Railway Operations, Transportation

Associated Faculty: Teaching and Research

6. P.G.Awate (ME)

7. A.Subash Babu (ME)

8. D. Manjunath (EE)

Associated Faculty: Research

9. S. A. Soman (EE)

10. A. Subramanyam (MA)

11. K. Suresh Kumar (MA)

12. M. Sohoni (CSE)

13. R.K. Pant (AE)

14. A.A.Diwan (CSE)



Systems & Control Engineering

Introduction

The Systems and Control Engineering group at IIT-Bombay is a unique entity in the Indian academic circle, offering exclusive graduate level education in systems and control. Apart from its core faculty members, the group has at least a dozen participating faculty members from other departments who contribute to the research and teaching activities of the group. The active research areas of the group include process control, smart structures, global optimization, embedded systems, reliable control, nanotechnology, systems biology, robotics, geometric mechanics, nonlinear systems theory and control. The group offers both the M.Tech. and Ph.D. programmes. Over the years, the alumni of the group have been placed in many of the leading control, automation industries and academic institutions of the country.

Student Intake

M.Tech:	: 27
Ph. D.:	: 6

Degrees Awarded

M.Tech:	: 22
Ph. D.:	: 6

R & D Activities

Sponsored Research Projects:

New	: 1
Ongoing	: 5
Completed	: 3
Faculty Involved	: 2

Academic Programme

The group offers M.Tech. and Ph.D. programmes. During the academic year 2008-2009 the number of students joined the M.Tech. programme was 27 and Ph.D. programme was six. This year 22 M.Tech. and six Ph.D. degrees were awarded

Project Title	Sponsoring Agency	Status
“Path Planning and Control of Nonholonomic Systems”	Department of Science and Technology	Ongoing Project
“Modeling and Controller Synthesis for Mechanical Systems with Fluid and Flexible Elements”	Indo-French Centre for the Promotion of Advanced Research	Ongoing Project
“Singularity Avoidance Algorithm in Variable Speed CMGs”	Indo-French Centre for the Promotion of Advanced Research (ISRO)	New Project
“Towards Reliable Smart Adaptable Air-Vehicles”	UK India Education and Research Initiative	Ongoing Project
“Design of Flight Controller by Fast Output Sampling Technique”	ARDB	Ongoing Project

Project Title	Sponsoring Agency	Status
“Design of Missile Auto-Pilot by using fast Output Sampling Feedback”	Defence Research & Development	Ongoing Project
“Nonlinear Control Strategies for Launch Vehicles”	Indian Space Research Ogranisation	Closed
“Active Control of Fuel Slosh Motion.”	Indian Space Research Ogranisation	Closed
“Design of Launch Vehicle Autopilot by Fast Output Sampling Feedback”	Indian Space Research Ogranisation	Closed

Consultancy Projects

The department undertook one job generating Rs. 2,66,999/-.

Consultancy Jobs	: 1
Faculty Involved	: 1

Visitors to the Department

- Prof. Rodolphe Sepulchre, Professor at Dept. of Computer Science, University of Liege, Belgium, visited Syscon during Jan 2009. He delivered lectures on “Optimization on Matrix Manifolds”.
- Prof. S. P. Bhattacharya, Professor, Texas A&M University, visited Syscon in Jan 2009 and delivered a talk on “Data Driven Model Free PID Controller Design”.
- Prof. Hazare, Cummins College of Engg., Pune, visited Syscon in Sept 2008 and conducted a full day session on Lab View for students of Syscon.
- Prof. Ajay Deshmukh, Cummins College of Engg., Pune, visited Syscon in Sept. 2008 and delivered a lecture on “Process Automation” for students of Syscon.

Conferences / Symposia / Workshops / Seminars

National

Bandyopahdyay, B.

Participated in the *Workshop on Challenges in Control Systems* at NIT Trichy, January 2009

Delivered an invited talk in *IEEE International Conference on Avionics Systems (ICAS 2008)* held at Hyderabad, India during 22-23rd Feb. 2008.

International

Nataraj, P. S. V.

Participated and presented two talks at the *13th GAMM-IMACS International Symposium on “Scientific Computing, Computer Arithmetic and Verified Numerical Computations (SCAN’08)”*, during Sept. 29- Oct 3, 2008, at El Paso, Texas, USA.

Participated in *II Academic Seminar of IBSA Education*, Florianopolis-State of Santa Catarina-Brazil, during 13th-16th August, 2008.

Participated and presented two technical papers in *Third IFAC workshop on “Fractional Differentiation and its Applications (FDA’08)”*, held at Cankaya University, Ankara, Turkey during November 05-07, 2008.

Invited Lecturers

National

Nataraj, P. S. V.

Delivered lectures on “Electronics devices and Circuits” at NIT Warangal on Sept. 6, 2008.

Honorary Work

Prof. Bandyopahdyay, B. visited under UK India Education and Research Initiative Major Award, June 2008, at Leichestar University, U. K.

Faculty Members and their Specialization

Core Faculty:

1. B. Bandyopadhyay

Large Scales Systems, Model order reduction, Robust Control, Sliding mode Control and Nuclear Reactor Control.

2. P. S. V. Nataraj

Interval analysis, Nonlinear Feedback Systems Analysis and Design,
Optimization, Robust Feedback Systems Analysis and Design,
Scientific Computing

3. R. N. Banavar

Optimal and Robust Control, Estimation and Signal Processing,
Dynamics and Control of Underactuated Systems,

4. Arpita Sinha

Cooperative control of Multi-agent systems, Resource Allocation, Team theory and its application, Game theory

Associated Faculty**5. Ravindra D. Gudi**

Dept. of Chemical Engg.

Linear and Nonlinear Identification.

Nonlinear and Multimodel Control, Statistical Methods

6. Kannan Moudgalya

Dept. of Chemical Engg.

Process Control, Simulation, Software Engg

7. Sachin C. Patwardhan

Dept. of Chemical Engg.

Computer Control Systems, Adaptive & Predictive Control,

System identification & Fault tolerant Control

8. Sharad Bhartiya

Dept. of Chemical Engg.

Modeling, Identification and Control

9. Dr. Mani Bhushan

Dept. of Chemical Engg.

Fault detection and diagnosis, Sensor network design, Optimal alarm management, Planning and scheduling in process plants, Process safety analysis.

10. Santosh Noronha

Dept. of Chemical Engg.

Modeling and analysis of metabolic and genetic regulatory networks, Fault detection and diagnosis, Adaptive Control of Bioreactors

11. Vivek Agarwal

Dept. of Electrical Engg.

Power Conversion, Modeling and Simulation of Power Electronic Systems, EMI Problems, Micro-Processor based Control of A.C. Drives.

12. Madhu N. Belur

Dept. of Electrical Engg.

Systems & Control theory, Behavioral Theory of Systems & Control, Optimal control, Numerical aspects of algorithms, Algorithmic aspects of controller design, Hybrid systems: fault diagnosis

13. H. K. Pillai

Dept. of Electrical Engg.

Control Theory, Optimization, Computational Science, Coding Theory

14. Debraj Chakraborty

Dept. of Electrical Engg

Optimal Control, Differential Games,

Control Theory Applications, Game Theory

15. Siddhartha P. Duttagupta

Dept. of Electrical Engg

Microelectronics

16. Bharatendu Seth

Dept. of Mechanical Engg.

Modelling and Control of Dynamic Systems, Efficient Power Transmissions, Biomechanics and Prosthetics, Robotics and Walking Machines, Neural Networks and Fuzzy Logic Systems.

17. K. K. Issac

Dept. of Mechanical Engg.

Synthesis of Mechanisms, Dynamics of Machines

Optimal Design of Mechanical Systems, Robotics

18. P. Seshu

Dept. Mechanical Engg.

Stress and Vibration Analysis, Finite Element method, Computer-Aided Simulation, Smart Structures, Active Vibration Control.

19. P. S. Gandhi

Dept. Mechanical Engg.

Nonlinear Dynamical Systems and Control, Mechatronics, Micro Electromechanical Systems (MEMS), Robotic systems, kinematics and dynamics.

20. S. Suryanarayanan

Dept. Mechanical Engg.

Automatic Control, Mechatronics

21. N. K. Khosla

Dept. of Metallurgical Engg. & Material Science

Hardware implementation of control algorithms

Central library

Introduction

Central Library is a true reflection of IIT Bombay's culture of excellence which is known world over. The library, like all vibrant and productive organizations, strives to keep pace with a global, dynamic, and technology-enabled information environment to meet the expectations of its users.

Central Library during the year continued to march to its mission of facilitating the creation of new knowledge through the acquisition, organization and dissemination of library materials. It offered a range of services including reference and consultation, membership and circulation, document delivery, resource sharing, information alert service, book bank for needy students, user awareness programmes, and ICT-enabled web-based services. It extended the help and support to establish a library at the IIT Gandhinagar. The library participated in the Golden Jubilee Celebrations of the institute and organized two book exhibitions, a national workshop, and the Sixth

Annual Meet of INDEST-AICTE Consortium during the year. It earned Rs 48,16,582/- during the year for providing services to corporates, industry, educational institutions and others.

2. Collection Development and Management

Collection building is one of the important functions of the library that supports academic and research work of the students, faculty, staff and other users. Library collection comprising books, journals, theses, reports, standards, pamphlets and other reading material in science, engineering, technology, humanities and social sciences, and management is considered one of the best in the country and is its greatest asset. It spent over Rs 7.75 crores during the year to maintain and update its collection with new knowledge resources. The total collection of library as on 31st March 2009 stands as follows :

<i>Collection</i>	<i>Added during 2008-09</i>	<i>Total as on 31st March 2009</i>
Books, theses, CDs, Videos	4244	2,22,572
TLL & BC (Book bank) collection	143	11,206
Bound volumes of journals	1080	1,09,336
Reports, pamphlets, standards	203	66,951
Photocopies, films	—	4410
Total	5670	4,14,475
Subscription to journals	—	1442

All the newly acquired documents have been processed for use. A list of new additions of books and reports is issued every fortnightly and can be accessed on the library home page. An email alert is also sent to the requesting faculty member(s) about the arrival of publications requested by them. Special care was taken to neatly maintain the library stacks to facilitate users to locate the desired document quickly, and worn-out labels were immediately replaced. The library undertook binding of 149 volumes in-house and got 2400 volumes bound through vendors. The library also procured and processed 629 books for IIT Gandhinagar.

3. Digital Library

Central Library has its own homepage, provides web-based access to its resources, procures over 12,000 electronic journals and databases, supports on-line submission of theses and dissertations, and has set up an institutional repository of publications brought out by the IIT Bombay community.

The library is a part of the institute-wide network and has adequate computing infrastructure to cater to the needs of the users. The WI-FI facility in the reading area continues to attract users to bring in their laptops to have seamless access to print and electronic resources.

3.1 Library Homepage

(<http://www.library.iitb.ac.in>)

Library Homepage provides a single window to all the resources and services of the Central Library. It allows to:

- Search/browse the material in the library (Search Library Catalogue, OPAC)
- Check the materials borrowed by a user and their due date
- Know the recent arrivals

- Access E-Resources (books, journals, theses, databases and multimedia products)
- Submit dissertation / thesis (IIT Bombay students only)
- Download library membership form, Book suggestion form, library guide (Know Your Library)
- Locate library material (Collection organization)
- Ask the librarian, virtual reference service.

3.2 OPAC (On-line Public Access Catalogue)

The OPAC is one of the most heavily used databases of the library and is accessible 24x7 via library web page. Besides listing all the documents available in the library, it allows on-line reservation, circulation, fine collection, and indicates status of a particular book. OPAC is searchable by author, title, accession number, subject and several other fields.

3.3 E-Resources

The Central Library provides web-based access to over 12,000 full text journals and 12 databases 24 x 7 on institute-wide network as per the following details:

3.3.1 Full-text Resources

ABI Inform -	http://proquest.umi.com/pqweb?RQT=302&cf=1
ACM Digital Library -	http://portal.acm.org/portal.cfm
ACS Journals -	http://www.library.iitb.ac.in/dres/ACS.html pubs.acs.org/journals
ACS Legacy Archives (23 journals 1879-1995)	http://pubs.acs.org/archives/promo/index.html
AIAA Journals -	http://www.library.iitb.ac.in/dres/AIAA.html
AIP Journals -	http://www.library.iitb.ac.in/dres/AIP.html
AMS Journals -	http://www.ams.org/journals/
ASCE Journals -	http://www.pubs.asce.org/journals/jrns.html
ASCE Proceedings -	http://www.ascelibrary.org/ascecp
ASME Journals (+ AMR) -	http://www.asme.org/publications/journals
ASTM Journals -	http://journalsip.astm.org
ASTM Standards -	http://enterprise.astm.org
BioOne 1 (82 high impact bioscience journals and 1 book)	http://www.bioone.org
Blackwell Journals -	http://www.blackwell-synergy.com/action/showjournals
Cambridge University Press Journals -	http://journals.cambridge.org
Capitaline -	http://www.capitaline.com/user/framepage.asp?id=1
CMIE Databases	On Intranet
CRIS-INFAC CRISIL Ind. Information -	http://www.crisil.com
Duke Mathematical Journal (Volume 1 – 100)	projecteuclid.org

EBSCO Databases -	http://search.ebscohost.com/
Emerald Full text -	http://www.emeraldinsight.com/
Euromonitor GMID -	http://www.euromonitor.com/gmid
IEEE/IEE Electronic Library Online -	http://ieeexplore.ieee.org
INSIGHT -	http://www.insight.asiancerc.com/
JSTOR Journals Archive -	http://www.jstor.org
IOP Electronic Journals -	http://www.iop.org/EJ/subs/-view=journal
Journal of Geophysical Research (7 journals)	
Space Physics	http://www.agu.org/journals/ja
Solid Earth	http://www.agu.org/journals/jb
Oceans	http://www.agu.org/journals/jc
Atmospheres	http://www.agu.org/journals/jd
Planets	http://www.agu.org/journals/je
Earth Surface	http://www.agu.org/journals/jf
Biogeosciences	http://www.agu.org/journals/jg
Material Science and Engineering Collection (Trans Tech) -	http://www.library.iitb.ac.in/dres/ejn.html www.scientific.net
Nature Online -	http://www.nature.com/nature/index.html
Oxford Subject Collections (2 subjects)	http://www.oxfordjournals.org/
Humanities & Social Sciences	
Mathematics & Physical Sciences	
Project MUSE -	http://muse.jhu.edu
RSC Journals + Archives -	http://www.rsc.org/publishing/journals
Sage Subject Collections (2 subjects)	http://online.sagepub.com/
Sociology	
Urban studies & Planning	
Science Direct -	http://www.sciencedirect.com/
Science Online (AAAS, USA) -	http://www.sciencemag.org
SIAM Journals Online -	http://epubs.siam.org/
SIAM's Online Journal Archive (LOCUS) -	http://locus.siam.org/
Springer verlag Link -	http://www.springlink.com/
Taylor & Francis Journals -	http://www.library.iitb.ac.in/index.php?option=com_content&task=view&id=139&Itemid=1
Wiley Journals -	http://www.library.iitb.ac.in/index.php?option=com_content&task=view&id=140&Itemid=1
3.3.2 Databases	
COMPENDEX	- http://www.engineeringvillage2.org
Inorganic Crystal Structure Database	- http://icsdweb.fiz-karlsruhe.de/index.php
INSPEC	- http://www.engineeringvillage2.org
J-Gate	- http://j-gate.informindia.co.in

JCCC	- http://jccc-indest.informindia.co.in/
MathSciNet	- http://www.ams.org/mathscinet
PsycInfo	- http://web.ebscohost.com/ehost/search
Scifinder Scholar	- http://web.scifinder/scholar/index.html
SCOPUS	- http://www.scopus.com
Web of Science	- http://isiknowledge.com/

3.3.3 Multimedia (intranet, CD-net)
<p>Chemical Abstracts – 12th & 13th Collective Index</p> <p>Chemical Abstracts on CD (2003-07)</p> <p>COMPENDEX (1991-2001)</p> <p>Current Contents on Disc (1999-2001)</p> <p>Dissertation Abstracts</p> <p>Index to Scientific & Technical Proceedings (1990-2000)</p> <p>Indian Patents</p> <p>Indian Standards</p> <p>INSPEC (1991 – 2001)</p> <p>Power Diffraction</p> <p>CDs received along with books are mirrored on CDH CD-MIRROR server and is accessible on Windows machines at http://cdmirror.library.iitb.ac.in/</p>

3.3.4 Addition of New E-Resources

Central Library added the following resources during the year :

1. Journals Citation Reports (JCR) – shows impact factor of journals
2. Optics Infobase of Optical Society of America (14 journals)
3. INFORMS (12 journals package)
4. ICE (Institution of Civil Engineers, UK – Thomas Telford) 24 journals
5. Proceedings of the Royal Society (A)
6. Taylor & Francis (1200 journals)

3.4 Electronic Theses & Dissertations

(<http://etd.library.iitb.ac.in>)

Central Library supports electronic submission of theses and dissertations by the postgraduate and doctoral students. It maintains a full-text database of over 5000 items submitted since 1999-2000 on Intranet. During the year, 512 M.Tech. dissertations and 198 Ph.D. theses were submitted on-line. The library has also developed a database (providing bibliographic details and abstract) using open source software, GSDL of all the Master's dissertations and Ph.D. theses submitted since 1999 and 1965, respectively. This database containing over 2500 records is accessible through the library homepage.

3.5 Institutional Archive

(<http://dspace.library.iitb.ac.in/jspui/>)

Central Library has set up an archive of publications brought out by the institute. The archive already has over 1200 items and is being updated to cover more publications which are permissible within the copyright regulations. The archive is expected to evolve into a database of all publications produced by the IIT Bombay community and is accessible on the Internet through the library homepage.

4. Library Services

4.1 Reference, Consultation & Circulation

Reference service helps users to make full use of library resources and services. It provides necessary assistance to users in locating information or document of their choice. The Library issued 75,638 books and other documents to its members during the year. In addition to members, 694 visitors including students, research scholars, engineers and faculty members from several academic and R&D institutions used the library. It is open from 0900 to 2300 hrs on all working days and from 1000 to 1700 hrs on holidays (except three national holidays), when it operates with skeletal staff. The library remains open till 0100 hrs on all days during examinations. "Ask the Librarian" link provided from the library home page encourages users to avail of the reference service virtually.

4.2 Membership

The membership of the library for different categories of users stands as mentioned below:

Category of membership	Number
Students and research scholars	5726
Faculty	463
Officers and other staff	1637
Retired faculty members	133
Professors Emeritus / Scientists	34
Alumni Members	416
Corporate Members	79
Educational Institute Members	53
Total	8541

4.3 Sharing of Resource and Partnerships

The library maintains excellent relations with the libraries of IITs, BARC, NITIE, C-DAC, IISc, IIG, TIFR, TISS, and UICT for exchange of books, journals, photocopies, and videocassettes for the mutual benefit of the users. It loaned 84 books to other libraries and borrowed 12 books from them. It also supplied 544 pages of photocopies to other libraries and received 125 pages of photocopies for our own users.

4.4 Photocopying Service

Photocopying service is one of the important services offered by the library. It provided 4301 pages of photocopies to the faculty of the institute free of charge and 47710 pages to other individuals and organizations on payment. About 42 organizations maintain Deposit Account with the library to obtain photocopies quickly.

4.5 Book Bank (TLL and BC Collections)

The library maintains a book bank to help students belonging to Scheduled Castes, Scheduled Tribes and economically weaker sections of the society. The bank mainly consists of the prescribed text books for undergraduate courses and loans up to seven books each to these students for full semester. During the year, 506 students availed of this facility and borrowed 2341 books from this collection.

4.6 Information Alert Services

The library offered the following current awareness services to alert users about the latest information of their interest:

- List of Additions, new arrivals
- Lest-you-miss
- News items display
- Useful articles Display
- Faculty publications display
- Display of Scholarship and fellowship information
- Display of Forthcoming conferences, other national and international events, employment opportunities, and prospectus of foreign universities

5. Users Education, Conferences, Seminars

Users education is an important regular activity of the library to inform, alert, educate and train users about the various resources and services of the library. In addition to the orientation programmes organized for new students, the library conducted short duration training programmes on “How to Use” SciFinder Scholar, Web of Science and JCCC databases for our faculty and students so that they are able to use these resources more effectively. For users desiring to learn more about any service, database or any resource, the library provides one-on-one training. The library also organized 10 half-a-day interactive sessions on “Enhancing User Awareness” for new faculty and research scholars to familiarize them with various resources and services. The library makes good use of various mailing lists and news groups to interact and communicate with the user community, to inform them about the new activities and services, and to

obtain their comments and suggestions. The brochure “Know Your Library” continues to be a popular medium to give detailed information about the activities and services of the library.

Central Library organized INDEST-AICTE Workshop and the Sixth Annual Meet in January 2009 as part of the Golden Jubilee Celebrations of the IIT Bombay. The three-day national workshop was attended by over 100 library and information professionals, and a large number of representatives of publishers, vendors, and service providers from all over the country. The theme of this workshop was “Web 2.0 and Library Services in Science and Technology Libraries”. Awards were distributed to various member institutes for recording highest usage of e-resources during the workshop. IIT Bombay received highest usage awards from ACM, ASCE, ASME, SciFinder Scholar, and American Mathematical Society. A books exhibition was also organized along with the workshop so that the participants as well as IIT Bombay community could browse and select the latest publications for the personal collection or for their libraries.

6. Staff News

The accomplishments made by the library during the year would not have been possible without the talented and dedicated officers and staff who performed their duties exceptionally well and who deserve deepest appreciation for their intelligence, enthusiasm and honesty with which they served the library. The description given below highlights the activities they have been involved in, in addition to their regular jobs:

1. Mr. D. Jotwani, Institute Librarian, was selected for Endeavour Executive Award 2009 for professional development by the Government of Australia. He was invited to serve as a member of the committee of University Grants Commission to review the 11th Plan Proposals of INLIBNET Centre (an inter-university centre of UGC), Ahmedabad. Mr Jotwani has been appointed as the Chairman of the Project Review and Steering Group (PRSG) by the Ministry of Communications and Information Technology, New Delhi, to review the various digitization projects being implemented at IIT Hyderabad, University of Delhi Library, C-DAC Noida, C-DAC Kolkata, and Vanasthali Vidyapeeth, Rajasthan, under the National Digital Library Project. He was also invited by the University of Rajasthan, Jaipur, to address the participants of the Refresher Course for College / University Librarians and Teachers in Library Science, January 2009.
2. Dr. D. N. Phadke, Assistant Librarian (SG), presented a paper “Geographical Information Systems : an introduction, application and sources of information in GIS” at a state level symposium

held in March 09 at Sawantwadi, Maharashtra. He delivered a lecture on “E-Resources in School Libraries” to School librarians from KVS in August 2008 in Mumbai. The third edition of his book on library computerization and automation (Marathi) was also published during the year.

3. Dr. H. S. Waydande, Assistant Librarian (SS), attended the National Conference on Digitization and Digital Preservation, DESIDOC, New Delhi, 11-12 December 2008, and presented a paper on “Digital Library for Defence Organization”. He (co-author) also submitted the following papers to various conferences:
 - “Building of digital library for teacher education programme in India”. In *International Conference on Knowledge for All – role of libraries and information centres* (ILA-TISS), Mumbai, 12-15 November 2008.
 - “Digitization of archives : a radical movement to attain knowledge for all”. In *International Conference on Knowledge for All – role of libraries and information centres* (ILA-TISS), Mumbai, 12-15 November 2008.
 - “Information sharing and defence organization”. In *International Conference on Knowledge for All – role of libraries and information centres* (ILA-TISS), Mumbai, 12-15 November 2008.
 - “Management of change in libraries and information centres in ICT environment : a strategy towards knowledge for all”. In *International Symposium on Emerging Trends and Technologies for Libraries and Information Services*, Noida, 18-20 December 2008.
4. Ms. Shobha Kulkarni, Assistant Librarian (SS), delivered lectures on “Retrospective Conversion”, “Enhancing E-resource Usage”, and “Thesis Archiving” to the participants of various refresher courses/seminars. Her paper on “Library Security Systems” was also published in *Library Herald* 46(2), 2008.
5. Mr. Omprakash Bhendigiri, Assistant Librarian, was invited by the INFLIBNET Centre, Ahmedabad, to evaluate the beta version of the software, SOUL in September 2008.
6. Four Library Information Officers, Ms. Rekha Oltkar, Mr. N. C. Hugar, Mr. G. P. Murshillin, and Mr. D. B. Kamble were deputed to help set up a library at the IIT Gandhinagar.

academic report

Academic Report

Admissions offered at IIT Bombay for the following Programmes in 2008-09 are given below:

Ph.D.	- 344
M.Tech.	- 592
M.Mgt.	- 86
M.Des.	- 49
M.Phil.	- 12
M.Sc.-Ph.D.	- 16
(Dual Degree)	
M.Sc.	- 144
Dual Degree	- 233
5 Yr. Int. M.Sc.	- 21
B.Tech.	- 389

Total	1886
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Degrees Awarded

At the 46th Annual Convocation held on 8th August 2008, 1426 degrees were awarded as follows:

B.Tech. - 333, Dual Degree: (B.Tech. & M.Tech.) - 179, M.Tech. - 479, M.Sc. 2 year -102, 5 year Int. M.Sc. - 14, M.Des. - 44, M.Phil. - 15, M.Mgt. - 53, M.S. (By Research) - 3, PGDIIT - 4, and Ph.D - 200.

Medals

The President of India Medal was awarded to Sushant Sachdeva, and the Institute Gold Medal was awarded to M.S.Shaama. The Silver Medalists were Rahul Goel, Aerospace Engg.; Prabhu Arun Laxman, Chemical Engg.; Rao Anirudha Sudarshan, Civil Engg.; Kamath Sudeep Uday, Electrical Engg.; Deep Gupta, Mechanical Engg.; Roopali Kukreja, Metallurgical Engg. and Materials Science; Vamsi Pritham Pingali, Engineering Physics; Saswati Sarkar, M.Sc. Applied Geology; Rajiv Kumar, Applied Geophysics; Writer Diana Kaikobad Kashmira, M.Sc. School of Biosciences & Bioengineering; Aniruddha Sasmal, M.Sc. Chemistry; Krishna Ramkumar (5 yr. Int. M.Sc.), Chemistry; Saurabh Sharma, M.Sc. Physics; Awasare Sanjeev Nandakumar Anita, M.Sc. Applied Statistics and Informatics, Alladi Sriram, M.Sc. Mathematics. Harshad Dilip Ranadive, M.Tech. (DD), Aerospace Engg.; Kartik Shekhar & M.S.Shaama, M.Tech. (DD), Chemical Engg.; Ashna Chopra, M.Tech. (DD), Civil Engg.; Neha Singh, M.Tech. (DD), Computer Sc. & Engg.; Kartik G., M.Tech. (DD), Electrical Engg.; Pradhan Rohan Nandkumar, M.Tech. (DD), Mechanical Engg.; Naresh Sharma, M.Tech. (DD), Metallurgical Engg. and Materials Science

STATEMENT SHOWING THE TYPES OF SCHOLARSHIPS, STIPEND AND FINANCIAL ASSISTANCE AWARDED TO THE B.TECH., Dual Degree, M.Sc. (INTEGRATED) STUDENTS FOR THE YEAR 2008-2009

Sr.	Types of Scholarships No.	Amount	No. of students
1.	The Institute Merit-cum-Means Scholarship with benefit of Free tuition	Rs. 1000/-p.m.	490
2.	The facilities of free messing (only basic menu) to SC/ST	Basic Menu bill plus pocket allowance of Rs. 250/-p.m. & exemption from payment of Hostel Room Rent	246

3. Financial Assistance to Meritorious students for Higher Studies awarded by Govt. of Maharashtra	Rs.8000/-p.a.	5
4. National Talent Search Scholarship (NTS)	Rs. 500/-p.m. Rs.6000/-p.a.	231
5. Scholarship from Steel Authority of India Ltd.	Rs. 500/-p.m.	5

IIT Bombay Heritage Fund Scholarship

Name of the Scholarship	No. of Schol.	Amount
Abraham Thomas Schp.	2	Rs.1000/-
Ruyintan & Monica Mehta Family Foundation Scholarship	2	Rs.1000/-
Prof. G. N. Revenkar Scholarship	1	Rs.1000/-
Dr. Chandrakant Thanawala Scholarship	1	Rs.1000/-
R. N. Limaye Scholarship	1	Rs.1000/-
Manohar & Sunita Kamat Scholarship	1	Rs.1000/-
Manohar & Sunita Kamat Scholarship	1	Rs.1000/-
C.Vimala & M.R.K. Menon Scholarship	1	Rs.1000/-
Indira Manudhane Scholarship	1	Rs.1000/-
Dr. G.V. Bakore Memorial Scholarship	1	Rs.1000/-
Shri Raman K. Rao Scholarship	1	Rs.1000/-
Miss A. J. Majmundar	1	Rs.1000/-
IITB alumni Microsoft Scholarship	3	Rs.1000/-
Ashish Prasad Nandi Majumdar Scholarship	1	Rs.1000/-
Kumar and Susan Shah Scholarship	1	Rs.1000/-
Subodh Ghonge Scholarship	2	Rs.1000/-
Mr G. M. Nabar Scholarship	1	Rs.1000/-
H. J. Talsania Scholarship	1	Rs.1000/-
Jagjivan Ujamshi Talsania Schp	1	Rs.1000/-
Vasant Himatlal Talsania Schp	1	Rs.1000/-
Indira Manudhane Scholarship	1	Rs.1000/-
Vidyadhar and Radhika Kulkarni Scholarship	1	Rs.1000/-
Mr. Badruddin Sonawalla Scholarship	1	Rs.1000/-
David J. Dunn Scholarship	1	Rs.1000/-
Shri C.K. Apte Scholarship	1	Rs.1000/-
Dr. Vijaya Apte Memorial Scholarship	1	Rs.1000/-
T. R. S. Anand and Bhanumati Anand scholarship	1	Rs.1000/-
Mr and Mrs Ranaganathan Scholarship	1	Rs.1000/-
Jayant Sathe Scholarship	1	Rs.1000/-
Mr Balkrishna K. Mundhe	1	Rs.1000/-
Sandra Lee Purkayastha Scholarship	1	Rs.1000/-
IIT Alumni@Microsoft Scholarship	7	Rs.1000/-
Burjor S. Dadyburjor Scholarship	1	Rs.1000/-
Samir Shah - Prakash Peres Memorial Scholarship	1	Rs.1000/-
Mr. Shantilal H. Goradia Scholarship	1	Rs.1000/-
Mr. S.S. Shiralkar Scholarship	1	Rs.1000/-
Kanitkar scholarship	2	Rs.1000/-
Rajesh Radhakrishnan Scholarship	1	Rs.1000/-
Vidyadhar and Radhika Kulkarni Scholarship	1	Rs.1000/-
Lata Vijaykar Schp	1	Rs.1000/-
Mrs. Minaz Sonawalla Scholarship	1	Rs.1000/-
Usha Purkayastha Scholarship	1	Rs.1000/-

Nagesh C. Chaudhari Scholarship	1	Rs.1000/-
Mr S. J. and Mrs S.S. Kulkarni Scholarship	1	Rs.1000/-
Gajendra Chandra Malakar Scholarship	1	Rs.1000/-
Late Shri Gopaldas D Dattani Schp.	1	Rs.1000/-
George Tharakan Scholarship	1	Rs.1000/-
Mrs. Ila Chandrakant Scholarship	1	Rs.1000/-
Dr. Kishor M. kulkarni Scholarship	1	Rs.1000/-
Prof. Mohan M. Kulkarni scholarship	1	Rs.1000/-
Prof. K. Shankar Scholarship	1	Rs.1000/-
Abbas Bhatia/ John A. Martin Jr. Scholarship	1	Rs.1000/-
Prabhakar D. Mahajan scholarship	3	Rs.1000/-
Madho & Radha Agarwal Schp	1	Rs.1000/-
Suresh & Varsha Nihalani Schp	2	Rs.1000/-
Himangshushekhar Purkayastha Scholarship	1	Rs.1000/-
Mr. Kasamali Virani Scholarship	1	Rs.1000/-
Bijoya Chaudhari Scholarship	1	Rs.1000/-
Lionel J D'luna Scholarship	1	Rs.1000/-
Bibha Nandi Scholarship	1	Rs.1000/-
Dwarka Nath Shuklo Baidya Scholarship	1	Rs.1000/-
Subha & Anand Talwalkar Schp.	1	Rs.1000/-
IIT Bombay Heritage Fund Scholarship	6	Rs.1000/-
Mr Roop Kumar & Mrs. Suraj Devi Agarwal Scholarship	1	Rs.1000/-
Abhay Himatlal Talsania Scholarship	1	Rs.1000/-
Narendra Joshi Merit Schp.	1	Rs.1000/-
P K Seshambal Scholarship	1	Rs.1000/-
Dina Nath & Gayatri Nath Schp	1	Rs.1000/-
Mrs Meenakshi Vishwanathan Schp	1	Rs.1000/-
Dr P Ramadevi Menon Memorial Schp.	1	Rs.1000/-
Anonymous Schp.	4	Rs.1000/-
Abraham Thomas Schp.	1	Rs.1000/-
Prof M V Hariharan Schp	1	Rs.1000/-
N S Rajaraman Schp	1	Rs.1000/-
Virendra Kumar Scholarship	1	Rs.1000/-
Radha Rani Agarwal Merit Scholarship	1	Rs.1000/-
Chamanlal and Labhkunwar Kothary Schp.	1	Rs.1000/-
Vijaya Patil Schp.	1	Rs.1000/-
Mr Digamber and Nilima Schp.	1	Rs.1000/-
M Radhakrishna Kamath Scholaship	1	Rs.1000/-
California Scholarship	2	Rs.1000/-
Shubhada Mulekar Joshi Scholarship	1	Rs.1000/-
S Ramaritam Scholarship	1	Rs.1000/-
Justin Bhansali Memorial Scholarship	1	Rs.1000/-
Lakshmit and Kadayam Srinivasan Scholarship	1	Rs.1000/-
Amrutha Iyengar Scholarship	1	Rs.1000/-
Anisbert & Kumarie Sequeria Schp.	1	Rs.1000/-
Soonu Daduburjor Schp	1	Rs.1000/-

Financial Assistance to Postgraduate students Research Scholars/ M.Tech./ M.Des./ M.Phil. and M.Sc. (2-year programme students)

Sr. No.	Type of Scholarship	Amount per month	No. of students	
			Institute schp.	Other Schp. (RA)
1	Institute Teaching Assistantship * (Ph.D)	Rs. 12,000/- Rs. 14,000/- Rs. 15,000/- Rs. 16,000/- Rs. 17,000/-	91 239 163 - -	- - - 4 11
2	Postgraduate Assistantship to M.Tech. students (2 yr. programme)	Rs. 5,000/- 1 year II year Rs. 6,000/- Rs. 6,500/- Rs. 7,000/-	394 398	26 25 49 40 25
3	Postgraduate Assistantship to M.Des. students (2 yr. programme)	Rs. 5,000/- 1 year II year	33 35	- -
4	Postgraduate Assistantship to M.Phil students (2 yr. programme)	Rs. 5,000/- 1 year II year	12 13	- -
5	CSIR Fellowship to Ph.D studentsM.Tech students	JRF Rs. 12,000/- SRF Rs. 14,000/- JRF Rs. 12,000/-	74 64 4	- - -
6	QIP Scholarships to M.Tech students	Rs. 2500/- 1 year II year	19 19	- -
7	QIP Scholarships to Ph.D students	Rs. 6,000/- Rs. 6,400/-	18 31	- -
8	UGC scholarship to Ph.D students	Rs. 12,000/-(JRF-HSS) Rs. 14,000/-(SRF-HSS) Rs. 14,000/- (JRF Engg. & Tech) Rs. 15,000/- (SRF-Engg. & Tech)	31 21 1 0	- - - -
9	Rajiv Gandhi National Fellowship	Rs. 14,000/-	1	-

List of Scholarship/Fellowship

Government Fellowship/Scholarship

Sr. No.	Name of Fellowship/Scholarship	No. of student	Monthly Fellowship (in Rs)
1	MNES (Ministry of Non-conventional Energy Systems) M.Tech. Ph.D.	— 4	— 10,000/-
2	DAE (Board of Research in Nuclear Science – BRNS) M.Tech.	3	15,000/-
3	NBHM (National Board of Higher Mathematics) Ph.D. M.Sc.	9 8	12,000/- 6,000/-
4	AERB (Atomic Energy Regulatory Board) M.Tech.	4	15,000/-
5	AICTE National Doctoral Fellowship (All India Council for Technical Education) Ph.D..	11	18,000/-
6	Ministry of Urban Development & Poverty Alleviation (CPHEEO) M.Tech.	4	2,000/-
7	DBT-JRF (Department of Biotechnology, Jr. Research Fellowship) Ph.D.	2	12,000/-
8	ICPR (Indian Council of Philosophical Research) Ph.D	1	5,000/-
10	ICMR (Indian Council of Medical Research) Ph.D	5	12,000/-
11	ICSSR (Indian Council of Social Science Research) Ph.D	1	38,621/-

Private Fellowship/Scholarship

Sr. No.	Name of Fellowship/Scholarship	No. of student	Monthly Fellowship (in Rs)
1	TCS (Tata Consultancy Services) M.Tech. Dual Degree Ph.D B.Tech	7 3 6 1	9,000/- 8,000/- 14,000/- 8,000/-
2	Forbes Marshall – M.Tech.	1	9,000/-
3.	Infosys Fellowship - Ph.D.	5	15,000/-
4.	GE Foundation ScholarshipM.Tech.Dual Degree	4	8,000/-
5	Crompton Greaves – Ph.D	4	18,000/-
6	Microsoft Research India – Ph.D.	4	16,000/-
7	M/s Chemithon Engineering Pvt. Ltd (CEPL)Ph.D.	1	10,000/-
8	Dr. Gargi Vishnoi Memorial ScholarshipM.Tech.	1	2,000/-
9	Schulmberger Fellowship – M.Tech.	4	8,000/-
10	Bell Lab India- Ph.D	1	15,000/-
11	Philips India FellowshipPh.D	3	15,000/-
12	British Gas (BG) Fellowship - M.Tech	4	8,000/-
13	Eco-Axis Fellowship - M.Tech	2	5,000/-
14	IITB Monash Ph.D	21	23,333/-
15	ATE Fellowship	1	5,000/-
16	GE Global Research Centgre-DD	1	12,500/-

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
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RECIPIENTS OF DEGREE OF DOCTOR OF PHILOSOPHY

Department : Aerospace Engineering

1.	02401003	Hrushikesh Barik Shock	Wave Reflection Configurations in Shock-Vortex Interactions.	Prof. Avijit Chatterjee
2.	01401702	Malakarjun Mahadeo Patil	Numerical Simulation of Real Gas Effects in Hypersonic Flows using Energy Relaxation Method.	Prof. Mandal J.C.
3.	01401701	Josyula Umakant	Characterization of Fidelity Uncertainty for Robust Design of Aerospace Vehicles	Prof. Sudhakar K. Prof. Mujumdar P. M. S P Selvam
4.	03401301	Vilas Ramdas Kalamkar	Flow Simulation in Turbo machinery using CFD	Prof. Shevare G.R. Prof. Roy B.

Department : Chemical Engineering

1.	03402002	Dalvi Sameer Vishvanath	Production of Ultra-Fine Particles by Depressurization Crystallization Using Sub-Critical Carbon Dioxide	Prof. Mukhopadhyay M.
2.	01402002	Harikrishnan G.	Polyurethane Foams: Processing and Material Development	Prof. Khakhar D.V.
3.	02402701	Sasanka Raha	Studies on Colloidal Cake Filtration: Modeling, Measurements and Analysis	Prof. Khilar K.C.
4.	99402601	(Ms) Sangeetha M Chandrasekaran	Specificity of Lipases in Alkoxy-carbonylation Reaction : Experimental and Modeling Studies.	Prof. Wangikar P.
5.	02402602	Chinmay Ghoroi	Kinetics of Cement Clinkerization : A Study of Multi-Step Solid Phase Reactions.	Prof. Suresh A.K. Prof. Mehra A.
6.	01402003	R. Palpandi Raja	Studies on Liquid Phase Oxygen Supply	Prof. Santosh Noronha
7.	04402005	Talwalkar Sandip Shripad	Multifunctional Reactors	Prof. Sanjay Mahajani
8.	02402005	Katariya Amit Madanlal	Non - Linear Dynamics of Reactive Distillation for Synthesis of TAME	Prof. Moudgalya Kannan. Prof. Sanjay Mahajani
9.	01402604	Parag Hanumanthappa	Axial Mixing of Granular Materials in Horizontal Rotating Cylinders	Prof. Khakhar D.V.
10.	00402803	Sanjay Madhavrao Chavan	Studies in Ion Exchange Involving Ionic Surfactants	Prof. Juvekar V.A.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
11.	03402701	Mujumdar Kaustubh Sitaram	Modeling of Rotary Cement Kilns	Prof. Mehra A. Dr. Vivek V. Ranade
12.	01402302	T. Umasankar Patro	Preparation and Properties of Polymer-Layered Silicate Nanocomposites	Prof. Ashok Misra Prof. Khakhar D.V.
13.	03402602	Vimal Katiyar	Synthesis and Processing of Lactic Acid Based Polymers and Nanocomposites	Prof. Nanavati Hemant
14.	03402005	Parmar Nileshkumar Harshadbhai	Coating Flows of Viscous Liquids on a Rotating Vertical Disc	Prof. Tirumkudulu Mahesh
15.	00402301	Avinash Mahadeo Kadam	Waste Water Purification using Constructed Soil Filter System	Prof. Shankar H.S.
16.	03402708	Utikar Ranjeet Pandurangrao	Modeling of Fluidized Bed Ploypropylene Reactors	Prof. Mehra A. Vivek V. Ranade
17.	01402603	Arunagirinathan M. A.	Surfactant Dissolution: Phase Transformations and Microstructure Evolution	Prof. Bellare J.
18.	03402604	Padhiyar Nitin Umedlal	Strategies for Control of Spatial Property Profile and Grade Transition in Distributed Parameter Systems : An Application to the Continuous Pulp Digester	Prof. Bhartiya S.
19.	03402603	Dinesh Balkisan Mantri	Selective Catalytic Reduction of NOx by Hydrocarbons.	Prof. Aghalayam Preeti
20.	02402601	Dasika Venkata Narayana Prasad	Flow,Mixing and Segregation of Granular Materials inRotating Cyclinder with Non-Circular Cross-Sections	Prof. Khakhar D.V.
21.	03402706	Rajkiran Rajendra Tiwari	Polymeric Nanocomposites with Clays and Modified Clays: Dispersion Structure, Morphological, Thermal and Mechanical Characterizations	Prof. Juvekar V.A. U. Natarajan
22.	99402603	Joshi Hemant Vasant	Studies on Rigid Rod-Like Molecules: Kinetics of Polymerization Reaction, and Film Formation	Prof. Khakhar D.V.
23.	01402001	Nitin Vasant Bhate	Studies in the Mechanism of Aromatic Nitration: Investigating the Role of Microphase	Prof. Juvekar V.A. Prof. Sanjay Mahajani

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
24.	00402006	Kapileswar Nayak	Molecular Modeling of Elasticity and Photoelasticity of Polymer Networks	Prof. Nanavati Hemant
25.	03402006	Khadse Anil Nivrutti	Underground Coal Classification: Kinetics and Process Modeling.	Prof. Aghalayam Preeti Prof. Sanjay Mahajani
Department : Chemistry				
1.	01403307	Kuldeep Singh	Synthetic Approaches to Novel Heterocycles and Carbocycles via Metathesis	Prof. Sambasivarao Kotha
2.	01403312	Samaresh Panda	Synthetic Strategies Towards the Synthesis of Otteliones, Aspinolide B and Aigialomycin D	Prof. Kaliappan K P
3.	01403006	R. Venkateswaran	New Phosphorus (III)-Based Bi, Tri, and Tetradentate Ligands: Syntheses, Reactivity, Transition Metal Chemistry and Catalytic Studies.	Prof. M. S. Balakrishna
4.	03403306	Tushar Kanti Mukherjee	The Influence of Microenvironments of Organized Assemblies on Photoinduced Electron Transfer and Excited State Proton Transfer Processes	Prof. A. Datta
5.	04403310	Debashis Panda	Photophysical Investigation of Biologically Relevant Fluorescent Probes	Prof. A. Datta
6.	01403310	(Ms) Remya Korah	Synthesis and Characterization of Alkaline Earth Metal Complexes of Substituted Benzoic Acids.	Prof. R. Murugavel
7.	02403310	(Ms) Punidha S.	Fuctionalized Core Modified Porphyrins for the Synthesis of Novel Porphyrin Assemblies.	Prof. M. Ravikanth
8.	02403306	Santosh G.	Synthesis and Studies of Re(I) Bridged Porphyrin Dyads, Ferrocene-porphyrin Conjugates and Meso-furyl Porphyrins with Hetero Atom Substituted Cores.	Prof. M. Ravikanth
9.	03403305	(Ms) Ruchika Sharma	Protein – Ligand and Protein – Solvant Interactions in Biologically Important Systems: A Biophysical Approach	Prof. Nand Kishore
10.	02403605	Madhu G.	Stereoselective Reactions Involving Nitroalkenes	Prof. I.N.N. Namboothiri

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
11.	03403606	Nitin Kumar Singhal	Glyco-conjugates Based on Ribose, Galactose & Lactose: Synthesis, Characterization, Metal Ion Recognition, Complexation, Binding & Altering the Properties of Some Lectins and Glycosidases.	Prof. C. P. Rao
12.	02403304	Vrajesh Rameshchandra	Strategic Utilization of Suzuki-Miyaura Cross-Coupling Reaction and Ring-Closing Metathesis in Organic Synthesis	Prof. Sambasivarao Kotha
13.	02403604	(Ms) Sunita Patel	Molecular Dynamics Simulations of Certain Peptides from Proteins : Implication for Protein Folding and Nature of the Unfolded State.	Prof. Y. U. Sasidhar
14.	02403309	Manabendra Sarma	Formulation and Implementation of Theoretical Approaches to Photodynamic Control of Chemical Reactions and Vibrational Fine Structure in Resonant Electron-Molecule Scattering	Prof. Manoj K. Mishra
15.	03403201	Solomon Libsu Bikilla	Synthesis, Antioxidant and Photochemical Studies of some beta-ionyl Compounds.	Prof. Anil K. Singh
16.	02403007	Narayana Murthy S.	Synthetic Studies on Herbarumin, Cladospolide A and Eleutherobin	Prof. Kaliappan K P
17.	03403302	Niladri Maity	Organometallic Complex Derived silica Supported Nanocatalysts for Heterogeneous Hydrogenation Processes.	Prof. Goutam K. Lahiri
18.	02403301	(Ms) Mamta	Morita-Baylis-Hillman and Michael Initiated Intramolecular Diels-Alder Furan Reactions of Activated Alkenes	Prof. I.N.N. Namboothiri
19.	02403312	Venkata Subrahmanyam	Synthesis Studies on C-Aryl Glycosides, Platencin and Taxa-sugar Hybrids.	Prof. Kaliappan K P
20.	02403006	Pankaj Ramjiut Arti Singh	Electrochemical Atomic Force Microscopy and Related Studies of Polyaniline.	Prof. A. Q. Contractor
Department : Civil Engineering				
1.	03404602	Venkata Reddy Keesara	Distributed Rainfall-Runoff Modeling of Watershed using Finite Element Method, Remote Sensing and Geographical Information Systems	Prof. T I Eldho Prof. Rao E.P.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
2.	04404401	Bibhuti Bhusan Das	Some Studies on Determination of Pore Characteristics of Concrete	Prof. Singh D.N.
3.	03404301	Shaik Mastan Vali Sharief	Groundwater Remediation Strategies using FEM-GA Simulation Optimization Models	Prof. T I Eldho Prof. Rastogi A.K.
4.	03404801	Jagadish G. Kori	Seismic Response Control of Structures using Semi-active Dampers	Prof. Jangid R.S.
5.	97404705	Nilkanth Hanmantrao Kulkarni	Numerical Experiments on Solute Transport in Groundwater Flow Systems	Prof. Rastogi A.K.
6.	04404001	(Ms) Pooja Jain	Real Time Wave Forecasting Using Soft Computing Tools	Prof. Deo M.C.
7.	00404802	(Ms) Geeta Shivshankar	Performance Indicators Based Decision Support for Multipurpose Multireservoir Operation	Prof. Gupta Kapil
8.	02404803	(Ms) Geetha K.	Long Term Hydrologic Simulation Using Modified SCS-CN and Variable Source Area Based Models	Prof. T I Eldho Prof. Rastogi A.K. Prof. S Mishra
9.	03404302	Abhay N. Bambole	Hybrid-Interface Element for Elasto-Plastic and Failure Analysis of Laminated Composite Plates	Prof. Desai Yogesh M.
10.	04404804	Shrikant Bhauraoji Charhate	Applications of Genetic Programming and Artificial Neural Networks to Coastal and Ocean Problems.	Prof. Deo M.C.
11.	05404304	Vijaykumar Ramanlal	Variable Friction Pendulum System for Near-Fault Ground Motions	Prof. Jangid R.S.
12.	03404601	(Ms) Reshmidevi T. V.	Knowledge-Based Model for Supplementary Irrigation Assessment In Agricultural Watersheds	Prof. T I Eldho Dr. Rina Jana
13.	01404301	Abhinandanakumar A. Bage	Damage Detection in Structures using Ultrasonic Guided Waves and Ann	Prof. Banerji P.
14.	01404802	Hareshkumar Mohanlal Patel	Stream Aquifer Intraction with Radial Collector Wells using AEM, GA and PSO Based Models.	Prof. T I Eldho Prof. Rastogi A.K.
15.	03404007	(Ms) Payal Desai	Stress Analysis of Finite Length Cylinders - Some Studies	Prof. Kant Tarun

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
Department : Computer Science & Engineering				
1.	02405004	Kanade Aditya Sunil	SPOTS: A System for Proving Optimizing Transformations Sound	Prof. Uday Khedkar Prof. Sanyal Amitabh
2.	02405401	Chintapalli Sobhan Babu	Degree Conditions for Subgraphs	Prof. Diwan A.A.
3.	00405001	Ratul Kumar Mujumdar	Feedback Driven Dissemination of Dynamic Data: Towards Providing QoS Guarantees in Wide Area Networks	Prof. Ramamritham Krithi Prof. Moudgalya Kannan.
4.	01405401	(Ms) Bageshri Karkare	Complexity and Efficiency Issues in Data Flow Analysis	Prof. Uday Khedkar
5.	03405006	(Ms) Shetal Arvind Shah	Content Dissemination Networks for Dynamic Data	Prof. Ramamritham Krithi
Department : Earth Sciences				
1.	02406002	Pankaj Kumar Tiwari	Crustal and Upper Mantle Structure Beneath the Deccan Volcanic Province	Prof. Mohan G.
2.	02406305	S. Saji	High Fluoride in Groundwater Around Teklenjunj Karbi Anglong District and Haldiati Nagaon District, Assam, India	Prof. Chandrasekharam D. Mr. T.K. Rao
3.	01406701	S. Ravi	Geology and Petrology of Selected Kimberlites Fields of Southern India	Prof. Patel S.C.
4.	02406001	Mohammad Ayaz Alam	Geological, Geochemical and Geothermal Studies on the Barren Island Volcano, Andaman Sea, Indian Ocean	Prof. Chandrasekharam D.
5.	04406304	Sourav Saha	Modern and Pleistocene Coastal Sediments of the Gulf of Khambhat- An Analogue for Understanding Oligo-Miocene Hydrocarbon Reservoirs of the Surat Depression	Prof. Banerjee Santanu
6.	02406303	(Ms) Archana M. Nair	Reflectance and Thermal Emission Spectroscopy of Terrestrial Rocks for Spectral Remote Sensing and Image Analysis	Prof. Mathew George
7.	04406001	Jyotirmoy Mallik	Tectono-Geomorphic Evaluation of the Bachau-Samakhiali Basin, Eastern Kachchh, Western India.	Prof. Mathew George
8.	01406801	(Ms) Dipa Dutta	Genesis of the Pre-Cambrian Iron Ore Deposits Associated with Banded Hematite Quartzite in Selected Mines of North Goa, India	Prof. Jadhav G.N.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
9.	03406602	Balamurugan Guru	Remote Sensing, GIS and Modeling for Characterizing the Fractured Aquifer System in Hosur region, Tamil Nadu, India	Prof. Biswal T.K. Prof. S Anbazhagan
10.	04406303	Manoj Khandelwal	Evaluation and Prediction of Blast Induced Ground Vibration and Frequency for Surface Mine- A Neural Network Approach	Prof. Singh Trilok Nath
Department : Electrical Engineering				
1.	00407006	(Ms) Vani Prasad Pulumathi	Standardization of Interconnects : Towards an Interconnect Library in VLSI Design	Prof. Desai Madhav
2.	03407302	Jiji C. V.	Single - Frame Image Super - Resolution	Prof. Chaudhuri Subhasis
3.	03407805	Pushkar Gajanan Patwardhan	New Results in Two-Dimensional Non-Separable Multirate Fitter Banks	Prof. Gadre V.M.
4.	01407402	Pradeep Vinayakrao	A High Fidelity and Robust Closed Loop Active Flux Compensation Scheme for Mitigating CT Saturation	Prof. Soman S.A. Prof. Apte P. R.
5.	00407803	Milind Shantilal Shah	Estimation of Place of Articulation During Stop Closures of Vowel-Consonant-Vowel Syllables	Prof. Pandey P.C.
6.	04407302	(Ms) Elizabeth P. Cheriyan	Discrete-time Dynamic Model of NGH Damper and SSR Analysis of Large Power Systems	Prof. Kulkarni A.M.
7.	02407604	Nitin S. Kale	Making Hotwire CVD a Viable Technology Alternative for BioMEMS Applications: Device Optimization, Fabrication and Characterization	Prof. Rao Ramagopal
8.	03407003	(Ms) Jayalakshmi M.	Digital Watermarking for Copyright Protection and Error Concealment	Prof. Merchant S N
9.	99407702	Arbind Kumar	Simplified Direct Torque Control Strategies for Medium and High Power Three-Phase Induction Motor Drive	Prof. Fernandes B.G. Prof. Chatterjee Kishore Mr. M.D. Bagewadi
10.	02407702	Dharmraj Vishwanath	High Power Factor AC to DC Conversion Systems	Prof. Chatterjee Kishore Prof. Fernandes B.G. Dr. A.K. Nath
11.	02407004	Sachin Jain	Single Stage Grid Connected Photovoltaic Systems with Maximum Power Point Tracking	Prof. Agarwal Vivek
12.	04407301	Pawar Tanmaykumar Dharmendrasinh	Ambulation Analysis of ECG Signals from Wearable Recorders	Prof. Chaudhuri Subhasis Prof. S. Duttagupta

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
13.	02407703	Vinay Purusaothaman	Novel Diffusion Based Techniques for Depth Estimation and Image Restoration from Defocused Images	Prof. Chaudhuri Subhasis
14.	98407302	(Ms) Rajashree Vilas Sarwadnya	Microfabricated System for Microbial Assay	Prof. Lal R.
15.	02407302	Nistala Bheema Rao	Tunable Sprial Inductor for RF Applications	Prof. Chandorkar A.N.
Department : Humanities & Social Sciences				
1.	00408301	(Ms) Meghna Purohit	Migration, Construction of Identity and Strategies for Survival : Bangladeshi Migrants in Jaipur District	Prof. Robinson Rowena
2.	01408005	(Ms) Farida Mohommed Jafar Zulekha Umrani	Computer Adoption Among Mumbai Muslim Youth : Empowerment and Impact Assessment	Prof. Ghadially Rehana
3.	02408003	Naveen Kumar Kashyap	Regulatory Role of a Sleep as Declarative Memory Consolidating Agent: An Experimental Analysis	Prof. Tanmay Bhattacharya Prof. Gupta Meenakshi
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6.	02408804	Atish Somashekhar Taukari	Executive Functioning in Air Traffic Managers	Prof. Tanmay Bhattacharya Prof. Gupta Meenakshi
7.	99408801	(Ms) Ananda Amritmahal	A Feminist Critical Perspective on Indian Women's writing with Special Reference to the Work of Shashi Deshpande and Mahasweta Devi	Prof. Malshe M. S .
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9.	01408303	(Ms) Thakur Sai Arun	The Agaris of North-West Maharashtra: An Ethnographic Study	Prof. Robinson Rowena
10.	01408302	Abhilash Sreekumar Nair	Test of Conditional Capital Asset Pricing Model in Indian Stock Market- Two Alternative Approaches	Prof. Ramanathan A Prof. Subramanyam A.
11.	03408701	Kamat Manoj S.	A Study of Corporate Dividend Policy in India: 1961-2006	Prof. Bhole L. M. Dr. I. Bhanu Murthy

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12.	01408701	(Ms) Anupam Prakash	A Study of the Impact of Capital Adequacy Norms on Scheduled Commercial Banks in India	Prof. Bhole L. M. Dr. Janak Raj
13.	02408601	(Ms) Debasri Chakrabarti	A Study of the Complex Predicates of Hindi	Prof. Malshe M. S. Prof. Sarma Vijayanthi Prof. P. Bhattacharya (co-supervisor)
14.	02408901	Subash S.	An Analysis of the Spillover Effects of Foreign Direct Investment in India (1994-2005)	Prof. Ramanathan A
15.	01408702	Dhananjay Shambrao	Evaluation of an Incentive Plan: A Case Study of A Petrochemical Organization	Prof. Gupta Meenakshi Dr. S. Chandrasekhar
Department : Mathematics				
1.	01409002	Manoj Kumar Pandey	On Certain Wave Propagation Problems Involving First Order Quasi-Linear Hyperbolic Systems of PDEs.	Prof. Sharma V.D.
2.	02409601	Gopichand Agnihotram	Construction of Optimal Reliability Test Plans	Prof. Sabnis S.V.
3.	02409002	Raja Sekhar Tungala	On Certain Problems Associated with Hyperbolic Systems of Conservation Laws	Prof. Sharma V.D. Prof. G. K. Srinivasan
4.	02409001	Ajit Patel	Mortar Finite Element Methods for Second Order Elliptic and Parabolic Problems	Prof. Pani A.K. Prof. Nataraj Neela
5.	02409301	Arunkumar Ravanrao Patil	Weight Hierachy and Generalized Spectrum of Linear Codes Associated to Grassmann Varieties.	Prof. Ghorpade S.R Prof. Pillai Harish .
6.	02409005	Sarvesh Kumar	Finite Volume Element Methods For Incompressible Miscible Displacement Problems in Porous Media.	Prof. Nataraj Neela Prof. Pani A.K.
Department : Mechanical Engineering				
1.	02410601	Deoras Mukund	Analysis of Hydrogen Distribution in Nuclear Reactor Containments	Prof. Iyer Kannan N. Prof. Aghalayam Preeti
2.	02410004	Sachin Lotan Borse	Flow Distrubution Inside Stationary Cooled Gas Turbine Blade	Prof. Date A.W. Prof. Vedula R.P.
3.	02410302	Mohammed Sadhikh	Shipboard Chilling Using Waste Heat.	Prof. Rane Milind
4.	03410402	Nalawade Mukund Kerba	Heat Transfer Enhancement in Ducts with Delta Wing Vortex Generators	Prof. Vedula R.P. Prof. Prabhu S V

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5.	01410901	Bhojwani Virendra	Design Development & Testing of Opposed Piston Linear Compressor Driven Two-stage Stirling Cycle cryocooler for Space Application.	Prof. Bapat S.L. Prof. Narayankhedkar K.G.
6.	03410403	Kore Sachin Dnyandeo.	Electromagnetic Welding of Flat Sheets.	Prof. Date P.P Prof. Kulkarni S V
7.	02410003	(Ms) Desai Sharvari	An Alternative Method of Quantitative Characterization of Non-uniformity in the Strain Distribution of Drawn Sheet Metal Parts.	Prof. Date P.P.
8.	04410801	Thaddeus M. P.	Numerical Modeling of Resistance Spot Welding Process and its Experimental Validation	Prof. De Amitava
9.	04410001	Nanji Jethabhai Hadia	Three-Dimensional Waterflooding with Vertical and Horizontal Wells: Experiments and Simulation	Prof. S. K. Mitra Prof. Vinjamur Madhu
10.	04410302	Vijay Kumar Sukhwani	Synthesis and Applications of Low Cost Magnetorheological Suspensions	Prof. H. Hirani
11.	03410001	V.B. Sunil	Intelligent Recognition of Features from CAD Models	Prof. Pande S.S.
12.	03410002	Pranab Samanta	Hybrid (Permanent Magnetic+Hydro-dynamic) Bearing : Theoretical and Experimental Studies	Prof. H. Hirani
13.	04410303	Udaykumar Anna Dabade	Characteristics of Machined Surfaces on Al/SiCp Metal Matrix Composites Produced During Turning	Prof. S. S. Joshi
14.	03410801	Bhat Sunil	Crack Parameter in the Vicinity of an Elastically Matched but Plastically Mismatched Bimetallic Interface and Crack Growth under Fatigue Load	Prof. Ukadgaonker Vijay Dr. M. Jha
15.	03410003	Krishnarao D. Dhuri	Optimal Sizing and Placement of Piezoelectric Sensors/Actuators for Active Vibration Control of Flexible Structures	Prof. Seshu P.

Department : Metallurgical Engineering & Materials Science

1.	02411701	(Ms) Malobika Karanjai	Synthesis and Evaluation of Sintered Ti-Ca-P Biocomposites	Prof. Kashyap B.P. Prof. Mohan T.R.R. R Sundaresan
2.	01411006	S. Rajakumar	Nanoparticles of Ferrites and Ferromagnetic Metals with Different Shapes	Prof. Bahadur D.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
3.	02411703	Amit Sinha	Studies on Phase Evolution and Electrical Conductivity of Gadolinium Based Perovskite Type Oxide Ion Conductors	Prof. Gopalan Prakash Prof. B. P. Sharma
4.	00411704	Abhijit Ghosh	Synthesis and Sintering Studies of Yttria Stabilized Zirconia Nano Powders	Prof. Mohan T.R.R. Dr. A. K. Suri
Department : Physics				
1.	02412001	Ashutosh Kumar Alok	Constraints on the New Physics Contribution to the Flavour Violating Rare Decays of B Mesons	Prof. Sankar S.Uma
2.	02412302	(Ms) Borhade Pravina	Chern-Simons Theory-Topological String Duality and Dijkgraaf-Vafa Conjecture.	Prof. P. Ramadevi
3.	01412602	Libu K. Alexander	Magnetic Studies On Some Co-Based And Cr-Based Geometrically Frustrated Systems	Prof. Mahajan Avinash V.
4.	02412002	Rajeev Kumar Sinha	Origin of Methyl Torsional Potential in some Selected Nitrogen Heterocyclic Molecules: Experimental and Theoretical Investigations.	Prof. Kundu Tapanendu
5.	01412305	Sukhvinder Singh	Growth and Study of Structural and Optical Properties of Polycrystalline and Epitaxial Films and Nanocrystallites of Zinc Oxide	Prof. Major S.S.
6.	01412304	(Ms) Ankhi Roy	Investigation of One Rare Decay Channel of the Eta Meson	Prof. Varma Raghava
7.	03412004	(Ms) Salunke Sarita Subhash	Theoretical and Experimental Studies of Low Dimensional Quantum Spin Systems	Prof. Dasgupta I Prof. Mahajan Avinash V.
8.	02412005	Pramod Kumar	Magnetic,Magneto-thermal and Magneto-transport Studies in Some Rare Earth-based Intermetallic Compounds	Prof. Suresh K.G.
9.	01412301	Binay Bhushan	Optical Nonlinearity Correlation with Electronic and Chemical Structures of Polymers their Nanostructures and Metal-Nanocomposites	Prof. Singh B.P.
10.	02412901	Murtaza Bohra	Deposition and Magnetic Properties of Nanocrystalline Magnetite and Zinc Ferrite Thin Films	Prof. N. Venkataramani Prof. Prasad Shiva

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
11.	02412301	Prasanta Mandal	Growth and Optical Studies of $Cd_xZn_{1-x}S$, CdS/ZnS Core-Shell and Doped CdS Nanocrystallites in Organic LB Multilayers.	Prof. Major S.S. Prof. Srinivasa Raman
12.	03412303	Rajesh V. Nair	Optical Studies on Self-Assembled Photonic Crystals in the Visible and Near-IR Wavelength Ranges.	Prof. Vijaya R.

Department : Corrosion Science & Engineering

1.	01416001	Ashish Kumar Thakur	Mechanical and Corrosion Behavior of Age-hardened AA7020 Alloy	Prof. Malhotra S.N. Prof. Raman R.
2.	01416701	Shailesh Kumar Singh	Development of Thermally Sprayable Low Density Polyethylene Coating System for Marine Environmentating system for marine environment.	Prof. Raja V. S. Dhirendra Kumar
3.	01416901	(Ms) Rashmi Sumant Dalvi	Localized Corrosion Studies on 2205 Duplex and 316l Stainless Steel Autogenous Welds Prepared by TIG and CO ₂ Laser Welding Processes	Prof. Raman R. Prof. Samajdar I.
4.	00416002	(Ms) Smita Kumari	Corrosion and Erosion Resistant Coatings to Combat Fireside Corrosion in Coal-Based Power Plants.	Prof. Khanna A. S. .
5.	02416303	Antony P. J.	Corrosion of 2205 Type Duplex Stainless Steel in Chloride Medium Containing Aerobic and Anaerobic Bacteria	Prof. Raman R.
6.	02416001	Saravanan P.	Plasma Immersion Nitrogen Ion Implantation of Austenitic Stainless Steels for Enhanced Corrosion Resistance of Body Implants	Prof. Raja V. S.
7.	02416301	P. Mathiazhagan	High Temperature Oxidation Behaviour of Modified Low Alloy Steel	Prof. Khanna A. S.
8.	04416301	Vagge Shashikant Tukaram	Effect of Strontium on Electrochemical Corrosion Behavior of Galvanized Coating in the Deformed and Un-deformed Conditions	Prof. Raja V. S.
9.	01416702	Sanjeet Kanungo	Wear Resistant Cermet Coatings for Diesel Engine Applications	Prof. Khanna A. S. Dr. S. G Dixit

Department : Energy Science and Engineering

1.	03417301	Patel Rajeshkumar Naranbhai	Extraction of Natural Phenols from Biomass Pyrolysis oil.	Prof. Ganesh Anuradda Prof. Bandyopadhyay Santanu
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2.	03417004	Manish Shakdwipee	Analysis of Renewable Hydrogen Options	Prof. Banerjee Rangan Prof. Venkatesh K. V.
3.	02417301	Jayaramaiah G. V.	Voltage Control Strategies for Stand - Alone Self-Excited Induction Generator	Prof. Fernandes B.G.
4.	04417301	Kulkarni Govind Narayan	Design and Optimization of Solar Thermal Systems	Prof. Bandyopadhyay Santanu Prof. Kedare S B
5.	01417702	Vishal Renukadas	Benchmarking and Energy Efficiency of Glass Furnaces.	Prof. Banerjee Rangan Prof. Gaitonde U.N. Mr. Abhay Nalawade
6.	02417402	(Ms) Indu R Pillai	Diffusion of Renewable Energy Technologies	Prof. Banerjee Rangan
Department : Centre for Environmental Science & Engineering				
1.	02418302	(Ms) Anushuya R.	Biodegradation of Complex Phenolic Wastewater using Hybrid UASB Reactor	Prof. S.K.Gupta
2.	02418601	Partha Sarathi Majumder	Biological Treatment of Wastewater Containing Chlorinated Phenols	Prof. S.K.Gupta
3.	01418602	Manoj Kumar Mani Chaturvedi	Treatment of Wastewater Using Natural Systems.	Prof. S.R.Asolekar
4.	03418801	Upendra Dahyabhai Patel	Reductive Dechlorination of Penta-chlorophenol using Bimetallic Systems and Immobilized Palladium	Prof. Sumathi Suresh
5.	03418901	(Ms) Rachna Patel	A Sequential Biological- Chemical Method for Treatment of Azo Dyes	Prof. Sumathi Suresh
6.	01418003	Mahindrakar Amit Baburao	Treatment of Certain Heavy Metals Bearing Hazardous Wastes Generated by Ship Breaking Industry	Prof. S.R.Asolekar
7.	01418302	Deepak Raj Dubey	Wastewater Denitrification in Upflow Anoxic Sludge Blanket Reactor	Prof. S.R.Asolekar
8.	01418301	Rewatkumar Pithuji Borkar	Biodegradation of Chlorinated Organic Compounds Using UASB Reactor	Prof. S.K.Gupta
9.	02418301	Shahid Parvez	Bioluminescence Inhibition Based Toxicity Assessment of Hydrophobic Organic Compounds: Component Contribution to Mixture Toxicity.	Prof. Suparna Mukherji Prof. Chandra V

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10.	03418003	(Ms) Anal Vasantrao Chavan	Algal-Bacterial System for the Treatment of Wastewater Containing Petroleum Hydrocarbons in Rotating Biological Contactor.	Prof. Suparna Mukherji
11.	02418002	Puneet Sarna	Enhanced Biological Phosphorus and Nitrogen Removal from Wastewaters using Sequential Batch Reactors	Prof. Sanjeev Chaudhari

Department : Industrial Engineering & Operations Research

1.	01419801	Sajeev Abraham George	Competences and Performance Measurement for Supply Chain Management.	Prof. Rangaraj Narayan
2.	01419802	Ateekh-Ur-Rehman Lateef-Ur-Rehman	Evaluation of Reconfigured Manufacturing Systems Using Simulation and Multicriteria Methods	Prof. Babu A. Subash Prof. N. Hemachandra

Department : Reliability Engineering

1.	04422302	Suresh H. N.	Reliability based Degradation Model for Preventive Maintenance of Piping Systems.	Prof. (Ms.) A. Srividya Prof. A.K. Verma
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Department : Systems & Control Engineering

1.	03423201	Alemayehu G/Egziabher	Multirate Output Feedback Based Digital Redesign of Sliding Mode Control Algorithms and their Applications	Prof. Bandyopadhyay B. Prof. Agarwal Vivek
2.	01423804	Shingare Prashant Sridharrao	Fixed and Interval Model Reduction Techniques for Control System Design	Prof. Bandyopadhyay B. Prof. H.K. Abhyankar, VIT, Pune
3.	00423002	Kubal Nandkishor Shashikant	Applications of Interval Global Optimization to Robust Stability Analysis and Control	Prof. Nataraj P.S.V.
4.	01423803	(Ms) Sondur Shanta Mallikarjun	Application of Extrapolation Methods to Range Finding Algorithms and Global Optimization	Prof. Nataraj P.S.V.
5.	04423302	Sreekumar C	Investigations into the Hybrid Modeling and Control of DC-DC Power Converters	Prof. Agarwal Vivek
6.	03423801	Nikhil Anil Chaudhary	A Study of the Regulatory Design Principle of Tryptophan System in Escherichia coli	Prof. Bhartiya S. Prof. Venkatesh K.V.

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Department : SJM School of Management

1.	00427603	Suralkar Suresh Anandrao	An Empirical Analysis of Mergers and Acquisitions of Indian Banks.	Prof. Bhole L. M.
2.	03427001	(Ms) Shalini Pathak	Social Influences on Consumer Behavior in Groups Like Family	Prof. Sanjaya singh Gaur
3.	03427002	(Ms) Richa Agrawal	Customers' Relational Behavior in a Pseudo-Relationship Context Prof. Sanjaya singh Gaur	
4.	03427801	(Ms) Leena Shrivastava	Performance Evaluation of Mutual Funds	Prof. S.V.D.Nageswara Rao

Department : School of Information Technology

1.	01429002	Srinath Perur	Connectivity Properties for Topology Design in Sparse Multi-hop Wireless Networks.	Prof. S. R. Iyer
2.	03429701	Debabrata Nayak	Wireless Security Policy Optimization Techniques	Prof. D. B. Phatak Ashutosh Saxena

Department : School of Biosciences & Bioengineering

1.	02430001	Joshi Manoj Achyutrao	Design, Fabrication and Functionalization of Microcantilever Biosensors	Prof. Mukherji Soumyo Prof. Rao Ramagopal
2.	01430005	(Ms) Pallavi Srivastava	Perturbation of Microtubule Cytoskeleton by Hamlet and Rotenone: Insights into their Antiproliferative Mechanisms	Prof. D. Panda
3.	01430305	Prashant Venkatrao Kodgire	Transcriptional Regulation of Motility Associated Genes epr, flgM and hag in Bacillus Subtilis	Prof. K.K. Rao
4.	02430005	Patel Ronak Yogeshbhai	Molecular Dynamics Simulations of Ganglioside GM1 in Lipid Bilayers	Prof. P.V.Balaji
5.	01430802	(Ms) Chimote Geetanjali	Mycobacterial Lipid-lung Surfactant Interactions.	Prof. Banerjee Rinti
6.	01430801	(Ms) Mita Bhowmick	Numerical Modeling of Near Infrared Light Propagation for Diffuse Optical Tomography	Prof. Desai U.B. Prof. Seshu P.
7.	02430307	B. Naveen	Studies on Phosphatidylinositol 4-kinases in RBL 2H3 Cells	Prof. G. Subrahmanyam
8.	02430304	Ranjeet Kumar Sinha	Studies on Type II Phosphatidylinositol 4- Kinase in T Lymphocytes	Prof. G. Subrahmanyam

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
9.	03430006	Patil Amol Valmik	Functional Diffuse Optical Tomography for Neonatal Brain Function Monitoring	Prof. Desai U.B. Prof. Mukherji Soumyo
10.	01430304	Mohd. Tanvir Qureshi	Studies on Interaction of Gal3 Protein and Gal80 Protein of Saccharomyces Cerevisiae.	Prof. P. J. Bhat
11.	02430801	Jose Iven	Non-Invasive Imaging of Breast Cancer : Synthesis and Characterization of Novel Near-Infrared Fluorescent Estrogen Conjugate.	Prof. K. D. Deodhar
12.	02430802	Nirdosh Kumar Rana	Assessment of Diabetic Feet Based on Gait Pattern, Muscles Activity and Foot Pressure.	Prof. Ray G.G Dr. T. Sreedhar
13.	02430007	Rathinasamy K.	Antiproliferative Mechanism of Action of Benomyl and Griseofulvin	Prof. D. Panda Prof. Bellare J.

RECIPIENTS OF DEGREE OF MASTER OF PHILOSOPHY

Department : Humanities & Social Sciences

Specialization : Planning and Development

1.	06808003	(Ms) Piu Mukherjee	Regional Development and Growth Process of West Bengal	Prof. Bhole L. M.
2.	06808008	(Ms) Aswathy P.	Determinants of Stock Price and Volatility of Indian Stock Market: An Empirical Study	Prof. Bhole L. M. Prof. Ramanathan A
3.	06808009	(Ms) Aakriti Grover	Slum Relocation and Vulnerability to Disasters: A Case Study of Kranti Nagar Slum, Mumbai	Prof. Parthasarathy D.
4.	06808010	Prakash Singh	Inflation and Growth: Evidence from India	Prof. Bhole L. M. Prof. Narayanan K.
5.	06808012	Shivani Choudhary	Service Sector Growth in India: Structure, Impact and Determinants	Prof. Ramanathan A
6.	06808015	(Ms) Ware Aarti Anand	Development Induced Displacement and It's Impact on elementary and Secondary Education	Prof. Robinson Rowena Prof. Ramanathan A
7.	06808007	Anil Philip	Institutional Support for Technology Development and Behaviour of SMES - A Case Study of TIFAC;s Mgt. Programme 1993-2004	Prof. Narayanan K.

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8.	06808011	(Ms) Rupsha Banerjee	Process and Impact of R&D: Case Study of IIT Bombay	Prof. Parthasarathy D. Prof. Ramamritham Krithi
9.	06808001	Avishek Bose	Multi Stakeholder Partnerships and Information Communication Technologies - A Case Study of E-Choupaz	Prof. Subuddhi K. Prof. Parthasarathy D.
10.	06808002	(Ms) Sohinee Ganguly	A Study of Stress and Coping Strategies of Students of IIT Bombay	Prof. Pooja Purang Prof. A. Khan
11.	06808004	Anand Shukla	Agribusiness Practices in Maharashtra: A Case Study of Contract Farming Scheme in Jalgaon District	Prof. Subuddhi K. Prof. Trivedi Pushpa
12.	06808005	Jaison Davis	Volatility and Stock Market Microstructure: A Study of Index Volatility in Indian Stock Market	Prof. Trivedi Pushpa
13.	06808006	Neelakanta N. T.	Determinants of Foreign Institutional Investment Share Holding in India: A Sectoral Analysis	Prof. Trivedi Pushpa
14.	06808013	Naresh B.	Social Capital and Microfinance - Dynamics of group Relations	Prof. Subuddhi K. Prof. Ramanathan A

RECIPIENTS OF DEGREE OF MASTER OF DESIGN

Department : Industrial Design Centre

1.	05613802	Paranjpe Atul Vidyadhar	Hard/Hybrid Luggage Design.	Prof. B.K.Chakravarthy
2.	06613804	Mantri Nikhil Prakash	Information Device for Sugarcane Farmers.	Prof. Ray G.G
3.	06613004	(Ms) Vaishali Borker	Retail Design - Display Systems for the Indian Super Markets.	Prof. Bapat V.P.
4.	06613006	(Ms) Maithilee Parag Apte	Knockdown Display System in Bamboo for Lifestyle Products.	Prof. Rao A.G
5.	06613802	Rakshit Anantrai	Device to Increase Business for 'Kirana' Shops in Context for Competition for Malls.	Prof. Joshi Anirudha
6.	06613001	Manoj Kumar A.G	Explosive Detection System for Transit Environments.	Prof. B.K.Chakravarthy
7.	06613007	Pushkar V Ingale	Personal Water Transport.	Prof. Bapat V.P.
8.	06613002	(Ms) Ratika Bakshi	Design of Products for Infants.	Prof. Munshi K.
9.	06613805	(Ms) Roli Singh	Passenger Trailer For Tractors.	Prof. Munshi K.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
10.	05613804	Girish S.	Experiential Learning Kit for School Children.	Prof. Rao A.G
11.	06613003	Munwar Khan Shamsher Khan	Design of Low Cost ATM for Rural India.	Prof. Athavankar Uday A.
12.	06613005	Mahmadkasif Yakub Sheikh	Studio for Creative Vocational Education in Bamboo.	Prof. Rao A.G
13.	06613009	Maske Sandeepkumar Vitthalrao	Small Wind Mill Generator.	Prof. Munshi K.
14.	06613010	Parasar Kishore Das	De-stressing for Call Center Youth : An Alternative Medicine Approach.	Prof. R. Sandesh
15.	06613801	Lourenco Benjamin Rowland Antonio	Educational Toys for the Under Privileged.	Prof. B.K.Chakravarthy
16.	06613803	Dharmraj Kushwaha		Prof. Ray G.G
Specialization : Visual Communication				
1.	06625006	(Ms) Shruti Agarwal	Contextually Appropriate Airports - A Generic Design Process.	Prof. Trivedi Kirti
2.	06625007	Biju Mathew Neyyan	Emerging Directions in Magazine Design.	Prof. Trivedi Kirti
3.	06625801	Saaib Bakir Zafar	Game Design.	Prof. Joshi Anirudha
4.	06625804	(Ms) Shilpa Beura	Interconnectivity.	Prof. Trivedi Kirti
5.	06625004	(Ms) Deepti Halder	Illustrations for Meghadootam.	Prof. G.V.Sreekumar
6.	06625005	(Ms) Ruchi K. Shah	Repositioning Screenprinting.	Prof. Nina Sabnani
7.	06625001	Shayak Sen	Film on Varnasi.	Prof. Sumant Rao
8.	06625003	Shantanu Pradyumna Jog	Redesign of Indian Coins.	Prof. G.V.Sreekumar
9.	06625008	Sunil Gajanan Mahajan	Undiscovered Powai : A Photographic Journey.	Prof. Mohanty Raja
10.	06625802	Arko Provo Mukherjee	Designing A Photography Magazine.	Prof. G.V.Sreekumar
11.	06625803	Shah Manish Anilkumar	An Installation on Global Warming.	Prof. Sumant Rao
12.	06625805	(Ms) Deepti Gopinath Chhaya Sawant	Kautilya - A Theme Based Board Game Design	Prof. Athavankar Uday A.
Specialization : Interaction Design				
1.	06633006	Atish Jayantilal Patel	Stock Trading Application for Infrequent Investors.	Prof. Joshi Anirudha

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
2.	06633008	Nagargoje Arun Yeshwantrao	Interactive Toys for Children.	Prof. Poovaiah Ravi
3.	06633009	(Ms) Girija Aneel Aathalye	Communication Device for Families.	Prof. Joshi Anirudha
4.	06633002	Parth Sanjay Nilawar	Enhancing Media Richness in Synchronous Distributed Classrooms.	Prof. Athavankar Uday A.
5.	06633003	Anshuman Kumar	A Cross Cultural Comparative Study on How Users Maintain Their Phonebooks. - With Focus on Cultural and Cognitive Styles of Koreans and Indians.	Prof. Joshi Anirudha
6.	06633801	(Ms) Kavita Krishnamoorthy	Redesign of the Mobile User Interface for Elderly Women.	Prof. Joshi Anirudha
7.	06633005	Surendrakumar Manekar	Software Tools for Illustrators.	Prof. Poovaiah Ravi
8.	06633004	Kumar Natwarlal Ahir	Design of Services for Interactive Television in Indian Context.	Prof. Poovaiah Ravi
9.	06633007	Chinmoy Kumar Das	Architectural Website for Supporting Students and Practitioners.	Prof. Athavankar Uday A.

Specialization : Animation

1.	06634001	Joshi Rishikesh Dinkar	Animation on Powada of Veer Baji	Prabhu Deshpande. Prof. Nina Sabnani
2.	06634002	Ajay Singh Supahiya	Animation Short on Ramayana Duel Between Ram and Parshurama.	Prof. Shilpa Ranade
3.	06634003	Hashim K. Basheer	Hand of Hunger - A Film.	Prof. Mohanty Raja
4.	06634004	(Ms) Deepa Kailash Chordia	Animated Fairytale.	Prof. Shilpa Ranade
5.	06634005	Samvatsar Shaunak Pramod	An Animated Short on Environment & Conservation.	Prof. Sumant Rao
6.	06634006	Sunil K. Tunagaria	Animation on Human Emotions.	Prof. Nina Sabnani
7.	06634007	Varunjyoti Deori	Humour - A Study of Human Nature.	Prof. Sumant Rao

RECIPIENTS OF DEGREE OF MASTER OF MANAGEMENT

Department : SJM School of Management

1.	06927810	Kunal Pachariwala	Exploring New Business Models in the Visual Media (Film & Music) Industry.	Prof. Jha Shishir Kumar
2.	06927824	(Ms) Jain Nilufer Ashok	Implementation of IT in SMEs.	Prof. Jha Shishir Kumar

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
3.	06927841	(Ms) Donkada Venkata Sai	Business Opportunies Through Rural Communication.	Prof. Jha Shishir Kumar
4.	06927844	(Ms) Vishakha Mittal	Implementation of IT in SMEs.	Prof. Jha Shishir Kumar
5.	06927804	Vaibhav Jha	Assessing Feasiability of Recommendation Framework.	Prof. Sonar M Rajendra
6.	06927805	Pavan Kumar Thatha	Assessing Feasibility of Universal Recommendation Engine.	Prof. Sonar M Rajendra
7.	06927803	Hemant Sharad Rekha Kane	Telecom Policy in India: Implications for Mobile Telephony	Prof. Jha Shishir Kumar
8.	06927830	Vinod A.	Technologically Enhanced Distance Learning: Opportunities and Applications in the Indian Context.	Prof. Jha Shishir Kumar
9.	06927806	Muralidharan S.	Knowledge Modelling of the Life Insurance Underwriting Procedures.	Prof. Sonar M Rajendra
10.	06927807	(Ms) Divya John	Using Hybrid Intelligence Approach for Advising on Insurance Policies for Retail Customers.	Prof. Sonar M Rajendra
11.	06927822	S.K.Teja Kappagantula	Knowledge Modelling for Personal Investment Advisory Process- Banking Financial Services and Insurance Domain.	Prof. Sonar M Rajendra
12.	06927823	Diwakar Sekhar Yasarapu	Using Hybrid Intelligent System Approach for Advising on Banking Products.	Prof. Sonar M Rajendra
13.	06927837	Abhishek Jain	Knowledge Modelling : Customers' Perspective of Retailers.	Prof. Sonar M Rajendra
14.	06927839	Rachit Raman Meharotra	Knowledge Modelling : Retailers' Selection.	Prof. Sonar M Rajendra
15.	06927856	Bhupendra Kumar Jagdev	Knowledge Modelling: Supplier Selection.	Prof. Sonar M Rajendra
16.	06927861	Puneet Kumar	Using Intelligent Systems for Avising on Real-Estate Domain.	Prof. Sonar M Rajendra
17.	06927816	Yuvnish Dhamija	Comparative Analysis of SOM Neural Network with K-Means Clustering Algorithms.	Prof. Usha Ananthakumar
18.	06927826	Abhishek Garg	Co-Strategy for AI (Artifical Intelligence) Startup in Indian Education Sector.	Prof. Sonar M Rajendra

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
19.	06927842	Pulkit Bansal	Digital Rights management in the Mobile Environment.	Prof. Jha Shishir Kumar
20.	06927845	Rohit Nandurkar	Antispamming techniques and Role of Artificial Intelligence.	Prof. Sonar M Rajendra
21.	06927849	Deepak Kumar Behera	Assessment of Banking Industry in India and Scope for Business Intelligence.	Prof. Sonar M Rajendra
22.	06927854	Sunil Chelluri	Impact of DRM on Digital Service Based Industries.	Prof. Jha Shishir Kumar
23.	06927811	Ramesh N.	Digital Business Models in Music and Video.	Prof. Jha Shishir Kumar
24.	06927819	(Ms) Uma Nathany	Case Study of Microfinance Trnsactions in India.	Prof. Jha Shishir Kumar
25.	06927829	Pranjal Srivastava	Finding the Right Path for Regional Aviation in India : Any Lessons to Learn from China?	Prof. H. Huber
26.	06927835	Shreyas Vishvas Tejaswini Navare	Developing a Digital Business Model in the Publishing Industry.	Prof. Jha Shishir Kumar
27.	06927848	Ananth A.	A Study on the Impact of WTO Regulations on Indian Fishing Industry.	Prof. Jha Shishir Kumar
28.	06927813	Mahesh Krishnan	Examining Digital Production and Distribution Channels.	Prof. Jha Shishir Kumar
29.	06927817	Shah Pravir Satyaprakash	Financial and Economic Analysis of Oil and Gas Exploration Projects in India.	Prof. S.V.D.Nageswara Rao
30.	06927821	(Ms) Shipra	Digital Rights Management in Mobile Environment.	Prof. Jha Shishir Kumar
31.	06927820	Chaitanya Marathe	Study of the Air Deccan/Kingfisher Merger.	Prof. H. Huber
32.	06927831	Bhaskar Lakhotia	Designing a Framework for User and Acquisition in Indian Airline Industry.	Prof. H. Huber
33.	06927801	Saket Tandon	NO PROJECT	
34.	06927802	Abhishek Chatterjee	NO PROJECT	
35.	06927808	Ankit Agarwal	NO PROJECT	
36.	06927809	Aniruddha Balkrishna Aradhye	NO PROJECT	
37.	06927814	Gaurav Sinha	NO PROJECT	

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
38.	06927815	Saravleen Singh	NO PROJECT	
39.	06927818	Hasan Ali	NO PROJECT	
40.	06927828	Prashant Mittal	NO PROJECT	
41.	06927832	Abid Husain	NO PROJECT	
42.	06927833	Jayesh Hariprasad Kakade	Commodities: An Investment Grade Asset Class.	Prof. S.N.Rao
43.	06927834	Nilay Ritwik	NO PROJECT	
44.	06927838	Vineet Kejriwal	NO PROJECT	
45.	06927843	Arpit Agarwal	NO PROJECT	
46.	06927850	Yogendra Panwar	NO PROJECT	
47.	06927857	Mohit Bhatia	NO PROJECT	
48.	06927858	Shekhar Malik	Estimation of Returns Based on Financial and Business Risk.	Prof. S.N.Rao
49.	06927859	(Ms) Asha G. Rao	NO PROJECT	
50.	06927860	Lakshya Kumar Das	NO PROJECT	
51.	06927862	Bhushan Ishwar Giradkar	NO PROJECT	
52.	06927863	Arvinder Pal Singh	NO PROJECT	
53.	06927836	Moiz Aliasger Saif	Oil Price Determination.	Prof. S.V.D.Nageswara Rao

RECIPIENTS OF DEGREE OF MASTER OF TECHNOLOGY

1.	06301011	Vidhyashankar N.	Multigrid Methods for Fuler Equations.	Prof. Mandal J.C.
2.	06301013	Gosavi-Inamdar Sagar	Unsteady Incompressible Flow Computations on Dynamic Meshes.	Prof. Mandal J.C.
3.	06301006	Lavaraj C	Conjugate CFD Simulation of Microchannel cooling in Gas Turbine Blades.	Prof. Marathe A.G. Prof. S. P. Mahulikar
4.	06301404	S K Dwivedi	Propeller's Effects on MAV Flight.	Prof. Arya Hemendra

Department : Aerospace Engineering Specialization : AEROSPACE PROPULSION

5.	06301015	Amareshwara Sainadh	Studies in Morphing Aircraft Design Including Propulsion System.	Prof. Pant R.K.
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Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
6.	06301005	Shashank Khurana	Aerothermal Studies of Hypersonic Vehicles.	Prof. S. P. Mahulikar
7.	06301017	(Ms) Reddam Dhana Nagasujatha	Infrared Signature Studies of Aerospace Vehicles.	Prof. S. P. Mahulikar
8.	06301019	(Ms) Parampalli Ramya Hande	Study on Strut Based Supersonic Combustion.	Prof. Marathe A.G.
9.	06301004	Veera Vijay Kumar	Analysis and Modeling of Shock/Turbulence Interaction using Linear Theory.	Prof. Krishnendu Sinha
10.	06301010	Kalai Selvan M	Combustion Behaviour in Pulse Detonation Engine.	Prof. Sudarshan Kumar

Department : Aerospace Engineering Specialization : AEROSPACE STRUCTURES

11.	05301813	Parimi Jaya Shankar	Stress Wave Propagation in Functionally Graded Materials and High Strain Rate Compressive Behaviour of Various Materials.	Prof. Arya Hemendra Prof. Naik N.K.
12.	06301020	Arun Shourie R.	Numerical and Experimental Studies on Vibration of Structures Excited by Piezoceramic Stacks.	Prof. Mujumdar P. M. Prof. Joshi Ashok
13.	06301407	Arun D.	Design and Development of Flexible Wing MAV.	Prof. Arya Hemendra Prof. Mujumdar P. M.
14.	06301018	Gurusamy S.	Ballistic Impact Behaviour of Metals and Ceramic-Metal Armours.	Prof. Naik N.K.
15.	06301009	Mohit Verma	Fatigue Behaviour of Quasi-Isotropic Laminated Composites using Fracture Mechanics Approach.	Prof. Naik N.K.

Department : Aerospace Engineering Specialization : Dynamics and Control

16.	06301012	Arun Tom Abraham Achamma Thomas	Attitude Determination using GPS:- Estimation of Baseline Vectors.	Prof. Arya Hemendra
17.	06301014	Rajesh Kumar Verma	Speed and Position Control of Flight Actuator.	Prof. Joshi Ashok
18.	06301405	Pradeep Kumar Shukla	Angular Velocity Consensus Problem for a Planar Cluster of Satellites.	Prof. S. P. Bhat Prof. Joshi Ashok
19.	06301406	Kanade Nitin Ramesh	Wind Turbine Control.	Prof. Joshi Ashok Prof. Sudhakar K.
20.	06301403	Tarun Uppal	Real Time Operating System Benchmarking on Mini Aerial Vehicle's Hardware in Loop Simulation.	Prof. Arya Hemendra

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
Department : Chemical Engineering Specialization :				
1.	06302024	Patil Rahul Narayan	Optimization of Length of Horizontal Production Well for Bottom Water Reservoir Conditions	Prof. Vinjamur Madhu Prof. S. K. Mitra
2.	06302035	Ramkrishna Das	Modeling of Biological Networks of Ecoli and Bisubtilis	Prof. Santosh Noronha
3.	06302025	Munish Kumar Sharma	Development and Characterization of Hydrophobic Nanocomposite Surfaces	Prof. Roy S.
4.	06302015	Venkata Ramesh M.	Kinetic Modeling of Automotive Catalytic Converter	Prof. Aghalayam Preeti
5.	06302029	Palle Srinivasareddy	Modeling, Validation and Simulation of Combustion of IC Engines	Prof. Moudgalya Kannan. Prof. Aghalayam Preeti
6.	06302019	Laxman Rangnathrao Bhosale	Cracking in Flocculated Dispersions	Prof. Tirumkudulu Mahesh
7.	06302017	Sree Rama Satya Nookapathi A.	Carbon and Nitrogen Removal in Constructed Soil Filter	Prof. Shankar H.S.
8.	06302004	Mehta Bhavin Nitin	Matrix Factorization and Trajectory Based Receptor Models for Air Pollution Source Identification	Prof. Chandra V Prof. Manibhushan
9.	06302028	(Ms) Sailaja Bhimavarapu Drops	Non-Linear Deformation of Charged	Prof. Rochish Thaokar
10.	06302001	(Ms) Swathi M.	Hybrid Systems, Synthesis and Purification of Methyl Isobutyl Kelone	Prof. Malik R.K.
11.	06302003	Mahendranadh Desu	Qualitative Trend Analysis Approaches for Batch Process Fault Diagnosis	Prof. Manibhushan
12.	06302005	Meenesh R. P. Singh	Nanoparticles Production by Cryogenic Grinding	Prof. Roy S.
13.	06302010	Anshuman Mishra	Stability of Liquid - Liquid Interface in the Presence of Electricfield	Prof. Juvekar V.A.
14.	06302018	B. Eswar Prasad	Synthesis of Anisotropic Nano Particles in Surfactant Media	Prof. Mehra A.
15.	06302020	Devesh Radhakrishnan	Quantification of the Metabolic Network in Corynebacterium Glutamicum	Prof. Venkatesh K.V.
16.	06302022	Madan Kumar K.	Model Development and Sensitivity Analysis for Glycopeptide Producer Strain of amycolatopsis Balhimycina	Prof. Wangikar P. Prof. Manibhushan

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
17.	06302032	(Ms) Meenakshi	Modeling and State Estimation of Pandia Digester for Wheat Straw Pulping	Prof. Bhartiya S.
18.	06302802	Patil Amit Vijay	Removal of Oily Soil Through Roll-up in Detergency	Prof. Roy S.
19.	06302006	Sunkesula Nagappa	Poly (L-Lactic Acid) Networks: Experimental, Theoretical and Computational Analysis	Prof. Nanavati Hemant
20.	06302026	Abhishek Maheshwari	Stochastic and Population Balance Models in Biological Systems	Prof. Sarika Mehra
21.	06302027	Subrahmanyam Kesani	Photocatalytic Degradation of Phenol Using TiO ₂ Impregnated Activated Carbon on Presence of UV Light	Prof. Rao V.Govardhana.
22.	06302803	Nallamalli Srinivasarao	Simulation Studies on Single Bed Pressure Swing Adsorption	Prof. Moharir A.S.
23.	05302402	Rajendra Digambar Shimpi	Oxidation of Organic Pollutant in Water Using Fenton Process	Prof. Rao V.Govardhana.
24.	06302023	Deshmukh Omkar Suresh	Drop Detachment Dynamics of Dilute Polymer Solutions	Prof. P.Sunthar
25.	06302011	Katkar Harshwardhan Hemant	Experimental Study of the Flow of Granular Materials on an Inclined Plane	Prof. Khakhar D.V.
26.	06302016	Dwaipayan Dasgupta	Fischer-Tropsch Synthesis	Prof. Sanjay Mahajani

Department : Civil Engineering Specialization : Geotechnical Engineering

1.	06304806	V Ramana Karapureddi	Some Studies on Swelling Shrinkage and Tensile Strength Characteristics of fine Grained Soil.	Prof. Singh D.N.
2.	06304021	Jitendra Kumar Soni	Development and Designing with Geosynthetic Clay Liners (GCLs).	Prof. Mandal J.N.
3.	06304010	Ravindranath Salimath	Analysis of a Laterally Loaded Piles in Stiff Clay.	Prof. Dewaikar D.M.
4.	06304034	(Ms) Priyanka Dutta	Analysis of Axially Loaded Piles.	Prof. Dewaikar D.M.
5.	06304007	Mayukh Mukhopadhyay	Pushover Analysis for Laterally Loaded Piles under Statics Seismic Conditions.	Prof. Choudhury Deepankar
6.	06304009	Manoranjan Tripathy	Behaviour of Shallow Foundations Subjected to Blast Loads.	Prof. Choudhury Deepankar

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
7.	06304401	(Ms) Shabana Saeed Khan	Laboratory Studies on the Evaluation of Premeability of Soil-Geosnthetic System.	Prof. Viswanadham B.V.S.
8.	06304008	(Ms) Subhra Dutta	Centrifuge Modelling of Ground Loss Due to Circular Tunnel Deformation in Sands.	Prof. A. Juneja
Department : Civil Engineering Specialization : Remote Sensing				
9.	06304026	Manish Parmar	Partially Supervised Classification of Remotely Sensed Images.	Prof. Venkatachalam G. Prof. B.K. Mohan (Rtd)
10.	06304018	Prem Kumar T.	Landslide Hazard and Risk Assessment.	Prof. Venkatachalam G.
11.	06304037	Hariprasadareddy Vuyyuru	SCS-CN and USLE Based Sediment Yield Modelling with Remotely Sensed Data.	Prof. T I Eldho
12.	06304301	(Ms) Reshma Rohidas Raskar	Real Time Computation of Precipitable Water Vapour Using Global Positioning Systems-Data Quality Improvement.	Prof. Rao E.P.
Department : Civil Engineering Specialization : Structural Engineering				
13.	05304028	Udagiri Rajesh Kumar	Condition Assessment of Reinforced Concrete Buildings.	Prof. Sinha Ravi
14.	06304030	Subodh Uttamrao Shinde	Earthquake Analysis of Torsionally Couped Building with Uncertain Structural Parameters.	Prof. Banerji P.
15.	06304814	Hussen Shaik	Analysis of Pretensioned Concrete Girders during construction.	Prof. Banerji P.
16.	06304014	Amar Nath Roy Chowdhury	MPA-Based Estimation of Hysteretic Energy Demand-P- Effects & Buildings with plan-Asymmetry.	Prof. Ghosh Siddharth
17.	06304015	Vishal Biharilal Bhatia	Seismic Upgradation of Multi-Story Steel Frames Using Steel Plates Shear Walls.	Prof. Ghosh Siddharth
18.	06304025	(Ms) Lakshmi Aparna Doguparthi	Comparitive Study of Different Simplified Analytical Models of Steel Plate Shear Walls.	Prof. Ghosh Siddharth
19.	05304031	Sanjeevkumar Appayya	Static and Dynamic Analysis of High Mast.	Prof. Jangid R.S.
20.	06304013	Nachiket Bapurao Suman Patil	Design and Analysis of Composite Ship Structure.	Prof. Jangid R.S.
21.	06304017	(Ms) K. Rekha Rani	Condition Assessment of Bridgeges Using Vibration Singature Analysis.	Prof. Goyal Alok

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
22.	06304001	Abey Ivan	Condition Assessment of reinforced Concrete Buildings.	Prof. Sinha Ravi
23.	06304016	Aditya Ranjit Sandhya Karve	GIS Based Sesimic Loss Estimation	Prof. Sinha Ravi
24.	06304035	Debasis Das	Fatigue and Fracture Behaviour of Composite Laminated Plate.	Prof. Desai Yogesh M.
25.	06304302	Patel Bhavinkumar Rameshchandra	Failure Analysis of Laminated Composite.	Prof. Desai Yogesh M.
26.	06304028	Naik Sachin Narayanrao	Semi-Analytical Elasticity Solutions for Arches and Cylindrical Sheels.	Prof. Kant Tarun
27.	06304813	Ramjibhai Mavjibhai	Finite Element Analysis of High Strain Rate Problems of Reinforced Concrete Nuclear Containment structures.	Prof. Kant Tarun
Department : Civil Engineering Specialization : Transportation Systems Engineering				
28.	05304011	Anurag Kushwaha	Effect of Route Choice Models on Network Travel time Reliabilities.	Prof. Tom V Mathew
29.	06304002	Abhinav G.	Air Tavel Demand Modelling for Mumbai Metropolitan Region.	Prof. K.V.Krishna Rao
30.	06304003	G. Rajesh	Evaluation Scheme for Long Term work Zone Traffic management Plans.	Prof. Dhingra S.L.
31.	06304004	Aditya M. R.	Impact of Proposed Growth centres on Transportation Scenario of Pune Metropolitan Area.	Prof. Dhingra S.L.
32.	06304033	Allam Sivakanth	Study of Typical Parameters at Signalized Intersections.	Prof. K.V.Krishna Rao
33.	06304803	Rohit Parmar	Financial Analysis of Airport Projects	Prof. K.V.Krishna Rao
34.	06304005	(Ms) Kajal Dubey	Conceptual Architecture and Porgression Model for an Area Traffic Control System.	Prof. Tom V Mathew
35.	06304006	Nandakumar Reddy S.	Approximation Schemes and Sampling Methods for Robust Network Design Problem under Uncertain Demand.	Prof. Tom V Mathew
36.	06304032	(Ms) Valekar Pritiben Sureshbhai	Public Transit Flect Management and Scheduling for Greator Mumbai.	Prof. Tom V Mathew
37.	06304801	Guru Charandas Nunna	Travel Time Prediction from Single Loop Detector.	Prof. Tom V Mathew
38.	06304802	Ishtiyag Gull	Optimal Transit Route Network Design.	Prof. Dhingra S.L. Prof. Tom V Mathew

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
39.	06304027	(Ms) Shelli Biswas	Environmental Impact assessment of Thane Ghodbunder Road Project.	Prof. Dhingra S.L.
40.	06304031	Umesh Chandra Koted	Calibration and Validation of Road Deterioration Model Using HDM-4	Prof. Dhingra S.L.
41.	06304020	Revade Ravi Sukhadev	Evaluation of an Area Traffic Control Systems and Saturation flow Model for Heterogeneous Traffic.	Prof. Tom V Mathew
42.	06304804	Soumyajit Ghosh	Coordinated Feeder Route Development for the Proposed Mass Transit System.	Prof. K.V.Krishna Rao

Department : Civil Engineering Specialization : Water Resources Engineering

43.	06304812	Arun Lila	Comparision of Binary Coded Real Coded Steady State and Elite Genetic Algorithm for Transmissivity and Storage Coefficient Assessment.	Prof. Rastogi A.K.
44.	06304022	(Ms) Mansi Daga	Wind Estimation from waves using Data Driven Methods.	Prof. Deo M.C.
45.	06304012	(Ms) Arpita Mondal	FEM-GA Based Simulation-Optimization Models for Groundwater Remediation.	Prof. T I Eldho
46.	06304023	(Ms) Jyoti Maan	Diffusion Wave Based Distributed Hydrologic Simulation of Water Shed Using Finite Element Method and Geographical Information Systems.	Prof. T I Eldho
47.	06304011	Lokanadham B.	Spatial and Temporal Distribution of Monsoon Rainfall in an Urban Area: Mumbai.	Prof. Gupta Kapil
48.	06304808	Chandra Prakash Sharma	Scour of Layered Soils Under the Action of an Impinging JET.	Prof. Pani B.S.
49.	06304811	Vhirodkar Mukesh Vikas	Effect of Dead Zones on Pollutant Dispersion in Rivers.	Prof. Pani B.S.
50.	06304024	(Ms) Kirty Sharma	Artificial Neural Network and Genetic Programming Moduls for Meteorological Parameter Prediction.	Prof. Jothiprakash V.
51.	06304807	(Ms) Sakhare Suhasini Shankarappa	Derivation of Wave Spectrum Using Data Driven Methods.	Prof. Deo M.C.

Department : Computer Science & Engineering

1.	05305011	Anand P. V.	Scientific Computations in Graphical Processing Units.	Prof. Sharat Chandran
2.	05305023	Bhaskar Reddy Guthikonda	Incorporating Burs-Based Instruction Selection in GCC.	Prof. Uday Khedkar

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
3.	05305037	Ranjithkumar Kasukurthi	Source Code Optimization on Pentium 4 for GCC.	Prof. Biswas S.
4.	05305047	Pavan Kumar P.	Instruction Scheduling in GCC.	Prof. Biswas S.
5.	06305012	R. Ambareesha	Image-Based Animations.	Prof. Uday Khedkar Prof. Sharat Chandran
6.	06305018	Krishna Kumar Rai	Object Recognition and Content Based Image Retrieval.	Prof. Sharat Chandran
7.	06305015	Harin Nalin Vadodaria	Adding Precondition and Effect Matching in Semantic Search for Services.	Prof. Bellur Umesh
8.	06305005	Manish Aggarwal	Design and Implementation of Safety Critical Real-Time OS.	Prof. Ramamritham Krithi
9.	06305011	Momin Matin Nabilal	Design and Implementation of Safety Critical Real-Time OS.	Prof. Ramamritham Krithi
10.	06305031	(Ms) Tholiya Namrata Pramodkumar	Subdivisions of Graphs.	Prof. Diwan A.A.
11.	06305405	Vaidya Nachiket Dilip	Developing a Symbolic Simulator for VHDL for use in Verifying Hierarchical Hardware Systems.	Prof. Supratik Chakraborty
12.	06329017	Gundecha Rahul Chandrakumar	Performance Isolation in Virtualized Machines.	Prof. Varsha Apte
13.	06305004	(Ms) Supriya Rajendra Himalika Marathe	Extensions to Perfcenter - A Performance Modeling Tool for Distributed Systems.	Prof. Varsha Apte
14.	06305014	Rajesh Boppana	Backbone Colorings when the Backbone is a Tree of Bounded Degree.	Prof. Vishwanathan Sundar
15.	05305902	Powar Yogesh Ashok	Improving IEEE 802-II MAC Layer Handoff Latency to Support Multimedia Traffic.	Prof. Varsha Apte
16.	05305905	Verma Kamaljeet Santoshkumar	Searching with Enriched Information and Structures.	Prof. Bhattacharya P.
17.	06305003	Jubin Bharat Asha Chheda	M - Learning: Localized Software Tools for Scalable, Collaborative E - Learning.	Prof. D. B. Phatak
18.	06305007	Aditya Sharma	Multilingual Wordnet Mapping and Lexicon Management.	Prof. Bhattacharya P.
19.	06305009	Srijith P. K.	Corpus Management.	Prof. Om P. Damani
20.	06305016	Mitesh Manmal Khapra	Word Sense Disambiguation in a Multilingual Setting.	Prof. Bhattacharya P.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
21.	06305406	Limaye Sandeep Uday	Semantics Extraction from Text in the Universal Networking Language Framework.	Prof. Bhattacharya P.
22.	05305904	Suresh Parthasarathy Mala Iyengar	Adaptive Query Processing.	Prof. Sudarshan S.
23.	05305906	Dhananjay Sadashivrao	Query - Coverage Aware Test Database Subset Extraction.	Prof. Sudarshan S.
24.	06305021	Khem Dhawal Punamchand	Building Navigational Prototype from Formal Tropos Specification.	Prof. Joshi Rushikesh K.
25	06305023	Arunachalam G.	Using Constraints in Ontology Mapping.	Prof. Sarda N.L.
26.	06305301	Mukesh Kumar Gupta	A Component - Centric Approach Modeling of Web Applications.	Prof. Joshi Rushikesh K.
27.	06305403	Chetan Dewan	Customising Open - Source Rendering Engine for Visual - Based Simulation.	Prof. Sharat Chandran
28.	06329012	Bonda Sri Rama Gupta	Extending Ontology Based Inter Operability Tool for GIS.	Prof. Sarda N.L.
29.	05305901	Sachin Harishchandra	Modeling, Verification and Deployment of Trust in Distributed Systems.	Prof. Sivakumar G.
30.	06305032	Sandesh R. Hegde	Resource Controller for Processes in Linux.	Prof. Sivakumar G.
31.	05305601	(Ms) Deshpande Sameera Vijay	IBURG Based Code Generation Mechanism in GCC.	Prof. Uday Khedkar
32.	06305006	Sachin Sharad Sarita Pawar	Shallow Parsing of Indian Languages.	Prof. Bhattacharya P.
33.	06305008	Faraz Motasim Shabhazker	Linear Types in the C Programming Language.	Prof. Uday Khedkar
34.	06305407	Anoop Kunchukuttan	Multiword Expression Recognition` for Compound Nouns.	Prof. Om P. Damani
35.	05305903	(Ms) Uma Kamlakar Anjali Sawant	Structured learning for Mean Reciprocal Rank Optimization.	Prof. Chakrabarti Soumen
36.	06305026	Ajay Kumar Sarda	Keyword Search on Very Large Databases.	Prof. Sudarshan S.
37.	06305030	Nimkar Kaustubh Narhar	SMT Solving with Fixpoint Constraints on Bit - Vectors.	Prof. Supratik Chakraborty
38.	06305033	Kiran Kumar Joseph	CESC: A Scenario Based Language for Specification and Verification of Reactive Systems.	Prof. Krishna Shankara Narayanan

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
39.	06305402	Nilesh Ramesh Jaiswal	Visual Specifications and Modeling of Distributed Systems.	Prof. Krishna Shankara Narayanan
40.	06305801	(Ms) G. Lakshmi Manasa	Timed Automata: Extensions and Decidability.	Prof. Krishna Shankara Narayanan
41.	06329019	Rajiv Ashu Khanna	Structured Learning for Normalized Discounted Cumulative Gain.	Prof. Chakrabarti Soumen
42.	06305001	Deshpande Vinay Sudhir	Efficient Evaluation of Top - K Queries Over Duplicate Records.	Prof. S. Sarawagi
43.	06305010	Joglekar Kedar Shripad	Network Flow Related Optimization.	Prof. Ranade A.
44.	06305013	Shah Chintan Bhadreshkumar	DRAWCAD-II	Prof. Ranade A.
45.	06305029	Makawana Dhavalkumar Pravinchandra	Entity Type Identification VIA Budgeted Web Search.	Prof. Chakrabarti Soumen Prof. G.Ramakrishnan
46.	06329013	Sourabh Kasliwal	Aggregate Queries Over Identity Uncertainty Models.	Prof. S. Sarawagi
47.	06305027	V. Ashwin Kumar	Architectural Interaction Modeling.	Prof. Joshi Rushikesh K.
48.	06305002	(Ms) Nidhi Malik	Discovering Dependencies in Courseware Repositories.	Prof. S. R. Iyer
49.	06305024	Peddareddy Sreedhar Reddy	Implementation of Wifire Phy Sectorization in Opnet.	Prof. S. R. Iyer
50.	06329016	Chougule Sandeep Govind	Parametric Surface Generation and Mechanical Analysis of Conveyor.	Prof. Sohoni Milind
51.	06305025	Sarda Swapnil Kamalkishor	Melody Based Music Information Retrieval.	Prof. Joshi Rushikesh K. Prof. Preeti Rao

Department : Earth Sciences Specialization : Geoexploration

1.	06306007	(Ms) Laxmipriya Sahoo	Geochemistry and Geochronology of Carbonatites of Chhota Udaipur Complex.	Prof. Pande Kanchan
2.	06306002	Abhishek Chandra	Chemical Characterization of Bassein Formation in Selected Wells of Panna-Mukta Block, Mumbai Offshore Basin.	Prof. Banerjee Santanu
3.	06306003	Ajoy Kumar Nandi	Biostratigraphy and Stable Isotope Stratigraphy of Bassein Formation in Selected wells of Panna-Mukta Block, Mumbai Offshore Basin.	Prof. Saraswati P.K.
4.	06306010	(Ms) Troyee Das	Quantitative Infrared Thermal Emission Studies of Igneous Rocks.	Prof. Mathew George
5.	06306004	Arijit Ghosh	Micropaleontology and Stable Isotope Stratigraphy of Mahanadi Offshore and North East Coast.	Prof. Saraswati P.K.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
6.	06306005	(Ms) Urmi Khasnobis	Sedimentological Study of Shallow Core from Mahanadi Offshore Basin and North East Coast of bay of Bengal.	Prof. Banerjee Santanu
7.	06306008	Abdul Wahid E.	Geothermometry and Opaque Mineralogy of Carbonatites of Sevattur and Samalpatti, Tamil Nadu, India.	Prof. Jadhav G.N.
8.	06306009	Krishanu Bandyopadhyay	Strain Analysis of Moyar-Bhavani Salem - Attur Shear Zone, Salem, Tamil Nadu.	Prof. Biswal T.K.
9.	06306011	Anoop Kumar Mishra	Slope Stability Analysis in a jointed Rockmass in Agastyamuni Area, Rudraprayag - A Numerical Approach.	Prof. Singh Trilok Nath
10.	06306012	(Ms) Madhumita Das	Retrieval of Suspended Sediment Load using OCM Data and its Relevance to Sediment Dynamics in the Gulf of Cambay.	Prof. D. Ramakrishnan
11.	06306013	Praveen Kumar K. A.	Shear Wave Velocity Structure of North Western India.	Prof. Mohan G.

Department : Electrical Engineering Specialization : Control & Computing

1.	05307410	Vijayakumar G	Protein Structure Analysis	Prof. Santosh Noronha
2.	05307033	Nalam Venkat	Model Order Reduction	Prof. Pillai Harish
3.	06301003	Rout Siba Shankar	Lossless Medical Image Compression.	Prof. Gadre V.M.
4.	05307910	Somawanshi Prkalp	A Hardware Implementation of Cryptographic Cipher Through AHIR	Prof. Desai Madhav
5.	06307041	Bojja Srikanth	Secure Mobile Banking.	Prof. Desai U.B. Prof. Merchant S N
6.	06307018	Bibin Sebastian	Data Acquisition and Control of Transportation Systems.	Prof. Pillai Harish

Department : Electrical Engineering Specialization : Communication Engineering

7.	04307402	Soumyabrata Ghosh	Vehicle Detection and Tracking : A Feature Based Approach	Prof. Desai U.B.
8.	06307415	(Ms) Vaishnavi Chhagan Motghare	Implementation of Media Access Control Layer of 802.16 Standard	Prof. Karandikar Abhay
9.	06307416	Mallapur Veerayya	An Energy-Aware On-Demand Routing Protocol for Ad-Hoc Wireless Networks.	Prof. Karandikar Abhay
10.	06307418	Rajnish Sethi	Architecture of Tactical Communication System.	Prof. Karandikar Abhay

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
11.	06307302	Vanmali Ashish Vasant	Rate-Distortion Optimization in H.264/AVC	Prof. Gadre V.M.
12.	06307406	Nikam Prasad Prakash	Rate Distortion Optimization for Scalable Video Coding	Prof. Gadre V.M.
13.	06307412	Sarath Gopi	Routing Protocol for Underwater Sensor Networks.	Prof. Desai U.B.
14.	05307905	Rajasekharam Naidu P.	Routing Protocols in Wireless Sensor Networks	Prof. Merchant S N
15.	05307R01	Santhana Krishnan B.	Wireless Video Streaming	Prof. Merchant S N
16.	06301002	Ravi Shankar Ojha	Multihop Cellular Networks	Prof. Merchant S N
17.	06307017	T. Naresh Kumar Reddy	Cross Layer Optimization for Video Transmission over Wireless Networks.	Prof. Merchant S N
18.	06307414	(Ms) Richa Shejwar	WiSNIS : A Mashup for Wireless Sensor Network Information System.	Prof. Desai U.B.
19.	05307601	Noel Athaide	Forwarding Table Partitioning in Distributed PC based Routers.	Prof. Manjunath D.
20.	05307R02	Poojary Sudheer Manjunath	A Study of Self-Tuning Algorithms using Queuing Models.	Prof. Manjunath D.
21.	06307407	(Ms) Smita Nair	Techniques for Blind Image Restoration under Alternating Minimization	Prof. Chaudhuri Subhasis Prof. Chaudhuri
22.	06307040	Nagaraj Tadinada	Human Tracking for Surveillance using Mean Shift Tracker.	Prof. Chaudhuri Subhasis
23.	06307413	Neelesh Kumar Tamrakar	Low Bit Rate Speech Coding Using Fixed Segments	Prof. Preeti Rao
24.	05307907	Parag Shankar Nalini Kulkarni	Network Partitioning Scheme : An Approach for Performance Improvement in Co-operative Wireless Network.	Prof. B.K.Dey
25.	06307408	(Ms) Savitha S.	DSP Implementation of Isolated Digit Recogniser	Prof. Preeti Rao
26.	06307409	Sajeed Navas O.	Synchronization in OFDM Systems.	Prof. B.K.Dey
27.	06307417	Arun Bhandari	Localization in Wireless Sensor Networks.	Prof. B.K.Dey
28.	05307901	Dyahadray Ashwini Sudhir	Intelligent Edge Device Implementation for Scalable Video Applications : Real-Time Bitstream Extractor.	Prof. Girish Saraph

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
29.	05307902	Swapnil Ganesh Bandekar	Performance Analysis of Different QoS Schemes on Linux Test-Bed	Prof. Girish Saraph
30.	05307R04	Himanshu Prafulla	Intelligent Edge Device Implementation for Scalable Video Applications : Network Interface and Software Architecture.	Prof. Girish Saraph
31.	05307R03	Panchbhai Ashwin Vijay	Performance Analysis of SoCs	Prof. Manjunath D.
Department : Electrical Engineering Specialization : Electronic Systems				
32.	05307R10	Prasad Joshi	Design of Aerial Mobile Integrated Power Plant	Prof. S. Duttagupta
33.	05307402	Hrishikesh Shashishekhar Gokhale	Implementation of 802.16 Base Station	Prof. Karandikar Abhay
34.	06307424	Badarinarayan R.	General Purpose RTS Platform for Dynamical Systems Simulation with FPGA.	Prof. M. Chandorkar
35.	05307915	Kundu Amit Arabinda	Design of Ground Penetrating Radar.	Prof. Kumar Girish
36.	06307045	Mhala Manoj Mahadeo	Design of RF Power Amplifiers.	Prof. Kumar Girish
37.	06307423	Shailendra Singh Yadav	Wireless Sensor Network for Real Time Remote Monitoring.	Prof. Merchant S N
38.	06307427	Binay Raj	Design and Fabrication of Circulator at 2.45 GHz.	Prof. Kumar Girish
39.	06307428	Ritesh Pal	Design and Fabrication of Magnetron and its Application in Microwave Heating.	Prof. Kumar Girish
40.	06307031	(Ms) Neha Bhargava	ECG Trend Analysis.	Prof. Desai U.B.
41.	06307038	Kapil Jainwal	Design of 5-GHz Low Phase Noise Quadrature Voltage Controlled Oscillator (QVCO).	Prof. J.Mukherjee
42.	06307044	Kunal Kamal	Design of RF Receiver for WiMAX Application.	Prof. Kumar Girish
43.	06307003	Naga Venkata Srikanth V.	Modeling and Design of Digital Controller for Boost type PFC Converter.	Prof. Agarwal Vivek
44.	06307401	Bhavik Rajnikant Patel	Landmark Detection for Speech Recognition.	Prof. Preeti Rao
45.	06307015	Ramakrishnan S.	Vocal Segment Extraction for Classical Music	Prof. Preeti Rao

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
46.	06307305	(Ms) Rajani Arasada	Optimization of Output Power from PV Panels.	Prof. S. Duttagupta
Department : Electrical Engineering Specialization : Microelectronics				
47.	06307034	M. Muni Kumar	Automatic Classification of Cardiac Abnormalities using Hermite Analysis	Prof. Sharma Dinesh
48.	06307024	Srinivas Gangam	Identification of Bottlenecks in Memory Sub-System in System-on-Chip	Prof. Desai Madhav
49.	06307043	Polasa Rakesh Kumar	An Implementation of Fault Simulation Algorithm on a Distributed FPGA based Platform	Prof. Desai Madhav
50.	06307012	Deepak Chandra Pandey	Simulation and Characterization of AlGaIn/GaN HEMTs	Prof. Vasi J. Prof. S. Chakrabarti
51.	06307422	Mohan Rajaram Doifode	Simulation of AlGaAs/GaAs HEMT and Hall Effect Measurement	Prof. Vasi J. Prof. S. Dhar
52.	05307913	Kushare Mangesh Babaji	A Simulation Approach to study Novel Back Bias Assisted Band to Band (B4) Tunnel Flash EEPROMs	Prof. Souvik Mahapatra
53.	06307002	Neeraj Goyal	Characterization of Traps in SiOxNy Gate Dielectrics by using Low Frequency Noise and Charge Pumping measurements	Prof. Souvik Mahapatra
54.	06307011	Rajesh Kumar Asnani	New Perspectives of Split Gate Flash EEPROMs	Prof. Vasi J. Prof. Souvik Mahapatra
55.	06307030	Abhishek Jain	Simulation Study of Super Junction Power MOSFET	Prof. M. B. Patil
56.	06307026	Anshul Sengar	PVT Compensated Reference Generators	Prof. M. Shojaei Baghini
57.	05307R07	Nageswararao Pedapati	Microcantilever based Biosensor	Prof. Mukherji Soumyo Prof. Rao Ramagopal
58.	06307028	Nikam Vishwanath	Optimization of n-channel and p-channel T-FET.	Prof. Anil K.G.
59.	06307047	(Ms) Ambili V.	Variability Modeling in MOSFETs.	Prof. Anil K.G.
60.	06307301	Mehta Sandip Anilbhai	Design & Simulation of APD/SIPM for Single Photon Detection Application	Prof. Anil K.G.
61.	06307421	Manish Kumar	A Feasibility Study of G2-FET on Bulk Silicon Substrates.	Prof. Anil K.G. Prof. M. B. Patil
62.	05307904	Save Yogesh Dilip	Application of DC Analyzer in Solving Combinatorial Optimization Problem.	Prof. Narayanan H.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
63.	06307007	Satkuri Rajkumar	Design of On-chip Test Circuits for Fast-Interconnects	Prof. Sharma Dinesh
64.	06307013	Abhishek Misra	Fabrication and Characterization of Metal Silicides for Advanced CMOS.	Prof. Anil K.G
65.	06307025	Roswald Francis	FinFet : A Feasible Candidate for Sub-45nm Circuits.	Prof. M.Shojaei Baghini
66.	06307027	Varvakanti Siva Sankar	Fast DC Analysis.	Prof. Narayanan H.
67.	06307046	Murali Krishna P.	Burst Mode GHz Digitizer.	Prof. M.Shojaei Baghini
68.	06307304	Debprasad Nandi	Low Power, Low Noise Charge Amplifier and Shaper Design.	Prof. M.Shojaei Baghini
69.	06307402	Raval Harshil Narendrabhai	Electrical Characterization of Organic Transistor Devices and Circuits	Prof. Rao Ramagopal
70.	05307806	N Mani Bharath	Modeling and Characterization of Nano Scale MOS Transistors.	Prof. Rao Ramagopal
71.	06307303	Giri S.kulkarni	Exploring the Feasibility of Planar Double-Gate MOSFETs :Effect of Gate Architecture and Underlaps.	Prof. Rao Ramagopal
72.	05307R09	Pinkesh Rohit Shah	Fabrication of High-K MOSFET.	Prof. S. Duttagupta
73.	06307008	Diwakar Suvvari	Reversible Watermarking using Difference Expansion and (5,3) Wavelet Transform for JPEG 2000 Compression Standard.	Prof. J.Mukherjee
74.	06307010	Anil Kumar Baratam	VLSI Implementation of Distorted Template based Toa Algorithm for 802.11a Local Positioning Applications	Prof. J.Mukherjee
75.	06307022	Nageswara Rao Kunchapu	Towards Sub 100nm Technology	Prof. Vasi J. Prof. Anil K.G
76.	06307420	Sarang Someshwarrao	General Purpose Programmable Analog CMOS Signal Conditioning IC for Personal Biomedical Monitoring System.	Prof. M.Shojaei Baghini
77.	05307914	Gandigude Amol Mahadev	WIMAX Receiver	Prof. Chandorkar A.N.
78.	06307023	Shabbir Amjhera Wala	10-Bit Pipeline ADC for Cable Modem Application	Prof. Chandorkar A.N.
79.	06307029	Rajendra Medarametla	Impact of Process Variations on Performance of CMOS Digital Design for 45nm Technology.	Prof. Chandorkar A.N.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
80.	06307419	Madan Lal	A Multistandard ADC for GSM/ WCDMA/ Bluetooth Applications.	Prof. Chandorkar A.N.
81.	05307R08	Tushar Verma	Design and Fabrication of Micro-cantilever-Based Sensor for Detection of Explosives.	Prof. Rao Ramagopal
Department : Electrical Engineering Specialization : Power Electronics & Power Systems				
82.	05307912	Shabari Nath	Current Direction based Two Step Commutation Control of Matrix Converter.	Prof. Fernandes B.G.
83.	06307033	Hari Kalluru	Design and Fabrication of Flux Reversal Machine for Rooftop Wind Power Generation	Prof. Fernandes B.G.
84.	06307048	Naresh Vattikuti	Theoretical Investigation of Design and Control of Outer Rotor Segmented Switched Reluctance Motor.	Prof. Fernandes B.G.
85.	06307410	Harminder Singh Johar	Fault Tolerance Analysis of Brushless DC Motor - Drive	Prof. Fernandes B.G.
86.	06307042	K. Tulasi Chandra	Common Information Model based Open Architecture for Power Control Centers.	Prof. Khaparde S.A.
87.	06307004	Santhosh Kumar V.	AC Voltage Sensorless Multi Functional Operation of Active Rectifier	Prof. Chatterjee Kishore
88.	06307005	Dilip Kumar Jain M.	Hybrid Filters.	Prof. Chatterjee Kishore
89.	06307021	Vetsa Kiran Kumar	Design and Development of Micro-controller based Software and Hardware for Four-leg Inverter	Prof. M. Chandorkar
90.	06307404	Shah Ankit Pinakinkumar	Three-Phase Power Quality Monitoring System.	Prof. M. Chandorkar
91.	06307020	Praveen Kumar B.	Realtime Control of a Scaled Laboratory Model of a HVDC Link.	Prof. Kulkarni A.M.
92.	05307R06	Kaushik K.	Analysis of Coupled Electromagnetic Problems using Wavelet-Galerkin and Finite Element Methods.	Prof. Kulkarni S V
93.	05307911	Nimesh V.	Simulation Study of Novel Power MOS Transistors.	Prof. Rao Ramagopal
94.	05307R05	P. Rajesh	Fuel Cell Fed DC and AC System.	Prof. Agarwal Vivek
95.	06307039	Goggela Sudhakar	A New Approach to Improve the Power Factor for an AC Drive Applications.	Prof. Agarwal Vivek

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
96.	06307403	Ashwini R. Dixit	Design Simulation and Fabrication of 1kv, 1kw DC Power Source based on Voltage Fed PWM Inverter.	Prof. Agarwal Vivek
97.	06307411	Ashish Talwalker	FPGA based Operation and Performance Comparison of Contemporary Single-stage Single Switch(S4) PFC Topologies.	Prof. Agarwal Vivek

Department : Mechanical Engineering Specialization

1.	06310412	Harsh Wahi	Measures for reduction of NOX and PM levels in diesel engines.	Prof. S. K. Mitra
2.	06310410	A.D. Godbole	Development of fire resistant coatings for naval application.	Prof. Khanna A. S.
3.	06310409	Pusapati Yesu Babu	Effect of chlorination on galvanic corrosion of cupronickel and carbonsteel bimetallic couples in marine heat exchangers.	Prof. Raja V. S.
4.	06310414	Madhav T Vittal	Evaluation of performance of commercially available boiler water treatment chemicals for prevention of scaling and corrosion on waterside of marine boiler tubes.	Prof. Raja V. S.
5.	06310411	A.K. Pandey	Studies on residual life estimation techniques of boiler tubes in Indian Navy.	Prof. Raman R.
6.	06310415	Manish Bahl	Study of port related logistics.	Prof. Babu A. Subash

Department : Mechanical Engineering Specialization : Design Engineering

7.	04310414	Abhijit Ganpat Sasane	Engine Mount using MR Fluid.	Prof. H. Hirani
8.	06310011	N Jaya Raju	Characterisation of stable crack growth and study on extension of through-the-thickness crack in pipes.	Prof. Maiti S.K.
9.	06310023	Rahul Laxman Ramtekkar	Experimental investigation of process parameters in microstereolithography system and development of 3D microstructures.	Prof. Gandhi Prasanna S.
10.	06310005	Maniar Malay Chandrakant	Design and analysis of rotary engine.	Prof. Seth Bhartendu
11.	05310404	Bapat Chandrashekhar Bhagwan	Collision analysis of ship structure.	Prof. Seshu P.
12.	05310904	Phatak Amit Arun	Vibration Energy harvesting using piezoelectric material.	Prof. Gandhi Prasanna S.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
13.	06301001	Raghuvanshi Jayeshkumar Kundansing	Shape optimization of electrostatic micro-actuator with dynamic pull-in analysis.	Prof. D.N. Pawaskar
14.	06310012	Maddina Suresh Babu	Finite element modeling and simulation of spherical indentation test.	Prof. D.N. Pawaskar
15.	06310013	Shiva Rama Krishnan S.	Transient vibrations of non-linear system.	Prof. Srirangarajan H.R.
16.	06310014	R. Arun Kumar	Comparative study of stiffness characteristics of plates, their assemblages and frame networks.	Prof. Seshu P.
17.	06310303	Prashant Narwade Annasaheb	Dynamic vibration absorber.	Prof. Srirangarajan H.R.
18.	06310406	Kundawala Murtuza K	Bipeds with dynamically stable gaits.	Prof. Issac K.Kurien
19.	06310017	Jadhav Trushar Laxman	Development of mobility cum sitting aid for paraplegics.	Prof. Issac K.Kurien
20.	06310025	Atul Kumar Agrawal	Harnessing the benefits of independent steering in front wheel steered four-wheeled vehicles.	Prof. Shashikanth S.
21.	06310402	Vinod G.M.	Chaotic vibration of non linear systems.	Prof. Srirangarajan H.R.
22.	06310408	Nirmal Panda	Development of minimally invasive expandable module for knee prosthesis.	Prof. Ravi B. Prof. Seth Bhartendu
23.	06310405	R. Girish	Modelling of effects of unsymmetry arising out of crack in beams on its natural vibrations.	Prof. Maiti S.K.
24.	05310901	Abhijeet Arun Khatri	Development of hardware-in-loop control system to assist electric power steering design.	Prof. Shashikanth S.
25.	06310001	Anand Gurvindarsingh Gursharan	Automatic control system design of an autonomous helicopter for aggressive flight.	Prof. Issac K.Kurien
26.	06310015	Sarang Saurabh	Development of insect leg.	Prof. Amarnath C.
27.	05310405	Maltesh Goudappa Gouda Patil	Design of valve operating system for internal combustion engines.	Prof. H. Hirani
Department : Mechanical Engineering Specialization : Manufacturing Engineering				
28.	05310022	Joshi Mahesh Manohar	Formability studies in multistage deep drawing of rectangular cup using ann and fourier analysis.	Prof. Date P.P.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
29.	06310026	P Suresh Kumar	Computer-aided selection and virtual implantation of knee prosthesis.	Prof. Ravi B.
30.	06310028	Pavan Kumar Reddy G.	Rule based system for casting junction design considering solidification shrinkage.	Prof. Ravi B.
31.	05310905	Neela Venkatesh Meera	Numerical modeling of laser engineered net shaping process using finite element method	Prof. De Amitava
32.	06310018	Patil Yuvraj Yashwant	Thermo-mechanical modeling of friction stir welding.	Prof. De Amitava
33.	06310037	Shivamurti Sharanappa Bhadange	Studies on hot forming of fine grained materials.	Prof. Date P.P.
34.	06310302	Ashish Dinanathrao Urade	Determination of optimal process parameters in metal injection moulding for bilayer of 316 L-ss & Fe combinations.	Prof. Date P.P.
35.	06322010	T R Milind	Studies on severe plastic deformation by equal channel angular extrusion (ECAE).	Prof. Date P.P.
36.	05310902	Sushrut Shrikant Pavanaskar	Geometric modeling of deformable objects using artificial neural networks.	Prof. Pande S.S.
37.	06310033	Gaonkar Amar Keshav	Web based feature modeler and process planning system for CNC turning.	Prof. Pande S.S.
38.	05310906	Gupte Rohit Pradeep	Development of motion transmission error test for gear inspection.	Prof. Ramakrishnan N.
39.	06310029	Dapkekar Dilip Harinarayan	Analytical modelling for cutting forces in end miling of metal matrix composites.	Prof. S. S. Joshi
40.	06310038	Dheeraj Ahluwalia	Design and development of micro-electrodeposition process for laser-liga.	Prof. S. S. Joshi

Department : Mechanical Engineering Specialization : Thermal & Fluids Engineering

41.	06310010	Bapat Yogesh Uday	Advection scheme for a free surface flow.	Prof. Upendra Bhandarkar Prof. Gaitonde U.N.
42.	06310019	Parmeshwar Deshmukh	Natural convection in volumetrically heated enclosures.	Prof. Gaitonde U.N. Prof. S. K. Mitra
43.	06310036	G. Narendra	3D level set method for simulation of two fluid stratified flow in a pipe.	Prof. Sharma Atul
44.	06310301	Pravin Dnyaneshwar Sawarkar	Use of delta wing inserts for heat transfer augmentation in pipe flow.	Prof. Vedula R.P.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
45.	06310404	Pankaj Kumar Sharma	A physics based finite volume formulation in cylindrical coordinates for unsteady state conjugate heat-transfer.	Prof. Sharma Atul
46.	06310009	Koli Bharat Ramesh	Numerical simulation of free surface flow using SPH.	Prof. Iyer Kannan N.
47.	06310020	Sudeep Sahu	Experimental and numerical study of scavenging process.	Prof. Date A.W.
48.	06310022	Indra Kumar Sharma	Numerical simulation of heat transfer in supercritical fluids.	Prof. Iyer Kannan N.
49.	06310030	Pandya Nayankumar Girishbhai	A semi-Explicit immersed boundary method and its applications to flow across a transversely oscillating cylinders.	Prof. Sharma Atul
50.	06310034	Giridhar Ashish Ashok	Experimental and numerical analysis of evaporative cooler cum heater.	Prof. Date A.W.
51.	06310035	Marella Vamsi Krishna	Lattice boltzmann method based simulation of flow over a transversely oscillating square cylinder.	Prof. Sharma Atul
52.	06310201	Anwar Demsis Awol	Experimental study of rarefield gas flow with application to microchannels.	Prof. Amit Agrawal Prof. Prabhu S V
53.	06310027	Yogesh Tolambiya	Investigation of fluid flow and heat transfer characteristics for flow through a duct containing twisted-tape subjected to rotational force field.	Prof. Date A.W.
54.	06310031	Pendalwar Santosh P	Heat transfer augmentation in internal flows for turbulent flow using nanofluids.	Prof. Upendra Bhandarkar Prof. Prabhu S V
55.	06310401	Puneet Singh	Heat transfer distribution on a flat plate by the impingement of subsonic and supersonic jet.	Prof. Prabhu S V
56.	06310032	Lokanath Mohanta	Experimental investigation and CFD simulation of pulse tube refrigerator.	Prof. M.D.Atrey
57.	06310008	Indi Amaey Chandrashekhar	Experimental investigations on local heat transfer distributions in pin fin channels.	Prof. Prabhu S

Department : Metallurgical Engineering & Materials Science Specialization : Materials Science

1.	05311011	(Ms) Ceena Joseph	Investigation and Growth of Hafnium Nitride Thin Films by Molecular Beam Epitaxy.	Prof. Gopalan Prakash
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Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
2.	06311003	(Ms) Sheleena Hom	Processing, Structure and Properties of Polypropylene Based Conducting composites.	Prof. Arup R. Bhattacharyya Prof. Kulkarni Ajit R.
3.	06311401	Balaji V.	Study on PEEK Matrix Composites Containing Nano Silicon Nitride Dispersions.	Prof. Tiwari A.N.
4.	06311012	Amit Kumar	Preparation and Properties of Mechanically Alloyed SiCp-Al Alloy Matrix Composites.	Prof. Tiwari A.N.
5.	06311006	Phatak Anup Keshav	Development of Micromorph Solar Cells by HWCVD.	Prof. Dusane Rajiv O.
6.	06311014	Abhishek Raj Sensitivity	Analysis of Wire Drawing Process by Finite Element Simulation.	Prof. Narsimhan K.
7.	06311402	Ajit Bhaskar Bhandakkar	Processing and Corrosion Studies of Metal Matrix and Polymer Matrix Composites.	Prof. Prasad R.C.
8.	06311013	Vijay Kumar Dalla	Environment Assisted Cracking of Line Pipe Steels.	Prof. Prasad R.C.
9.	06311403	Vikram Neekhra	Fracture and Fatigue Behaviour of Al Alloy Matrix Composite.	Prof. Prasad R.C.
10.	06311004	Hemant Vinayak Borkar	Nanomagnetic Layered double Hydroxides for Drug Delivery Applications.	Prof. Bahadur D. Prof. R. Srivastava
11.	06311007	M Naresh	Synthesis and Characterization of Aqueous Magnetic Suspensions for the Possible Treatment of Cancer.	Prof. Bahadur D. Prof. D. Panda

Department : Metallurgical Engineering & Materials Science Specialization : Process Engineering

12.	06311010	Rishikesh Kumar	Microstructural Heterogeneity in Line-Pipe Steels.	Prof. Samajdar I .
13.	06311015	Mohammed Mushtaq	Drawn High Carbon Steel Wires- Microstructural Issues.	Prof. Samajdar I. Prof. Narsimhan K.

Department : Corrosion Science & Engineering

1.	06316006	(Ms) Akanksha Sharma	Nanostructured Waterborne Polyurethane Coating using Sol-Gel Method.	Prof. Khanna A. S.
2.	06316001	Brajesh Kumar Jha	High Performance Nano-Alumina Grafted Waterborne Polyurethane Coating.	Prof. Khanna A. S.
3.	06316005	Hemant Kumar Sukruji Abhare	Stress corrosion Cracking and Hydrogen Embrittlement Study of CAR-2 Grade Stainless Steel.	Prof. Raja V. S.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
Department : Energy Science and Engineering				
1.	06317007	Suresh Krishna I P	Matrix converter for doubly fed induction generator.	Prof. Fernandes B.G.
2.	06317010	(Ms) Rallabandi Vandana Prabhakar	Experimental investigation of design and control of outer rotor segmented switched reluctance motor.	Prof. Fernandes B.G.
3.	06317809	Upadhyay Ashish Manglaprasad	Solar powered high brightness led lantern.	Prof. Fernandes B.G.
4.	06317801	Dave Jigar Maheshbhai	Development of a design advisor for energy efficient building.	Prof. Nayak J.K. Prof. Gaitonde U.N.
5.	06317012	(Ms) Kajal Shah	Modelling and experimental investigation of dual fuel engine.	Prof. Aghalayam Preeti
6.	06317013	(Ms) Arti Kumari	Design and implementation of energy efficient electronic ballast.	Prof. Chatterjee Kishore
7.	06317016	(Ms) Sivapriya M B	Optimal placement and sizing of distributed generators in microgrid.	Prof. Banerjee Rangan Prof. Kulkarni S V
8.	06317018	Antisen A Maliekal	Fabrication of Silicon Nanocrystals embedded in Silicon nitride matrix.	Prof. C.S. Solanki
9.	06317303	Chikku Abraham	Analysis of partial discharge propagation for diagnostics of transformers.	Prof. Kulkarni S V
10.	06317806	Kale Paresh Govind	Generation of nano sized Si particles from free standing porous silicon(PS) film using ultrasonication.	Prof. C.S. Solanki
11.	06317810	Vamshi Krishna G	Thermal modeling of hotspots in transformers.	Prof. Kulkarni S V
12.	06317014	Pronoy Ghosh	Experimental and numerical investigations on low cost wind turbines.	Prof. Prabhu S V Prof. Date A.W.
13.	06317015	T. Tirupathi Reddy	Implementation of real time control and monitoring function in a laboratory model of a power system.	Prof. Kulkarni A.M.
14.	06317017	A Venugopal	Experimental and numerical investigations on vortex flowmeter.	Prof. Prabhu S V Prof. Amit Agrawal
15.	06317812	(Ms) Chetana Savithri	Real time control of power electronics controllers in a scaled power system.	Prof. Kulkarni A.M.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
16.	06317011	(Ms) Bendarkar Sharvari Shekhar Supriya	Methods to improve operational efficiency of discoms.	Prof. Soman S.A.
17.	06317004	Manish Mahadeo Manisha Rane	Modelling of circulating fluidised bed boilers.	Prof. Iyer Kannan N.
18.	06317005	Kabra Vivek Vijaykumar	Alternatives for energy autonomous residential building.	Prof. Banerjee Rangan
19.	06317301	Nishith B. Desai	Organic Rankine cycle.	Prof. Bandyopadhyay Santanu
20.	06317302	Pradeep Sharma	Optimization of energy sources with respect to size, economy, efficiency and other parameters for a hybrid distributed generation system.	Prof. Agarwal Vivek
21.	06317304	(Ms) J. Surya Prabha	A comparison of forward and flyback s4 PFC topologies for a high power factor Li-Ion battery charging application.	Prof. Agarwal Vivek
22.	06317802	Arvind Kumar Limje	CFD simulation of two fluid stratified developing flow in a plane channel and a pipe.	Prof. Sharma Atul
23.	06317804	Poluru Anil Kumar	Analysis of characterization techniques of nano structured materials.	Prof. C.S. Solanki
24.	06317807	Vinu Thomas	Evaluation of concentrator PV systems up to 200X.	Prof. C.S. Solanki
25.	06317808	Tanveer Ahmad	CFD simulation of efficient cooling of solar cells under light concentration.	Prof. Sharma Atul Prof. C.S. Solanki
26.	06317811	Rahul Porwal	DSP based sensorless control of induction motor.	Prof. Agarwal Vivek
27.	06317813	Vikas Bansal	Cogeneration potential through process integration.	Prof. Bandyopadhyay Santanu
28.	05317601	Bhosale Sandeep Jayawant	Simulation of solar industrial process heat system.	Prof. Kedare S B
29.	06317008	(Ms) Ms. Manisha Vasant Pawar	Modeling of carbon monoxide and nitrogen oxides generated in four stroke spark ignited gasoline engines.	Prof. Shashikanth S.
30.	06317006	Sivaramakrishna Tella	Analysis of hydrogen storage based renewable Energy System.	Prof. P.C.Ghosh

Department : Centre for Environmental Science & Engineering

1.	05318011	Shyam R.	Development of Teaching Tools for Distance Learning in Air Pollution.	Prof. Virendra Sethi
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Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
2.	06318003	Amit Kumar Singh Parihar	Comparative Study of Characteristics of Particulate Emissions from C.I.Engines Operating on Diesel and Bio-Diesels.	Prof. Virendra Sethi Prof. Parikh P.P.
3.	06318803	Sushil Kamlakar Daud	Co-Benefits of Waste Heat Recovery and Air Pollution Reduction in Commercial Kitchens.	Prof. R.S.Patil Prof. Rane Milind
4.	06318001	(Ms) Sinjini Chakraborty	Surface Hydrophobicity of Petroleum Hydrocarbon Degrading Bacteria and their Interactions with NAPLs and Surfaces.	Prof. Suparna Mukherji Prof. Mukherji Soumyo
5.	06318005	Rahul Sadanand Bhat	Effect of Pretreatment Methods on Anaerobic Sludge to Enhance Hydrogen Production using Starch as the Substrate.	Prof. Sumathi Suresh
6.	06318006	Vivek Bissa	Removal of Heavy Metals from Contaminated ground Water using Low Cost Adsorbent.	Prof. S.K.Gupta
7.	06318007	Jadhav Paritosh Gangadharrao	Nitrogen Removal from Wastewater using RBC Operated in Step Feed Mode.	Prof. S.K.Gupta
8.	06318201	Wondifraw Getinet Mengist	Application of Air Quality Models for Health Benefit Assessment.	Prof. R.S.Patil
9.	06318203	Mammo Beriso Bulbo	Environmental Decision Support System for Rational Selection of Technological Alternatives.	Prof. S.R.Asolekar
10.	06318802	Ashish Bhuwan	Bacterial Degradation of Polycyclic Aromatic Hydrocarbons.	Prof. Suparna Mukherji
11.	06318804	Mehta Vrajesh Sanat Arti	Arsenic Removal from Drinking Water using Zero Valent Iron(ZVI).	Prof. Sanjeev Chaudhari
12.	06318805	Dankhara Kalpesh Labhubhai	Effect of Cation & Organic Substrate on Enhanced Biological Nutrient Removal on SBRs.	Prof. Sanjeev Chaudhari
13.	06318004	(Ms) Lekshmi S. R.	Colour, BOD-COD Removal of Distillery Spentwash by Combined Anaerobic Digestion and Advanced Oxidation.	Prof. A.K.Dikshit
14.	06318009	Varigala Venkata Siva Kumar	Membrane Technology for Treating Paper Mill Effluent.	Prof. A.K.Dikshit
15.	06318402	Shivkumar Ramchandra Vanjari	Challenges and Remedies in Integration of Municipal Environmental Services.	Prof. S.R.Asolekar

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
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Department : Industrial Engineering & Operations Research

1.	05319014	Krishna Teja B.	Applications of reinforcement learning in multistage production planning.	Prof. Awate P.G.
2.	05319005	A Nageshwar Sharma	Constraint directed scheduling: Concepts and applications.	Prof. Awate P.G.
3.	06310003	Naval Kishor	Collaborative decision models for supply chain management.	Prof. Babu A. Subash
4.	06310004	(Ms) Niketa Agarwal	Interactive decision models for project risk management.	Prof. Babu A. Subash
5.	06319801	Ankit Jain	Impact of supply uncertainty in supply chains.	Prof. J. Venkateswaran
6.	06319001	Abhishek Maheshwari	Distributed simulation environment for supply chain analysis.	Prof. J. Venkateswaran
7.	06319008	Pratap Dangeti	Modelling and analysis of manufacturing systems: A case study.	Prof. J. Venkateswaran
8.	06319009	Piyush Verma	Timetabling and operations planning in railway networks.	Prof. Rangaraj Narayan
9.	06319802	Tilak Raj Singh	Airline crew planning and management.	Prof. Rangaraj Narayan
10.	06319803	Naga Satya Narayana Bojja	Neural networks for system identification and estimation: Principles and applications.	Prof. Awate P.G.
11.	06319004	Manish Kumar Singh	Optimal booking strategies for a shipper dealing with a monopolistic logistics carrier.	Prof. Rangaraj Narayan
12.	06319007	Yogesh Prakash Sushma Awate	Some novel algorithms in reinforcement learning.	Prof. N. Hemachandra
13.	06319006	Narode Avinash Ravindra	A study on lean manufacturing.	Prof. Babu A. Subash

Department : Reliability Engineering

1.	06322013	Gunda Naga Siva Kumar	Design Fabrication and Characterization of Microfluidic Devices.	Prof. S. K. Mitra Prof. Rao Ramagopal
2.	06322002	Madhubabu Maddirala	Design of Reliable Power System for Airborne Application	Prof. S. Duttagupta
3.	06322014	Srinivasa Rao Battula	MOSFET Fabrication and Microchannel Cooling	Prof. S. Duttagupta
4.	06322006	Sandesh Dinkar Naik	Reliability Evaluation of Structural Components.	Prof. (Ms.) A. Srividya
5.	06322007	Amit Chandrakar	Uncertainty Quantification with Monte Carlo Simulation.	Prof. (Ms.) A. Srividya

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
6.	06322008	Ravi Hari	Supply Chain Reliability.	Prof. A.K. Verma
7.	06322011	Sidharth Singh	Probabilistic and Deterministic Optimization Approaches for Mechanical Designs using Genetic Algorithms.	Prof. (Ms.) A. Srividya
8.	06322004	Dharaneendra Babu	BIST Controller for Flash Memory,	Prof. Chandorkar A.N.
9.	06322009	Shailender Reddy K.	Aggressive Memory Testing.	Prof. Chandorkar A.N.
Department : Systems & Control Engineering				
1.	06323801	Anup Menon	Time Optimal Reorientation of a Sphere.	Prof. Banavar R.N.
2.	06323004	V. Vishnuvardhana Rao T.	An Implementation of Embedded and Computationally Efficient Multivariable Nonlinear Controllers.	Prof. Sachin Patwardhan
3.	06323301	Markana Anilkumar Trikambhai	Performance Analysis of Controllers.	Prof. Moudgalya Kannan.
4.	06323006	Santosh Krishna P.	Sliding Mode Control of a DC Drive Through Ethernet.	Prof. Agarwal Vivek
5.	06323803	Dhanraj Bhawlal Indira Rajput	DSP Based Sensorless Control of Induction Motor.	Prof. Nataraj P.S.V.
6.	06323303	Parikh Nishant Nareshbhai	Modeling and Control of a Nuclear Steam Generator.	Prof. Sachin Patwardhan Prof. Bandyopadhyay B.
7.	06323405	Chandrakant Karmakar	Fault Diagnosis of Gas Turbines Using Correspondence Analysis.	Prof. Nataraj P.S.V.
8.	06323302	Makwana Dipesh H.	PID Controller Based on Relay Feedback Method for Single Loop and Multiple Loop Control System.	Prof. Nataraj P.S.V.
9.	06323007	V. Krishna Chaitanya Bommisetty	Fuzzy Logic Based Sensorless Control of BLDC Motor.	Prof. Agarwal Vivek
10.	06323401	G.Kumaresan	Optimal Control for Aircraft Reorientation.	Prof. Banavar R.N.
11.	06323802	Rama Sai Krishna Vakkantula	DSP Based Current Control Techniques for Shunt Active Power Filter.	Prof. Agarwal Vivek
12.	06323804	Jaya Krishna B.V. N.	FPGA Implementation of QFT Based Controller for Buck Type DC-DC Converter.	Prof. Agarwal Vivek
13.	06323009	Biswadip Dey	Stabilizing a Flexible Beam on a Cart: A Distributed Port Hamiltonian Approach.	Prof. Banavar R.N.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
14.	06323406	Hari Vijay Pala	Steady State Modelling and Adaptive Simulation of SR-30(Minilab) Turbo Jet Engine.	Prof. Nataraj P.S.V.
15.	06323002	Vamsikrishna Sanka	Implementation of Bernstien Global Optimization Algorithms in Matlab.	Prof. Nataraj P.S.V.
16.	06323003	C.V.Rohit Kumar	Co-Simulation of Handel -C Based Vector Control of Induction Motor.	Prof. Nataraj P.S.V.
17.	06323005	Ramesh Kumar Bitra	Implementation of Interval Based Optimization Algorithm using Field Programmable Gate Array.	Prof. Nataraj P.S.V.
18.	06323407	Gautham Y.B.	DSP Based Techniques for Control of Brushless Motor.	Prof. Nataraj P.S.V.
19.	06323402	(Ms) Sowmya Avula	PPF Technique for Active Vibration Control of Smart Beam.	Prof. Bandyopadhyay B.
20.	06323403	Aditya Singh Jamwal	Observer Based Control of Gas Turbine.	Prof. Bandyopadhyay B.
21.	06323404	Amit Vilas Deshmukh	Control of Large Pressurised Heavy Water Reactor: An Observer Based Approach.	Prof. Bandyopadhyay B.
22.	06323010	Gopinath Govindarajula	Modeling and Control System Design for Braking System of Car	Prof. Shashikanth S. Prof. K. Arya

Department : School of Information Technology

1.	05329028	Sajith Varghese C	Advance Reservation Mechanisms Usings GMPLS and Metro Ethernet.	Prof. Ashwin A. Gumaste
2.	06329201	Hao Pisith	Graphical Rendering of Rain.	Prof. Sharat Chandran
3.	06329023	Amit Kumar Jain	SMS-Based-Secure-Payment-System.	Prof. D. B. Phatak
4.	05329601	Siddharth Bondre	CAdMium : A Context Aware Adaptive Middleware For Seamless User Mobility in Service Oriented Environments.	Prof. Bellur Umesh
5.	05329602	Anupam Jagdish Chomal	Design and Implementation of Safety Critical Real-Time OS.	Prof. Ramamritham Krithi
6.	05329R07	Nandan Rajendra Marathe	Structured Learning & Design of Kernels for Long Entity Detection.	Prof. S. Sarawagi
7.	06329006	Amogh Sanjay Asgekar	Domain Adaptation for Real World Systems.	Prof. S. Sarawagi
8.	05329R05	Santhosh Kumar Duvvuru	Design and Deployment of Vehicle Traffic Monitoring Sensor Networks.	Prof. Purushottam Kulkarni

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
9.	06329003	(Ms) Akankshi Ratadiya	Making Sense of Consistently Inconsistent Forecasters.	Prof. Purushottam Kulkarni
10.	06329028	Ambikeshwar Pratap Singh	Experiments with Neural Network for Sales Forecast.	Prof. Purushottam Kulkarni
11.	06329036	Kedar Ajit Maduri Rudre	MH-WiFiRe Multi-Hop Extension to WiFiRe.	Prof. S. R. Iyer
12.	06329010	Srinivas Reddy M	QoS Based Routing Protocol for Multi-channel Multi-Interface Wireless Ad-hoc Networks.	Prof. A.Sahoo
13.	06329027	Dalvi Sandip Rakhmaji	A Mac-Aware Energy Efficient Reliable Transport Protocol for Wireless Sensor Networks.	Prof. A.Sahoo
14.	05329R01	Lahane Ashish Gajanan	Financial Forecasting : Comparison of ARIMA, FFNN and SVR.	Prof. A.Sahoo
15.	06329007	Girish Vishwanath Manisha Joshi	Short-Term Load Forecasting Using Regression Methods.	Prof. A.Sahoo
16.	06319005	Bhalerao Shrikant Vishnu	Automating Data Placement in Affordable Parallel Database Systems.	Prof. D. B. Phatak
17.	06329002	Manoj Kumar	English to UNL Enconverter.	Prof. Om P. Damani
18.	06329014	(Ms) Namrata Jain	Novelty Detection in Resource Constrained Environments.	Prof. Ramamritham Krithi
19.	05329R10	Inakota Rajesh	Securing Enterprise Networks.	Prof. Om P. Damani
20.	06329005	(Ms) Kavita Kumari Tota	QoS Provisioning in Middleware of Wireless Sensor Networks (WSN).	Prof. A.Sahoo
21.	06329011	Jeevan Balkrishna Chalke	Scheduling and Call Admission Control (CAC) in IEEE 802.16 Mesh Networks.	Prof. A.Sahoo
22.	06329020	Shashank Asthana	Modeling and Performance Analysis of Telephony Gateway Registration Protocol.	Prof. A.Sahoo
23.	06329024	(Ms) Radha A.	Transformation of BPML to UML.	Prof. D. B. Phatak
24.	06329035	(Ms) Shivani Agarwal	Secure Mobile Payments.	Prof. D. B. Phatak
25.	05329R04	Janak Chandarana	Implementation of WiFiRe MAC : Framing, Memory & Wireless Modules.	Prof. S. R. Iyer
26.	05329R08	Madalapu Ranjithkumar	Implementation of WiFiRe MAC Protocol : Ranging, Registration and Packet Classifier Modules.	Prof. S. R. Iyer

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
27.	06329008	Rohan Francis S B Nogueira	Named-Entity Recognition Using Graphical Models.	Prof. Om P. Damani
28.	06329022	Ajay N	Empirical Studies in Hindi to English Cross-Language Information Retrieval.	Prof. Bhattacharya P.
29.	06329029	Punde Avadhoot Dattatray	Hypervisor Technology.	Prof. Dhamdhare D.M.
30.	06329034	Ramdas Ramananda Rao	Rethinking Shikav.	Prof. Ranade A.
31.	06329001	Sudarshan Shrihari Sandhya Rode	A Pothole Detection System.	Prof. K. Arya Prof. Purushottam Kulkarni
32.	06329026	Gosai Kalpeshgeer Balvantgeer	Node Placement in Multi-Tier Sensor Networks.	Prof. Purushottam Kulkarni

Department : School of Biosciences & Bioengineering

1.	05330601	Rajdeep Ojha	Managing the Incontinence Bladder in Spinal Cord Injury.	Prof. Manchanda Rohit Prof. Devasahayam Suresh
2.	06330015	(Ms) Richa Dayal	Preparation and Characterisation of Scaffolds for Bone Regeneration.	Prof. Soni Vivek Prof. Bellare J.
3.	06330012	Nawsupe Ganesh Babasaheb	Pulse Signal Analysis and Characterization.	Prof. Joshi Rajani R Prof. Gadre V.M.
4.	06330011	Lingala Sajan Goud	Signal and Image Processing for Cardiac and Functional Magnetic Resonance Imaging.	Prof. Gadre V.M.
5.	06330002	Vivek Sharma	Middle Infrared Spectroscopy for Non-invasive Blood Glucose Sensing.	Prof. Desai U.B.
6.	06330004	Vibhor Khanna	Microsensors for Explosive Detection.	Prof. Mukherji Soumyo
7.	06330008	Sharma Anil Gopalkrishna	Simulation of an AO System Using Scilab and Removal of Speckle Noise in Retinal OCT Images Through Image Processing Techniques.	Prof. Desai U.B.
8.	06330013	Vinay Sharma	Preparation and Characterization of BSA Nanoparticles Loaded with Carboplatin for Drug Delivery to Retino Blastoma Tissue.	Prof. Santosh Noronha
9.	06330602	(Ms) Arpita De	DNA Hybridization Sensor.	Prof. Mukherji Soumyo
10.	06330801	(Ms) Chandratre Deepali Chandrasekhar	Development of a Surface Plasmon Resonance Based Biosensor.	Prof. Mukherji Soumyo Prof. Kundu Tapanendu
11.	06330005	Saravjeet Singh	Design of a Micropump for Biomedical Applications.	Prof. R. Srivastava

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
12.	06330301	Brij Mohan K	Novel Optical Bilirubin Sensor.	Prof. R. Srivastava
13.	06330007	Carvalho Edmund John	Biopolymeric Substances as Vitreous Substitutes.	Prof. Banerjee Rinti
14.	06330802	Nitin Joshi	Lipid Based Drug Delivery Systems for the Treatment of Lung Cancer.	Prof. Banerjee Rinti
15.	06330006	Madhur Parihar	Investigation of Computational Properties of Medium Spiny Projection Neuron.	Prof. Manchanda Rohit
16.	06330014	Joshi Nikhil Rajeev	Sensory Supplement System for Balance Maintenance in Patients Having Bilateral Vestibular Loss.	Prof. Manchanda Rohit

Department : Centre of Studies in Resources Engineering Specialization : Natural Resources Engineering

1.	06331001	Yogesh Pralhad Sindhu Mahajan	Dynamic Phenomenon in Spatzal Data Analysis	Prof. Venkatachalam (Mrs)P.
2.	06331009	Rege Manoj Ravindra Gayatri	Influence of Sampling Point Location Errors on Estimation of Scalar Field in Sensor Networks	Prof. Venkatachalam (Mrs)P.
3.	06331803	(Ms) Jayalakshmi R.	Study of Salt-Affected Coastal Areas Using Remote Sensing and GIS	Prof. Inamdar A.B.
4.	06331005	Gupta Ashish Pradeep	Rainfall Runoff Modelling Using SCS Model in Spatial Domain	Prof. Gedam S.S.
5.	06331401	Nakil Mahendra Balwant	Effect of Terrain Parameters on Water Induced Soil Erosion	Prof. Khire M.V.
6.	06331004	(Ms) Pawar Sweta Dayanand	Spatial Queries in P2P Geographic Information System	Prof. Shyamalee Mukherjee
7.	06331007	(Ms) Vartika Soni	Hyperspectral Image Analysis	Prof. Mohan B.Krishna
8.	06331801	(Ms) Latha H. N.	Partially Supervised and Ensemble Classification of Remotely Sensed Images	Prof. Mohan B.Krishna
9.	06331802	(Ms) Prajna N. S.	Digital Image Segmentation and Extraction of Buildings from High Resolution Remotely Sensed Images	Prof. Mohan B.Krishna
10.	06331002	Satyan Raina	A Web Based Spatial Decision Support System for Watershed Development Planning	Prof. Adinarayana J.
11.	06331006	Rohit Verma	Study of Atmospheric Correction Methods Using MODIS Ocean Color Data	Prof. Murthy M.V.R.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
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12.	06331008	S. Shravan Kumar	Affine Invariant Image Matching	Prof. Gedam S.S.
13.	06331010	Khant Vijaykumar Shakanbhai	Shoreline Change Study for Gulf of Khumbhat	Prof. Inamdar A.B.

RECIPIENTS OF DEGREE OF DUAL DEGREE

Department : Aerospace Engineering Specialization : Aerospace Aerodynamics

1.	02D01007	Ranjan Kumar	Comparison of Particle & Grid Based CFD for Incompressible, Unsteady, Viscous 2D Flow	Prof. P. Ramachandran
2.	03D01005	Goswami Kaushik	Classical Dynamics Approach to the Study of Mixing	Prof. P. Ramachandran
3.	03D01003	Rohan Jain	Track Based Wind Turbines	Prof. Sudhakar K.
4.	03D01007	Rajvanshi Deepanshu Arvindkumar	Development of a 3D Tree Code for Solving the N-Body Problem	Prof. P. Ramachandran
5.	03D01012	Ravindra Joshi	Use of Knowledge Based Engineering Tools for Airship Design	Prof. Pant R.K.
6.	03D01013	Anchal Saxena	Network Optimization for Cargo Airlines	Prof. Pant R.K.
7.	03D01008	Harshad Dilip Ranadive	Efficient Implicit KFVS Schemes for Euler Equations	Prof. Mandal J.C.
8.	03D01014	Amar Deep	Design & Development of a Quadrotor Flying Vehicle	Prof. Sudhakar K. Prof. Karunakaran K.P.
9.	02D01003	Amit Kiran Sowani	Analysis of I-Beams Adapting a Refined Plate Theory	Prof. Shimpi R.P. Prof. Mujumdar P. M.
10.	03D01017	Vivekanand	Applications of New First Order Shear Deformation Theory	Prof. Shimpi R.P.

Department : Aerospace Engineering Specialization : Aerospace Propulsion

11.	03D01004	Sunil Gupta	Numerical Study of Tip Leakage Flow in an Axial Compressor	Prof. A.M.Pradeep
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Department : Aerospace Engineering Specialization : Dynamics and Control

12.	01D01006	Ajay Kumar	Analysis of Indian Financial Crises of 1991: Stochastic Optimal Control/ Dynamic Programming Approach	Prof. S. P. Bhat Prof. S.V.D.Nageswara Rao
13.	02D01005	B. Sirish	Sensor Fusion in Miniature Aerial Vehicles	Prof. Arya Hemendra

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14.	02D01015	Kashyap Bhargava	Control Traffic Systems	Prof. M Belur Prof. Pant R.K.
15.	03D01006	Mrinal Varshney	Modelling and Control of a Fluid in a Tank: A Port-Hamiltonian Approach	Prof. Banavar R.N. Prof. S. P. Bhat
16.	03D01018	Parmar Kaushikkumar Vishrambhai	Miniature Air Vehicle-Platform for Flight Mechanics Studies	Prof. Arya Hemendra

Department : Chemical Engineering Specialization : Process Systems Design & Engineering

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2.	02D02007	Anand Kumar Singh	Model Analysis of Metabolic Networks as Applied to a Spargillus Niger System	Prof. Venkatesh K.V. Prof. N.S. Puneekar
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4.	02D02016	Aditya Vivek Karandikar	Simulated Moving Bed Reactor : Modeling and Simulation	Prof. Sanjay Mahajani
5.	03D02015	Vibhu Arora	Thermodynamic Properties of Fluids Confined in Nanoporous Material	Prof. Adhikari J.
6.	03004024	Shah Sagar Nemchand	Comparison of Different State Estimation Techniques	Prof. Bhartiya S.
7.	03D11031	Rajesh Grandhe	Nonlinear Classification Based Fault Diagnosis in Chemical Processes Using Support Vector Machines	Prof. Manibhushan
8.	03D02009	Kartik Shekhar	Modeling & Simulation of the Liquid Phase Oxidation of Cyclohexane	Prof. Suresh A.K. Prof. Sanjay Mahajani
9.	03D02014	(Ms) M S Shaama	Modeling & Simulation of Reactive Chromatography	Prof. Sanjay Mahajani
10.	03D02018	Gaikwad Pushkar Arun	Finite Element Modeling of Red Blood Cells	Prof. Sameer Ralph Jadhav
11.	03D02003	Deepak Singhal	Determination of Permeability Heterogeneity in a Rock Sample: Experiments & Numerical Model	Prof. Vinjamur Madhu
12.	03D02001	Arpit Khandelwal	Cavity Modelling for Underground Coal Gasification	Prof. Aghalayam Preeti
13.	03D02007	Risbud Sumedh Ratnakar	Protein Structure Analysis	Prof. Santosh Noronha
14.	03004017	Saurabh Baid	Internally Heat Integrated Distillation Columns	Prof. Malik R.K.

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16.	03D02010	Dalal Onkar Anant	Modeling and Control of a Plug	Prof. Patwardhan S.R. Prof. Banavar R.N.
17.	03D04012	(Ms) Sai Pooja Mahajan	Modeling Formation for Nanoparticles	Prof. Mehra A.
18.	03D02017	Debasish Das	Non Fluctuating & Fluctuating LBM for Fluid Flow Problems	Prof. Rochish Thaokar
19.	03103003	(Ms) Swati Prasad	Determination of the Free Surface Profile for a Shear Thinning Liquid Coating a Vertical Rotating Disc	Prof. Nanavati Hemant Prof. Tirumkudulu Mahesh
20.	03D02004	Bharat Bhushan Mudgal	Molecular Modeling of Thermomechanics of Macromolecules	Prof. Nanavati Hemant
21.	03D02002	Sunmay Shivadekar	CNT-PET Based Nano Composites Development and Modeling	Prof. Ashok Misra

Department : Civil Engineering Specialization : Structural Engineering

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2.	03D04015	Farooq Adam Mukadam	Plastic Design of Steel Plate Shear Walls	Prof. Ghosh Siddharth
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4.	03D04013	Vinod Kumar Kushvaha	Fatigue Analysis of Composite Structures	Prof. Desai Yogesh M.
5.	03D04014	Rahul Bhartiya	Fatigue Analysis of Concrete Structures	Prof. Desai Yogesh M.
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Department : Electrical Engineering Specialization : Microelectronics				
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25.	03D07026	Anurag Singla	Memory Access Pattern Analysis	Prof. Desai Madhav
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27.	03D07020	Sambit Palit	Modeling & Simulation of Nanocrystal & SONOS Flash Memory Devices	Prof. Souvik Mahapatra
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34.	03D07035	B Yadaiah Vinay Kumar	High Performance Computing on FPGA's & Parallelization of Circuit Simulation	Prof. Patkar Sachin Prof. Narayanan H.
35.	03D07038	Vivek Mishra	Partitioning & Scheduling Issues in VLSI Circuits & Multi-FPGA Platforms	Prof. Patkar Sachin
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42.	03D07022	Chabukaswar Shamrao Bhagawat	Fabrication and Characterization of Semiconductor Devices	Prof. Rao Ramagopal

Department : Mechanical Engineering Specialization : Computer Aided Design (CAD) & Automation

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11.	03D10009	Vipul Saboo	Development of a Single Legged Hopping Robot	Prof. Seth Bhartendu
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18.	03D10039	Ishan Saxena	Fabrication of Microfilters by Excimer Laser Micromachining	Prof. S. S. Joshi Prof. Amit Agrawal
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27.	00D10040	Parag Saharia	Design & Development of Milling Cutter with Self Propelled Round Inserts	Prof. S. S. Joshi
Department : Mechanical Engineering Specialization : Thermal & Fluids Engineering				
28.	02D10043	Sumedh Pralhad Padghane	Numerical Simulation of Flow & Heat Transfer in a Wavy Channel	Prof. Sharma Atul
29.	03D10040	Anupam Sengupta	Experimental Study of Interface Development in Bi-Fluid Cavity Flows	Prof. Date A. W.
30.	03D10003	Gaurav Chaturvedi	Study of Particulate Emissions in the Exhaust from S.I. Engines	Prof. Upendra Bhandarkar Prof. Virendra Sethi
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38.	03D10018	Mridul Sarkar	Development and Performance Investigation of Single Stage Coaxial Pulse Tube Cooler	Prof. M.D.Atrey
39.	03D10023	Mehta Vikrant Pradeep	Numerical Modeling of Radiation Heat Transfer in AHWR Rod Bundle Array for Decay Heat Removal	Prof. Arunkumar Sridharan
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41.	02D10031	Shiv Nandan Patel	Design of an Evaporator for Near Supercritical Application	Prof. Arunkumar Sridharan Prof. Bandyopadhyay Santanu

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42.	03D10002	Swapnil Sachdev	Study of Rarefied Gas Flows Using Direct Sumulation Monte Carlo	Prof. Amit Agrawal Prof. Upendra Bhandarkar
Department : Metallurgical Engineering & Materials Science Specialization : Ceramics & Composites				
1.	03D11008	Aashish Rathi	Synthesis & Characterization of Barium Titanate Based Bulk & Thin Film Ferroelectric Materials	Prof. Gopalan Prakash
2.	03D11002	Varun Verma	Development of Low Temperature Transparent Conducting Oxide (TCO) Coatings by RF Sputtering	Prof. Dusane Rajiv O.
3.	03D11003	Naresh Sharma	Synthesis of Lanthanum Gallate Tantalate Oxide Ion Conductors	Prof. Prasanna T.R.S.
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6.	03D11001	Sumeet Kumar Malik	Synthesis of Ultrafine YSZ Powders & their Consolidation into Dense Components	Prof. Parag Bhargava
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11.	03D11022	Abhinav Seth	Processing of Magnetic Nanocomposites Through Sonochemistry & Ferromagnetism in Nanogermanium	Prof. Bahadur D.
12.	03103013	Piyush Poddar	Computer Based Control of ESR Process	Prof. Ballal N.B.
13.	03D11012	Sai Krishna S. Thota	Synthesis & Characterization of Composite Electrolytes for Solid Oxid Fuel Cells	Prof. Gopalan Prakash
14.	03D11027	Alok Kumar Jha	Corrosion & Biocompatibility of Plasma Source Ion Implanted Stainless Steel	Prof. Raja V. S.

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Department : Metallurgical Engineering & Materials Science Specialization : Metallurgical Process Engg.				
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25.	03D11018	Parag Ranjan Bansal	Aqueous Collodial Suspensions of Magnetic Nanoparticles	Prof. Bahadur D. Prof. Parag Bhargava
26.	03D11006	Abhishek Sisodia	Study of Passive Films on Magnesium Alloy in Alkaline Solutions	Prof. Raja V. S.
27.	03D11010	Anand Kumar Upadhyay	Project Optimization for Manufacturing Few Automotive Component Using Aluminium Sheets	Prof. Narsimhan K.
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Kanpur	5.	Prof. M. Anandakrishnan, Chairman, BOG, IIT Kanpur, & Chairperson, Madras Institute of Development Studies, 79, Second Main Road, Gandhi Nagar, Adyar, Chennai -600 020.	Member
Delhi	6.	Prof. V.S. Ramamurthy, Chairman, BOG, IIT Delhi, & Former Secretary, Deptt. of Science & Technology.	Member
Guwahati	7.	Dr. M.K. Bhan, Chairman, BOG, IIT Guwahati Department of Biotechnology, Block-2, 7 th Floor, C.G.O. Complex, Lodi Road, New Delhi -110 003.	Member
Roorkee	8.	Shri Jaiprakash Gaur, Chairman, BOG, IIT Roorkee, JA House, 63 Basant Lok, Vasant Vihar, New Delhi.	Member
Director of each Institute (Ex-officio)			
Kharagpur	9.	Prof. Damodar Acharya, Director, Indian Institute of Technology, Kharagpur - 721 302.	Member

Bombay	10.	Prof. Ashok Misra (up to 03/10/08) Prof. J.M.Vasi, Actg. Director (from 04/10/08 to 31/12/08) Prof. D.V. Khakhar, (from 01.01.2009) Director, Indian Institute of Technology, Bombay - 400 076.	Member
Madras	11.	Prof. M. S. Ananth, Director, Indian Institute of Technology Madras, Chennai - 600 036.	Member
Kanpur	12.	Prof. S. G. Dhande, Director, Indian Institute of Technology, Kanpur - 208 016.	Member
Delhi	13.	Prof. Surendra Prasad, Director, Indian Institute of Technology, Hauz Khas, New Delhi - 110 016.	Member
Guwahati	14.	Prof. Gautam Barua, Director, Indian Institute of Technology, Guwahati - 781 039.	Member
Roorkee	15.	Dr. S.C. Saxena, Director, Indian Institute of Technology, Roorkee, Uttaranchal - 247 667.	Member
Chairman, University Grants Commission (Ex-officio)	16.	Prof. Sukhdeo Throat, Chairman, University Grants Commission, Bahadurshah Zafar Marg, New Delhi - 110 002.	Member
Director-General, Council of Scientific & Industrial Research, (Ex-officio)	17.	Prof. Samir K. Brahmachari, Director General, Council of Scientific & Industrial Research, Govt. Of India, Anusandhan Bhawan, 2, Rafi Marg, New Delhi.	Member
Chairman of the Council Of the Indian Institute of Science, Bangalore (Ex-officio)	18.	Dr. K. Kasturirangan, Chairman, Council of Indian Institute of Science, Bangalore, National Institute of Advanced Studies, Indian Institute of Science Campus, Bangalore - 560 012.	Member
Director of the	19.	Prof. P. Balaram,	Member

Indian Institute of Science, Bangalore (Ex-officio)		Director, Indian Institute of Science, Bangalore - 560 012.	
Three Nominees of the Central Government			
To represent the Ministry concerned with Technical Education	20.	Shri R.P. Agrawal, Education Secretary, Ministry of Human Resource Development, Dept. of Secondary and Higher Education, New Delhi.	Member
To represent the Ministry of Finance	21.	Ms. Sushma Nath, Secretary, Ministry of Finance, Dept. of Expenditure, North Block New Delhi – 110 001.	Member
To represent any other Ministry	22.	Shri Jainder Singh, Secretary, Ministry of Information Technology, Electronic Niketan, 6, C. G. O. Complex, New Delhi.	Member
Nominee of the All India Council for Technical Education (AICTE)	23.	Prof. R.A. Yadav, Chairman, AICTE, I.P. Estate, I.G. Sports Complex, New Delhi – 110 002.	Member
Nominees of the Visitor (minimum three) (maximum five)	24.	Prof. C.N.R. Rao, Chairman, Scientific Advisory Council to the Prime Minister, CSIR Centre of Excellence in Chemistry, Chemistry & Physics of Materials Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur P.O., Bangalore - 560 064.	Member
	25.	Prof. C.S. Seshadri, Director, Chennai Mathematical Institute, Chennai, Plot H1, SIPCOT IT Park Padur PO, Siruseri - 603 103.	Member
	26.	Prof. Sabyasachi Bhaattacharya, Director, Tata Institute of Fundamental Research, Homi Bhabha Road, Mumbai 400 005.	Member
	27.	Dr. Kota Harinarayan, Chairman, Research Council of Central Scientific Instrument Organization, Raja Ramana Fellow, National Aero Space Laboratories, P.O. No. 1779, Bangalore - 560 017.	Member
	28.	Shri Tarun Das,	Member

		Chief Mentor, Confederation of Indian Industry, Plot No.249-F, Sector 18, Udyog Vihar, Phase IV, Gurgaon 122 015, Haryana.	
Three Members of Parliament (Two from Lok Sabha) (One from Rajya Sabha)	29.	Shri Milind Deora, Member of Parliament (Lok Sabha), 65, Lodhi Estate, New Delhi - 110 003.	Member
	30.	Shri Ananta Nayak, Member of Parliament (Lok Sabha), 180, South Avenue, New Delhi - 110 001.	Member
	31.	Shri B. J. Panda, Member of Parliament (Rajya Sabha), 2, Mahadev Road, New Delhi.	Member
	32.	Shri Ashok Thakur, Additional Secretary (HE), Ministry of Human Resource Development, Department of Higher Education, Shastri Bhavan, New Delhi 110 115.	Secretary

Members of the Board of Governors

Nominated by Visitor	Dr. Anil Kakodkar, Chairman, Atomic Energy Commission, & Secretary, Deptt. of Atomic Energy, Anushakti Bhavan, CSM Marg, Mumbai - 400 001.	Chairman
Ex-officio	Prof. Ashok Misra, (up to 3/10/08) Prof. J.M. Vasi (from 4/10/08 to 31/12/08) Prof. D.V. Khakhar (from 01/01/2009) Director, IIT Bombay, Powai, Mumbai 400 076.	Member
Council Nominees (Four)	Shri Ravi Mathur, IAS (up to 17/08/08) Shri Ashok Thakur, IAS (from 18/08/08) Additional Secretary, Ministry of Human Resource Development, Deptt. of Higher Education Govt. of India, Shastri Bhavan, New Delhi 110 115.	Member
	Shri Nandan M. Nilekani, Chief Executive Officer, President and Managing Director, Infosys Technologies Limited, 44, Electronics City, Hosur Road, Bangalore – 560 100.	Member
	Dr. K.N. Ganesh, Director, Indian Institute of Science Education & Research (IISER), 900, NCL Innovation Park, Dr. Homi Bhabha Road, Pune - 411 008.	Member
State Government Nominees (Three)	Shri Sunil Bharti Mittal, (up to 17/06/08) Dr. S.R. K. Prasad (from 18/06/08) Managing Director, Krishna Industrial Corporation Limited, 239, Annasalai, Chennai 600 006.	Member
MAHARASHTRA	Dr. N. B. Pasalkar, Director of Technical Education, Govt. of Maharashtra, Mumbai 400 001.	Member
GUJARAT	Shri Hasmukh Adhia, IAS Principal Secretary (Education), Education Department, Block - 5, 7th Floor, Sardar Bhavan, Sachivalaya, Ghandinagar 382 010, Gujrat.	Member
KARNATAKA	Dr. K. Balaveera Reddy (up to 17/09/08)	Member

Prof. H.P. Khincha (from 18/09/08)
Vice-Chancellor,
Visvesvaraya Technological University,
Belgaum 590 014, Karnataka.

GOA	Fr. Ramould D'Souza, Goa Institute of Management, Ribandar, Goa - 403 006.	Member
Senate (Two)	Prof. A. N. Chandorkar, Professor, Department of Electrical Engineering, IIT Bombay, Mumbai 400 076.	Member
	Prof. M.S.C. Bose, Professor, Department of Mechanical Engineering, IIT Bombay Mumbai 400 076.	Member
Ex-officio	Dr. T. Sahay, Registrar (up to 07/05/08) Shri B. S. Punalkar, Offg. Registrar (from 07/05/08) IIT Bombay, Powai, Mumbai 400 076.	Secretary

Members of the Finance Committee

Dr. Anil Kakodkar, Chairman, Atomic Energy Commission, & Secretary, Deptt. of Atomic Energy, Anushakti Bhavan, CSM Marg, Mumbai - 400 001.	Chairman
Prof. Ashok Misra (up to 03/10/08) Prof. J.M. Vasi (from 04/10/08 to 31/12/08) Prof. D.V. Khakhar (from 01/01/09) Director, Indian Institute of Technology Bombay, Powai, Mumbai 400 076.	Member (Ex-officio)
Shri Ravi Mathur, IAS (up to 17/08/08) Shri Ashok Thakur, IAS (from 18/08/08) Additional Secretary, Ministry of Human Resource Development, Deptt. of Higher Education, Government of India, Shastri Bhavan, New Delhi 110 001.	Member
Shri. V. B. Aras, Head, Corporate Audit Service, Larsen & Toubro Ltd., Gate No. 1, North Block-II, B' Wing, 3 rd Floor, Saki Vihar Road, Powai, Mumbai 400 076.	Member
Shri Sanat Kumar Ray, Additional Secretary & Financial Adviser, Ministry of Human Resource Development, Government of India, Shastri Bhavan, New Delhi 110 001.	Member
Prof. R. K. Shevgaonkar, (up to 21/02/09) Prof. A.Q. Contractor (from 22/02/09) Dean (Alumni & Corporate Relations), IIT Bombay, Mumbai 400 076.	Member (Ex-officio)
Dr. T. Sahay, Registrar (up to 07/05/08) Shri B. S. Punalkar, Offg. Registrar (from 07/05/08) IIT Bombay, Powai, Mumbai 400 076.	Secretary (Ex-officio)

Building and Works Committee

Prof. Ashok Misra, (up to 03/10/08) Prof. J.M. Vasi (from 4/10/08 to 31/12/08) Prof. D.V. Khakhar (from 01/01/09) Director, IIT Bombay, Powai, Mumbai – 400076.	Chairman
Shri V.K. Rokade, Superintending Engineer, Mumbai Central Circle-1, CPWD, 5 th Floor, Old CGO Building, 101 MK Road, Mumbai - 400 020.	Member
Shri A.B.Gaikwad, Superintending Engineer, Mumbai (PWD) Circle & Housing Deptt. 25, Murzban Road, Fort, Mumbai - 400 001.	Member
Shri S. Ramanujam, Director of Construction, Services & Estate Management, Vikram Sarabhai Bhavan, Anushakti Nagar, Mumbai - 400 094.	Member
Ms. Seema Raj, Director(T) , Department of Secondary & Higher Education, Minsitry of Human Resource Development, Government of India, Shastri Bhavan, New Delhi - 110 001	Member
Prof. R. K. Malik, (up to 19/04/09) Prof. K.V.K. Rao (from 20/04/09) Dean (Infrastructure Planning & Development), IIT Bombay, Powai, Mumbai - 400 076.	Member
Dr. T Sahay, Registrar (up to 07/05/08) Shri B. S. Punalkar, Offg. Registrar (from 07/05/08) IIT Bombay, Powai, Mumbai 400 076.	Member-Secretary (Ex-officio)

Heads of Departments

Prof. K. Sudhakar (up to 09.06.2008)
Prof. P.M. Mujumdar (from 10.06.2008)
Aerospace Engineering

Prof. Anurag Mehra
Chemical Engineering

Prof. A. Q. Contractor (up to 02.12.2008)
Prof. Nand Kishore (from 03.12.2008)
Chemistry

Prof. M. C. Deo (up to 18.07.2008)
Prof. Y.M. Desai (from 18.07.2008)
Civil Engineering

Prof. Abhiram Ranade
Computer Science & Engg.

Prof. T. K. Biswal
Earth Sciences

Prof. S. Chaudhuri (up to 31.12.2008)
Prof. D.K. Sharma (from 01.01.2009)
Electrical Engg.

Prof. (Ms.) Meenakshi Gupta
Humanities & Social Sciences

Prof. J.K. Verma
Mathematics

Prof. S.K. Maiti (up to 13.08.2008)
Prof. S.L. Bapat (from 14.08.2008)
Mechanical Engg.

Prof. R.O. Dusane
Met. Engg. & Mat. Science

Prof. D. S. Misra (up to 22.09.2008)
Prof. Raghava Varma (22.09.2008)
Physics

Prof. Rangan Banerjee
Energy Science and Engineering

Heads of Centres

Prof. Ravi Poovaiah
Industrial Design Centre

Prof. Raman S. Srinivasa
Centre for Research in Nanotechnology and Science (SAIF is merged to CRNTS)

Prof. D. Chandrasekharam (up to 17.09.2008)
Prof. H.S. Pandalai (from 18.09.2008)
Centre of Studies in Resources Engineering

Prof. S.R. Asolekar
Centre for Environmental Science and Engineering

Prof. G. Sivakumar
Centre for Formal Design and Verification of Software

Prof. P. M. Mujumdar
Centre for Aerospace Systems Design and Engineering

Prof. A. W. Date
Centre for Technology Alternatives in Rural Areas

Prof. U. A. Yajnik
Computer Centre

Prof. Kannan Moudgalya
Centre for Distance Engineering Education Programme

Heads of Schools

Prof. (Ms.) Karuna Jain
Shailesh J. Mehta School of Management

Prof. Dulal Panda
School of Biosciences & Bioengineering

Convenors of Interdisciplinary Programmes

Prof. Narayan Rangaraj
Industrial Engineering & Operations Research

Prof. P.S.V. Nataraj
Systems & Control Engineering

Academic Staff (Alphabetically) (1.4.2008to 31.3.2009)

Following abbreviations have been used

SJMSOM = Shailesh J. Mehta School of Management

CESE = Centre for Environmental Science and Engineering

IDC = Industrial Design Centre

BJMSBB = Bhupat & Jyoti Mehta School of Bioscience & Bioengineering

CS&E = Computer Science and Engineering

Met. Engg. & Mat. Sc. = Metallurgical Engineering and Materials Science

IE&OR = Industrial Engineering and Operations Research

KreSIT = Kanwal Rekhi School of Information Technology

CAD = Computer aided Design Centre

RSIC = Regional Sophisticated Instrumentation Centre

(Cont.) = Contract

Sr. No.	Name	Designation	Qualification	Deptt.	Senate	Remarks
1	Adhikari Jhumpa	Assistant Professor	Ph.D. (State University of New York at Buffalo)	Chemical Engg	No	
2	Adil Gajendra Kumar	Associate Professor	Ph.D. (University of Manitoba)	SJMSOM	No	
3	Adinarayana J.	Associate Professor	Ph.D. (BHU, Varanasi)	CSRE	No	
4	Adsul Bharat G	Assistant Professor	Ph.D. (IIT Bombay)	CS & E	No	
5	Agarwal Vivek	Professor	Ph.D. (University of Victoria)	Electrical Engg.	Member	
6	Aghalayam Preeti	Associate Professor	Ph.D. (University of Massachusetts)	Chemical Engg	No	
7	Agrawal Amit	Associate Professor	PH.D. (University of Delaware)	Mechanical Engg.	No	
8	Amarnath C.	Professor	Ph.D. (University of Allahabad)	Mechanical Engg.	Member	Prof. -In-Charge, (SINE)
9	Anandavardhanan U.K.	Assistant Professor	Ph.D. (University of Hyderabad)	Mathematics	No	
10	Ananthakumar Usha	Associate Professor	Ph.D. (IIT Bombay)	SJMSOM	No	
11	Apte Prakash R.	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
12	Apte Varsha	Associate Professor	Ph.D.(Duke University USA)	CS & E	No	
13	Arya Hemendra	Associate Professor	Ph.D.(IIT Bombay)	Aerospace Engg.	No	
14	Arya Kavi J.	Associate Professor	Ph.D. (University of Oxford, UK)	CS & E	No	
15	Aslam Mohammed	Assistant Professor	Ph.D. (University of Pune)	Physics	No	
16	Asolekar S.R.	Professor	Ph.D. (University of Iowa)	CESE	Member	HOD, CESE
17	Athavale Ameer	Professor	Ph.D. ((University of Indiana)	Mathematics	Member	
18	Athavankar U.A.	Professor (Retd. on 31.1.2007 RE upto 22.1.2010)	B.Arch. (IIT Bombay)	IDC	Member	
19	Atrey Milind	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
20	Awate P.G.	Professor	Ph.D. (University of Corneli)	Mechanical Engg.	Member	
21	Baghini Maryam S.	Assistant Professor	Ph.D. (Sharif University of Technology) (Cont.)	Electrical Engg.	No	
22	Bahadur D.	Professor	Ph.D. (IIT Kanpur)	Met.Engg. & Mat.Sc.		Member
23	Bairya Ramesh T.S.	Assistant Professor	Ph.D. (University of Hyderabad)	H&SS	No	
24	Bajoria K.M.	Associate Professor	Ph.D. (University of Cambridge)	Civil Engg.	No	

Sr. No.	Name	Designation	Qualification	Deptt.	Senate	Remarks
25	Balaji P.V.	Professor	Ph.D. (IISc. Bangalore)	SB&B	Member	
26	Balakrishna M.S.	Professor	Ph.D. (IISc. Bangalore)	Chemistry	Member	
27	Ballal N.B.	Professor	Ph.D. (IIT Kanpur)	Met.Engg. & Mat.Sc.	Member	
28	Banavar R.N.	Professor	Ph.D. (University of Texas)	Systems & Control	Member	
29	Bandyopadhyay B.	Professor	Ph.D. (IIT Delhi)	Systems & Control	Member	
30	Bandyopadhyay Rajdip	Associate Professor	Ph.D. (IISc, Bangalore)	Chemical Engg	No	
31	Bandyopadhyay Santanu	Associate Professor	Ph.D. (IIT Bombay)	Energy Science & Engg.	No	
32	Banerjee Rangan	Professor,	Ph.D. (IIT Madras), Dip.in Business Finance	Energy Science & Engineering	Member	Convener ESE Group
33	Banerjee Rinti	Professor	Ph.D.(IIT Bombay)	SB&B	Member	
34	Banerjee Santanu S.	Professor	Ph.D. (University of Jadavpur)	Earth Science	Member	
35	Banerjee Sauvik	Assistant Professor	Ph.D. (University of California)	Civil Engg	No	
36	Banerji Pradipta	Professor	Ph.D. (University of California)	Civil Engg.	Member	
37	Bapat S.L.	Professor	Ph.D. (IIT Delhi)	Mechanical Engg.	Member	HOD, Mech. Engg. Deptt
38	Bapat Varadraj B.	Assistant Professor	Ph.D. (IIT Bombay)	SJMSOM	No	
39	Bapat Vijay P.	Professor	B.E. (Sangli) DIIT(IIT Bombay)	IDC	Member	
40	Baskar. S	Assistant Professor	Ph.D, Bangalore	Mathematics	No	
41	Bellare Jayesh	Professor	Ph.D. (University of Minnesota)	Chemical Engg	Member	
42	Bellur Umesh R.	Associate Professor	Ph.D. (Syracuse)	CS & E	No	
43	Belur Madhu N.	Assistant Professor	Ph.D. (univ. of Groningen)	Electrical Engg.	No	
44	Bhallamudi Ravi	Professor	Ph.D. (IISc Bangalore)	Mechanical Engg.	Member	
45	Bhandarkar Upendra	Assistant Professor	Ph.D. (University of Minnesota)	Mechanical Engg.	No	
46	Bharatiya Sharad	Associate Professor	Ph.D. (Oklahoma)	Chemical Engg	Co-opted Member	
47	Bhargava Parag	Associate Professor	Ph.D. (Univ. of Birmingham & Uni. of Alabama in Guntsville)	Met.Engg. & Mat.Sc.	No	
48	Bhargava S.	Professor	Ph.D. (University of Gujarat)	SJMSOM	Member	
49	Bhat P. Jayadeva	Professor	Ph.D. (IISc. Bangalore)	SB&B	Member	
50	Bhat Parameshwar R.	Professor	Ph.D. (IIT Kanpur)	H&SS	Member	
51	Bhat Sanjay P.	Associate Professor	Ph.D.(University of Michigan)	Aerospace Engg.	No	
52	Bhattacharyya Arup R.	Associate Professor	Ph.D. (IIT Delhi)	Met.Engg. & Mat.Sc.	No	
53	Bhattacharyya Pushpak	Professor	Ph.D.(IIT Bombay)	CS & E	Member	
54	Bhattacharyya Surajit	Assistant Professor	Ph.D. (IIT Kanpur)	H&SS	No	
55	Bhattacharyya	Assistant Professor	P.G.D. (IIT Bombay)	H&SS	No	

Sr. No.	Name	Designation	Qualification	Deptt.	Senate	Remarks
	Tanmay		Gurukala Kangri Vishwavidyalaya Haridwara			
56	Bhujade M.R.	Professor	Ph.D. (IIT Bombay)	CS & E	Member	
57	Bhushan Mani	Assistant Professor	Ph.D. (IIT Bombay)	Chemical Engg	No	
58	Biswal T.K.	Professor	Ph.D. (University Rajasthan)	Earth Sciences	Member	HOD, Earth Sciences
59	Biswas Supratim	Professor	Ph.D. (IIT Kharagpur)	CS & E	Member	
60	Bose M.S.C.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
61	Chakrabarti Soumen	Associate Professor	Ph.D. (University of California)	CS & E	No	
62	Chakrabarti Subhananda	Associate Professor	Ph.D. (University of Calcutta)	Electrical Engg.	No	
63	Chakraborty Debraj	Assistant Professor	Ph.D. (University of Florida)	Electrical Engg.	No	
64	Chakraborty Supratik	Associate Professor	Ph.D. (The Leland Stanford Jr. University)	CS & E	No	
65	Chakravarthy B. K.	Professor	M.Des. (IIT Bombay)	IDC	Member	
66	Chandiramani N.K.	Associate Professor	Ph.D.(Virginia Tech.)	Civil Engg.	No	
67	Chandorkar A.N.	Professor	Ph.D. (Rajasthan Univ.)	Electrical Engg.	Member	
68	Chandorkar Mukul C.	Professor	Ph.D. (Univ.of Wisconsin Madison)	Electrical Engg.	Member	
69	Chandran Sharat	Professor	Ph.D. (Univ.of Maryland)	CS & E	Member	
70	Chandrasekharam D.	Professor	Ph.D. (IIT Bombay)	Earth Science	Member	
71	Chaporkar Prasanna S.	Assistant Professor	Ph.D. (University of Pennsylvania – Philadelphia)	Electrical Engg.	No	
72	Chatterjee Avijit	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Co-opted Member	
73	Chatterjee Kishore	Associate Professor	Ph.D. (IIT Kanpur)	Electrical Engg.	No	
74	Chaudhari Sanjeev	Professor	Ph.D. (IIT Kanpur)	CESE	Member	
75	Chaudhari Subhasis	Professor	Ph.D. (University of California)	Electrical Engg.	Member	
76	Chebrolu Kameswari	Assistant Professor	Ph. D (UCSD, California)	CS & E	No	
77	Choudhary Deepankar	Associate Professor	Ph.D. (IISc Bangalore)	Civil Engg.	Co-opted Member	
78	Chowdhury Arindam	Assistant Professor	Ph.D (Carnegie Mellon Univ)	Chemistry	No	
79	Contractor A.Q.	Professor	Ph.D. (IIT Bombay)	Chemistry	Member	
80	Damani Om P.	Associate Professor	Ph.D. (University of Texas at Austin)	CS & E	No	
81	Das Ashish	Professor	Ph.D. (I. A.S.R.I)	Mathematics	Member	
82	Das Dibyendu	Associate Professor	Ph.D. (University of Bombay)	Physics	No	
83	Das Pragya	Associate Professor	Ph.D. (TIFR)	Physics	No	
84	Dasaka Satyanarayana M	Assistant Professor	Ph.D. (IISc. Bangalore)	Civil Engg.	No	
85	Dasgupta Indra	Professor	Ph.D. (University of Calcutta)	Physics	Member	
86	Date Anil W.	Professor	Ph.D. (London)	Mechanical Engg.	Member	HOD, CTARA
87	Date Prashant P.	Professor	Ph.D. (IIT Madras)	Mechanical Engg.	Member	

Sr. Name No.	Designation	Qualification	Deptt.	Senate	Remarks
88 Datta Sambha N.	Professor	Ph.D. (University of Virginia)	Chemistry	Member	
89 De Amitava	Professor	Ph.D. (IIT Kanpur)	Mechanical Engg.	Member	
90 Deb Kushal	Associate Professor	Ph.D. (University of Hyderabad)	H&SS	No	
91 Deo Makrand C.	Professor	Ph.D. (IIT Bombay)	Civil Engg.	Member	
92 Deodhar K.D.	Professor (Retd on 31.12.2006 RE up to 02.12.2009)	Ph.D. (IIT Bombay)	Chemistry	Member	
93 Desai Madhav P.	Professor	Ph.D. (University of IlliNois)	Electrical Engg.	Member	
94 Desai Uday B.	Professor	Ph.D. (The John Hopkins Univ.)	Electrical Engg.	Member	
95 Desai Yogesh M.	Professor	Ph.D. (University of Manitoba)	Civil Engg.	Member	HOD, Civil Engg. Deptt.
96 Dewaikar D.M.	Professor	Ph.D. (IIT Bombay)	Civil Engg.	Member	
97 Dey Bikash Kumar	Assistant Professor	Ph.D. (IISc Bangalore)	Electrical Engg.	No	
98 Dhamdhare D.M.	Professor	Ph.D. (IIT Bombay)	CS & E	Member	
99 Dhar Subhabrata	Assistant Professor	Ph.D (M.S. University, Baroda)	Physics	No	
100 Dikshit Anil Kumar	Professor	Ph.D. (University of Cornell)	CESE	Member	
101 Diwan Ajit A.	Professor	Ph.D. (IIT Bombay)	CS & E	Member	
102 Doshi Jagdeep B.	Professor	Ph.D. (University of California)	Mechanical Engg.	Member	
103 Durani Susheel J.	Professor	Ph.D. (Jammu)	Chemistry	Member	
104 Dusane O.R.	Professor	Ph.D. (University of Pune)	Met.Engg. & Mat.Sc.	Member	HOD, Met. Engg. & Mat. Sci. Deptt.
105 Dutta Anindya	Associate Professor	Ph.D. (University of Jadavpur)	Chemistry	No	
106 Dutta Pankaj	Assistant Professor	Ph.D. (IIT- Kharagpur)	SJMSOM	No	
107 Dutta Suryendu	Assistant Professor	Ph.D. (RWTH Aachen University)	Earth Science	No	
108 Duttagupta S.P.	Assistant Professor	Ph.D. (University of Rochester)	Electrical Engg.	No	
109 Eldho Iype T.	Professor	Ph.D. (IIT Bombay)	Civil Engg.	Member	
110 Enamundram Chandrasekhar	Associate Professor	Ph.D. (University of Mumbai)	Earth Science	No	
111 Eric Wambach	Assistant Professor (Contract)	Ph.D. (Columbia University)	Mathematics	No	
112 Fernandes Baylon G.	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
113 Fernandes Rodney A.	Assistant Professor	Ph.D. (University of Pune)	Chemistry	No	
114 Gadre Vikram M.	Professor	Ph.D. (IIT Delhi)	Electrical Engg.	Member	
115 Gaitonde U.N.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
116 Gandhi Prassana S.	Associate Professor	Ph.D.(University of Rice)	Mechanical Engg.	No	
117 Ganesh Anuradha	Professor	Ph.D. (IIT Delhi)	Energy Science & Engg.	Member	
118 Garg Anurag	Assistant Professor (Contract)	Ph.D. (IIT, Roorkee)	CESE	No	
119 Garge Shripad M.	Assistant Professor	Ph.D (University of Allahabad)	Mathematics	No	

Sr. Name No.	Designation	Qualification	Deptt.	Senate	Remarks
120 Gaur S.S.	Associate Professor	Ph.D. (BITS Pilani)	SJMSOM	No	
121 George Siby K.	Assistant Professor	Ph.D. (NEHU Univ. Shillog)	H&SS	No	
122 Ghadijally Rehana	Professor	Ph.D. (Auburn)	H&SS	Member	
123 Ghorpade S.R.	Professor	Ph.D. (Purdue Univ.)	Mathematics	Member	
124 Ghosh Santanu K.	Assistant Professor	Ph.D (Jadavpur University)	SB&B	No	
125 Ghosh Atanu	Professor	M.Tech. (IIT Delhi) P.G. Diploma in Mgmt. (IIM Ahmedabad)	SJMSOM	Member	
126 Ghosh K. Dipan	Professor	Ph.D. (Bombay)	Physics	Member	
127 Ghosh Prakashchandra	Assistant Professor	Ph.D. Technical Univ. of Aachem	Energy Science . & Engg	No	
128 Ghosh Prasenjit	Associate Professor	Ph.D.(Columbia Univ)	Chemistry	No	
129 Ghosh Siddhartha	Assistant Professor	Ph.D. (Univ. of Michigan)	Civil Engg.	No	
130 Ghosh Subimal	Assistant Professor	Ph.D.(Indian Institute of Science, Bangalore)	Civil Engg.	No	
131 Golay Pravesh J	Lecturer (Sr. Scale) (Contract)	Ph.D. (Pune University)	H&SS	No	
132 Gopalan Prakash	Professor	Ph.D. (Purdue Univ.)	Met.Engg. & Mat.Sc.	Member	
133 Goyal Alok B	Professor	Ph.D. (California)	Civil Engg.	Member	
134 Gudi R.D.	Professor	Ph.D. (Univ.of Alberta)	Chemical Engg	Member	
135 Guha Anirban	Assistant Professor	Ph.D. (IIT Delhi)	Mechanical Engg.	No	
136 Gumaste Ashwin Anil	Assistant Professor	Ph.D (Univ.of Texas)	CS & E	No	
137 Gundimeda Haripriya S.	Associate Professor	Ph.D. (Indira Gandhi Institute of Development)	H&SS	No	
138 Gupta Santosh K.	Professor	Ph.D. (University of Pennsylvania – Philadelphia)	Chemical Engg	Member	
139 Gupta Kapil	Professor	Ph.D. (Univ.of Sheffield)	Civil Engg.	Member	
140 Gupta Meenakshi S.	Professor	Ph.D. (IIT Kanpur)	H&SS	Member	HOD, Humanities & Social Sci. Deptt.
141 Gupta Nayantara	Assistant Professor (Contract)	Ph.D. (Indian Association for the cultivation of Sci., Jadavpur)	Physics	No	
142 Gupta Rajesh	Assistant Professor	Ph.D. (IIT Delhi)	Energy Science & Engg.	No	
143 Gupta S.K.	Professor	Ph.D. (IIT Bombay)	CESE	Member	
144 Hemachandra N.	Associate Professor	Ph.D. (IISc. Bangalore)	I.E. & O.R.	No	
145 Hirani Harish	Associate Professor	Ph.D. (IIT Delhi)	Mechanical Engg.	No	
146 Huber Hans	Associate Professor (Contract)	Ph.D. (Geneva)	SJMSOM	No	
147 Inamdar Mandar M.	Assistant Professor	Ph.D. (California Institute of Tech.)	Civil Engg.	No	
148 Issac K.K.	Professor	Ph.D. (IIT Madras)	Mechanical Engg.	Member	

Sr. Name No.	Designation	Qualification	Deptt.	Senate	Remarks
149 Iyer Sridhar R.	Associate Professor	Ph.D. (IIT Bombay)	CS & E	No	
150 Iyer K.N.	Professor	Ph.D. (Purdue Univ.)	Mechanical Engg.	Member	
151 Jadhav G.N.	Professor	Ph.D. (IIT Bombay)	Earth Science	Member	
152 Jadhav Sameer R.	Assistant Professor	Ph.D. (John Hopkins Univ.)	Chemical Engg	No	
153 Jain Karuna	Professor	Ph.D. (IIT Kharagpur)	SJMSOM	Member	HOD- SJMSOM
154 Jangid R.S.	Professor	Ph.D. (IIT Delhi)	Civil Engg.	Member	
155 Jha Shishir Kumar	Associate Professor	Ph.D. (Syracuse Univ.)	SJMSOM	No	
156 Jog S.D.	Assistant Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	No	
157 Joshi Kapil D.	Professor	Ph.D. (Indiana)	Mathematics	Member	
158 Joshi Anirudha N.	Associate Professor	M.Tech. (IIT Bombay)	IDC	No	
159 Joshi Ashok	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member	
160 Joshi Purva	Lecturer (Sr. Scale)	M.Des.(IIT Bombay) (Cont.)	IDC	No	
161 Joshi R.K.	Associate Professor	Ph.D. (IIT Madras)	CS & E	No	
162 Joshi R.R.	Professor	Ph.D. (UTC France)	Mathematics	Member	
163 Joshi Suhas	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
164 Jothiprakash V.	Associate Professor	Ph.D. (IIT-Madras)	Civil Engg.	No	
165 Juneja Ashish	Assistant Professor	Ph.D.(National Univ of Singapore)	Civil Engg.	No	
166 Juvekar V.A.	Professor	Ph.D. (IIT Bombay)	Chemical Engg	Member	
167 Kaliappan Krishna P.	Professor	Ph.D. (IISc. Bangalore)	Chemistry	Member	
168 Kant Tarun	Professor	Ph.D. (IIT Bombay)	Civil Engg.	Member	
169 Karandikar Abhay	Professor	Ph.D. (IIT Kanpur)	Electrical Engg.	Member	Head-Computer Centre
170 Kashyap B.P.	Professor	Ph.D. (IIT Kanpur)	Met.Engg. & Mat.Sc.	Member	
171 Kathuria Vinish Kumar	Associate Professor	Ph.D. (Indira Gandhi Inst. Of Development Research)	SJMSOM	No	
172 Keshari Manoj K.	Assistant Professor	Ph.D. (TIFR)	Mathematics	No	
173 Khakhar D.V.	Director	Ph.D. (Massachusetts)	Chemical Engg	Member	
174 Khan Azizuddin	Assistant Professor	Ph.D. (IIT Kanpur)	H&SS	No	
175 Khanna Anand S.	Professor	Ph.D. (Madras Univ.)	Met.Engg. & Mat.Sc.	Member	
176 Khaparde S.A.	Professor	Ph.D. (IIT Kharagpur)	Electrical Engg.	Member	
177 Khedkar Uday P.	Professor	Ph.D. (IIT Bombay)	CS & E	Member	
178 Khilar K.C.	Professor	Ph.D. (Univ.of Michigan)	Chemical Engg	Member	
179 Khire M.V.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No	
180 Khosla N.K.	Professor	Ph.D. (IIT Kanpur)	Met.Engg. & Mat.Sc.	Member	
181 Kotha Sambasivarao	Professor	Ph.D. (Univ.of Hyderabad)	Chemistry	Member	

Sr. Name No.	Designation	Qualification	Deptt.	Senate	Remarks
182 Kottantharayil Anil	Associate Professor	Ph.D. (Universitat der Bundeswehr, Munich Germany)	Electrical Engg.	No	
183 Kulkarni A.M.	Associate Professor	Ph.D. (IISc. Bangalore)	Electrical Engg.	No	
184 Kulkarni Malhar A.	Associate Professor	Ph.D. (Univ. of Pune)	H&SS	No	
185 Kulkarni Mrinmoyi	Assistant Professor (Contract)	Ph.D.(State Univ. of New York)	H&SS	No	
186 Kulkarni Purushottam S.	Assistant Professor	Ph.D. (Univ. of Massachusets)	CS & E	No	
187 Kulkarni R. A.	Professor	Ph.D. (IIT Kharagpur)	Met.Engg. & Mat.Sc.	Member	
188 Kulkarni Rekha P.	Professor	Ph.D. (IIT Bombay)	Mathematics	Member	
189 Kulkarni Srikrishna V.	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
190 Kulkarni Suvarn S.	Assistant Professor	Ph.D. (Pune University)	Chemistry	No	
191 Kumar Anil	Professor	Ph.D. (IISc. Bangalore)	Chemistry	Member	
192 Kumar Girish	Professor	Ph.D. (IIT Kanpur)	Electrical Engg.	Member	
193 Kundu Tapanendu	Professor	Ph.D. (Jadavpur Univ.)	Physics	Member	
194 Lahiri G.K.	Professor	Ph.D. (Jabalpur)	Chemistry	Member	
195 Limaye B.V.	Professor (Retd. on 31.8.2006 RE up to 7.8.2009)	Ph.D. (Rochester)	Mathematics	Member	
196 Mahajan Avinash V.	Professor	Ph.D. (Iowa)	Physics	Member	
197 Mahajan Swapneel	Assistant Professor	Ph.D. (Cornell Univ.)	Mathematics	No	
198 Mahajani Sanjay	Professor	Ph.D. (Bombay Univ.)	Chemical Engg	Member	
199 Mahapatra Souvik	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
200 Mahulikar S.P.	Professor	Ph.D.(Nanyang Tech. Univ., Singapore)	Aerospace Engg.	Member	
201 Maiti S.K.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
202 Maji Samir K.	Assistant Professor	Ph.D. (Jadavpur University)	SB&B	No	
203 Major Syed S.	Professor	Ph.D. (IIT Delhi)	Physics	Member	
204 Malhotra S.N.	Professor	Ph.D. (IIT Bombay)	Met.Engg. & Mat.Sc.	Member	
205 Malik Ranjan K.	Professor	Ph.D. (Wisconsin Madison Univ.)	Chemical Engg	Member	
206 Malshe Milind S.	Professor	Ph.D. (Bombay Univ.)	H&SS	Member	
207 Manchanda Rohit	Professor	Ph.D. (Oxford Univ.)	SB&B	Member	
208 Mandal J.C.	Professor	Ph.D. (IISc. Bangalore)	Aerospace Engg.	Member	
209 Mandal J.N.	Professor	Ph.D. (IISc. Bangalore)	Civil Engg.	Member	
210 Manik D.N.	Professor	Ph.D. (Auburn Univ.)	Mechanical Engg.	Member	
211 Manjunath D.	Professor	Ph.D. (Rensselaer Polytechnic, New York)	Electrical Engg.	Member	
212 Mathew George	Associate Professor	Ph.D. (M.S. Univ.)	Earth Science	No	

Sr. Name No.	Designation	Qualification	Deptt.	Senate	Remarks
213 Mathew Tom V	Associate Professor	Ph.D. (IIT Madras)	Civil Engg.	No	
214 Mathur Pradeep	Professor	Ph.D. (Keel Univ.)	Chemistry	Member	
215 Mehra Anurag	Professor	Ph.D. (Bombay)	Chemical Engg	Member	HOD, Chemical Engg. Dept
216 Mehra Sarika	Assistant Professor	Ph.D.(Univ of Minessota)	Chemical Engg	No	
217 Menezes Viren	Assistant Professor	Ph.D. (IISc. Bangalore)	Aerospace Engg.	No	
218 Menezes Bernard L	Professor	Ph.D (Univ.of Texas)	CS & E	Member	
219 Merchant S.N.	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
220 Mishra M.K.	Professor	Ph.D. (Univ. of Florida)	Chemistry	Member	
221 Mishra Saurabh	Assistant Professor	Ph.D. (Pennsylvania State Univ.	Met.Engg. & Mat.Sc.	No	
222 Mishra Trupti	Assistant Professor	Ph.D. (IIT Kharagpur)	SJMSOM	No	
223 Misra D.S.	Professor	Ph.D. (IIT Kanpur)	Physics	Member	
224 Mitra Mira	Assistant Professor	Ph.D. (IISc. Bangalore)	Aerospace Engg.	No	
225 Mitra Sagar	Assistant Professor	Ph.D. (IISc. Bangalore)	Energy Science & Engg.	No	
226 Mohan B.K.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No	
227 Mohan Gollapally	Professor	Ph.D. (ISM Dhanbad)	Earth Sciences	Member	
228 Mohanty Raja	Associate Professor	M.Des. (IIT Bombay)	IDC	No	
229 Moharir Arun S.	Professor	Ph.D. (IIT Kanpur)	Chemical Engg.	Member	Prof-in-Charge, CEP/QIP
230 Moudgalya Kannan	Professor	Ph.D. (Rice Univ. Houston)	Chemical Engg.	Member	
231 Mujumdar P.M.	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member	HOD
232 Mukherjee Asmita	Assistant Professor	Ph.D. (TIFR)	Physics	No	
233 Mukherjee Indrajit	Assistant Professor	Ph.D. (IIT Kharagpur)	SJMSOM	No	
234 Mukherjee Jayanta	Assistant Professor	Ph.D. (The Ohio State Univ. Columbus, USA)	Electrical Engg.	No	
235 Mukherjee Soumyajit	Lecturer (Sr. Scale) (Contract)	Ph.D. (IIT Roorke)	Earth Sciences	No	
236 Mukherjee Soumyo	Professor	Ph.D. (Univ. Of Colarado)	SB&B	Member	
237 Mukherjee Suparna	Professor	Ph.D. (Univ.of Michigan)	CESE	Member	
238 Mukhopadhyay G.	Professor	Ph.D. (Bombay)	Physics	Member	
239 Mukhopadhyay Siuli	Assistant Professor	Ph.D. (Univ. of Calcutta)	Mathematics	No	
240 Munshi Kishori lal	Professor	P.G.D. (IIT Bombay)	IDC	Member	
241 Murthy Sahana	Assistant Professor (Contract)	Ph.D. (Rutgers University)	C- DEEP	No	
242 Murugavel Ramaswamy	Professor	Ph.D. (IISc. Bangalore)	Chemistry	Member	
243 Nagaraja G.	Professor	Ph.D. (IISc. Bangalore)	CS & E	Member	
244 Nagarajan R.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No	

Sr. Name No.	Designation	Qualification	Deptt.	Senate	Remarks
245 Naik N.K.	Professor (Retd. on 30.6.2006 RE up to 19.06.2009)	Ph.D. (IIT Bombay)	Aerospace Engg.	Member	
246 Namboothiri I.N.N.	Professor	Ph.D. (IISc.Bangalore)	Chemistry	Member	
247 Nambudiripad N.	Associate Professor	Ph.D. (Oxford Univ.)	Physics	No	
248 Nanavati Hemant J.	Associate Professor	Ph.D. (Georgia Instt.of TechNology)	Chemical Engg	No	
249 Nand Kishore	Professor	Ph.D. (IIT Delhi)	Chemistry	Member	HOD, Chemistry Dept.
250 Nandi Basanta Kumar	Associate Professor	Ph.D. (Utkal University)	Physics	No	
251 Narashimhan K.	Professor	Ph.D. (Purdue Univ.)	Met.Engg. & Mat.Sc.	Member	
252 Narayanan Harihar	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
253 Narayanan Krishna S.	Assistant Professor	Ph.D. (IIT Madras)	CS & E	No	
254 Narayanan Krishnan	Professor	Ph.D. (Univ. of Delhi)	H&SS	Member	
255 Narayanan N. C.	Associate Professor	Ph.D. (ISS, The Hague, Netherlands)	CTARA	No	
256 Narayanan Vishnu	Assistant Professor	Ph.D. (University of California)	I.E. & O.R.	No	
257 Narayankhedkar K.G.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	Convener, School of Cryogenic Engg.
258 Nataraj Neela	Associate Professor	Ph.D. (IIT Delhi)	Mathematics	No	
259 Nataraj P.S.V.	Professor	Ph.D. (IIT Madras)	Systems & Control Engg.	Member	HOD, Systems & Control Engg. Group.
260 Nath Rajakishore	Assistant Professor	Ph.D. (Central Univ., Hyderabad)	H&SS	No	
261 Nayak Jayant K.	Professor	Ph.D. (IIT Delhi)	Energy Science & Engg.	Member	
262 Neergat Manoj	Assistant Professor	Ph.D (IISc, Bangalore)	Energy Science & Engg.	No	
263 Noronha Santosh B.	Assistant Professor	Ph.D. (Univ.of Maryland, Baltimore County)	Chemical Engg	No	
264 Padhi Puja	Assistant Professor	Ph.D. (Univ. of Hyderabad)	H&SS	No	
265 Panda Dulal	Professor	Ph.D. (Jadavpur Univ.)	SB&B	Member	HOD
266 Panda Ranjan K.	Associate Professor	Ph.D. (Univ.of Hyderabad)	H&SS	No	
267 Panda Ratikanta	Assistant Professor	Ph.D. (Univ. of Hyderabad)	H&SS	No	
268 Pandalai Hari S.	Professor	Ph.D. (ISM, Dhanbad)	Earth Sciences	Member	HOD,CSRE
269 Pande Sanjay S.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
270 Pandey Kanchan	Professor	Ph.D. (Gujarat Univ)	Earth Sciences	Member	
271 Pandey Prem C.	Professor	Ph.D. (Univ.of Toronto)	Electrical Engg.	Member	
272 Pani A.K.	Professor	Ph.D. (IIT Kanpur)	Mathematics	Member	
273 Pant Prita	Assistant Professor	Ph.D. (Cornell Univ)	Met.Engg. & Mat.Sc.	No	
274 Pant R.K.	Associate Professor	Ph.D. (U.K.)	Aerospace Engg.	No	

Sr. Name No.	Designation	Qualification	Deptt.	Senate	Remarks
275 Parmananda Punit	Associate Professor	Ph.D. (Ohio University)	Physics	No	
276 Parthasarathy D.	Professor	Ph.D. (Univ. of Hyderabad)	H&SS	Member	
277 Patankar Swati	Associate Professor	Ph.D. (Tufts Univ. Boston)	SB&B	No	
278 Patel Suresh C.	Professor	Ph.D. (Univ of Wyoming)	Earth Science	Member	
279 Patil Mahesh B.	Professor	Ph.D. (Univ. of Illinois)	Electrical Engg.	Member	
280 Patil R.S.	Professor	Ph.D. (Delhi)	CESE	Member	
281 Patil Rahul J.	Assistant Professor	Ph.D. (University of Colorado)	SJMSOM	No	
282 Patkar Sachin B.	Associate Professor	Ph.D. (IIT Bombay)	Electrical Engg.	No	
283 Pattanaik Sarmistha	Assistant Professor	Ph.D. (Jawaharlal Nehru University)	H&SS	No	
284 Patwardhan Anand P	Professor	Ph.D. (Carnegie Mellon Univ.)	SJMSOM	Member	
285 Patwardhan S.C.	Professor	Ph.D. (IIT Bombay)	Chemical Engg	Member	
286 Patwari Naresh Ganpathi	Associate Professor	Ph.D. (IIT Bombay)	Chemistry	No	
287 Pawaskar N. Dnyanesh	Assistant Professor	Ph.D. (Univ. Brunensis)	Mechanical Engg.	No	
288 Phale Prashant S.	Professor	Ph.D. (IISc. Bangalore)	SB&B	Member	
289 Phatak D.B.	Professor & Subrao M. Nilekani Chair Professor	Ph.D. (IIT Bombay)	CS & E	Member	
290 Pillai Harish K.	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
291 Poopathi K.P.K.	Professor	Ph.D. (IIT Kanpur)	Mechanical Engg.	Member	
292 Poovaiah B.A. Ravi	Professor	DIIT (IIT Bombay)	IDC	Member	HOD
293 Porwal Pankaj K.	Assistant Professor	Ph.D. (University of Cornell)	Civil Engg.	No	
294 Powle U.S.	Associate Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	No	
295 Prabhu Gaonkar G.V.	Professor	D.Sc. (University of Paris)	Met.Engg. & Mat.Sc.	Member	
296 Prabhu Nityananda	Professor	Ph.D. (University of Canegie)	Met.Engg. & Mat.Sc.	Member	
297 Prabhu S.V.	Associate Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	No	
298 Pradeep A.M.	Assistant Professor	Ph.D. (IIT Kanpur)	Aerospace Engg.	No	
299 Pradeep Kumar P.I.	Assistant Professor	Ph.D. (Uppasala University, Sweden)	Chemistry	No	
300 Prakash Om	Professor	Ph.D. (IIT Bombay)	Met.Engg. & Mat.Sc.	Member	
301 Prasad R.C.	Professor	Ph.D. (IISc. Bangalore)	Met.Engg. & Mat.Sc.	Member	
302 Prasad Shiva	Professor	Ph.D. (Delhi)	Physics	Member	
303 Prasanna T.R.S.	Assistant Professor	Ph.D. (MIT, Cambridge)	Met.Engg. & Mat.Sc.	No	
304 Puneekar N.S.	Professor	Ph.D. (IISc. Bangalore)	SB&B	Member	
305 Puranik Bhalchandra	Assistant Professor	Ph.D. (University of Wisconsin Madison)	Mechanical Engg.	No	

Sr. Name No.	Designation	Qualification	Deptt.	Senate	Remarks
306 Puthenpurakal Tony J.	Assistant Professor	Ph.D. (University of Purdue)	Mathematics	No	
307 Radhakrishna M.	Associate Professor	Ph.D (ISM, Dhanbad)	Earth Sciences	Co-opted Member	
308 Radhakrishnan Ratheesh	Lecturer (Sr. Scale) (Contract)	Ph.D (Manipal University)	H&SS	No	
309 Raghunathan Ravi	Assistant Professor	Ph.D. (University of Yale)	Mathematics	No	
310 Raja S. V.	Professor	Ph.D. (IISc. Bangalore)	Met.Engg. & Mat.Sc.	Member	
311 Ramachandran K.	Professor	D.I.I.T (IIT Bombay)	IDC	Member	
312 Ramachandran Prabhu	Assistant Professor	Ph.D. (IIT-Madras)	Aerospace Engg.	No	
313 Ramadevi Pichai	Associate Professor	Ph.D. (University of Madras)	Physics	Co-opted Member	
314 Ramakrishnan D	Associate Professor	Ph.D. (M.S. University, Baroda)	Earth Science	No	
315 Ramakrishnan Ganesh	Assistant Professor	Ph.D. (IIT Bombay)	CS & E	No	
316 Ramakrishnan N.	Professor (Retd. on 31.12.2006 RE up to 10.12.2009)	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
317 Ramamritham K.	Professor	Ph.D. (University of Utah)	CS & E	Member	
318 Raman Bhaskaran	Associate Professor	Ph.D. (University Of California at Berkeley)	CS & E	No	
319 Raman Preeti	Assistant Professor	Ph.D. (TIFR)	Mathematics	No	
320 Raman R.	Professor	Ph.D. (IIT Bombay)	Met.Engg. & Mat.Sc.	Member	
321 Ramanathan A.	Professor	Ph.D. (IIT Bombay)	H&SS	Member	
322 Ramasubramanian K.	Associate Professor	Ph.D. (University of Madras)	H&SS	No	
323 Rana Indra K.	Professor	Ph.D. (University of Calcutta)	Mathematics	Member	
324 Ranade Abhiram G.	Professor	Ph.D. (University of Yale)	CS & E	Member	HOD, CS & E
325 Ranade Shilpa	Associate Professor	M.Des (IIT Bombay)	IDC	No	
326 Rane Milind V.	Professor	Ph.D. (University of Maryland)	Mechanical Engg.	Member	
327 Rane Mandar	Assistant Professor	M.Des. (IIT Bombay)	IDC	No	
328 Rangaraj Narayan	Professor	Ph.D. (John Hopkins Univ.)	I.E. & O.R.	Member	HOD
329 Ranjan Akhil	Professor	Ph.D. (Bombay)	Mathematics	Member	
330 Rao Govardhana G.	Professor	Ph.D. (IIT Madras)	Chemical Engg	Member	
331 Rao Mallikarjuna K.S.	Assistant Professor	Ph.D. (IISc. Bangalore)	I.E. & O.R.	No	
332 Rao A.G.	Professor (Retd .on 28.2.2007 RE up to 23.2.2010)	Dip.in PD (NID A'bad)	IDC	Member	
333 Rao Anand B	Assistant Professor	Ph.D. (C.M. University, Pittsburgh)	CTARA	No	
334 Rao C. Pulla	Professor	Ph.D. (IISc. Bangalore)	Chemistry	Member	

Sr. Name No.	Designation	Qualification	Deptt.	Senate	Remarks
335 Rao Emmela P.	Associate Professor	Ph.D. (IIT Bombay)	Civil Engg.	No	
336 Rao K. Krishnamurthy	Professor	Ph.D. (University of Bombay)	SB&B	Member	
337 Rao K.V.K	Professor	Ph.D. (IIT Madras)	Civil Engg.	Member	
338 Rao Nageshwara S. V. D.	Associate Professor	Fellow of IIM Ahmedabad	SJMSOM	No	
339 Rao Preeti S.	Professor	Ph.D. (University of Florida)	Electrical Engg.	Member	
340 Rao Ramgopal V.	Professor	Ph.D. (University of Germany)	Electrical Engg.	Member	
341 Rao Sapar Narayan	Associate Professor	Ph.D. (IIT Madras), Dip.in Business Finance	SJMSOM	No	
342 Rao Sumant	Associate Professor (Contract)	M.Des. (Visual Communication)	IDC	No	
343 Rao Y.S.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No	
344 Rastogi A Kumar	Professor	Ph.D. (Birmingham)	Civil Engg.	Member	
345 Ravikanth M.	Professor	Ph.D. (IIT Kanpur)	Chemistry	Member	
346 Ray Gaur G.	Professor	Ph.D. (University of Calcutta)	IDC	Member	
347 Reddy Manne Janga	Assistant Professor	Ph.D. (IISc. Bangalore)	Civil Engg.	No	
348 Robinson Rowena	Professor	Ph.D. (University of Cambridge)	H&SS	Member	
349 Roy Bhaskar	Professor	Ph.D. (IIT Kharagpur)	Aerospace Engg.	Member	
350 Roy Sandip	Associate Professor	M.S. (SUNY, Buffalo)	Chemical Engg	No	
351 Ruchi Anand	Assistant Professor	Ph.D (Cornell University)	Chemistry	No	
352 Sabnani Nina	Associate Professor	M.A (Syracuse Univ, Newyork, USA)	IDC	No	
353 Sabnis Sanjeev V.	Associate Professor	Ph.D. (University of Madras)	Mathematics	No	
354 Sadhu Nachiketa	Assistant Professor	M.Sc. (University of Calcutta)	IDC	No	
355 Sahoo Anirudha	Associate Professor	Ph.D. (Texas A&M Univ.)	CS & E	No	
356 Sain Anirban	Associate Professor	Ph.D. (IISc. Bangalore)	Physics	No	
357 Samajdar Indradev	Professor	Ph.D. (University of Drexel)	Met.Engg. & Mat.Sc.	Member	
358 Sandesh M. Ramu	Assistant Professor	M.DES, IIT Bombay	IDC	No	
359 Sanyal Amitabha	Professor	Ph.D. (IIT Kanpur)	CS & E	Member	
360 Saraph Girish P.	Associate Professor	Ph.D. (University of Maryland)	Electrical Engg.	No	
361 Saraswati Pratal K.	Professor	Ph.D. (IIT Bombay)	Earth Sciences	Member	
362 Sarawagi Sunita	Associate Professor	Ph.D. (University of California)	CS & E	No	
363 Sarda N.L.	Professor	Ph.D. (IIT Bombay)	CS & E	Member	
364 Sarin Pradeep	Sarin Pradeep	Ph.D (Massachusetts Instt. Of Tech.)	Physics	No	
365 Sarma Vijayanthi Mala	Associate Professor	Ph.D. (Massachusetts Instt.of Tech.)	H&SS	No	
366 Sasidhar Y.U.	Professor	Ph.D. (IIT Madras)	Chemistry	Member	
367 Sebastian C.D.	Associate Professor	Ph.D (Banaras Hindu Univ.)	H&SS	No	

Sr. Name No.	Designation	Qualification	Deptt.	Senate	Remarks
368 Senthil Kumar M.	Associate Professor	Ph.D. (IIT Madras)	Physics	No	
369 Seshu Pasumarthu S	Professor	Ph.D. (IIT Madras)	Mechanical Engg.	Member	
370 Sethi Virendra	Professor	Ph.D. (Univ.of Wisconsin, Madison)	CESE	Member	
371 Shah Narendra G	Associate Professor	Ph.D. (ATU France)	CTARA	No	
372 Shankar S. Hariharan	Professor	Ph.D. (University of Monash)	Chemical Engg	Member	
373 Sharma Dinesh	Assistant Professor	MBA (University of Jammu)	SJMSOM	No	
374 Sharma Atul	Assistant Professor	Ph.D. (IIT Kanpur)	Mechanical Engg.	No	
375 Sharma Dinesh K.	Professor	Ph.D. (Bombay Univ.)	Electrical Engg.	Member	HOD
376 Sharma Pratibha	Assistant Professor	Ph.D. (University of Rajasthan)	Energy Science & Engg.	No	
377 Sharma S.D.	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member	
378 Sharma Vishnu D.	Professor	Ph.D. (BHU)	Mathematics	Member	
379 Shastri Anant R.	Professor	Ph.D. (Bombay Univ.)	Mathematics	Member	
380 Shastri Sudha	Associate Professor	Ph.D. (IIT Delhi)	H&SS	Co-opted Member	
381 Sheth Bharatendu	Professor	Ph.D. (MIT Cambridge)	Mechanical Engg.	Member	
382 Sheth Hetu C.	Associate Professor	Ph.D. (IIT Bombay)	Earth Sciences	No	
383 Shevare G.R.	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member	
384 Shevgaonkar R.K.	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
385 Shimpi R.P.	Professor	Ph.D.(IIT Bombay)	Aerospace Engg.	Member	
386 Shukla Alok	Professor	Ph.D. (Utah State University	Physics	Member	
387 Singh Ramesh Kumar	Assistant Professor	Ph.D. (Georgia Institute of Technology)	Mechanical Engg.	No	
388 Singh A.K.	Professor	Ph.D. (IIT Kanpur)	Chemistry	Member	
389 Singh B.P.	Professor	Ph.D. (IIT Kanpur)	Physics	Member	
390 Singh D.N.	Professor	Ph.D. (IIT Kanpur)	Civil Engg.	Member	
391 Singh H.B.	Professor	Ph.D. (University of Aston)	Chemistry	Member	
392 Singh Prabhakar P.	Professor	Ph.D. (University of North Carolina, USA)	Physics	Member	
393 Singh Triok Nath	Professor	Ph.D. (BHU)	Earth Science	Member	
394 Singh Vishwakarma H.	Professor	Ph.D. (University of Gorakhpur)	Chemistry	Member	
395 Sinha Arpita	Assistant Professor	Ph.D. (IISc. Bangalore)	Systems & Control	No	
396 Sinha Krishnendu	Assistant Professor	Ph.D. (University of Minnesota)	Aerospace Engg.	No	
397 Sinha Pooja Purang	Assistant Professor	Ph.D. (IIT Delhi)	H&SS	No	
398 Sinha Ravi	Professor	Ph.D. (North Western Univ.)	Civil Engg.	Member	
399 Sirola Vikram Singh	Assistant Professor	Ph.D. (JNU)	H&SS	No	
400 Sista Sivaji G.	Assistant Professor	Ph.D. (IISc. Bangalore)	Mathematics	No	
401 Sivakumar G.	Professor	Ph.D.(University of Illinois)	CS & E	Member	HOD, CFDVS

Sr. Name No.	Designation	Qualification	Deptt.	Senate	Remarks
402 Sivasubramanian S.	Assistant Professor	Ph. D. (TIFR)	Mathematics	No	
403 Sohoni Milind Ashok	Professor	Ph.D. (IIT Bombay)	CS & E	Member	
404 Solanki Chetan Singh	Assistant Professor	Ph.D. (Katholieke Universiteit Leuven)	Energy Science & Engg.	No	
405 Soman S.A.	Professor	Ph.D. (IISc.Bangalore)	Electrical Engg.	Member	
406 Sonar Rajendra M.	Associate Professor	Ph.D. (University of Pune)	SJMSOM	No	
407 Sreekumar G.V.	Associate Professor	M.Des (IIT Bombay)	IDC	No	
408 Sreekumar Sharmila	Associate Professor	Ph.D. (Central Univ.of Hyderabad)	H&SS	No	
409 Sridharan Arun Kumar	Assistant Professor	Ph.D (The Pennsylvania State Univ.)	Mechanical Engg.	No	
410 Srinivasa Raman S.	Professor	Ph.D. (University of Toledo)	Met.Engg. & Mat.Sc.	Member	Head, CRNTS
411 Srinivasan G.K.	Associate Professor	Ph.D. (University of Minnesota)	Mathematics	No	
412 Srinivasan Murali K.	Professor	Ph.D. (University of Illinois)	Mathematics	Member	
413 Srirangarajan H.R.	Professor	Ph.D. (IISc. Bangalore)	Mechanical Engg.	Member	
414 Srivastava Rohit	Assistant Professor	Ph.D. (Louisiana Tech.Univ., Ruston, USA)	SB&B	No	
415 Srivastava Sanjeeva	Assistant Professor	Ph.D (University of Alberta)	SB&B	No	
416 Srividya A.	Professor	Ph.D. (IIT Bombay)	Civil Engg	Member	
417 Subhankar Karmakar	Assistant Professor	Ph.D (IISc. Bangalore)	CESE	No	
418 Subhash A. Babu	Professor	Ph.D. (IIT Delhi)	Mechanical Engg.	Member	Prof-in-Charge (Training & Placement)
419 Subrahmanyam G.	Professor	Ph.D. (Ind.Agri.Res.Inst. Delhi)	SB&B	Member	
420 Subramanyam A.	Professor	Ph.D. (University of Poona)	Mathematics	Member	
421 Subuddhi M. K.	Associate Professor	M.A. (Calcutta) M.A.(J.N.U.)	H&SS	No	
422 Sudarshan Kumar	Assistant Professor	Ph.D. (IISc Bangalore)	Aerospace Engg.	No	
423 Sudarshan S.	Professor	Ph.D. (University of Wisconsin)	CS & E	Member	Prof.-in-Charge, Applications Software Cell (ASC)
424 Sudhakar K.	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member	
425 Sunoj Raghavan	Associate Professor	Ph.D. (IISc. Bangalore)	Chemistry	No	
426 Sunthar P.	Assistant Professor	Ph.D. (IISc. Bangalore)	Chemical Engg	No	
427 Suresh Akkihebbal K.	Professor	Ph.D. (University of Monash)	Chemical Engg	Member	
428 Suresh G. K.	Associate Professor	Ph.D. (IIT Madras)	Physics	No	
429 Suresh kumar K.	Associate Professor	Ph.D. (IISc. Bangalore)	Mathematics	No	
430 Suresh Sumathi	Professor	Ph.D. (IISc. Bangalore)	CESE	Member	
431 Suryanarayanan Shashikanth	Assistant Professor	Ph.D. (University of California)	Mechanical Engg.	No	

Sr. Name No.	Designation	Qualification	Deptt.	Senate	Remarks
432 Talwar Neelima	Professor	Ph.D. (Baroda)	H&SS	Member	
433 Tembe Bhalachandra L.	Professor	Ph.D., (SUNY,USA)	Chemistry	Member	
434 Thaokar Rochish	Assistant Professor	PhD. (IISc. Bangalore)	Chemical Engg	No	
435 Tirumkudulu Mahesh S.	Associate Professor	Ph.D. (City Univ.of New York, USA)	Chemical Engg	No	
436 Tiwari A.N.	Professor	Ph.D (IIT Kanpur)	Met.Engg. & Mat.Sc.	Member	
437 Tomy C.V.	Professor	Ph.D. (TIFR.,Mumbai)	Physics	Member	
438 Trivedi K.Kirti	Professor	Ph.D. (IIT Bombay)	IDC	Member	
439 Trivedi Pushpa L.	Professor	Ph.D. (IIT Bombay)	H&SS	Member	
440 Ukadgaonkar V.G.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
441 Umasankar S.	Professor	Ph.D. (IIT Kanpur)	Physics	Member	
442 Varma Raghava	Professor	Ph.D. (IIT Kanpur)	Physics	Member	HOD, Physics Dept.
443 Vasi Juzer M.	Professor	Ph.D. (University John Hopkins)	Electrical Engg.	Member	
444 Vedula Rajendra P.	Professor	Ph.D. (University of Arizona)	Mechanical Engg.	Member	
445 Vellaisamy P.	Professor	Ph.D. (IIT Kanpur)	Mathematics	Member	
446 Velmurugan Rajbabu	Assistant Professor	Ph.D(Gerorgia Institute of Tech.) USA	Electrical Engg.	No	
447 Venkataraman Chandra	Professor	Ph.D. (University of California)	Chemical Engg	Member	
448 Venkataraman G.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No	
449 Venkataramani N.	Professor	Ph.D. (IIT Bombay)	Met.Engg. & Mat.Sc.	Member	
450 Venkatesh K.V.	Professor	Ph.D. (University of Purdue)	Chemical Engg	Member	
451 Venkateswaran Jayendran	Assistant Professor	Ph.D. (University of Arizona)	I.E. & O.R.	No	
452 Verma A.K.	Professor	Ph.D. (IIT Kharagpur)	Electrical Engg.	Member	
453 Verma J.K.	Professor	Ph.D. (University of Purdue)	Mathematics	Member	HOD, Maths Dept.
454 Vijaya R.	Professor	Ph.D. (IIT Madras)	Physics	Member	
455 Vinjamur Madhu	Associate Professor	Ph.D. (University of Drexel)	Chemical Engg	No	
456 Viswanadham B.V.S.	Professor	Dr. Ing. (University of Ruhr)	Civil Engg.	Member	
457 Viswanathan Ganesh A.	Assistant Professor	Ph.D. (University of Houston)	Chemical Engg	No	
458 Viswanathan N.N.	Associate Professor	Ph.D. (IISc. Bangalore)	Met.Engg. & Mat.Sc.	No	
459 Viswanathan S.	Professor	Ph.D. (University of Chicago)	CS & E	Member	
460 Vitta Satish	Professor	Ph.D. (University of Cambridge)	Met.Engg. & Mat.Sc.	Member	
461 Wangikar Pramod P.	Professor	Ph.D. (University Of Iowa)	Chemical Engg	Member	
462 Yajnik U.A.	Professor	Ph.D. (University of Texas)	Physics	Member	

Name	Position	Qualification	Department
Scientific/Design Staff			
Aiyar R.P.R.C.	Principal Res. Scientist	Ph.D. (IIT Bombay)	CRNTS
Bhowmick Uday	Research Scientist	Ph.D. (IIT Bombay)	Chemistry
Gandhi Mayuri	Research Scientist	Ph.D. (IIT Bombay)	CRNTS
Gedam S.S.	Principal Research Engineer	Ph.D. (IIT Bombay)	CSRE
Harendranath C.S.	Principal Res. Scientist	Ph.D. (IIT Bombay)	RSIC
Inamdar A.B.	Principal Res. Scientist	Ph.D. (IIT Bombay)	CSRE
Kalwankar Arun	Producer-cum-Designer	Dip.in Fine Arts (Drg.&Ptg.)	C-DEEP
Mombasawala L. S.	Sr. Res. Engineer	M.Tech. (IIT Bombay)	CRNTS
Mukhopadhyay P.	Principal Res.Scientist	Ph.D. (Sweden)	CRNTS
Mukherji Shyamalee	Sr.Research Engineer	Ph.D. (IIT Bombay)	CSRE
Murty M.V.R.	Principal Reserch Scientist	Ph.D. (IIT Bombay)	CSRE
Rao Y.S.	Sr. Research Scientist	Ph.D. (IIT Bombay)	CSRE
Venkatachalam P.	Principal Res. Scientist	Ph.D. (IIT Bombay)	CSRE
Vijayalakshmi S.	Research Scientist	Ph.D. (IIT Bombay)	CRNTS
Kalwankar Arun	Producer-cum-Designer	Dip.in Fine Arts (Drg.&Ptg.)	C-DEEP
Mombasawala L. S.	Sr. Res.Engineer	M.Tech. (IIT Bombay)	CRNTS
Mukhopadhyay P.	Principal Res.Scientist	Ph.D. (Sweden)	CRNTS
Mukherji Shyamalee	Sr.Research Engineer	Ph.D. (IIT Bombay)	CSRE
Murty M.V.R.	Principal Reserch Scientist	Ph.D. (IIT Bombay)	CSRE
Rao Y.S.	Sr. Research Scientist	Ph.D. (IIT Bombay)	CSRE
Venkatachalam P.	Principal Res.Scientist	Ph.D. (IIT Bombay)	CSRE
Vijayalakshmi S.	Research Scientist	Ph.D. (IIT Bombay)	CRNTS

Name	Position	Qualification	Department
Group ‘A’ Officers			
Adagale D.B.	Assistant Registrar	B.A., L.L.B.	Dean (R&D’s) Office
Ainapure S.V.	Medical Officer (SG)	M.D. (Bombay)	IIT Hospital
Andhare A.B.	Asst. Workshop Supdt.	Ph. D. (IIT Bombay.)	Mechanical Engg.
Appaji B.B.	Senior Sports Officer	Ph.D. (Gwalior)	Student’s Gymkhana
Bajre Kamal Kumar	Assistant Registrar	MPM (Pune University)	Administration
Bhagwat A. S.	Principal	Diploma in Higher Education, M. Sc	Campus School & Jr. College
Bhaldar I.H.	Asst. Workshop Supdt.	B.E. (Kolhapur University) (SG)	Mechanical Engg.
Bhendigiri Omprakash B.	Assistant Librarian	M.Lib.Sc.(Karnatak University)	Central Library
Bhorkade G.K.	Assistant Registrar	M.Sc.(Mangalore Univ.), Dip in Comp.Sc., Amravati Univ., Maha.State Certi in IT MKCL	Administration Section
Chaurasia Dharmendra S	Senior Programmer	B.E. Electronics (Mumbai University)	ASC
Chilap Gopal R.	Manager	B. Com. (Bombay Univ.) Diploma in Printing Technology, (Yashwaantrao Chavan Maharashtra Open University, Nasik)	Printing Press
Dabholkar Nayan S.	Manager, Guest House	B.A., Dip.in Hotel Management & Catering and Dip.in Business Management. M.A. Maurai Kamraj Univ.	Guest House
Dhankar Rajesh	Security Officer	B.A. (Rajasthan Univ.), Dip.in Computer Science & Application (NIT & M), Ministry of Defence	Security Section
Edwin M.	Physical Training Instructor Gr.I	Ph.D. (Gwalior)	Student’s Gymkhana
Jadhav M.N.	Assistant Librarian	M.Sc. (Marathwada University), M.Lib. (Marathwada University)	Central Library
Jena A.K.	Chief Technology Officer	M.E. (IISc. Bangalore)	Computer Centre
Jha S.N.	Senior Sports Officer	Ph.D. (Gwalior)	Student’s Gymkhana
Joglekar C.P.	Co-ordinator,	B.A.(Pune Univ.), MPM- Pune University	P.T & D Cell

Name	Position	Qualification	Department
Joshi Jaya	Public Relations Officer	PGDBM (IIPM, Delhi) Relations Section	Publications & Public
Jotwani Daulat	Librarian	B.Sc., M.Lib.Sc, M.A. Cert. French (Univ. Of Rajasthan.)	Central Library
Kale Sheetal N.	Medical Officer	M.B.B.S. (Nagpur University)	IIT Hospital
Khobragade Y.S.	Medical Officer (SG)	M. D. (Delhi)	IIT Hospital
Korade Umesh R.	Assistant Registrar	B.Sc. (Shivaji Univ.), M.B.A. (Shivaji University)	Academic Section
Kowe Vijay G.	Assistant Registrar	MBA (Nagpur University)	Academic Section
Kulkarni S.D.	Assistant Librarian	M.Lib.Sc.	Central Library
Maharana Jyoti Prasad	Systems Manager	Ph.D. (IIT Bombay)	Computer Centre
Mamdapur V.B.	Supdt. Engineer	B.E. (Pune) and M.Tech. (IIT Bombay)	Estate Office
Marathe Madhukar S.	Assistant Registrar	MA (Pune University)	Administration
Mehta Sunil Kumar	Assistant Training & Placement Officer	B.E. (Mech. Engg), Gulbarga University	Placement Office
Meshram Arvind	Medical Officer	M.B.B.S. (Delhi), M.Phil (BITS Pilani)	IIT Hospital
Nagwekar Ashish M.	Computer Engineer	B.E. (Mumbai University)	Computer Centre
Pathak S.K.	Lab. Superintendent	M.Tech. (IIT Bombay) Ph.D (IIT Bombay)	Mechanical Engg.
Patil Arvind S.	Technical Officer	M.Tech. (IIT Kharagpur)	C-DEEP
Patil M.K.	Dy. Registrar	M.Com (Shivaji University)	Academic Section
Patil S.G.	Medical Officer	MBBS (Mumbai)	IIT Hospital
Patki Savita V.	Assistant Registrar	B. A (Bombay University)	Accounts Section
Phadke D.N.	Assistant Librarian (SG)	Ph.D. (Pune University)	Central Library
Pillai A. D. S.	Lab. Superintendent	B.Sc. (Bombay), Diploma in Computer Programming (New Jersey)	Computer Sc. & Engineering
Punalkar B.S.	Deputy Registrar (F&A)	M.A. (Shivaji University)	Accounts Section
Rajan Prema A.	Assistant Registrar	M.Com (Calicut University)	Accounts Section
Ramachandran P.S.	Senior Programmer	Ph.D. (IIT Bombay)	Computer Sc. & Engineering
Ramesh P.G.	Assistant Registrar	M.Phil. in Public Administration (Madurai Kamaraj University)	Audit Section

Name	Position	Qualification	Department
Rao M.N.R.	Manager (Telecommunication)	Dip. in Electrical Engg.	Telecommunication Deptt.
Reddy P.M.	Physical Training Instructor Gr.I	Ph.D. (Gwalior)	Student's Gymkhana
Ringnekar Nila D.	Medical Officer	MBBS (North Maharashtra Univ., Jalgaon)	IIT Hospital
Romani Indrajit A.	Assistant Registrar	M.Com (Mumbai University)	Accounts Section
Sahoo Biswakesan	Executive Engineer (Elect)	M.E. Burla/Sambalpur Univ.	Electrical Maintenance
Sawalkar D. K.	Assistant Registrar	MBA (Marathwada University)	Estate Office
Saxena Indu	Deputy Registrar	Ph.D. (Jamnalal Bajaj Instt.)	Administration
Sengupta K.	Physical Training Instructor Gr.I	Ph.D. (Gwalior)	Student's Gymkhana
Shah Nisha	Chief Medical Officer	MBBS (Nagpur), MD (Pde)(Nagpur)	IIT Hospital
Shangarpawar A.V.	Medical Officer (SG)	M.D., D.G.O. (Nagpur)	IIT Hospital
Shetye Asmita S.	Project Manager	B.E. Electronics (Mumbai University)	ASC (Application Software Cell)
Siriah Pankaj	Computer Engineer	M.Tech. (IIT Bombay)	Computer Sc. & Engineering
Solanki Manohar R.	Senior Programmer	M.Sc.(Mumbai University)	ASC
Tagare Amita	Counsellor	M.A. (Pune University)	Dean's Office
Tirmare P.V.	Computer Engineer	B.E. Computer Engg. (Shivaji University) M. Tech. (Dr.Babasaheb Ambedkar Technological Univ.)	Computer Centre
Unnithan K.R.P	Executive Engineer	B.E. Civil Engineering (Mumbai University)	Estate Office
Verma Hari Shankar	Assistant Registrar	M.A. (Kanpur Univesity)	M.M. Division
Verma Narsingh	Executive Engineer	AMIE	Estate Office
Vichare Sunil Y.	Computer Engineer	B.E. (Pune University)	Computer Centre
Vinjamur Sugandhi	Senior Programmer	MCA (Osmania University)	ASC
Waydande H.S.	Assistant Librarian(SG)	Ph.D (Pune University)	Central Library
Yadav S.S.	Senior Sports Officer	Ph.D. (Gwalior)	Student's Gymkhana

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

CONSOLIDATED ACCOUNTS

BALANCE SHEET AS AT 31.03.2009

Sr No.	Liabilities	(Amount in Rs.)	
		Current Year 2008-2009	Previous Year 2007-2008
1	<u>Capital Fund</u>		
a)	Amount Utilised for Capital Expenditure	2,698,136,953	2,184,628,443
	<u>Income and Expenditure</u>		
b)	Opening Balance as on 01-04-2008	197,697,400	197,697,400
	Add/(Less) : Excess of Income/ Expenditure during the year		
	Total of Sr. No.1 (a+b)	2,895,834,353	2,382,325,843
2	Project & Consultancy Assets Fund	2,333,061,332	1,903,967,212
3	ACRE Project Assets Fund	18,281,248	18,281,248
4	<u>Project & Consultancy Fund</u>		
	IRCC	679,921,506	668,146,872
	Consultative Practice Fund	46,678,744	61,397,316
5	General Provident Fund	629,278,282	561,608,319
6	Contributory Provident Fund	80,629,783	62,578,839
7	Post Retirement Medical Scheme	110,795,147	104,470,832
8	<u>Other Funds and Adjustable Accounts</u>		
a)	Main Accounts		
	1) Staff/Students Fund	36,373,157	26,410,321
	2) Other adjustable Accounts	31,143,475	6,197,641
b)	<u>Project & Consultancy</u>		
	1) Other Funds	149,663,694	134,550,146
	2) Other adjustable Accounts	63,447	146,918
9	Unutilised Grant in Aid	470,650,935	44,546,026
10	Donation Account	1,108,577,600	852,243,725
11	Endowment of Scholarships	644,787	672,950
12	Unspent balance of Coordinated Projects	796,740,902	787,396,213
13	Unutilised Grants from other organisation	123,836,130	118,752,474
14	<u>Other Liabilities</u>		
	Refundable Deposits	116,345,081	101,757,084
	Sundry Creditors	309,049,669	161,773,773
	Grand Total :	9,937,569,271	7,997,223,753

(Amount in Rs.)				
Sr No.		Assets	Current Year 2008-2009	Previous Year 2007-2008
		<u>Fixed Assets</u>		
1		Land	2,663,875	2,663,875
2		<u>Buildings</u>		
	a)	Works completed	784,769,480	785,656,766
	b)	Works in progress	296,857,025	57,274,346
3		Equipment and Tools/Academic Deptt. & Centers	724,279,572	510,307,787
4		Equipment and Tools other Sections	45,089,939	40,584,728
5		Augmentations of Labs Workshops	12,769,612	15,962,015
6		Equipment & Fur./Girish Gaitonde Donations	3,722,153	9,014,352
7		Equipment & Tools/Special grant from MHRD	1,531,953	1,934,955
8		Motor Vehicles	1,393,853	1,934,823
9		Furniture and Fixtures	34,738,045	30,609,487
10		Library Books and Journals	786,487,157	704,687,027
11		Library Books received as Donation	554,943	554,943
12		Library Books & Journals/Special grant from MHRD	2,026,954	2,026,954
13		Kanwal Rekhi School of Information Technology	1,252,389	21,416,329
14		<u>Project & Consultancy</u>		
	a)	Equipment and Tools	2,332,248,726	1,902,972,879
	b)	Books and Journals	812,606	994,333
15		ACRE/ Project Assets	18,281,248	18,281,248
16		<u>Investments</u>		
	a)	Purchase of Shares (L&T)	0	54
	b)	Fixed Deposits/investments	3,164,870,543	2,793,098,882
17		Accrued Interest	185,845,669	176,975,595
18		Closing Stock of consumables and other stock	9,863,742	7,975,263
19		<u>Receivables</u>		
	a)	Sundry Debtors	58,389,206	85,674,361
	b)	Guest House Bills Receivables	651,534	461,530
	c)	Grant-in-Aid sanctioned and but due	0	154,793,000
20		Cash in Hand and Bank	851,176,064	427,449,257
21		Recoverable Deposits	13,895,890	7,763,789
22		Advance Accounts	559,385,489	189,484,499
23		Miscellaneous Expenditure	4,984,176	3,434,371
24		Excess Expenditure of Sponsored (P&C)	37,700,193	34,400,590
25		Excess Expenditure Donation	1,327,233	8,835,716
		Grand Total :	9,937,569,271	7,997,223,753

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

CONSOLIDATED ACCOUNTS

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31.03.2009

SR. NO.	PARTICULARS	Current Year Up to 31.03.2009	(Amount in Rupees) Previous Year Up to 31.03.2008
1	<u>INCOME</u>		
	<u>Grant-in-aid from Govt. of India</u>		
a)	<u>Non-Plan</u>		
	Grant-in - aid released during the year	1,064,943,000	728,000,000
	Add: Shortfall in block grant 07-08 received in 08-09	101,057,000	117,943,000
	Less: Grant- in- aid due in 2007-08 received in 08-09	117,943,000	
		1,048,057,000	845,943,000
b)	Non Plan Grant for VI PC arrears	302,543,000	0
	Less: Grant c/f for paying 6 PC arrears for 2009-10	119,468,844	0
	Sub Total (b)	183,074,156	0
c)	<u>Plan</u>		
i)	Opning Balance b/f	44,546,026	104,219,868
ii)	Add: Grant-in-aid released during the year	592,950,000	552,500,000
iii)	Grant-in-aid sanctioned and due in 07-08		36,850,000
iv)	Less: Grant inAid due in 2007-08 received in 08-09	36,850,000	
	Sub Total c (i to iv))	600,646,026	693,569,868
v)	Less:- Amount utilised for capital expenditures	316,097,592	420,971,199
vi)	Less:- Plan Grant c/f for Capital Expenditure 08-09		44,546,026
vii)	Less:- Plan Grant c/f for Capital Expenditure 09-10	40,081,608	
	Sub Total (v to vii)	356,179,200	465,517,225
	Total Sr. No. 1 (a+b+c)	1,475,597,982	1,073,995,643
2	Oversight Committee Recommendation		
	Grant-in - aid released during the year	810600000	0
	Less: Amount Utilised for Capital Expenditure	457437446	0
	Less: Plan Grant c/f for Capital Expenditure 09-10	311100483	0
		42,062,071	0
3	Amount utilised from Endowment Fund	0	83,283,018
4	Consultation Receipts for library books	2,423,670	2,136,684
	Net Amount available for Revenue Expenditure Total (1 to 4)	1,520,083,723	1,159,415,345
5	Fees from students	98,184,731	91,729,152
6	Other receipts from students	56,199,193	33,033,618
7	All India Entrance Examination	102,516,512	117,622,032
8	Other income and miscellaneous receipts	82,796,420	65,802,190
9	Interest on CPF/GPF investment	56,798,819	51,086,003
10	Interest on Short Term Deposit/CLTD Account	11,196,387	6,876,158
11	Guest House Receipts	8,260,490	6,957,005
12	Leave Salary Received and Pension Contribution	326,273	1,283,073
13	Receipts from Continuing Education Prog.	4,799,196	4,617,592

SR. NO.	PARTICULARS	Current Year Up to 31.03.2009	(Amount in Rupees) Previous Year Up to 31.03.2008
14	Non Payable Institute Contribution	794,098	319,905
15	<u>Prior Period</u>		
i)	Prior Period Income	335,161	0
ii)	Excess Provision for Teaching Asstt. In 07-08 reversed in 08.09	38,678,917	0
16	Service Tax Receivable	0	2,479,368
17	Support from IRCC for Recurring Exp.	479,500	0
18	Insurance Claim	4,850	3,228,586
	Grand Total	1,981,454,270	1,544,450,026
	<u>EXPENDITURE</u>		
1	Pay and Allowances	691,436,796	492,885,088
	Sub Total (I)	691,436,796	492,885,088
2	Other Allowances	26,077,877	14,936,032
3	Retirement Benefits	302,982,884	235,870,012
	Sub Total (2 & 3)	329,060,761	250,806,044
4	<u>Administrative Expenses</u>		
i)	General Expenses	13,335,953	11,412,657
ii)	Other Misc expenses	44,352,822	54,458,038
iii)	Other educational expenses	24,450,071	25,218,572
iv)	All India Entrance Examination	41,315,201	81,943,048
	Sub Total (4)	123,454,047	173,032,314
5	<u>Departmental Expenses</u>		
i)	DOC/Consumables/Academic Deptt. and Centres	25,633,188	25,420,991
ii)	DOC/Other expenditure Academic Deptt. And Centres	10,542,314	12,711,838
iii)	Maintenance and receipts to equipment and tools	11,651,088	7,440,191
	Sub total (5)	47,826,589	45,573,020
6	Students Gymkhana Expenditure	6,214,436	8,162,836
7	Scholarship	163,045,812	146,659,406
8	Financial Assistance to Hostels (Mess Employees)	48,694,734	33,264,163
9	Health Facilities	21,757,608	23,236,577
10	House keeping and Estate maintenance	252,501,437	247,866,859
11	Water and Elect. Charges	139,737,291	109,744,350
12	Kanwal Rekhi School of Information Technology	0	77,994
13	Recurring Expenditure Girish Gaitonde Lecture Hall Complex	132,998	0
14	Surplus Transferred to Endowment Fund A/c	150,092,433	0
15	Golden Jubilee Expenses	7,499,327	13,141,374
	Grand Total	1,981,454,270	1,544,450,026

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

CONSOLIDATED ACCOUNTS

RECEIPTS AND PAYMENTS FOR THE PERIOD FROM 1-4-2008 TO 31-3-2009

SR NO	RECEIPTS	Amount In Rs.	SR NO	PAYMENTS	Amount In Rs.
1	<u>Opening Balance</u> <u>Cash in Hand and at Bank</u>	446,256,626	1	<u>Capital Expenditure</u> i) Equipment & Tools Academic & Centers	376,417,751
2	<u>Grant-in-aid</u> i) Non-Plan	1350,600,00	ii)	Equipment & Tools other sections	8,483,280
	ii) Plan	556,100,000	iii)	Augmentation of Lab. & Workshop	0
	iii) OSC	810,600,000	iv)	Furniture & Fixtures	8,512,102
3	Girish Gaitonde Seminar Hall Complex	0	v)	Library Books & Journals	81,169,993
4	Fees from students	98,184,731	vi)	Motor Vehicles	0
5	Other receipts from students	56,199,193	vii)	Kanwal Rekhi School of Information Technology	0
			viii)	<u>Building & works</u> a) Works completed	39,590,312
6	All India Entrance Examinations	102,516,512	b)	Works in progress	231,032,753
7	Other income & Misc. receipts	82,606,108			
8	Interest from CPF/GPF investments	48,738,033		Sub Total I	745,206,191
			2	<u>Revenue Expenditure</u> a) Pay & Allowances	
9	Interest on short term Deposits	8,032,498	i)	Pay Establishment	252,071,204
			ii)	Pay Faculty	204,273,710
10	Guest House Receipts	8,134,659	iii)	Pay Non Faculty Officer	36,848,646
			iv)	Arrears 6 th Pay commission	141,078,139
				Sub Total (a)	634,271,699
11	Leave salary and pension Contribution	326,273	b)	Other Allowances	26,032,710
			c)	Retirement Benefits	286,664,103
12	Receipts from Continuing Education Programme	4,799,196			
			d)	<u>Administrative Expenses</u> i) General Expenses	13,700,036
13	Grants from other Organisations	129,691,718	ii)	Other contingent expenses	42,899,048
			iii)	Other Educational expenses	24,365,575
14	<u>Adjustable Accounts</u> i) Advances Accounts	330,152,829	iv)	All India Entrance Examinations	41,315,201
	ii) Other accounts	598,744,146		Sub Total (d)	122,279,860
	iii) Refundable Deposits	109,139,541	e)	<u>Departmental Expenses</u> i) Doc/Consumable/ Academic Dept. and Centers	24,418,247
	iv) Endowment of Scholarship	796,691	ii)	Doc/Other Contingent Expenditure Academic Deptt. & Centers	10,412,643
	v) Recoverable Deposits	618,025	iii)	Maintenance & Repairs to Equipments & Tools	11,458,967
	vi) Misc. Expenses Recovery	19,323,145			
	Sub Total-14	1,058,774,376		Sub Total (e)	46,289,857
15	<u>Sundry Debtors</u>				

SR NO	RECEIPTS	Amount In Rs.	SR NO	PAYMENTS	Amount In Rs.
16	Main Account	102,550,520	f)	Students Gymkhana Expenditure	6,214,436
	Guest House bills	-	g)	Scholarships	149,299,626
17	recoverable Account	-	h)	Financial Assistance to Hostels	47,812,144
	Grant-in-aid due	154,793,000	I)	Health Facilities	22,475,782
	In 2007-2008		j)	House Keeping and Estate Maintenance	247,486,639
18	<u>Accrued Interest</u>		k)	Water & Elect. Charges	125,191,435
	Main Account	4,577,091	l)	Recurring Expenditure Girish Gaitonde Lect. Hall	132,998
	PRMS Account	2,495,866			
	CPF Account	826,268			
	GPF Account	9,002,912			
	Donation Account	22,903,238			
19	Consultancy Library Books	2,423,670	3	Grants from other organisations	133,481,140
			4	<u>Adjustable Accounts</u>	
20	Fixed Deposit Encased	681,585,227			
21	<u>IRCC Account</u>		i)	Advances Accounts	689,553,819
	IRCC Fund Account	211,725,836	ii)	Other Accounts	573,109,196
	Sponsored Project	1,751,120,517	iii)	Refundable Deposits	94,740,912
			iv)	Endowment Scholarship	1,927,991
22	<u>Donation Account</u>		v)	Recoverable Deposits	8,581,200
	Donation Fund Account	692,031,909	vi)	Fixed Deposits	906,219,429
-			vii)	Misc. Expenses	10,893,867
23	<u>Post Retirement Medical Scheme</u>			Total 4	2,285,026,413
	<u>Account :-</u>		5	<u>Sundry Creditors</u>	
	PRMS Fund account	4,076,269		Main account	117,904,173
24	<u>Contributory Provident Fund A/c.</u>			CPF Account	826,268
	Fund Account	18,050,051		GPF Account	9,002,912
25	<u>General Provident Fund A/c.</u>		6	<u>IRCC Accounts</u>	
	Fund Account	67,604,995		IRCC Fund Account	224,135,470
26	Receipt from Insurance Claim	4,850		Sponsored Project a/c.	1,913,659,951
27	Non-Payable Inst. Contribution	794,098	7	Golden Jubilee Celebration	7,499,327
			8	Guest house Bill	65,430
			9	Recoverable A/c.	
28	Support for Recurring Exp. From IRCC	479,500		Donation & Other A./c,	492,471,112
			10	<u>Closing Balance</u>	
				Cash in Hand and at Bank	851,176,064
	GRAND TOTAL	8,494,605,740		GRAND TOTAL	8,494,605,740