



Director's Report

Introduction

Established in 1958, IIT Bombay continues to be rated as one of the leading technical universities in the world. The academic and research programmes in Humanities and Social Sciences, in Design and in Management are also highly regarded. The institute attracts the best students from the country for its Bachelor's, Master's and Doctoral programmes, and, in the 53 years of its existence, around 39,000 students have graduated from it. IIT Bombay is known for its strong research groups in varied areas of science and technology that are making substantial contributions to national projects. The research and academic programmes are driven by an outstanding faculty, with many of them internationally reputed for their research contributions. I am happy to note that the institute continues to attract top quality academics to its faculty. The institute also continues to build links with national and international peer universities and other institutions to enhance research and educational programmes. IIT Bombay alumni have distinguished themselves through their achievements and contributions in industry, academics, research, business, government and social work. The institute continues to work closely with the alumni for enhancing its activities through interactions in academic and research programmes as well as mobilizing financial support.

The highest priority of the institute is to intensify its research efforts. The aim is to focus on "Research that Makes a Difference" to society, to industry and to the field itself. We are in the midst of a significant expansion in infrastructure to meet the research needs as well as the needs of the larger student body and the larger faculty. A detailed report of the progress of the institute follows.

Academic Programme

IIT Bombay has taken several new initiatives in restructuring and strengthening its academic programmes at postgraduate and undergraduate levels over the past years. A new curriculum for undergraduate students was introduced in 2007, two-year M.Sc. and six-year M.Sc.-Ph.D. dual degree

programmes were reviewed in 2008 and M.Tech.-Ph.D. dual degree programme was introduced in 2009. Introduction of new programmes at the postgraduate level and a focus on research and development are the crucial factors that have helped in the recognition of IIT Bombay as a premier institute for higher learning.

IIT Bombay has emerged as the leading institution for technology education and research in the country. It continues to be the most sought-after destination for undergraduate and postgraduate studies and attracts the top performers in national examinations such as GATE, CEED, NET, JAM and JEE. The fact that among 15 IITs in the country, 67 of the top 100 rankers in JEE 2010 have joined IIT Bombay and 16 of the top 20 All-India JEE rank holders have chosen to join IIT Bombay is a clear indication that the institute remains the first choice for the toppers. Similar trends are observed for the candidates qualifying other examinations as well. The characteristics of the student population at the institute are undergoing a significant change in the recent times. The on-roll strength in 2007-08 was 5285 students of which 2196 (41.5%) were undergraduates (UG) and 3089 (58.5%) were postgraduates (PG). After the implementation of the third and last phase of the 27 per cent OBC reservation during 2010-11, the on-roll strength has increased to 7129 of which 2902 (40.7%) are UG and 4227 (59.3%) are PG students. If no other new programmes are introduced in the immediate future, the UG population at the institute will attain its peak strength of 3415 (31%) in the academic year 2013-14, while the PG population will saturate at 7601 (69%) during the year 2018-19 with 11062 students in the institute. The number of students admitted to the preparatory course in 2010 has dropped to 10 (IIT Bombay-7, IIT Gandhinagar-2, and IIT Indore-1). The same figure for 2009 was 62 of which 32 students were for IIT Bombay. The institute has responded pragmatically to the large increase in its 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 curriculum for engineering and science education was implemented with effect from the academic year 2007-08. 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 Minor) – has raised their level of enthusiasm for academics. The opportunity for Minor has been subscribed heavily by all the three batches of students in the new curriculum and around 80 per cent of the eligible students have signed up consistently every semester ever since the Minor option came in force (Autumn 2008).

Review of academic programmes is a continuous activity at the institute. Two important reviews are scheduled to be completed during 2011-12. The first is a comprehensive review of the Ph.D. programme initiated in 2009. It is envisaged that the outcome will have a great impact on the research culture of the institute, in general, and the doctoral programme, in particular, in the years to come. The other review is on the B.Tech.-M.Tech. dual degree programme. The Ph.D. student strength has steadily been increased and we are on course to achieve our target of 2775 Ph.D. students (approx. 30%) on roll among an anticipated student population of 11062 in the academic year 2018-19. While we had 771 Ph.D. students on roll in the academic year 2001-02, the number in the academic year 2010-11 has risen to 1879, an increase of over 100 per cent in a span of just nine years. On the Ph.D. output front, as compared to 73 Ph.D. degrees awarded in 2001, the numbers of Ph.D. degrees awarded were 152, 200, 179 and 179 in the years 2006-07, 2008-09, 2009-10 and 2010-11, respectively. An interesting aspect of our Ph.D. output, observed in the recent years, is the fact that around 65 per cent of the Ph.D.s are in the engineering disciplines. All students involved in research in the institute are given the opportunity to interact with research community at the national and international levels by providing funds to attend international conferences. While the research scholars are the primary beneficiary of this scheme, a small number of other PG (including dual degree) and UG students have also benefited. The annual funding has been enhanced from Rs. 75 lakhs last year to Rs. 1.25 crores this year. With effect from January 2010, the funding for participation in international conferences has been enhanced to Rs. 60,000/- for North and South America; Rs. 45,000/- for Europe; and Rs. 30,000/- for Asia. In addition, the students are also reimbursed conference registration fees up to a maximum of Rs. 20,000/-. During the academic year 2010-11, 140 students were granted financial assistance for attending international conferences as against 115 during the previous year. Three M.Tech. students from the Department of Civil Engineering have been selected for the DAAD Sandwich Scholarship Programme in Germany. They will be doing their project work from September 2011 to May 2012.

The Institute Student Mentor Programme has been operating successfully for several years. The programme provides a support structure for the undergraduates, targeted largely to the first and second year students, and is essentially managed by the senior students under the supervision of a faculty coordinator. This programme has recently been extended to mentor-needy senior students at the departmental level. The postgraduate students have initiated a student companion programme this year, which is similar in spirit to the mentorship programme for undergraduates, to address the needs of PG students. For undergraduates, whose academic performance does not meet the requirements for continuation in their programmes, a final chance for continuation in the form of the Academic Rehabilitation Programme (ARP) has been in effect since 2008-09. A special Senate-appointed committee prescribes a customized academic load for ARP students, 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. Academic probation, a feature similar to ARP, gives a PG student a second chance to survive and continue in the programme.

Encouraged by enthusiastic and effective participation of students in various aspects of academic administration, mechanisms to channelise and structure the energy of the students in creative and constructive activities are being devised as follows.

The Practical Training Cell: This is a student initiative aimed at providing internships, projects and industry training opportunities to the students of IIT Bombay in universities, laboratories and companies across the globe with the active support of the Dean (AP) Office. A team of 24 hard working and able students with representatives from each department is responsible for searching, locating, identifying, evaluating and contacting potential recruiters keeping in mind the industry trends, the inclinations and the best interests of the students. A total of 368 summer interns were placed via Practical Training Cell in the year 2010-11 both in India and abroad.

UG Teaching Assistantship: In an effort to make the senior UG students more self-sufficient, responsible and oriented towards academics, IIT Bombay had introduced the concept of UG Teaching Assistantship during the academic year 2009-10. This year, 132 UG teaching assistants (75 in spring semester and 57 autumn semester) were appointed to assist the faculty in conducting various UG courses.

STUDe Club: This is an initiative under the Dean (AP) Office to set up programmes targeting a student's overall development. The club helps students achieve their cherished desires. It has conducted monthly motivational seminars, by eminent invited speakers,

and technical workshops each semester, in addition to publishing its newsletter and maintaining its website.

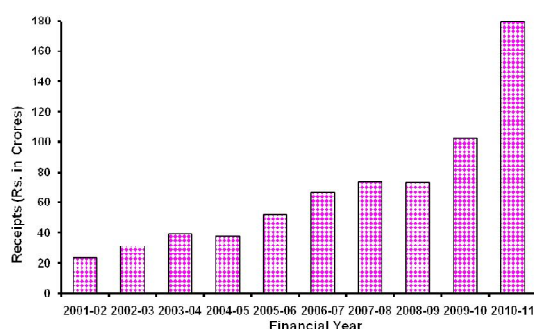
English Remedial Classes: The classes were envisioned in the summer of 2009 with the objective of identifying the first-year students who have not had sufficient exposure to the English language and helping such students to acquire basic English language skills that might be needed in the course of their academic career in the institute. The classes were run on a trial basis for a year and then were continued in the academic year 2010-11. Professionals are appointed under the aegis of Cell for Human Values who plan and design study material for the weak students so identified. An exam was conducted at the

end of the semester. Those who scored 40%+ in the exam were cleared; others had to attend the course in the spring semester too. There was a good correlation between good performance in the test and high class-attendance.

A new era of education and research in science and technology has been ushered in by IIT Bombay. Augmentation of our academic infrastructure, instructional and laboratory facilities and human resources has 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

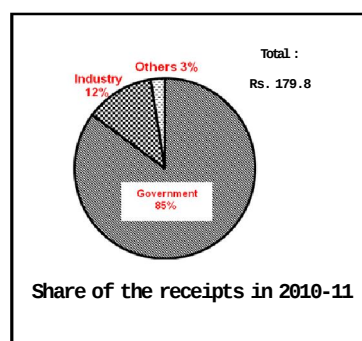
Research and development activities at IIT Bombay continued to grow. The institute received 180 crores as grants towards sponsored and consultancy research projects, which is an increase of 76 per cent over last year's receipts. The trend of research grants is given below:



Growth of R&D Funding :

Break-up of Funding

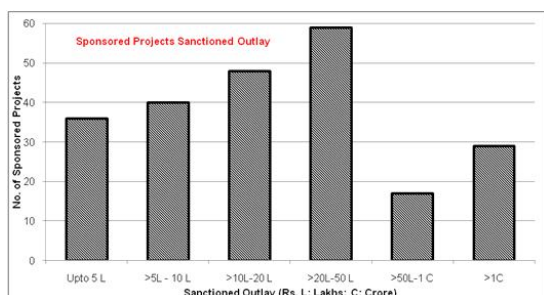
Receipts from	Amount (Rs. in Crores)
Government Agencies	153.0
Industry	22.2
Others	4.6
Total	179.8
National organisations	170.3
International organisations	9.5
Total	179.8



Funding for New Sponsored Research Projects

New sponsored projects numbering 229 were initiated during the year 2010-11 with a sanctioned outlay of Rs.174 crores, whereas during the year 2009-10 the number was 210 with an outlay of Rs.160 crores. The projects are undertaken in all areas of science and engineering, supported by government and industries, both national and international.

Funds of about Rs.160 crores were received for various new projects initiated during the year and ongoing projects of previous years.



Sponsors Include:

Government: Ministry of Human Resource Development, Ministry of New and Renewable Energy, Department of Science & Technology, Department of Information Technology, Indian Space Research Organisation, etc.

Industry: Ambuja Cements; LG India; Reliance Industries; Unilever Industries; Tata Teleservices Limited, India; AstraZeneca Research Foundation, India; Embio India; SAP India; Samsung Industries; Yahoo India; Applied Materials Inc., USA; Nokia Siemens Network, Germany; Semi Conductor Research Corporation, USA; Volvo Technology Corporation, Sweden; Xerox Corporation, USA; etc.

Others: Central Electricity Regulatory Commission, India; National Securities Depository Limited, India; Holcim Foundation for Sustainable Construction, Switzerland; International Institute for Applied Systems Analysis, Austria; Organisation for Economic Co-operation and Development (OECD), France; Wadhvani Foundation, USA; etc.

The institute also funded a number of research projects with a total outlay of Rs. 4.1 crores towards (i) seed grants for nurturing the research activities of new faculty, (ii) augmenting the research resources of faculty who received IIT Bombay research or review paper awards or IIT Bombay young investigator award, (iii) IIT Bombay research internships, and (iv) upgradation of central and national research facilities.

Funding from Government Agencies

The Ministry of New and Renewable Energy, as the major funding agency, sanctioned funds to establish a National Centre for Photovoltaic Research and Education and a new project in the energy conservation area with an outlay of about Rs.49.0 crores. During the current year, it has funded Rs.28.5 crores for seven new and ongoing projects.

The Department of Science and Technology sanctioned 65 new projects and a number of workshops with a total sanctioned funding outlay of Rs.36.3 crores. During the current year, Rs.22.6 crores were received for 140 new and ongoing projects. The projects were funded in wide ranging areas of science and technology including Bioscience, Environmental Engineering, Glacier Movement Studies, Chemical Engineering, Chemistry, Civil Engineering, Geochemistry, Computer Science and Engineering, Corrosion Science and Engineering, Earth Sciences, Electrical Engineering, Energy Science and Engineering, Social Sciences, Visual Media, Mathematics, Materials Science, and Physics.

Grants were also received for the implementation of projects under the programmes/schemes of Better Opportunities for Young Scientists in Chosen Areas of Science and Technology (BOYSCAST) Fellowship, J.C. Bose Fellowship, Ramanna Fellowship, Fast Track Scheme for Young Scientists, Fund for Improvement of Science and Technology (FIST) infrastructure in universities and higher educational institutions, Indo-German joint research project and SERC School.

The Department of Information Technology sanctioned 13 new projects with an outlay of Rs.34.0 crores in the areas of Chemical Engineering, Computer Science and Engineering, Document Image Analysis, Magnetic Nanoparticles and Network Technology. It has funded Rs.19.5 crores towards 23 new and ongoing projects during the current year.

The Board of Research in Nuclear Sciences sanctioned 18 new projects with an outlay of Rs.6.7 crores in the areas of Biosciences, Chemistry, Civil Engineering, Computer Science and Engineering, Earth Sciences, Electrical Engineering, Energy Science and Engineering, Mechanical Engineering, and for the upgradation of the National Facility of Texture and OIM. The institute received Rs.4.4 crores towards 32 new and ongoing projects.

The Ministry of Human Resource Development sponsored 11 new projects with a sanctioned funding outlay of Rs.4.8 crores. Funds were sanctioned for setting up laboratories and projects in the areas of Biosciences, Civil Engineering, Chemical Engineering, Computer Science and Engineering, Electrical Engineering, Management, Remote sensing and Systems & Control Engineering. It funded Rs.40 crores towards 14 new and ongoing projects.

The Indian Space Research Organisation sanctioned nine new projects with a sanctioned funding outlay of Rs.3.0 crores. For the current year, total funds of about Rs.16.2 crores were received for 20 new and ongoing projects. Projects sanctioned were in wide ranging areas of science and technology including Aerospace Engineering, Civil Engineering, Control Systems, Manufacturing, Mechanical Engineering, and Resources Engineering.

Various defence establishments sanctioned 22 new projects with an outlay Rs.7.4 crores in the areas of science and engineering such as Aerospace Engineering, Biosciences and Bioengineering, Chemistry, Corrosion Science and Engineering, Electrical Engineering, Materials Science, Mechanical Engineering, Nano-particles and Resources Engineering. They funded to the tune of Rs.5.7 crores towards 38 ongoing projects during this year.

Other major governmental funding agencies included the Department of Biotechnology (Rs.3.5 crores), Oil Industry Development Board (Rs.1.8 crores), Bhabha Atomic Research Centre (Rs.0.80 crore), and the Council of Scientific and Industrial Research (Rs.0.95 crore).

Funding from Industry

Interactions with industry through sponsored and contract research were excellent. Industry sanctioned 19 projects with an outlay of Rs.8.5 crores. They funded Rs.4.3 crores during this year towards 40 new and ongoing projects.

About Rs.8.7 crores were received from various international organisations such as Applied Materials Inc., USA; Compatible Technologies International, USA; European Commission, France; International Business Machines Corporation, USA; International Institute for Applied Systems Analysis, Austria; Intel Corporation, USA; Wadhvani Foundation, USA; McDonnell Academy, USA; Renesas Technologies Corporation, Japan; Semi Conductor Research Corporation, USA; Siemens Power Generation Inc., USA; University of Exeter, UK; University of Leicester, UK; Volvo Technology Corporation, Sweden; and Xerox Corporation, USA.

Some Major Sponsored Projects

- The Ministry of New and Renewable Energy sanctioned funds to establish a National Centre for Photovoltaic Research and Education with an outlay of Rs.47.5 crores over a period of five years. The activities of the centre will focus on both education and research in the broad area of solar photovoltaics.
- The Department of Science and Technology has in principle agreed to support the establishment of a National Centre for Aerospace Innovation and

Research in collaboration with the Boeing company in USA whose contribution is Rs.3.45 crores over three years. The centre aims to strengthen aerospace capabilities and develop an aerospace ecosystem in India by providing support to Indian start-up companies, SMEs and R&D in the related areas.

- The Department of Information Technology sanctioned a project “Network Sanitisation” with an outlay of Rs.14.8 crores over a period of three years. The objectives of this project include sanitisation of network equipment that is to be deployed in contemporary and future networks, among others.
- The Department of Information Technology sanctioned a project “Virtualized Cloud Computing Infrastructure using Light Trails and Very Fast Switching” with an outlay of Rs.5.58 crores over a period of three years.
- AstraZeneca Research Foundation, Bangalore, sponsored a project “Design and Synthesis of New Molecular Scaffolds using Diversity Oriented Synthesis” with an outlay of Rs.50.0 lakhs over a period of five years. The goal of this project is to develop a simple and efficient strategy to synthesize drug like molecules using diversity-oriented synthetic approach.

Activities of the Power Answer Labs (PAL) in the year included a project for a leading distributor of electric power for forecasting of load up to 2030, distribution network planning and benchmarking of the company performance. PAL is actively involved in the MHRD-led initiative to set up virtual labs on various subjects. PAL has provided experiments for power systems analysis, under the pilot phase.

Research Projects Completed

About 250 sponsored research projects in all areas of science and engineering were completed during this financial year.

Consultancy Activities

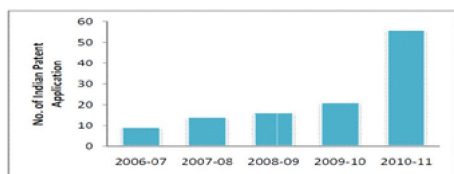
Consultancy activities continue to be an important activity, which received about 460 new projects with an outlay of about Rs.23.56 crores from industries and government. Funding of Rs.19.55 crores was received this year for about 540 new and the ongoing projects initiated in previous years.

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 industries and organisations from India and abroad and also for government.

- Autograv gravity meter
- Automated dynamic vapour absorption advantage system
- Automatic - flip chip bonder
- Gas chromatograph with high resolution mass spectrometer
- Low temperature scanning near-field optical microscope
- Molecular beam epitaxy system
- Precision lapping and polishing machine system
- Thermogravimetric analyser

The continued growth in the research and development activities at the institute has been possible due to concerted efforts towards simplification of processes and facilitation of R&D. Various initiatives have been taken to simplify and streamline processes and encourage taking up research starting from the UG level and incentivising research outputs.

- Dissemination of funding opportunities regularly to the researchers for seeking grants for research.



- This has resulted in an increase in the submission of project proposals.
- A number of collaborative interactions were held with various organisations from both government and industry sectors with an aim to enhance R&D partnership.
- Simplifying procedures for filing of patent applications both in India and abroad, by reducing the assessment procedure and expanding the panel of patent attorneys for legal support. This has enabled the filing of 56 Indian patent applications in various areas of science and engineering.

- Central Reserve Police Force
- Crompton Greaves Ltd.
- Eaton Corporation
- Ericsson India
- Patni
- Samsung
- Sharp
- Sony Corporation
- Synopsys

For the year 2010-11

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As a focused effort towards deployment of intellectual property developed at the institute, various published and granted patents available for licensing were advertised in various national newspapers. In addition, a website providing information on these technologies was created along with online interaction facilities. This has resulted in an increase in queries regarding IITB IP for possible licensing and initiated a systemic

As in the previous years, licensing activities continued. Some technologies licensed in the year include those for nano modified fly ash epoxy coating and fast curing underwater epoxy coating. In addition, web-based software for transmission system pricing for inter-state transmission system of India was given to CERC and a new version of the Short Term Load Forecasting (web STLF) tool developed by PAL was provided to a leading power utilities group. Also, IP was agreed to be licensed in the area of communications for incubation at the IITB Business incubator.

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Various activities were undertaken towards setting up new research consortia for interdisciplinary and directed research in the areas of Climate, Healthcare and Security. Internal group meetings, discussion with funding agencies, formulation of proposals, etc., were some of the ongoing activities in this regard. The National Centre for Aerospace Innovation and Research and NCPRE were initiated/set up in the year with of industry-academia-government participation.

In addition, workshops/discussions were held as part of the efforts for enhancing DBT-IIT partnership in the area of education and research in life sciences.

In order to enthuse and motivate students into research early on, a new 'Enthuse' initiative was started in the year.

Enthuse activities:

- Creating a film on IIT Bombay R&D focussing on student research
- R&D exhibition in Convocation Hall
- R&D orientation at the departments
- Post-dinner Hostel visits for research based talks by faculty
- 9 Meetings, Talks by 45 Faculty
- Initiated Pre-Internship Learning Opportunities and Open Challenges (PILOOCh) for interested students in research laboratories

Lectures by domain experts (both institute faculty and outside experts) on the work of winners of the Nobel prize for 2010 were also arranged.

'Techconnect-2011', organised by students as part of the Techfest event, showcased R&D exhibits from different academic units and also included demos and visits to labs and facilities.

Incentives for undertaking R&D were rewarded in the form of technology development, award, various research paper/review awards, young investigator award, industry impact award and Rakesh Mathur endowment awards. Lectures by the recipients of awards, on their work, were arranged for the institute audience.

Research & Consultancy Awards

- IIT Bombay Research Paper Award for the year 2008: 4 *awardees* (in Chemical Engineering, Chemistry and Electrical Engineering)·
- IIT Bombay Research Paper Award for the year 2009: 3 *awardees* (in Chemistry and Earth Sciences)·
- IIT Bombay Review Paper Award for the year 2008: 1 *awardee* (in Chemistry)·
- IIT Bombay Review Paper Award for the year 2009: 1 *awardee* (in Aerospace Engineering)·
- IIT Bombay Young Investigator Award for the year 2008:1 *awardee* (in Chemical Engineering)·
- IIT Bombay Young Investigator Award for the year 2009: 1 *awardee* (in Energy Science and Engineering)·
- IIT Bombay Industrial Impact Award for the year 2008:1 *awardee* (in Electrical Engineering)

Dr. P. K. Patwardhan technology development award-2009

- 1 *awardee* (in Mechanical Engineering)

Prof. S.C. Bhattacharya Award for Excellence in Pure Sciences-2010
1 *awardee* (in Chemistry)

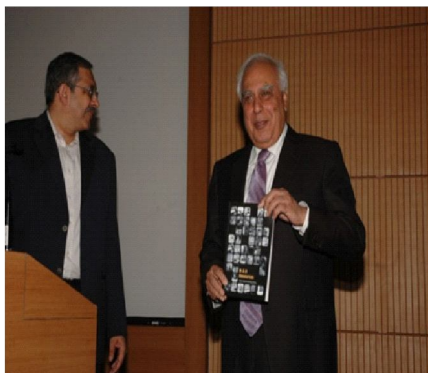
Prof. H.H. Mathur Award for Excellence in Applied Sciences-2010
1 *awardee* (in Computer Science & Engineering)

'IITB Research Internship Award' was instituted to attract bright students from all over India to carry out research at IIT Bombay for six months. These awards were advertised on a national level. Based on a process, the selected student candidates were paid a stipend to work on projects identified by relevant faculty.

IITB Research Internship Award:

- 1600 applications, 283 interviewed, 41 selected, 24 joined
- Research contingency grant of 50,000/-, stipend of Rs.10,000/- pm for each student

Various activities to showcase and disseminate IITB R&D were taken up during the year.



One of the significant achievements was the release of a booklet on 'R & D Resources' by Shri Kapil Sibal, Honourable Minister

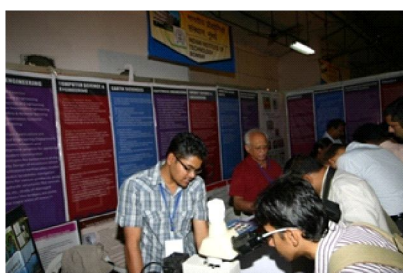
for Human Resource Development, Government of India, on 8th January 2011. This booklet highlights the research infrastructure facilities, templates for interaction with the institute and the areas of expertise of the faculty members.

Brochures/booklets released:

- R&D Resources
- Flier on technologies available for licensing
- 4-page 'R&D Flier' giving Institute R&D highlights
- PULSE Science & Technology magazine

R&D Exhibitions:

- PANIIT Alumni Conclave 2010, Noida, 29-31st October, 2010
- IITB Campus, 15-16th July, 6-7th December and 25th December, 2010
- Techconnect-2011, IITB campus, 8-9th January 2011
- 5th Science Expo, Nehru Science Centre, Worli, 20-24th January, 2011



5th Science Expo



PANIIT Alumni Conclave 2010

Various new and enhanced activities were taken up towards facilitation of R&D. These include providing incentives for project staff in the form of support for attending conferences, leave benefits and systematisation of accommodation, amongst others. The online systems and process were augmented for ease of submission, dissemination and retrieval.

Online / automation processes:

- Submission of application/registration for using / administration of Central Facilities
- Submission and management of agreements/ contracts / NDAs / MOUs
- Website for patents/technologies available for licensing with registration facility
- IITB research publications information
- New leave rules for project staff
- Interface for informing money received through wire transfer
- Project proposal submission under the IITB-IGCAR cell

Outreach Programmes

CEP (Continuing Education Programme), QIP (Quality Improvement Programme) and CDP (Curriculum Development Programme) activities continued to attract wide interest from industry, academia and from our own faculty.

The CEP courses at IIT Bombay are aimed primarily at working professionals. However, in the last couple of years students have also been considered for specialized training programme under CEP. The global recessionary trends of the last few years have now shown signs of reversal and this has been reflected in the overall performance during the current year. An important feature of the CEP activity during the current year has been the participation of many new academic units as well as faculty groups across the institute. The QIP courses, on the other hand, are generally meant for teachers working in various degree-level engineering colleges to upgrade their expertise and capabilities, and these are fully funded by the AICTE. The courses are very popular and draw a large number of deputations from across the country. In order to provide college teachers an opportunity to interact with the industry professionals, special efforts have been made to permit a few industry participants as part of the QIP courses, in the normal CEP mode. This model has been appreciated by the teachers as well as the industry personnel, and has also helped to improve the overall effectiveness of the various QIP courses.

Many of our CEP courses are now well established worldwide and continue to attract large participation both from within and outside the country. The certificate course on “Piping Engineering” has reached another milestone and has crossed its 58th edition in 2010. Similarly, the courses on “Urban Drainage Management”, “Casting, Design and Simulation”, “Human Computer Interaction”, “Energy Management”, etc., have all been well received by the industry. The seventh batch of certificate course on “Management with Dual Specialization in Marketing and Managing People” conducted this year had a significantly larger participation. This course has now become a regular feature of the CEP calendar of activities. Two editions of another newly developed course have been conducted for mathematics teachers at secondary school level. The course on “The Role of Technology in Crime and Crime Prevention”, now in its 8th edition, has also established itself as an important training programme for IPS officers from across the country. This year, 27 very senior police personnel stayed at our campus for a week and participated in the course.

As part of new initiatives during 2010-11, the second edition of a long-term certificate programme on “General Management for Technical Professionals” was conducted in distance mode using the facilities of a partner industry. The course was broadcast live from their studio in Mumbai and was simultaneously available at their centers in India and abroad. A total of 67 participants benefited from this course. The third edition, started in November 2010, had 78 participants registered for the course. In addition, a one-year course on “Certificate Programme in Business Management” was newly started in October 2010 in the distance mode using the facilities of a partner industry. A total of 147 participants have registered in the course. Similarly, the on-line version of the course on “Piping Engineering” commenced in July 2009 has continued during the current year. Till now, about 92 participants have registered from all over the world and the list is expected to grow manifold because of the vast reach of the course. Currently, efforts are underway to include many other CEP courses in this initiative.

The overall performance of CE&QIP during 2010-11 was very good. CEP conducted 139 courses with participation from over 2700 candidates from across different disciplines as well as industries, organizations and institutions, and a revenue earning of around Rs. 3.5 crores. Under QIP category, nine M.Tech. and 18 Ph.D. students from AICTE-approved engineering colleges were admitted. In addition, 12 teachers were inducted into Ph.D. programme under the advance admission scheme; they would be joining the institute for the regular programme from July 2011. Further, nine short-term courses were conducted with participation from 130 college teachers, under sponsorship from AICTE.

Under CDP, five books were completed and one new book-writing proposal was sanctioned.

International Relations

IIT Bombay assigns a significant value to its relationships with various international partners. Over the years, IIT Bombay has steadily built up a reputation for research and education both in India and abroad. This has helped in attracting a number of bright and young researchers from all over the world to join IIT Bombay as full-time or visiting faculty members. Further, a large number of international students are now very keen to study and do research at IIT Bombay either as full-time or as exchange students. Because of globalization efforts in major universities in the world, we see a huge potential to engage in collaborative research with various partner universities. Our researchers are regularly in touch with their peers in different countries and this has resulted in an increased number of joint publications. Many well-known researchers and academicians across the globe have visited IIT Bombay in the last one year and several MoUs have been signed when found appropriate to be engaged. IIT Bombay has also seen a large increase in the number of governmental and ministerial delegations from various countries in African, European, Asian, and North American continents. All these delegations have appreciated the value creation by IIT Bombay during its fifty three years of existence.

A conservative estimate is that India currently needs about 6000-8000 additional faculty members holding doctoral degrees. Unfortunately, India does not produce adequate number of Ph.D.s in science and technology. IIT Bombay, one of the largest producers of doctorates, graduates about 200 Ph.D.s annually. Hence there is a crucial need to increase our capacity to produce more doctorates annually without affecting the quality studentship. It was with this in view that IIT Bombay established a research academy in collaboration with Monash University, Australia, to take up long-term grand challenging problems for research. Under this academic partnership, we currently have close to 80 students registered for Ph.D. working on a range of high impact research projects. About 80 supervisors from IIT Bombay are involved in offering joint projects with faculty from Monash University for the joint Ph.D. programme. There is already confirmed external funding for this joint venture to the tune of \$11.50m, and we are also seeking additional funding from private enterprises and government departments to ensure that this programme is run successfully over the next 20 years.

MoUs with Foreign Universities

The institute signed memoranda of understanding with the following foreign universities:

- Beijing Jiaotong University, China
- Letter of intent with Waterloo Institute of Nanotechnology, Canada (addendum to the original MoU with Univ. of Waterloo)
- Hochschule fur Gestaltung Schwabisch Gmund, Germany
- Malardalen University, Sweden
- University of Stuttgart, Germany
- Rice University, USA (Renewal)
- University of Southern California, USA
- Federal University of Technology, Minna, Nigeria
- An addendum to Schedule 1 of the MoU with University of Cambridge, UK
- ParisTech – Paris Institute of Science & Technology, France
- Groupe des Ecoles des Mines, France & Institut Telecom, France
- Brown University, USA
- Nanyang Technological University, Singapore (renewal)
- Case Western Reserve University, USA
- Addis Ababa University, Ethiopia
- Universidad Politecnica de Valencia, Spain

Memoranda of understanding were also signed with the following institutions:

- CR Rao Advanced Institute of Mathematics, Statistics and Computer Science, Hyderabad
- Tata Institute of Fundamental Research, Mumbai, for setting up a National Centre for Mathematics
- Institute of Chemical Technology, Mumbai
- Amrita Vishwa Vidyapeetham
- French Language Tutor Programme agreement (for the academic year 2011-12) with Embassy of France, New Delhi.

Visits of International Delegations to IIT Bombay

IIT Bombay also witnessed a large number of international delegations for exploring areas of collaboration and cooperation. The major ones are as follows:

- Brown University, USA
- ETH Zurich, Switzerland
- Nelson Mandela African Institute of Science & Technology, Tanzania
- A Japanese delegation led by Mr. Koji OMI, Founder & Chairman, STS Forum
- A delegation from Costa Rica led by Mr. Rene Castro, Minister of Foreign Affairs
- Fondazione Ugo Bordoni, Italy
- Groupe des Ecoles des Mines, France
- A high level Russian delegation led by H.E. Mr. Dmitry A. Medvedev, President of the Russian Federation
- Malardalen university, Sweden

- University of Amsterdam, the Netherlands
- Rusnano, Russia
- Norwegian University of Science & Technology
- University of Edingburgh, UK
- University of Southern California, USA
- Lund University, Sweden
- Beijing Jiatong University, China
- Representatives from the French Consulate, Mumbai
- Representative from the Consulate of Israel, Mumbai
- Representative from the British Deputy High Commission, Bangalore
- Representative from the Consulate General of Russia, Mumbai

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

International Students

A total of 43 international students (nine for full programme and 34 as visiting students) from Bangladesh, Bhutan, Brazil, Canada, Chile, Dubai, Ethiopia, France, Germany, Iran, Japan, Nepal, Singapore, Sri Lanka, and USA have registered at IIT Bombay during the year 2010-11. They have joined the institute for course work/project work/postgraduate studies.

Student Exchange Programme

Under the memoranda of understanding, IIT Bombay students participated in the student exchange programme during the academic year 2010-2011, as follows:

Autumn semester:

- | | |
|----------------------------|---|
| • Dongguk Univ., Korea | : One Dual Degree student from Electrical Engg. |
| • Rice Univ., USA | : One B.Tech. and one Dual Degree student from Computer Sci & Engg. |
| • TU Munchen, Germany | : One M.Mgmt student from SJMSOM |
| • ETH Zurich | : One Dual Degree student from Mechanical Engg. |
| • EPFL Lausanne | : One 5-yr integrated M.Sc. student from Chemistry |
| • Univ. of Toronto, Canada | : One Dual Degree student from Aerospace Engg. |
| • Univ. of Alberta, Canada | : One Ph.D. student from Biosciences & Bioengg. |

Spring semester:

- Rice Univ., USA : One B.Tech. & one Dual Degree student from Computer Sci. & Engg. and one Dual Degree student from Electrical Engg.
- Johns Hopkins Univ., USA : One Dual Degree student from Electrical Engg.
- EPFL Lausanne : One 5-yr integrated M.Sc. student from Chemistry
- Univ. of Toronto, Canada : One Dual Degree student from Aerospace Engg.
- National Univ. of Singapore : One Dual Degree student each from the Depts. of Metallurgical Engg. and Materials Sci., Mechanical Engg. and Electrical Engg.
- Univ. of Alberta, Canada : One Ph.D. student from Biosciences & Bioengg.

Foreign Language Courses:

IIT Bombay makes efforts to inculcate a global sense of value and culture among its students. French, Japanese and German language and cultural courses are now being offered by native speakers of these languages in the campus. Through an agreement with Beijing Jiaotong University, we expect to start a similar programme in Chinese language from the coming academic year.

Campus at New York

At the invitation of the New York City Economic Development Corporation, IIT Bombay has submitted an initial proposal for setting up a campus at New York, USA.

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 the MHRD, continues to be the primary source of funds for the institute. Sponsored projects, industrial consultancy and continuing education programme contribute a small portion to meet our annual expenditure.

Donations from our alumni have helped us in a significant way. This year we received a sum of Rs.15.18 crores by way of donations. Out of this, Rs.12.65 crores were received from alumni and Rs.21.00 lakhs from faculty members. The corporates and others contributed Rs.2.32 crores. The major contributions from alumni were received from Mr. Victor Menezes for Convention Centre (Rs.5.17 crores); Mr. Romesh Wadhvani for WRCBB (Rs.1.90 crores); Mr. Vikas Joshi (Rs.46.00 lakhs) for Class of '85; Mr. Nagesh Palepu (Rs.33.80 lakhs), Mr. Girish Gaitonde (Rs.11.00 lakhs) for Class of '83; and Mr. Narayan Ramachandran (Rs.10.00 lakhs) for Class of '85. The major donors from faculty side were Prof. S.K. Gupta (Rs.6.49 lakhs) for instituting C.V. Seshadro Annual Distinguished Lecture in Chemical Engineering Department and Prof. Tarun Kant (Rs.6.46 lakhs) for Civil Engineering Corpus Fund (Chair Professorship).

The donors from corporates were Bharat Forges Ltd. (Rs.150.00 lakhs), Boeing (Rs.16.94 lakhs), Nomura (Rs.25.00 lakhs), Godrej Industries Ltd. (Rs.12.20 lakhs), Syngene International Ltd. (Rs.10.86 lakhs), British Gas India Pvt. Ltd. (Rs.4.72 lakhs), and KPMG (Rs.3.99 lakhs).

Faculty Affairs

Recruiting and retaining high quality faculty is indeed a challenging task. During the period, 13 faculty members on regular basis and eight on contract basis were appointed. The number of full-time faculty members on the rolls of the institute has risen to 498, comprising 254 professors, 118 associate professors, 117 assistant professors, and nine lecturers. In addition, there are 40 adjunct faculty members on the rolls. Six faculty members retired and three resigned.

The institute provided financial assistance to 198 faculty members for participating in international conferences. In addition, 190 faculty members travelled abroad for attending international conferences using external funding and 15 faculty members went abroad on Fellowships for research work.

The faculty of the institute contribute in diverse ways, besides educational and research pursuits, meeting national and global obligations through membership in 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. J. Adinarayana, CSRE, has been elected as Vice President (2010-12) of the Asian Federation for Information Technology in Agriculture (AFITA).

Prof. Vivek Agarwal, Department of Electrical Engineering, has been appointed as Deutscher

Akademischer Austausch Dienst German Academic Exchange Service (DAAD) Research Ambassador for the academic session 2010-2011.

Prof. D. Bahadur, Department of Metallurgical Engineering and Materials Science, has been selected by the Materials Research Society of India (MRSI) for the 'MRSI Distinguished Lectureship' for the period 2011-2012.

Prof. Jayesh Bellare, Department of Chemical Engineering, has been awarded the NASI-Reliance Platinum Jubilee Award for 2010.

Prof. Pushpak Bhattacharyya, Department of Computer Science and Engineering, has been appointed as Associate Editor of the prestigious journal ACM Transactions on Asian Language Information Processing (TALIP)

Prof. M.S.C. Bose and **Prof. R.P. Vedula**, Department of Mechanical Engineering, have been awarded "Prof. A.Jaganmohan Award for Professional Development".

Prof. D. Chandrasekharam, Department of Earth Sciences, has been elected to the Board of Directors, International Geothermal Association (IGA).

Prof. D. Chandrasekharam, Department of Earth Sciences, has been appointed as an Independent Director on the Board of Indian Rare Earth Ltd., ONGC and of Western Coalfields Ltd. for a period of three years.

Prof. Deepankar Choudhury, Department of Civil Engineering, has been selected for "The Asian Pacific Association for Computational Mechanics (APACM) Award 2010 for Young Investigators in Computational Mechanics".

Prof. U.B. Desai, Department of Electrical Engineering, has been selected for the award of J.C. Bose Fellowship.

Prof. S.L. Dhingra, Institute Chair Professor & Emeritus Fellow, Transportation Systems Engineering, Civil Engineering Department, has been appointed as a member of new Executive Committee of the International Benefits Evaluation and Costs (Intelligent Transport System) for 2010-2011, representing India.

Prof. Sudhir Ghorpade, Department of Mathematics, has been elected as Fellow of the National Academy of Sciences India (NASI).

Prof. Subimal Ghosh, Department of Civil Engineering, has been awarded the prestigious Boyscast Fellowship 2009-10 by the Department of Science and Technology, Government of India.

Prof. Ashwin Gumaste, Department of Computer Science and Engineering, has been selected for the "DAE-SRC Outstanding Research Investigator Award".

Prof. Karuna Jain, SJM School of Management, has been selected for the award of "Best Professor in Operations Management" by Asia's Best B-School Awards instituted by CMO Asia.

Prof. Abhay Karandikar, Electrical Engineering Department, has been selected jointly (with another nominee) for the "Hari Om Ashram Prerit Dr. Vikram Sarabhai Research Award" for the year 2009.

Prof. D.V. Khakhar, Director, IIT Bombay, has been selected for the award of J.C. Bose Fellowship.

Prof. Azizuddin Khan, Department of Humanities and Social Sciences, has been selected for the Bilateral Exchange Fellowship Programme (2010-2011) of Indian National Science Academy (INSA), New Delhi.

Prof. Azizuddin Khan, Department of Humanities and Social Sciences, has been awarded Hermes Fellowship by the Ministry of Foreign Affairs, France, Centre National de la Recherche Scientifique (CNRS), and La Fondation Maison des sciences de l'homme (FMSH), France, in 2009-10.

Prof. A.S. Khanna, Corrosion Science and Engineering, has been conferred the First Akzo Nobel Award for Excellence in Coating Research and Promotion.

Prof. S.M. Khopkar, Professor Emeritus of the Department of Chemistry, has been bestowed the "Lifetime Achievement Award" by the Indian Chemical Society, Kolkata.

Prof. Nand Kishore, Department of Chemistry, has been elected as President of the Indian Chemical Society (Mumbai Branch) for a period of two years.

Prof. S. Kotha, Department of Chemistry, has been selected for the award of J.C. Bose Fellowship.

Prof. S. Kotha, Department of Chemistry, has been selected for the "Prof. Y.T. Thathachari Prestigious research Award for Science – 2010".

Prof. Ashutosh Kumar, Department of Biosciences & Bioengineering, has been selected for the prestigious Ramalingaswami Fellowship of the Department of Biotechnology, Government of India.

Prof. G. K. Lahiri, Department of Chemistry, has been awarded Ramanna Fellowship (second time) by the Department of Science and Technology, Government of India.

Prof. K. P. Madhavan, Professor Emeritus of the Department of Chemical Engineering, has been bestowed the CHEMTECH CEW Leadership and Excellence Award.

Prof. Souvik Mahapatra, Department of Electrical Engineering, has been elected as Fellow of the Indian National Academy of Engineering (INAE).

Prof. S.K. Maiti, Department of Mechanical Engineering, has been elected as Fellow of the National Academy of Sciences, India (NASI).

Prof. Manoj Mishra, Department of Chemistry, has been honored with India-U.S. Professorship Award in Physics by the Indo-U.S. Science and Technology Forum(IUSSTF) and the American Physical Society (APS).

Prof. R.Murugavel, Department of Chemistry, has been selected for the “DAE-SRC Outstanding Research Investigator Award”.

Prof. Dulal Panda, Department of Biosciences and Bioengineering, has been selected for the “DAE-SRC Outstanding Research Investigator Award”.

Prof. Ramasubramanian, Department of Humanities and Social Sciences, has been selected for the “Prof. R.C. Gupta Endowment History of Science Lecture Award (2010)” of the National Academy of Sciences, India (NASI)

Prof. V. Ramagopal Rao, Department of Electrical Engineering, has been selected for the “DAE-SRC Outstanding Research Investigator Award”.

Prof. V. Ramgopal Rao, Department of Electrical Engineering, has been elected as Fellow of the National Academy of Sciences, India (NASI)

Prof. Hetu Sheth, Department of Earth Sciences, has been selected by the Indian Geophysical Union (IGU), Hyderabad, to receive the Krishnan Gold Medal for the year 2010.

Prof. R.K. Shevgaonkar, Department of Electrical Engineering, has been selected for “2011 IEEE Undergraduate Teaching Award” by IEEE Board of Directors.

Prof. A.K. Singh, Department of Chemistry, has been elected to the Council of the National Academy of Sciences, India for a period of two years.

Prof. D.N. Singh, Department of Civil Engineering, has been elected as Fellow of the Indian National Academy of Engineering (INAE).

Prof. H.B. Singh, Department of Chemistry, has been awarded Ramanna Fellowship (second time) by the Department of Science and Technology, Government of India.

Prof. T.N. Singh, Department of Earth Sciences, has been bestowed the “First P.N. Bose Mineral Award 2009” by the Indian Mining and Engineering Journal.

Prof. V.K. Singh, Department of Chemistry, has been selected for the prestigious J.C. Bose Fellowship of the Department of Science and Technology, Government of India.

Prof. Mahesh Tirumkudulu, Department of Chemical Engineering, has become a Member of the National Academy of Sciences, India.

Prof. John Paul Xavier, Industrial Design Centre, won the design contest organised by General Motors India for “Design the Next Chevrolet Contest” and was presented with a brand new Chevrolet Beat.

Infrastructure Development

This year we undertook three major building projects, namely, two hostel buildings (Nos. 15&16) of 2000-room capacity, two Type II-B staff housing buildings (56 flats), and extension to IIT Hospital building.

The infrastructure projects that were completed during the year include Victor Menezes Convention Centre, Lecture Hall Complex–I, Indoor Sports Stadium, Swimming Pool, and Type II-B staff housing building (24 flats). Projects such as Bio-School building (with three teaching labs, 28 faculty labs, classrooms and department office), Lecture Hall Complex–II, Nano Electronic Centre and C-Type faculty housing building (56 Flats) will be completed in the next few months.

The work of construction of Type-B faculty housing (120 flats) and Computer Centre and Computer Science Department building is in full swing and will be completed by July 2012. Many other projects such as Transit Workshop building, IITB-Monash Research Academy, H-1 Type staff housing buildings (60 flats) are at various stages of planning and pre-execution.

Apart from these, the building projects that are planned to be taken up in the near future include extension to Hostel 10 (650 rooms), Guest House expansion, Rahul Bajaj Innovation Centre housing SINE and IRCC, and the Department of Energy Science and Engineering building.

Central Library

Central Library plays a vital role in furthering the mission of IIT Bombay and facilitates creation and dissemination of knowledge. The range of services offered by the library are comparable to the best libraries in the world. Besides holding an excellent collection of over 400,000 volumes of books, journals, theses, reports, standards, and pamphlets, it provides access to over 12000 electronic books, journals and databases in sciences, engineering, technology, humanities and social sciences, and management.

The library's homepage (<http://www.library.iitb.ac.in>) serves as a single window to access all resources and services 24x7. 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 (Online Public Access Catalogue) is one of the most heavily used databases of the library and is also accessible 24x7 via library web page. Besides listing all the documents available in the library, it allows on-line renewal and reservation, circulation, fine collection, and indicates the status of a particular book. Self check-out of books was also introduced during the year. OPAC is searchable by author, title, accession number, subject and several other fields.

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, 703 M.Tech. dissertations and 187 Ph.D. theses were submitted on-line.

Central Library has set up an archive of publications (<http://dspace.library.iitb.ac.in/jspui/>). 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.

User education is an important activity of the library to inform, alert, educate and train users about the various resources and services of the library. In addition to orientation programmes organized for new students, the library conducted short duration training programmes on “How to Use” various databases for our faculty and students so that they are able to use these resources more effectively. The library also organizes half-day interactive sessions on “Enhancing User Awareness” for new faculty and research scholars to familiarize them with various resources and services.

Computer Centre

Computer Centre continues to provide computational and network infrastructural facilities and services to the IIT Bombay user community. It is responsible for the intra-campus connectivity and also for the the internet connectivity of IIT Bombay to the outside world. During the year, the following activities have been undertaken to install, expand and upgrade the computational and network infrastructure at IIT Bombay:

- The network of all hostels (1 to 13) has been upgraded with 200 managed gigabit state-of-the-art network switches and 13-layer 3- network switches with more secure features and 10G gigabit uplink feature. This feature can be utilized when the campus backbone network is upgraded to 10G. The network points in each room have been doubled. Around 4000 additional network points have been installed in the hostels.
- The new wing of Hostel No. 12 and the newly constructed Hostel No. 14 were provided with gigabit network in each room so as to meet the requirement on account of increased number of student intakes in the institute.
- The required network switches meant for the completion of the residential area network were procured and installed and the goal of providing internet facility to newly constructed buildings has been achieved. With this, each resident on campus has the IIT Bombay's local area network and access to internet.

- Five new network kiosks have been built to host the networking equipment, which can be used as distribution points to all the residential buildings on the campus.
- During the year, the total internet bandwidth for IIT Bombay campus users has been increased from 218 Mbps to 565 Mbps.
- Wireless intrusion detection system procured from Airtight Networks has been deployed at various locations to improve the security of the wireless segment of IITB campus network.

High Performance Computing Clusters: The old computing clusters GALAXY and CORONA continue to function as before. Given the space constraint, these clusters continue to be housed in the premises of Aerospace Engineering and Chemistry departments, respectively. After a lot of effort towards solving the infrastructural issues, the third cluster Spacetime Supercomputing facility consisting of 380 nodes with as many as 3040 processing cores, built using the most recent Intel quad core processors, is operational at the ground floor of the Computer Science and Engineering Department building. The aggregate theoretical speed is expected to be around 20 Tera-Flops. A course on “High Performance Computing” is being run on the Spacetime HPCC facility. However, there are still some issues regarding noise generated by the chiller plant of this HPCC facility. Efforts are on to reduce the noise levels. In addition to this, the purchase order for the procurement and installation of a Diesel Generator set for the Spacetime HPCC facility has been placed. This generator set is expected to provide a better and smoother operation of the HPCC facility by reducing hardware and power failures.

National Knowledge Network: IIT Bombay continued to be a member of the National Knowledge Network (NKN). This multi-gigabit network initiative, started by the National Informatics Centre (NIC), is currently being used by CDEEP to conduct distance education programmes.

Grid Computing Facility – GARUDA: This facility allows users of the institute to access the available resources on the National Grid.

Hardware/Software Infrastructure: All service offerings at the Computer Centre are based on OPEN SOURCE software systems. Computer Centre has registered as official mirror for various flavours of Linux Operating Systems on its anonymous FTP server which is available to the user community at large.

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. Campus-wide license of AVG anti-virus software has been in operation.

Software packages meant for scientific and technical computation such as ANSYS, MATLAB, MATHEMATICA, MAPLE, Dytran/NasTran/Partan, Tecplot, libraries from Numerical Algorithm Groups (NAG), etc., that are available through appropriate license schemes are procured, upgraded and administered by the Computer Centre.

Running ISDN and IP-based video conferencing facility has now been a part of the regular activities of the Computer Centre.

Projects for the Near Future: The core network of IIT Bombay is quite old. The switches are nearly six years old. The underground fibre-optic cable network is operational for more than 14 years. The cable network, as it exists now, is rather adhoc and has been patched many times because of damages occurred during construction and repair of roads. There is a strong case for creating a properly planned fibre-optic cabling infrastructure using single mode fibre with adequate redundancies so as to improve the reliability of network access. The replacements for core network switches is under active consideration. The goal is to have a future-ready network that can be easily migrated to a 10 gigabit infrastructure.

Centre for Distance Engineering Education Programme (CDEEP)

During the year, CDEEP explored new technologies for transmission of IIT Bombay courses. IIT Bombay courses are available LIVE through video conferencing on National Knowledge Network (NKN) with support from the National Informatics Centre (NIC). There were a total of 15 courses created and transmitted in CDEEP covering seven disciplines. The course recordings were available to people on campus through intranet. This facilitated them to review the classroom learning and also give feedback to CDEEP for possible improvements. The satellite transmission to 64 centers was stopped as the satellite “EDUSAT” of ISRO was not available. The infrastructure of three CDEEP studios was upgraded to HD quality equipment and state-of-the-art audio systems. CDEEP represented IIT Bombay successfully in a coordination meeting held in February 2011 at NIC Headquarters, New Delhi, where the reach of NKN was planned to be expanded to 21 new national level institutions across the country by creating virtual classrooms. CDEEP is supporting national level projects in Photo Voltaics (PV) by creating recording of courses conducted in CDEEP studios.

The following project activities were carried out during the year on the NPTEL project. NPTEL Phase II is planning to record 57 video courses out of which four are completed and sent for review – two from Aerospace Engineering, one from Electrical Engineering, and one from Electronics. Twenty two

courses are being recorded at present; more will be done in the next semester. A workshop on “NPTEL Awareness for Colleges in Mumbai” was conducted on March 19, 2011. A new HD video conferencing system has been installed. A two-day training on “CS5 Adobe Collection” was conducted for the staff to use the latest technologies in editing. CDEEP also supports the activities of the project “Talk To a Teacher”, i.e., empowerment of students and teachers through synchronous and asynchronous instruction”.

CDEEP also does recording of important events such as convocation, foundation day, institute colloquia and lectures.

Institute Events

The 48th Convocation of the Indian Institute of Technology Bombay was held in two sessions. At Session-I, held on Friday, August 6, 2010, Ms. Kiran Mazumdar Shaw, Chairman and Managing Director, Biocon Limited, Bangalore, was the Chief Guest and delivered the Convocation Address. Prof. Roddam Narasimha, Chairman, Engineering Mechanics Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, was the Chief Guest at Session-II, held on Sunday, August 8, 2010, and delivered the Convocation Address.

IIT Bombay celebrated its 52nd **Foundation Day** on March 10, 2011. **Shri Gopalkrishna Gandhi**, Chairman, Dandi Memorial Committee, was the Chief Guest. The institute honoured four of its alumni with the Distinguished Alumnus Award-2011, the highest honour the institute bestows on its alumni. The Young Alum Achiever Award-2011, a newly instituted award to recognise an alumnus/na from the institute who has achieved extraordinary success and accomplishments in their respective fields at a very young age, was presented to five young achievers in the field of design, innovation, finance and academic research. The “**Prof. H.H. Mathur Award for Excellence in Applied Sciences-2010**” was conferred on **Prof. Krithi Ramamritham**, Department of Computer Science and Engineering, and the “**Prof. S.C. Bhattacharya Award for Excellence in Pure Sciences-2010**” was conferred on **Prof. Goutam Kumar Lahiri**, Department of Chemistry. This year IIT Bombay also presented the “**Lifetime Achievement Award-2011**” to **Prof. Dipan Kumar Ghosh** who has spent a distinguished career spanning more than 35 years at the institute.

“Teacher’s Day”

The 52nd Teacher’s Day was celebrated on Monday, September 6, 2010. Prof. N. Mukunda, a prominent Indian theoretical physicist, was the Chief Guest. The Excellence in Teaching Award-2010, IRCC Research & Industrial Consultancy Award-2008-2009, and

Dr. P.K. Patwardhan Technology Development Award were presented on the occasion.

“Vanamahotsav 2010” was celebrated on July 24, 2010. Saplings were planted at the slope of the hill behind SAMEER.

Visit of Russian President

His Excellency Mr. Dmitry Medvedev, President of the Russian Federation, visited IIT Bombay on December 22, 2010, and had an interactive session with the faculty and students of the institute.

Conferences/Colloquia/Lectures/Seminars

Many conferences and lectures were organised during the past year. Some of these are listed below:

- IIT Bombay and Nomura presented a lecture by Shri Montek Singh Ahluwalia, Deputy Chairman, Planning Commission, Government of India, on December 24, 2010. Shri Ahluwalia spoke on “Challenges Before the Indian Economy”.
- Shri Kapil Sibal, Hon’ble Minister for Human Resource Development, Government of India, inaugurated the Victor Menezes Convention Centre on January 8, 2011. On this occasion, he spoke on “Role of Technology, Knowledge and Innovation in Transforming India”.
- Prof. Jayant V. Narlikar, Emeritus Professor, Inter-University Centre for Astronomy and Astrophysics, Pune, spoke on “A Critique of Standard Cosmology”, at an institute colloquium on January 21, 2011.
- Prof. Gautam Desiraju, Solid State and Structural Chemistry Unit, Indian Institute of Science, Bangalore, spoke on “Science and Engineering Education & Research in India”, at an institute colloquium on February 11, 2011.
- Prof. Rajendra Shinde, Director, United Nations Environment Programme, delivered the J.C. Bose Memorial Lecture on January 28, 2011. He spoke on “Low Carbon Economy – Technology and Policy Challenges: past, present and future”.
- Prof. Ada E. Yonath, Nobel Prize Winner for Chemistry (2009), Department of Structural Biology, Weizmann Institute, Rehovot, Israel, spoke on “The Amazing Ribosome: its tiny enemies and hints about its origin”, at an institute colloquium on February 3, 2011.
- Vice Admiral John J. Grossenbacher (Retd.), Director, Idaho National Laboratory, USA, spoke on “Structure of Nuclear Energy R&D in the USA”, at an institute colloquium on February 9, 2011.

- Dr. Andrew Kerr, Director, Edinburgh Centre on Climate Change, University of Edinburgh, spoke on “Bridging the Intimidating Gap between Good Ideas and the Practical Actions required for delivering a Low Carbon Economy”, at an institute colloquium on February 15, 2011.
- Prof. Ronnie Belmans, Katholieke Universiteit Leuven, Belgium, spoke on “The European Smartgrids Scene”, at an institute colloquium on February 15, 2011.
- Dr. Nitish V. Thakor, Professor of Biomedical Engineering, Electrical and Computer Engineering and Neurology, Johns Hopkins University, USA, spoke on “Building the Brain Machine Interface – Engineer’s Journey into Brain and Mind”, at an institute colloquium on March 2, 2011.
- Ms. Rohini Nilekani, Chairperson of Arghyam, Bangalore, spoke on “Social Challenges, Personal Responses”, at an institute colloquium on March 4, 2011.

Staff Development

The Personnel Training and Development Cell organized 26 training programmes on the most preferred areas for the non-teaching Groups A, B, C and D staff members of the institute. In all, 690 staff members participated in these training programmes. Besides, nine staff members were nominated for training at different organisations to acquire specialised job-related knowledge/skills.

Hindi Cell

Hindi Cell has played a crucial role in providing support to all sections and departments of the institute for effective implementation of Hindi. Today, the circulars, registers, forms, visiting cards, signboards, notice boards, banners and service books are prepared in bilingual form. The Application Software Cell has created a facility for the students to write their names in Hindi for preparing their degree certificates in bilingual form. As the text generated for this facility is in unicode font, we have acquired the corporate license of Akruti package for converting it into non-unicode for packages like pagemaker and photoshop. Akruti package has been kept on the intranet of the institute. The Dean (R&D) office and the IIT Hospital have constructed a number of pages in Hindi and English. The Central Translation Bureau has provided us Hindi translation of its rules and regulations. They have also provided translation of forms for the Academic office.

Hindi Cell trains staff members in Hindi word processing. At present there are 10 staff members preparing for their Hindi typing examination. In the institute we use open source operating systems like

Fedora and Ubuntu, and staff members are being trained to create Hindi facility on these platforms and use it on different tools like 'write', 'impress' and 'spreadsheet'.

During the year, 39 staff members successfully completed the *Pragya* course. Of them, 23 won the first prize, 14 the second prize and two the third prize; each of them under the three categories received a cash prize of Rs. 1200, Rs.800 and Rs.400, respectively.

We have adopted a policy of persuasion and encouragement with suitable incentives for Hindi implementation. This year we have honoured 10 staff members of the Institute for their excellent contribution. Hindi workshops are regularly organized for the staff members to refresh their knowledge of Hindi. We have also extended our support to some government organizations like Central Translation Bureau, Mumbai Mahanagar Telephone Nigam, and Nitie in their training programmes for Hindi translation, noting and drafting.

We celebrated Hindi *Pakhwada* in the month of September 2010. There was an active participation from the staff members. Students and teachers of the Campus School also took part in the programme. Today there is a trend towards use of Hindi in the institute. This shows that we are on right path to fulfil the national aspiration of adopting Hindi in official work.

Student Activities

Sports

The year 2010-11 saw an increase in sports activities at IIT Bombay. Inter-hostel matches for all major sports were held. Hostel-3 won the General Championship for boys and Hostel-10 won the General Championship for girls. Under Indian games, a Kho-kho team was formed. This team played matches against Mumbai District teams. The Inter-IIT Sports Meet 2010 was held at IIT Delhi in the month of December 2010. Girls team won Silver at the Meet. Overall, IIT Bombay secured the fourth position at the Inter-IIT Sports Meet.

Sports camps were conducted for squash, tennis and badminton with eight sessions spread over a month to enable students to participate. PG Sports was conducted round the year with huge success in terms of participation and talent generation. New events such as squash and lawn tennis were started from this year. Overall it provided a good platform for postgraduate students to bond together. Aimed at increasing the alumni-student interaction and developing a sense of belonging, matches were organised for games such as basketball, hockey, football, squash, and lawn tennis. This was highly appreciated by students and alumni alike, earning a permanent entry in the sports calendar with a promised sponsorship from the alumni.

Cultural Events

The Student Activity Centre conducted vocal and instrumental music classes for the benefit of the students to improve their talents. The western dance classes were also held. In order to promote photography and fine arts, workshops on script writing, cinematography and editing were conducted. An exhibition called "KALADARSHAN" was also held where paintings were exhibited.

"Surbahaar" and "Swar Sandhya" – musical programmes by the undergraduate and postgraduate students – were held this year. The excellent performance of the students was highly appreciated by the audience. "Anjali", a Gandhi Jayanti celebration, was organised with the usual fervour and enthusiasm. Under the auspices of SPICMACAY, a concert by Pt. Vishwamohan Bhatt and Pt. Vijay Ghate was held. For the first time an Institute Classical Night was organised by the students. In order to promote music and dance the institute has collaborated with NCPA.

The "Nihilanth" – the second National Debate competition – was conducted from October 15 to 17, 2010. Multiple debate workshops were held to encourage participation by the students in debates. The Inter-Hostel dramatic competition "Performing Arts Festival" was held in the month of March 2011.

The students participated in several student festivals and won the Literary Art Trophy at *Malhar* and the second position in Quiz at *Nihilanth*.

NCC

In all, 178 cadets from IIT Bombay enrolled for NCC. Apart from 10 days of annual training camp, an adventure camp at Kolad in Raigad was conducted. A trekking expedition was also organised for them. NCC cadets participated in a campaign against "Drink-and-Drive" as part of social service.

NSS

NSS organised field visits to a few of those rural communities living far from technology, development and minimum facilities. These trips were organised as part of a course for the first-year undergraduates.

Student Mentor Programme

The Student Mentor Programme successfully helped the undergraduate students through its three parallel programmes, namely, Institute Student Mentor Programme (ISMP), Department Academic Mentor Programme (D-AMP), and Preparatory Course Mentor Programme (PCMP). ISMP primarily deals with the first-year undergraduate students. Under this programme, the mentors, who are senior students, are responsible for helping a set of freshmen to adjust to the new environments and, subsequently, for monitoring their progress throughout the year. D-AMP helps students in each department who are

facing academic problems. PCMP, started this year, looks into the problems related to the reserved category students. There are five course mentors, including one girl, working under this programme.

A workshop was conducted during the orientation of mentors by senior mentors and a role-playing was done to cover and discuss various problems faced by freshmen.

Institute Student Companion Programme

The Student Companion Programme, started this year, provides the postgraduate students a platform for getting help at formal and informal levels. It also aims at the overall development of these students.

Postgraduate Student Activities

An institute-level Teaching Assistant orientation was organised to help the postgraduate students better understand their responsibilities and discharge their duties efficiently.

“Pulse”

“Pulse”, a Science and Technology magazine, was published for the first time.

Mood Indigo 2010

Mood Indigo 2010 was held during December 20-23, 2010. A total of 2300 students participated in the four-day festival. “Desi” was adopted as the theme for Mood Indigo 2010 with a vision to showcase and promote the Indian culture amongst the youth. Specific events like Great Indian Mela, Rajasthan Roots, and Folk Dance Competition were organised to complement the “Desi” theme. The biggest attraction of Mood Indigo was Sumo wrestlers from Mongolia. Byamba and Naranbat, the two Sumo wrestlers, came to the festival to teach the legendary Japanese art of Sumo wrestling to the interested students.

“Aagaaz”, a social initiative to spread awareness amongst the masses on multiple social issues, organised street plays in public places in Mumbai, Ahmedabad and Delhi with the help of college students. Mood Indigo brought together around 45 colleges to put up their performance.

The highlight of “International Night” was the band Katatonia, specially arranged with the help of Swedish Institute in India, and that of “Pronites” was the concert by legendary singer Asha Bhosale who embraced the stage at Mood Indigo for a second time in the last twenty five years.

Techfest 2011

Techfest 2011, IIT Bombay’s Annual International Science and Technology festival, was successfully organized from January 7th to 9th. Techfest celebrated the 14th anniversary of its existence this year. Events

such as competitions, workshops, lecture series, exhibitions, and professional shows introduced the participants to various fields of science and technology. With 85,000 students representing about 2100 colleges from all over India and neighbouring countries like Thailand, Australia, Singapore, Sri Lanka, Venezuela and Nepal, Techfest 2011 was certainly the biggest event till date. As part of the “Techfest 2011”, competitions, lecture series, exhibitions, etc., were organised, as follows:

Competitions: 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 a total prize money of US\$ 8500. “Full Throttle”, a popular competition initiated by Techfest in 2007 which centered around the highly famous IC engine-driven car, received exciting entries. For the very first time swarm robotics was introduced in India through Mars Manouvre, which was a part of the initiative “Techfest World Challenge” aimed at providing a truly international platform. This year, both Nexus (the national rounds held prior to the festival at five cities, viz., Mumbai, Patiala, Bhuwaneshwar, Indore and Kochi) and Inexus (the international rounds held in December 2010 in Sri Lanka, Thailand and Australia in the month of December) were part of “Techfest World Challenge”. “Avalanche” acted as a sequel to last year’s “Free Kick”, and, with a slightly reduced complexity in problem statement, received great entries displaying dexterous real time image processing capabilities. “Prayaas”, an initiative to help the society, aimed at solving the persistent energy crisis, rural and agricultural problems, and health care problems that the society faces today. “Verizon”, a social entrepreneurship competition, was introduced under the umbrella of Techfest 2011 for the very first time. Unlike events under “Prayaas”, the main aim of “Verizon” was to generate ideas and business plans to solve the problems prevalent in the Indian society. “Robowars” lived up to its legacy of being a highly involving event both for the participants and the audience. “Vertical Habitat” and “Citydrive” encouraged out of the box thinking to get innovative designs for sustainable living and efficient roadways. In “Hydranoids”, the concept of hand-powered robots (power transmission through hydraulics) was introduced for the first time. “Lift-off” and “Fulcrum” challenged participants to make a water-rocket and a suspension bridge, respectively, out of popsicle sticks. “Ozone”, the on-the-spot zone, provided the thrill and excitement throughout the three days by hosting a variety of quizzes, many involving activities, junkyard wars, and many other events. The “Laser Tag” and the “Indian Sudoku Challenge” attracted huge participation. “Ozone” also featured the much-awaited high-tech gaming sensations – “Virtusphere” and “Microsoft Kinect”.

Lecture Series: The lecture series proved to be a bridge between the students and eminent personalities. For the first time a nobel laureate delivered a lecture in Techfest. Harold Kroto, winner of the 1996 Chemistry Nobel Prize for the discovery of Buckminster Fullerene, shared his experiences with the students and faculty of IIT Bombay. Micheal Jones, Chief Technology Advocate, spoke about the latest research going on at Google. Mr William Baker, Structural Engineer of the Burj Khalifa, the tallest structure made by mankind, enlightened the crowd on the cutting-edge technology applied in the design and fabrication of the structure. The lecture by Jaap Haartsen, the inventor of Bluetooth, was highly appreciated. The lecture by Mr. Ks Pua on the invention of the pen-drive was the biggest draw of the lecture series and proved to be a highly enriching experience. Lectures by Prof. Proff Feifer, Prof. Holger Bech Neilsen and Dr Charles H. Benett all left the audience with a memory that they can cherish forever. Workshops on underwater robotics, information security, forensics, embedded systems, and haptics supplemented the educational value of lectures and provided the participants with a rich hands-on experience.

Exhibitions: For all the three days of the fest crowds flocked in huge numbers

to the exhibition hangar where exhibits from various universities across the globe and industrial firms were displayed. The audience was left spellbound with the exhibits from the Mazagon Dock and the Defence Research and Development Organisation. For the very first time featured exhibits from the ARS Electronica, the digital media research group from Austria. The exhibits like Lifewriter, Simlinz and Magic Eye left the audience mesmerised.

TechConnect: This is an initiative taken along with IRCC for promoting IIT Bombay R&D and technology transfer to the industries. A second time in a student festival, the event was very well appreciated by the faculty, the industry and the students.

Technoholix: Spanning all the three nights, Technoholix showcased a mix of cultural arts along with high-end technology. A highly popular group Double Dutch Force, arguably the world's best and most celebrated rope skipping group, performed for the first time in India and left everyone spellbound. Euphorie from France had a show on 3D holographic projections. Dunking Devils and Mark Nizer, the worlds best jugglers from USA, left the audience wanting for more. The cosmic circle pyrotechnics group from Austria rendered a beautiful show on the third night that provided a perfect ending to this year's Technoholix.

Scintillations: This was an entirely new segment in the festival which had interactive installations in the night time. Some of the installations worth mentioning are the Stop Motion Animation, the Discovery Dome, the Digital Wall Graffiti, and the TouchMagix Wall. The

audience was left spellbound by the grandeur at display in the event.

The 14th Techfest was a great learning experience for all the participants and the organisers. It will forever remain etched onto the minds of those who were involved with it.

E-cell Activities

Entrepreneurship Cell at IIT Bombay has been very active throughout the year. The major activities conducted are :

Opiniat: An effort to gauge the entrepreneurial needs and ambitions of the students of IIT Bombay.

Entrepreneurship Garage: E-Garage was launched on August 11, 2010. It is the place where innovative ideas are born and the nursery where ideas grow and mature into successful business ventures – a one-stop shop for for all the entrepreneurial needs. Speaker sessions, workshops, business games, and competitions – all under one umbrella of the E-Garage. In order to give the institute a chance to set up its own virtual company and to master the managerial and decision-making skills, E-Garage conducted Strategic Innovation Game(SIG), a simulation-based software that allows participants to run normal companies by making appropriate operational decisions like production and production efficiency, marketing, finance, human resources, sales, reports, and stock market. The teams play in different economy settings that allow to model real-life situations thus making it possible for the participants to learn the impact of their decisions realistically, but in a virtual setting. Fifty four students from the institute sat for four hours listening to the relevant lectures, throughout the game, by Dr. Lois Peters, Dr. William Tracy, and Dr. Dimitri Markovich from Rensselaer Polytechnic Institute (RPI), USA.

ENspace: The entrepreneurship newsletter of IIT Bombay was initiated for promoting entrepreneurial spirit through print medium. It contains information about various events and news relevant to entrepreneurship and it also has an analytical discourse on topics relevant to entrepreneurship. The magazine enjoys huge readership in the institute.

The Entrepreneurship Summit: E-Summit 2011 had conducted panel discussions as well as workshops for aspiring and budding entrepreneurs along with an intensive mentoring programme. E-Summit is India's largest networking forum for students, entrepreneurs, venture capitalists, investors, working professionals, academicians and technocrats, and it provides a platform for the students and faculty of IIT Bombay to collaborate and accelerate the process-flow of innovation, invention and diffusion of business ideas and technologies.

E-Games: E-Games are geared to creating an environment of friendly competition that will enable

future entrepreneurs to learn fundamental concepts, break the psychological barriers and think differently.

Eureka! : This was organized by the Entrepreneurship Cell of IIT Bombay. With a total prize money of USD 50,000, it is Asia's largest Business-Plan competition and the second largest in the world in terms of participation, resources and prize money. Over the years, Eureka!'s unique format comprising mentoring with a transparent judging process has become a model for similar competitions held in India and elsewhere.

Virtual Stock Market

The virtual stock market was an initiative to give an idea about the working of finance and markets to the students. It helps students understand the fundamentals of investment, stocks and various technical details like how different events affect different companies through the simulated web portal. The virtual stock market conducted from October 25 to 27, 2010, from 10 p.m. to 11 p.m. saw more than 3000 registrations with about 1000 people participating daily. A workshop was also conducted on October 22nd at IIT Bombay by market research analysts from ET Now to acquaint the students with the terminology and basics of the stock market. The workshop saw an overwhelming response from the students with more than 300 of them participating in it.

Vulture's Nest 2.0

The second season of the eagerly awaited Vulture's Nest is back to provide funding to budding entrepreneurs. Vulture's Nest is the more aggressive form of the conventional investor's pitch. The US and the UK have had similar shows, but Vulture's Nest was the first such show in India. After a successful run last year, more start-ups are expected to participate as the cap of maximum turnover of Rs.2 crores has been removed.

Placement

Amongst positive vibes about economic recovery and increased hiring, IIT Bombay (IITB) entered its placement season with high expectations in 2010-11. Around 250 organisations participated in the campus placement and over 950 jobs have been offered through on-campus and pre-placement offers. Students from Bachelor of Technology (B.Tech.), Master of Science (M.Sc.), Dual Degree (D.D.), Master of Technology (M.Tech.), Master of Design (M.Des.), Master of Philosophy (M.Phil.), and Doctor of Philosophy (Ph.D.) programmes in various fields of engineering, science and technology, and design participated in the placement process.

The process began in July 2010 with invitation to companies to visit the institute for pre-placement talks. These talks provided avenues for interaction and familiarisation of students with organisations and the

work profile offered by them. The final recruitment began from December 1, 2010, onwards. A small number of the eligible students did not actively participate in the placement process due to their other career choices.

The 'Day 1' of IITB placement saw an unprecedented 28 firms representing some of the most coveted jobs in the industry and participating in the process. A total of 119 jobs were offered to IITB students on Day 1, all belonging to the high-end job market reconfirming the commitment of top recruiters to the IIT Bombay graduates. There was a 50 percent increase over last year in the number of jobs offered on Day 1 and a 33 percent increase in the number of companies visiting the campus.

Inclination towards Engineering and Technology-oriented jobs

The students of IITB continue to demonstrate strong commitment to their core educational background in the choice of employment. This is primarily attributed to the more attractive work profiles and compensation packages offered to IIT graduates by the recruiters. In fact, several students were of the opinion that more technical job profiles could have been offered by recruiting companies considering the interest and availability of the students. More than two-thirds of the students opted for science, engineering and technology-oriented jobs, with companies operating in various sectors of the economy.

Increased Prominence in the Financial Services Sector

The finance sector was a major recruiter this year. With many of the top global companies of this sector preferring IITB over other campuses, the sector saw a rush among the top-level as well as mid-level companies to recruit the brightest and the best from the campus. A variety of profiles were opened up in the sector as these companies have begun to appreciate the analytical and quantitative analysis capability of the IITB students. Over 90 offers were made by financial services sector to IITB students.

Strengthening Presence in the Management Consulting Sphere

About 20 leading management consulting firms, including several global leaders, visited IITB for campus placement this year. These organizations work with large corporations across the globe and help them resolve complex business problems. They are relatively small groups of versatile professionals and carry a reputation of being very selective in their selection of campuses and of having extremely high standards in their recruitment process. With the quality recruits that these companies had last year, they came back with renewed vigour even as some new companies came on board. Over 90 offers were made in the management consulting sector.

Research & Development to the Forefront

With the economy increasingly striving for high-end products and services, a larger number of companies now strive to develop products on the forefront of technology. IITB saw an increase in organisations hiring fresh graduates in the R&D sector. This sector had been steadily growing for the past few years and this year IITB saw some premier job offers in this sector. A total of 16 R&D organisations offered around 70 positions this year.

Good Response from Government/Public Sector

Several IITB students have shown their inclination towards career in the government or public sector organisations. Sector leaders from government organisations and public sector companies, including several Maharatna and Navaratna companies, recruited from IITB. About 45 students have been recruited by these organisations.

Educating the Future Generations

IITB has continued to provide faculty to several educational institutions through campus placement. A total of 37 students, including several with doctoral degree, were offered jobs with educational institutions.

Diverse Recruiters

While the placement season has seen recruiters from the entire spectrum of the industry, the initial part of the season was dominated by a variety of firms from

sectors like management consulting, engineering and manufacturing, finance/banking and FMCG. Most of these firms are world leaders in their respective domains.

Preparing Well-rounded Students

This year a key focus of the placement office was to prepare the students for their placement in the industry. A large number of placement preparatory activities were conducted this year for the students. These included preparatory programmes to enhance communications skills, interview skills and group dynamics.

The highly successful student placement in 2010-11 clearly demonstrated the demand of IITB graduates among the top recruiters in various segments of the economy. The recruiters appreciated the high-level of knowledge and training of our students. A majority of our past recruiters held their faith in our students' abilities and came to recruit in large numbers. The year also saw several new organisations visiting IITB for the first time, and we look forward to fostering long-term relationship with all these organisations.

The success of the placement endeavour can be attributed to the outstanding quality of our students as well as the tremendous support provided by the institute administration, academic units, faculty and staff, alumni and other well-wishers. The placement office thanks them all and looks forward to their continued support.

Academic Program	Registered	Placed*	%Placed
B.Tech.	306	279	91(80)
Dual Degree	225	214	95(93)
M.Tech.	476	412	87(80)
5-yr M.Sc.	16	14	88(72)
2-yr M.Sc.	108	64	59(48)
M.Des.	57	33	58 (***)
M.Phil.	7	3	43 (***)
Ph.D.	52	11**	21 (36)

Placement detail by range of salary offered:

Range of Gross Salary (in Lakh Rupees per annum)	Number of Organisations	Number of Offers Received
Above 8.5	63	286
Between 7.0 to 8.5	46	135
Between 5.5 to 7.0	68	309
Between 4.5 to 5.5	49	122
Less than 4.5	36	106
Total	262	958

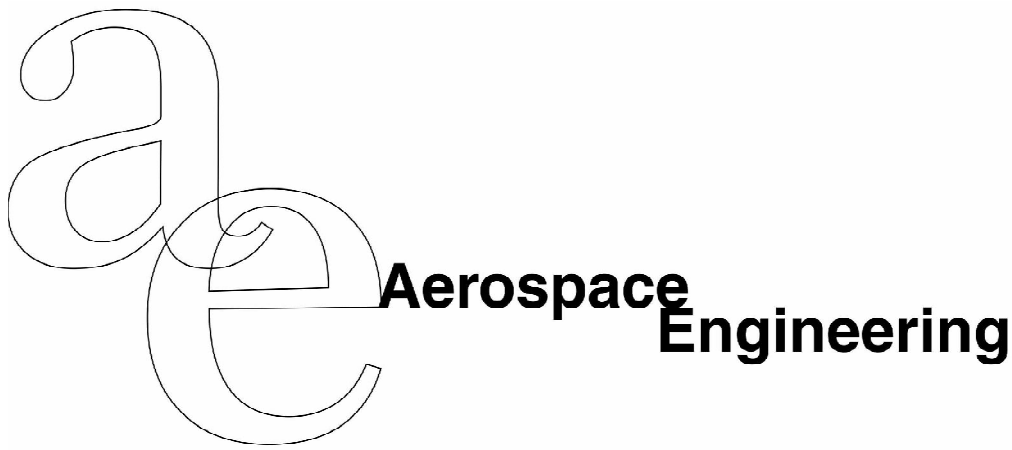
Placement detail by type of organisation:

Sr. No.	Sector	Number of Organisations	Number of Offers Received
1	Engineering. and Processing	84	265
2	Software	36	118
3	Consulting	19	95
4	Finance	22	91
5	Tech	26	91
6	R&D	17	69
7	IT	10	63
8	Analytics	18	46
9	Public Sector	8	46
10	Education	9	37
11	FMCG	3	20
12	Services	6	11
13	Others	4	6
Total		262	958

- * This includes a few students who were placed without assistance from Placement Office and those who opted out of placement pursue other career opportunities or higher studies.
- ** Many Ph.D. students opted for post-doctoral fellowships, faculty/research positions in government institutions or other career choices without availing the services of Placement Office, and we have not included their jobs in this count.
- *** Special dedicated placement initiatives for M.Des. and M.Phil. students were started by Placement Office for the first time in 2010-2011.

Concluding Remarks

We feel 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 in raising the level of education and research programmes in our quest for excellence. In particular, I would like to mention his emphasis on research that is directed to solving the problems of the nation and the world, which we have taken quite seriously. I would like to thank the Ministry of Human Resource Development for their timely and generous support. Finally, I would like to thank the faculty and staff of the institute for their devoted efforts in taking the institute forward on its path to excellence.



Introduction

Established in 1966-67 as “Department of Aeronautical Engineering”, the department was renamed as “Department of Aerospace Engineering” in 1992. The academic programmes of the department focus mainly on the science and engineering/technology behind flight vehicles and their sub-systems. The courses cover fundamentals of fluid dynamics, propulsion, structural mechanics, vehicle dynamics, control and guidance, etc., as well as applications of these fundamentals to the analysis of aerospace vehicles and also to some extent their design.

The department runs strong undergraduate and graduate programmes 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 academic programmes include the four-year B.Tech. degree programme, the five-year dual degree programme, the two-year M.Tech. programme and the Ph.D. programme.

The department is an excellent fusion of academics, research and technology development, coupled with education beyond the classroom and co-curricular activities. The landmark project PRATHAM, the IIT Bombay student satellite programme, initiated over three years back, involving complete design, development and launch of a nano-satellite, under the design-build-fly initiative nurtured during the past few years by the department, indicates the new trends and new opportunities in the learning of satellite and space technologies in the department. The project is entirely a students’ project involving students from all departments of IIT Bombay and mentored by faculty from several departments as well as scientists from the Indian Space Research Organization.

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 academic research of high quality thrive both amongst the students and the faculty.
- To organize short intensive courses, conferences and seminars on current technological developments which will be of benefit to the surrounding community.
- To undertake sponsored research of practical relevance and provide developmental consultancy which will promote contact with and be of service to industries and to government aerospace programmes
- To provide leadership in curriculum design and development.

The department cherishes the hope that its graduates will be the leaders of tomorrow in the aerospace engineering and technology arena. Their education is patterned with this in view.

Department Strength

The department faculty strength includes 19 full time faculty members, 1 Adjunct Professor and 1 Emeritus Fellow. The distinguished faculty of the department includes two faculty members holding the prestigious Alexander Von Humboldt Fellowship and one faculty member holding the Institute Chair Professor award. In addition, there are around 13 permanent and 31 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 313 students out of which about 113 are graduate and 200 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, 6W Ar-Ion laser from Spectra Physics, computer controlled 3D traverse system 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 as a part of mechatronics related facilities; the **Structures Lab**, which has facilities for composite fabrication, material testing, components testing, strain and vibration measurements, drop weight and ballistic impact testing, modal testing, bench type modular polariscope system and reflective polariscope system for photo-elasticity studies, high strain rate research facilities based on the split-Hopkinson's bar; the **Propulsion Lab**, which houses axial flow compressor research test rig for rotor tip aerodynamics studies, low speed low turbulence wind tunnel, diffuser test rig for turbine exhaust diffuser system for aerodynamic analysis, centrifugal blower and motor control unit for air delivery to the cascade tunnel; the **MAV Lab**, which has facilities for building & flying aircraft models, hardware in loop simulation for MAVs, facilities for design, development and implementation of autonomous control in MAVs; and the **ARDB Associate Center for CFD**, which provides computational assistance with a 252 CPU high performance computing cluster and One GPU sever and two serial Dual Quad Core Nehalem E5520 high performance servers, and work stations. The department also houses the **ARDB Center for Aerospace Systems Design and Engineering (CASDE)**, which conducts R&D activities and continuing education related to Multidisciplinary Design Optimization, MAV system design and integration and systems engineering. Major **computational facilities** include a 23 node Intel Xeon Cluster, SGI Altix 8 CPU, & SGI Altix 14 CPU machines. **Aircraft Design and Computing Lab (ADCL)** houses nine PCs loaded with latest versions of softwares for teaching aircraft conceptual design and analysis, such as (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. A **Shock Tunnel**, used for the simulation of hypersonic flow, 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, has been recently designed, developed and built in the department. Models such as re-entry bodies, scramjet engine and missile-shaped bodies can be tested to study its aerodynamics.

New infrastructure

A new laboratory is being set up for research in the field of cardiovascular flow dynamics.

Other New Set-ups

Major activities proposed

Study of high speed jet acoustics in Anechoic chamber for simulating far field environment.

Academic Programmes

The department offers a four-year undergraduate B.Tech. programme, a two-year graduate M.Tech. programme (admission to a five-year integrated dual degree programme has been discontinued from this year) and a Ph.D. programme. The specializations offered this year for M.Tech. programme 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 a scenario where India is poised to become a global economic superpower. As a part of the institute-wide revamping of the UG curricula, the department's 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", entered its third year of implementation. At the end of the year the earlier UG curriculum stands phased out. 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. Three new PG electives in the area of dynamics and control, specifically related to spacecraft navigation, guidance and control were introduced.

The department aims to provide students with a cordial atmosphere and an opportunity to acquire a multidisciplinary perspective to engineering problems.

Student Intake

B.Tech.	32
Dual Degree	30
M. Tech.	45
Ph.D.	18

Degrees Awarded

B. Tech.	20
M. Tech.	24
Dual Degree	16
Ph.D.	5

R& D Activities

The department has maintained and nurtured close association with the Aeronautical, Space, Defense and other industries in the country through invited lectures and 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 programmes 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 departmental faculty actively pursues research programmes that address basic engineering problems as well as applications in various fields of aerospace science and technology such as:

Experimental Aerodynamics, Aero-acoustics, Computational Fluid Dynamics, Grid Generation, Computational Electromagnetism, Hypersonic flows, Heat Transfer, Aerothermodynamics, Infrared Signature Suppression, Turbo-machinery and Air-breathing 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, Composite materials and Impact/Ballistic impact studies, spacecraft attitude dynamics, control, orbit estimation; Satellite-based navigation of land or flight vehicles, MAV research & development.

While the research and development activities of the department continue to contribute to national aerospace programmes, some of the faculty members are also engaged in basic research collaborations 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.

GPS Aided Inertial Navigation of Airplanes:

Contribution in GPS-based air navigation: Currently, standard single frequency Global Positioning System (GPS) receivers provide a positioning accuracy of approximately 4-20 m. This precision can be further enhanced with dual frequency receivers which are able to provide accuracy around 1-12 m. However, these errors are quite large when it comes to safety of life applications such as aircraft landings. Differential GPS (D-GPS) allows for precise positioning using information from reference stations on the ground. Carrier phase tracking is one such D-GPS approach which allows range determination with centimeter level accuracy. However, carrier phase measurements require estimation of unknown fixed integer ambiguities before the receiver can start determining its position. Using single difference smoothed pseudo-range measurements the integer ambiguities can be estimated with reasonable accuracy. This methodology brings the position error down to centimeter level which can meet the Federal Aviation Authority (FAA) regulations for Category-III (CAT-III) precision approaches. This paper examines single differenced smoothed pseudo-range measurements for integer ambiguity resolution for precise positioning using carrier phase tracking. Simulation of GPS receiver performance using this methodology has been carried out and demonstrates positioning with centimeter level accuracy for the approach phase of flight. Positioning errors are also compared for dual frequency and carrier phase tracking modes.

Our GPS-aided inertial navigation research is concerned with aiding a low-cost inertial measurement unit with GPS measurements so that the two can be used together for air navigation to render air travel in India affordable. Loose integration of GPS with IMU is in progress. Tightly-coupled and deeply integrated GPS-INS (inertial navigation system) will be examined subsequently.

Spacecraft payload controllers

We have developed a controller for scanning the motion of a thematic mapper mounted on a spacecraft bus for remote sensing. We expect that this controller would be similar to the one developed at ISRO. An ISRO Satellite Center control engineer is invited this week to examine this controller and evaluate.

Sponsored Research Projects:

The income received from sponsored research and consultancy projects:

Total Sponsored Research Projects	: 61
New	: 7
Ongoing	: 41
Completed	: 13

List of sponsored research projects

Sponsored Projects initiated in 2010-11			
Sr. No.	Project Title	Agency Name	Project Status
1	Estimation of angle of attack in Mini Aerial Vehicles	Aeronautical Research & Development Board	Ongoing
2	Centre for Aerospace Systems Design and Engineering (CASDE) - Phase-III.	Aeronautical Research & Development Board	Ongoing
3	R & D in Collaborative Missions - Phase 1	Aeronautical Research & Development Board	Ongoing
4	Manufacturing of MAVs	Aeronautical Research & Development Board	Ongoing
5	Study of Flow Characteristics of the Fontan's Circulation with Energy Booster	Aeronautical Research & Development Board	Ongoing
6	Numerical modelling of deflagration to detonation transition (DDT) in a detonation tube with commercial CFD software.	Defence Research & Development Organisation	Ongoing
7	IIT(B) STC/ viscous drag on a scramjet engine in a shock tunnel through wall heating rate measurements.	Indian Space Research Organisation	Ongoing
Sponsored Projects initiated in 2009-10			
Sr. No.	Project Title	Agency Name	Project Status
1	Co-ordinatorship Allowances.	Aeronautical Research & Development Board	Ongoing
2	Annual Symposium of AR&DB's Aerodynamics Panel at IIT, Bombay during 17-18.04.2009	Aeronautical Research & Development Board	Ongoing
3	Upgradation of Associate CFD Centre at IIT, Bombay	Aeronautical Research & Development Board	Ongoing
4	Systems/ Systems Engineering Panel Meeting on 01-02.09.2009 at Aerospace Engg. Deptt. I.I.T., Bombay	Aeronautical Research & Development Board	Project Closed
5	Development of liquid fuel based combustor operating in flameless combustion mode.	Aeronautical Research & Development Board	Ongoing
6	DST - FIST to the Aerospace Engg. Dept.	Department of Science & Technology	Ongoing
7	IIT(B) STC/ Development of High Resolution schemes for flow computations on space vehicle configurations using unstructured grids	Indian Space Research Organisation	Ongoing

8	IIT(B) STC/ Transonic Buffeting of Expendable and Reusable Launch vehicles	Indian Space Research Organisation	Ongoing
9	IIT(B)STC / Study of Shock Turbulent boundary layer interaction in high speed air intake - Phase II	Indian Space Research Organisation	Ongoing
10	IIT(B)STC / IITB Student Satellite Project (ISSP)	Indian Space Research Organisation	Ongoing
11	Assimilation of open source software in science and engineering education	Ministry of Human Resource Development	Ongoing
12	Virtual laboratory experiments	Ministry of Human Resource Development	Ongoing
13	NAL/ Hardware-In-Loop-Simulator for MAV Applications	National Aerospace Laboratories	Ongoing
14	De-sensitized Tip Design for Axial Flow Compressors.	Pratt & Whitney Co. Canada	Ongoing
Sponsored Projects initiated in 08-09			
Sr. No.	Project Title	Agency Name	Project Status
1	ARDB'S Grant-in-Aid for Financial support for one day workshop on Aero-Acoustics at IIT, Bombay on 23.05.2008	Aeronautical Research & Development Board	Ongoing
2	Co-operative Control of Fixed Wing MAVs.	Aeronautical Research & Development Board	Ongoing
3	Development of Bayesian Framework for Calibration of Twin Spool Turbofan Engine.	Aeronautical Research & Development Board	Ongoing
4	Development of Baseline Free Damage Detection Technique for Laminated Composite Structures.	Aeronautical Research & Development Board	Ongoing
5	Metrics and Motifs in Architectures of Complex.	Aeronautical Research & Development Board	Project Closed
6	Noise Suppression of High Subsonic Free Jets.	Aeronautical Research & Development Board	Ongoing
7	Steady/ Unsteady Low Speed Viscous Flow Computations on Static / Moving Grids.	Aeronautical Research & Development Board	Ongoing
8	MAV to Monitor areas of interest continuously without human intervention.	US Department of Defence	Ongoing

Sponsored Projects initiated in 07-08			
Sr. No.	Project Title	Agency Name	Project Status
1	AR&DB'S Systems/Systems Engg. Panel Meeting IIT, Bombay during 29.02.08 to 01.03.2008.	Aeronautical Research & Development Board	Ongoing
2	Axial fan performance evaluation and enhancement strategies under static and dynamic inflow distortions.	Aeronautical Research & Development Board	Ongoing
3	Mesoscale Modeling For Monsoon Related Weather Predictions - Phase II	Council of Scientific & Industrial Research	Ongoing
4	Capability development to meet MAV08 mission requirements.	Defense Research & Development Organisation	Technically Closed
5	DST / Development of microcombustors	Department of Science & Technology	Technically Closed
6	Study of Shock-turbulent Boundary Layer Interaction in High-speed air Intake. (IITB STC)	Indian Space Research Organisation	Ongoing
7	Novel strength enhancing insert assemblies.	Indian Space Research Organisation	Ongoing
8	Assessment of turbulence models in hypersonic reacting three-dimensional flow around re-entry flight vehicles. (IITB STC)	Indian Space Research Organisation	Ongoing
9	Development of a three components Accelerometer balance for use in IITB shock tunnel (IITB STC)	Indian Space Research Organisation	Ongoing
10	Siemens Power Generation Inc./ Annular diffuser aerodynamics for turbine delivery system.	International Collaboration Projects	Ongoing
11	Garuda Grid Computing Workshop at IIT Bombay on 28-30.06.2007	Sponsored by Private Organisations	Technically Closed
Sponsored Projects initiated in 06-07			
Sr. No.	Project Title	Agency Name	Project Status
1	Design and Development of 0.3 meter fixed wing autonomous micro aerial vehicle.	Aeronautical Research & Development Board	Project Closed
2	Thermodynamic Design of Wankel Engine.	Defense Research & Development Organisation	Technically Closed

Sponsored Projects initiated in 05-06			
Sr. No.	Project Title	Agency Name	Project Status
1	Experimental investigation of flow over after-burner diffuser cone.	Defense Research & Development Organisation	Technically Closed
2	Estimation of aerodynamic coefficients of 450kg bomb using CFD.	Defense Research & Development Organisation	Technically Closed
Sponsored Projects initiated in 04-05			
Sr. No.	Project Title	Agency Name	Project Status
1	“Centre of Excellence for Aerospace Systems Design and Engineering (CASDE) Phase -II”	Aeronautical Research & Development Board	Technically Closed
Sponsored Projects initiated in 03-04			
Sr. No.	Project Title	Agency Name	Project Status
1	Rapid Methods For Design Space Exploration and Identification of Multiple Optima	International Collaboration Projects	Project Closed
Sponsored Projects initiated in 02-03			
Sr. No.	Project Title	Agency Name	Project Status
1	RCS Computations of the ALH	Sponsored by Private Organisations	Project Closed
Sponsored Projects initiated in 93-94			
Sr. No.	Project Title	Agency Name	Project Status
1	Design & Development of appropriate rehabilitation aids for the physically handicapped using light weight durableJaipur Foot - Ph.II	Department of Science & Technology	Project Closed
Sponsored Projects initiated in 92-93			
Sr. No.	Project Title	Agency Name	Project Status
1	A study of optimum selection of lag terms through sensitivity of aircraft response to aerodynamic influence coefficient	Aeronautical Development Agency	Ongoing

Sponsored Projects initiated in 91-92			
Sr. No.	Project Title	Agency Name	Project Status
1	Multi block grid generation in three dimensional domains	Aeronautical Research & Development Board	Ongoing
Sponsored Projects initiated in 90-91			
Sr. No.	Project Title	Agency Name	Project Status
*	Indigenous development of aircraft system maintenance simulator (ASMS) for light combat aircraft	Aeronautical Development Agency	Ongoing
Sponsored Projects initiated in 89-90			
Sr. No.	Project Title	Agency Name	Project Status
1	Supersonic Panel Method	Aeronautical Development Agency	Ongoing
Sponsored Projects initiated in 87-88			
Sr. No.	Project Title	Agency Name	Project Status
1	Development of Liquid Oxygen system, Maintenance, Training simulator	Aeronautical Development Agency	Ongoing
2	Panel Method for LCA	Aeronautical Development Agency	Ongoing
Sponsored Projects initiated in 82-83			
Sr. No.	Project Title	Agency Name	Project Status
1	Dynamics of prewired compressor rotor blades	Aeronautical Research & Development Board	Ongoing

Consultancy Projects

Number of Jobs	: 20
Number of Faculty Involved	: 7

Extension activities

Conferences

Ramchandran, P.

Organized an international conference on “Python for education and scientific computing” held at Hyderabad, India between December 13-18th 2010. Major part of the funding for this conference was through an MHRD sponsored project for which Prof. Ramchandran, P., is one of the P.I.s.

CEP courses

The following faculty members conducted various CEP courses as under:

Hablani, H.

5-day CEP and QIP courses:

Course 1 “*Spacecraft Attitude Dynamics and Control*,” May 17-21, 2010; attended by some 20 teachers from various engineering colleges in the country and two engineers from DRDL, Hyderabad

Course 2 “*Satellite Orbits: Applied Perturbations, Maintenance, and Launch*,” May 31- June 04, 2010; attended by some 20 teachers from various engineering colleges in the country

Joshi, A.

6-Day open CEP course on “*Classical Control Systems – Theory and Hands-on (CCS_10)*”, during 10-15 May 2010 at IIT Bombay. (Coordinator: Prof. A. Joshi, Aero. Engg. Deptt.)

5-Day open CEP course on “*Dynamics and Control in State-space (DCSS_11)*”, during 10-14 January 2011 at IIT Bombay. (Coordinator: Prof. A. Joshi, Aero. Engg. Deptt.)

Workshop**Ramchandran, P.**

As part of an MHRD sponsored project we have conducted 9 workshops all over India for the spread of the adoption of the Free and Open Source Python programming language for scientific computing.

Video course

A video course on “Aerodynamics of Compressors and Turbines”, Author: **Prof. Bhaskar Roy**, Aerospace Dept. was released by CDEEP, IIT, Bombay in May 2010. The course has 20 lectures, each of 1.5 hour duration, and 3 Tutorials.

Visitors to the Department

Prof Kaoru Maruta, Institute of Fluid Science, Tohoku University, Sendai Japan

Prof H Nakamura, Institute of Fluid Science, Tohoku University, Sendai Japan

Dr D. Lee, Institute of Fluid Science, Tohoku University, Sendai Japan

Mr M. Hori, Institute of Fluid Science, Tohoku University, Sendai Japan

They visited the Department of Aerospace Engineering on 14-15th Dec 2010 and delivered lecture/presentation on “micro combustion and micro reactors” to the students and faculty of the department

George Schmidt, Draper Laboratory (Retired), MIT, Boston, USA, delivered lectures on “Inertial Navigation System and GPS Technology Trends INS-GPS Integration Architectures and Performance Comparisons” October-November 2010

Gopal Mathur, Technical Fellow, The Boeing Company, Huntington Beach, CA,” Vibro-acoustics and Noise Control of Composite Structures”, on January 31, 2011:

Prof. Brij Agrawal, Distinguished Professor, Director, Space Research and Design Center, Naval Postgraduate School, Monterey, California, USA, on “Deformable mirrors; reconstruction and closed-loop algorithms for adaptive optics” on March 14, 2011.

**Conferences/Symposia/Workshops/
Seminars (Participated/Papers Presented)****National****Agrawal, S., Hablani, H.B.**

“Automated Descent and Landing of Aircraft using D-GPS and Smoothed Pseudorange Measurements ,” *International Conference and Workshop on Emerging Trends in Technology*, **February 26-27, 2011**, Paper No. ICWET 334, Thakur Engineering College, Mumbai

Pandey, P., Puri, K., Ramachandran, P.

Presented a paper, “PySPH: Smooth Particle Hydrodynamics with Python”, at *SciPy.in 2010 Python for education and scientific computing* held at Hyderabad, India between December 13-18th 2010.

Agrawal, P., Ramachandran, P.

Presented a paper, “A parallel 3D flow solver in Python based on vortex methods”, at *SciPy.in 2010 Python for education and scientific computing* held at Hyderabad, India between December 13-18th 2010.

Sharma, S.D.

Participated in Workshop on Advances in Thermoacoustic Instability of Combustion Systems, held on 3rd January, 2011 at IIIT Pune and delivered an invited talk on “*Some experiments on thermoacoustics of the Rijke tube with geometric modifications and forced vorticity.*”

Sudhakar, K.

Member, National Steering Committee for ICAUV 2012, International Conference Autonomous Unmanned Vehicles scheduled during 24-25 Feb 2012,

Member, National Advisory Committee, 5th Symposium on Applied Aerodynamics and Design of Aerospace Vehicles (SAROD), November 16-18, 2011

Member, National Advisory Committee, 25th National Convention of Aerospace Engineers, IE(I) and BITS, Mesra November 4-5, 2011.

Publicity Chair, National Symposium on Challenges of Futuristic Systems, April 01, 2011

Menezes, V.

“A Shock-Wave-Based Therapeutic Device,” *National Symposium on Shock Waves 2011* (NSSW 2011), Bangalore, March 15, 2011.

Mitra, M.

Invited Talk: “Computational modeling for study of dynamic and wave characteristics of carbon nanotubes”, *International Conference on Carbon Nanotechnology: Potential and Challenges*, Dec. 2010, IIT Kanpur.

Rane, N., Pawar, V., Sinha, K.

“Effect of geometric variations on three-dimensional flow separation in a practical scramjet inlet”, *12th Annual AeSI CFD Symposium*, Indian Institute of Science, Bangalore, India, 11-12 August, 2010.

Roy, B.

“Aerodynamics of Tip Leakage Flows in a High Hub-Tip Ratio Low Speed Axial Flow Compressor Rotor”; FMFP2010-567; *37th National & 4th International Conference on Fluid Mechanics and Fluid Power*; IIT, Madras, Dec, 2010.

Sharan, N., Chatterjee, A.

“Axisymmetric Navier Stokes solver using Python and Cython”, *12th Annual CFD Symposium*, Bangalore, August 2010.

“Parallel Computation of Axisymmetric Jets,” *Python for Education and Scientific Computing (SciPy.in 2010)*, Hyderabad, December 2010.

International

Vaibhav Vashistha, Srinivasu Dakuri, Pradeep, A.M, Roy, B.

Participated and presented a paper at the *ASME TURBO EXPO 2010*, Glasgow, Scotland, UK.

Suzith A, Dinesh Bhatia, Aditya Mulmule, Pradeep, A.M, Roy, B.

Participated and presented a paper at the *ASME TURBO EXPO 2010*, Glasgow, Scotland, UK.

Pant, R.S.

Presented a paper “Delta Design Exercise: A tool for teaching interactions amongst disciplines” *3rd Annual Conference on Higher Education Pedagogy*, Blacksburg, Virginia Tech, February 3-4, 2011

Pant, R.S.

Presented eight papers at *10th Annual AIAA Aviation, Technology, Integration, and Operations (ATIO) Conference*, 13th -15th September 2010, Fort Worth, Texas, USA

Roy, B.

Participated in *American Society of Mechanical Engineer’s Conference, ASME/IGTI Turbo Expo 2010*, at Glasgow, Scotland, June 14 to 18, 2010, and presented the papers:

1) “A Study Of Use Of Sweep And Lean In Turbine Blade Tips In A Low Subsonic Cascade Tunnel”, **GT2010-22971**

2) “Study Of Tip Flows In High Hub-To-Tip Ratio Low Speed Axial Compressors With Varying Tip Gaps, Inflow Conditions And Tip Shapes”; **GT2010-22092**

Ramachandran, P., Kaushik., C.P.

Presented a paper “PySPH: A Python framework for SPH”, *SciPy10: Python for scientific computing*, held between June 28—July 3, 2010, at Austin, TX.

Ramachandran, P.

Presented a paper, “Python in science and engineering education in India”, *SciPy10: Python for scientific computing*, held between June 28—July 3, 2010 at Austin, TX.

Presented an invited talk, “Mayavi: bringing data to life” at *Python for education and Scientific Computing Conference* held at Hyderabad, India between December 13-18th 2010.

Sinha, K.

Attended *13th Asian Congress of Fluid Mechanics* in Dhaka, Bangladesh, Dec 16-20, 2010.

Sharma, S.D. and Murugan, K.N.

Participated in the *16th AIAA/CEAS Aeroacoustics Conference*, held during June 7-9, 2010 in Stockholm, Sweden and presented a paper “Near Field Aeroacoustics of a Jet from Elliptical Nozzle at M=0.8.”

Sharma, S.D.

Participated in the *37th National and 4th International Conference on Fluid Mechanics and Fluid Power (NCFMFP2010)*, held at IIT Madras, Chennai during December 16-18, 2010 and delivered an Invited Talk on “Innovative Approach to Generation of Streamwise Vortices in the Wake of a Blunt Trailing Edge”

Akram M., Sudarshan Kumar

Presented a paper “Flame dynamics in mesoscale diverging channels” participated in *8th Asia Pacific Conference on Combustion* held during 10-13th Dec. 2010 at Hyderabad India.

Sheelam, S., Sudarshan Kumar

Presented a paper “Optimization of a strut based fuel injection system for a supersonic combustor,” in *8th Asia Pacific Conference on Combustion* held during 10-13th Dec. 2010 at Hyderabad India.

Nehe, P.B., Sudarshan Kumar, Pangavhane, D.R.

Presented a paper on “Flame Stability in Swiss-roll Microcombustors and their application in Micro-reformers for Syngas Generation,” in *PEA-AIT International Conference on Energy and Sustainable Development: Issues and Strategies (ESD 2010)*, held during 2-4th June 2010 at Chiang Mai, Thailand.

Akram, M., Sudarshan Kumar

“Flame dynamics in mesoscale diverging channels”, *8th Asia Pacific Conference on Combustion*, Hyderabad, India (2010).

Guruganesh, R., Bandyopadhyay, B., Arya, H.

“A New Approach for Observer Design with Application to Micro Aerial Vehicle”, 6th, *ICECE 2010*, Dhaka, Bangladesh, Dec 18-20 2010

Joshi, A.

“Structure - Control Interactions in Flexible Aerospace Vehicles”, AIAA paper No. AIA-2010-2948, 51st *AIAA SDM Conference*, Rosen Centre, Orlando, Florida, USA, 12-15 April, 2010.

Joshi, A. Ramakrishna, D., Mujumdar, P.M. and Y. Krishna

“Identification of Multiple Input Forces in Vibration Testing of Flight Vehicle Structures”, AIAA paper No. AIAA-2010-2805, 51st *AIAA SDM Conference*, Rosen Centre, Orlando, Florida, USA, 12-15 April 2010.

Mandal, J. C.

“Development of Riemann Solver for Incompressible Flow Computations and Its Applications”, *International Conference on Mathematical Modelling and Applications to Industrial Problems (MMIP 2011)*, March 28-31, Mathematics Department, National Institute of Technology Calicut, Kerala, India 2011.

Mandal, J. C., Sonawane C.

“Simulation of Moderator Flow and Temperature Inside Calandria of CANDU Reactor using Artificial Compressibility Method”, *International Conference on Thermal Energy and Environment (INCOTEE 2011)*, 24-26 March 2011, Kalasalingam University, India (Communicated to Heat Transfer Engineering).

Mandal, J.C., Sonawane C.R., Iyer A., GosaviInamdar J.A.

“Incompressible flow computations over moving boundary using a novel upwind method”, Institute for Computational Fluid Dynamics (ICFD), *Conference on Numerical Methods for Fluid Dynamics*, 12-25 April 2010, University of Reading, UK.

Ramprasad, C., Arya, H.

“Estimation of Aerodynamic Angles in a Mini Aerial Vehicle”, *International Conference on theoretical, applied, computation and experimental mechanics*, IIT Kharagpur, 27-29 Dec. 2010.

“Multi-Stage Fusion Algorithm for Estimation of Aerodynamic Angles in Mini Aerial Vehicle”, 49th *AIAA, Aerospace Sciences Meeting*, Orlando, USA, Jan 4-7, 2011.

Shaja, A.S., Sudhakar, K.

“Classification of Systems from Component Characteristics”, *20th Anniversary International INCOSE Symposium*, 12-15 July 2010, Chicago. Won the Best Paper Award for a paper based on student work.

Sinha, K., Rane, N.J., Pawar, V.

“Numerical Investigation of three Dimensional shock/ boundary-layer interaction in a hypersonic inlet”, 28th *International Symposium on shock waves*, The University of Manchester, United Kingdom, 17-22 July 2011.

Soni, S., Mitra, M. and Singh, R.

“Effect of non-uniform load on buckling behaviour of composite laminates, with and without cutouts”, *International Conference on Composites for 21st Century: Current & Future Trends*, Jan. 2011, Bangalore

Poddar, B., Bijudas, C.R., Mitra, M., Mujumdar, P.M.

“Time reversibility of Lamb wave in composite plate”, *International Conference on Composites for 21st Century: Current & Future Trends*, Jan. 2011, Bangalore.

Kumar, A., Kulkarni, G., Poddar, B., Mitra, M., Mujumdar, P.M.

“Time Reversibility of Lamb Wave for Damage Detection in Isotropic Plate”, AIAA-2010-2627, 51st *AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference*, Florida, Apr. 12-15, 2010

Sonekar, P., Mitra, M.

“Wavelet-Based Model for One-Dimensional Periodic Structure”, AIAA-2010-2791, 51st *AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference*, Florida, Apr. 12-15, 2010

Invited Lectures

National

Mahulikar, S. P.

“Review of Infrared Signatures of Military Vehicles,” Defense Laboratory, Jodhpur, November 23, 2010.

Mandal, J.C.

“High speed flow computations on Unstructured Grids using Solution Dependent Weighted Least Squares Gradients”, 03 September 2010, ANSYS Software Pvt. Ltd. Pune, India.

“Incompressible flow computations using pseudo-compressibility method”, 03 September 2010, ANSYS Software Pvt. Ltd. Pune, India.

“High Resolution Finite Volume Computations on Unstructured Grids using Solution Dependent Weighted Least Squares Gradients”, 03 September 2010, School of Engineering & Technology, Indian Institute of Information Technology (I2IT), Pune, India.

“A novel method for incompressible flow computations using pseudo-compressibility approach”, 04 September 2010, School of Engineering & Technology, Indian Institute of Information Technology (IIT), Pune, India.

Sinha, K.

Invited talk in Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), held on January 17-18, 2011, Bangalore.

International

Mahulikar, S.P.

“Infrared Signature Studies of Aerospace Vehicles,” Department of Mechanical Engineering, Yonsei University, Seoul, S. Korea, May 18, 2010.

“Infrared Signatures of Aircraft & Helicopters,” School of Mechanical and Aerospace Engineering, Gyeongsang National University, Jinju, S. Korea, December 17, 2010.

Mandal, J.C.

“High Resolution Finite Volume Computations on Unstructured Grids using Solution Dependent Weighted Least Squares Gradients”, 16 April 2010, School of Engineering, Swansea University, UK.

“Incompressible flow computations using pseudo-compressibility method”, 16 April 2010, School of Engineering, Swansea University, UK.

“High Resolution Finite Volume Computations on Unstructured Grids using Solution Dependent Weighted Least Squares Gradients”, 20 April 2010, Rolls Royce, Derby, UK.

“Incompressible flow computations using pseudo-compressibility method”, 20 April 2010, Rolls Royce, Derby, UK.

Sharma, S.D.

“Some Experiments with Vortex Flows and Application of Circulation,” Institute of Mechanics, University of Kassel, Germany, June 11, 2010.

Significant Awards/ Distinctions

Mahulikar, S.P.

“IIT Bombay Review Paper Award,” IIT Bombay, September 2010; for: Mahulikar *et al.* 2007, Infrared signature studies of aerospace vehicles, *Prog. Aerospace Sci.* 43(7-8), 218-245.

Mitra, M.

Award: INAE Young Engineer Award 2010

Pant, R.S.

Member of Executive Committee of Mumbai Branch of The Aeronautical Society of India, 2010-11.

Ramachandran, P.

“Excellence in Teaching Award,” IIT Bombay, September 2010.

Nominated as a member of the Python Software Foundation in April 2010.

Sharma, S.D.

Editor-in-Chief International Journal of Emerging Multidisciplinary Fluid Sciences (IJEMFS)

Shimpi, R.P.

Appointed as the Governor’s Nominee on the Management Council of ‘North Maharashtra University’.

Honorary Work

Arya, H.

Member of Programme Management Board for National Programme on Micro Aerial Vehicle (NPMICAV)

Hablani, H.B.

Associate Editor:

AIAA Journal of Guidance, Control, and Dynamics
IEEE Transactions on Aerospace and Electronic Systems

Reviewer for Defense Science Journal, a DRDO publication

Joshi, A.

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

Senior Member, American Institute of Aeronautics & Astronautics

Reviewer for the American Institute of Aeronautics and Astronautics (AIAA) SDM Conferences to be held in April 2011

Member of Technical Committees on “Structural Dynamics”, “Adaptive Structures” and “Guidance, Navigation and Control” of the American Institute of Aeronautics and Astronautics (AIAA)

Mahulikar, S.P.

Reviewed papers submitted to, *Infrared Physics & Technology*, June 2010, & *Heat Transfer Engineering*, February 2011.

Mandal, J.C.

Evaluator for faculty promotion in Aerospace Engineering Department, Indian Institute of Science, Bangalore.

Expert member of review committee for Aerodynamic Configuration Design Review of Cannon Launched Guided Missile (CLGM), Armament R&D Establishment (ARDE) Pune, 28-04-2011.

Chaired sessions at INCOTEE 2011, MMIP 2011 international conferences

Reviewed NPTEL lectures, “Foundation of Scientific Computing” by Prof. Tapan Sengupta, IIT Kanpur.

Reviewed manuscript for AIAA Journal

Reviewed manuscripts for Computers and Fluids

Reviewed manuscripts for International Journal for Numerical Methods in Fluids.

Member of International Advisory Committee for 2nd Inter. Conference on Computational Methods for Thermal Problems, Dalian, China, Sept 5-7, 2011.

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

Member of International Scientific Committee for the 2nd African Conference on Computational Mechanics, 5-8 Jan. 2011, Cape Town, South Africa

Member of National Advisory Committee of International Conference on Thermal Energy and Environment, 24-25 March 2011 (INCOTEE 2011), Kalaslingam University, Tamilnadu, India.

Menezes, V.

Reviewed papers submitted to, *International Journal of Hypersonics*, June 2010, *Journal of Aircraft*, December 2010 & *Chinese Journal of Aeronautics*, December 2010.

Mitra, M.

Reviewer:

Journal of Sound & Vibration; *Smart Material & Structures*; *Computational Mechanics*; *Computers & Structures*; *Journal of Applied Physics*; *Mechanics of Advanced Material & Structures*

Pant, R.S.

Reviewed papers for AIAA Journal of Aircraft, IMechE, **Part G: Journal of Aerospace Engineering**, 2010.

Pradeep, A.M.

Reviewed papers for the *Journal of Power and Energy*: Part A, AIAA Journal and *Transactions ASME*, *Journal of Fluids Engineering*.

Ramachandran, Prabhu

Part of the program committee for the “Python for Scientific Computing Conference, 2010” held at Austin, Texas, USA.

Part of the program and organizing committee for the “Python for Education and Scientific Computing Conference, 2010” held at Hyderabad, India.

Sinha, K.

Reviewed papers for *Computers and Fluids*, March 2011; *International Journal of Hypersonic*, February 2011; 4th International Conference on Fluid Mechanics and Fluid Power, September 2010; *International Journal of Spray and Combustion Dynamics*, April 2010

Sudarshan Kumar

Reviewed papers for the following journals *Combustion and Flame*; *Proceedings of the combustion institute*; *International journal of hydrogen energy*; *Fuel*; *Aerospace Science and Technology*; *Energy and Fuels*; *International journal of Emerging Multidisciplinary fluid sciences*; *Recent patents in Engineering*; *International journal of hypersonics*; *Defence Science journal*

Sudhakar, K.

Member, Technical Sub-group, National Civil Aircraft Development Programme, NAL, CSIR, that reviews Technical Activities of NCAD at regular intervals.

Coordinator, Systems/Systems Engineering Panel, ARDB. Role expects to provide impetus to activities in the area of Systems/Systems Engineering in Aerospace sector with a view to encourage/promote R&D relevant to futuristic aeronautical programme through grants.

Chairman, Technical Committee, National Programme on Micro Aerial Vehicles. The TC-NPMICAV is responsible to seek and recommend proposals for funding. A total of Rs 80 Crores are to be disbursed through R&D projects to IITs, IISc, NAL and other institutions.

Co-opted Member, Kakodkar Committee Appointed by MHRD to Recommend Autonomy Measures to Facilitate IITs Scaling Greater Heights

Member, Academic Council, Indian Institute of Space Science Technology

Member, ARDB SIGMA Panel on Mini-Aerial Vehicles. Entrusted by ARDB with the mandate to promote activities in the area of Mini/Micro Aerial Vehicles (MAV). SIGMA acts as a recommending panel for ARDB Grants for R&D Projects in MAV.

Faculty Members and their Specializations

1. Pradeep A. M.

Active and passive flow control, Flow characteristics of internal flows and turbo-machinery, Design and performance enhancement strategies in turbo-machinery

2. Hemendra Arya.

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

3. Avijit Chatterjee.

Computational Fluid Dynamics, Aerodynamics, Computational Electromagnetics

4. Hari Hablani

Spacecraft, Missiles, Launch Vehicles Guidance, Navigation and Control

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 nano-tubes and nano-composites, 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

Lighter-Than-Air systems, Aircraft Design, Air Transportation, Optimization

14. Prabhu Ramchandran

Particle Methods, Vortex methods, Computational Fluid Dynamics, Scientific Computing

15. Bhaskar Roy

Aircraft Propulsion, Axial Flow Compressor, Gas Turbine Aerodynamics

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

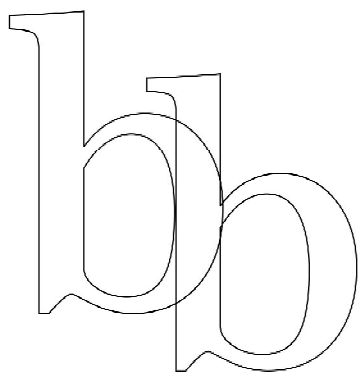
Computational fluid dynamics, Turbulence modeling, Hypersonic flows

20. Sudarshan Kumar

Combustion and Propulsion

21. Krishnarao Sudhakar

Systems Design & Systems Engineering



Biosciences & Bioengineering

Introduction

The Department of Biosciences and Bioengineering comprises mainly two areas representing Biotechnology and Biomedical Engineering. The department 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 endeavors to produce the leaders of tomorrow in this field. With the formation of the department, there has been a great impetus to research in the Biosciences at IIT Bombay.

Infrastructural development:

- IKA RV 10 Rotory vacuum evaporator
- Lambda 25 UV Visible Spectrometer
- Eppendorf refrigerated centrifuge
- Minus 86 degree deep freezer
- Genepix scanner with software
- Decyder 2D Preinstalled computer
- Refrigerated floor shaker
- Tetrad dissection system

Academic Programme

The academic programme currently consists of the M.Sc. Biotechnology (DBT- supported), Dual Degree M.Sc.-Ph.D. programme in Biotechnology, M.Tech. Biomedical Engineering and Ph.D. programme. The M.Tech. programme of the department 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 programme is extremely popular with doctors, and, like the M.Sc. programme, draws a very large pool of applicants. The institute has boosted this academic activity by funding four new scholarships in the department, and a few more are being added.

The academic programme of the department has been running successfully and a review of achievements over the years has shown positive trends both in terms of student career profile and the utility and quality of the prescribed courses. Extensive interactions with

groups in Electrical Engineering, Chemical Engineering, Aerospace Engineering, Computer Science and Engineering, Chemistry, and Mathematics synergistically augment the facilities of these laboratories making them truly unique in the country.

Degrees Awarded

M.Sc.	:	16
M.Tech.	:	21
Ph.D.	:	15

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.

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 department that is well endowed can attract the best faculty, students and researchers to itself and keep them motivated and productive to deliver the BioDepartment's stated mission of making an impact on health care delivery. This is our endeavor at IIT's BioDepartment.

The department 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 programmes that have been developed in the country.

Sponsored Research Projects

New : 25
Ongoing : 62
Completed : 06

Consultancy Projects

No of Jobs : 5

List of sponsored research projects in tabular form

Sponsored Projects initiated in 2010-11

Sr. No.	Project Title	Agency Name	Status
1	“Serum profiling of malaria patients by using proteomic techniques”	BRNS	Ongoing
2	BRNS/ Nanoengineered Alginate Carrier Glucose Sensors Using Competitive Binding Resonance Energy Transfer Assays Based on Apoenzymes	BRNS	Ongoing
3	BRNS/ Functional promiscuity of arginase in <i>Aspergillus niger</i> metabolism	BRNS	Ongoing
4	Role of microtubules dynamics in cell cycle and cell motility: Implication in cancer chemotherapy.	BRNS	Ongoing
5	Sequence Dependent Oligomerization of α -synuclein : Relevance to Parkinson’s Disease.	CSIR	Ongoing
6	Gold Nanostructures and polymeric nanoparticles for breast cancer therapy.	BRNS	Ongoing
7	Drug Loaded Surfactant Nanoparticles For Therapy in Acute Respiratory Distress Syndrome	DBT	Ongoing
8	Drug loaded surfactant nanoparticles for therapy in acute respiratory distress syndrome.	DBT	Ongoing
9	Proteomic analysis of human gliomas for biomarker discovery.	DBT	Ongoing
10	Nanoengineered Calcium-Sensing Tattoo Materials for Early Diagnosis of Milk Fever.	DBT	Ongoing
11	Oligomerization of α -Synuclein in Parkinson’s Disease (PD)	DBT	Ongoing
12	“Interactive meeting of DBT-IIT Bombay partnership on January 6-7, 2011	DBT	Ongoing
13	Nanoengineered Lab-on-a-Particle System.	DBT Innovative Yong Biotechnologist Award	Ongoing

Sr. No.	Project Title	Agency Name	Status
14	Force generation by Actin and Microtubules.	DBT Innovative Yong Biotechnologist Award	Ongoing
15	DBT- Project Assistantship of Mrs. Meghna Singh.	DBT	Ongoing
16	DBT- Project Assistantship of Mrs. Dipty Singh.	DBT	Ongoing
*	Development of Multifunctional Magnetic Nanoparticles for Cancer	Department of Information Technology	Ongoing
17	Understanding and modulating the alpha-synuclein aggregation in Parkinson's disease	DST	Ongoing
18	Study of regulatory factors involved in chromosome dynamics during meiotic cell division using budding yeast, <i>Saccharomyces cerevisiae</i> as a model system.	DST	Ongoing
19	DST/ Financial assistance for organizing 10th Meeting of the 'Programme Advisory Committee (PAC)' During 20-21 September 2010	DST	Ongoing
20	Deciphering the role of KRH1 and KRH2 in glucose and ammonium mediated signaling of filamentation response in	DST	Ongoing
21	IITB-WIN Collaborative research activities.	Waterloo Institute of Nanotechnology	Ongoing
22	NANOPARTICLES FOR DELIVERY OF ANTICANCER DRUGS IN RESISTANT TUMORS.	Indo-US Science & Technology Forum, New Delhi	Ongoing
23	Proteomics Laboratory	MHRD	Ongoing
24	Prototype development for Optical Fiber Based Pathogen Detection	Naval Materials Research Laboratory	Ongoing
25	Wadhwani center of excellence	Wadhwani Foundation	Ongoing
Sponsored Projects initiated in 2009-10			
Sr. No.	Project Title	Agency Name	Status
1	Structure and Functional Characterization of Bacterial Cell Deivision Protein SepF and UgtP and their roles in Z-Ring and Septum formation"	BRNS	Ongoing
*	"Characterization of the fermentative pathway in <i>Pichia pastoris</i> and study of its role in central carbon metabolism"	BRNS	Ongoing
2	NANOENGINEERED "SMART TATOO" LACTATE SENSORS	CSIR	Ongoing

Sr. No.	Project Title	Agency Name	Status
3	In Search of the novel pathways, enzymes or operons involved in the degradation of aromatic compounds using metagenomic approach.	DBT	Ongoing
4	DST/ Controlled Drug Delivery using Layer-by-Layer Self-Assembly with Antibody Conjugated Magnetic PLGA Nanoparticles using Dual Drug Regimen for Breast Cancer Therapy	DST	Ongoing
5	MICRO-CANTILEVER BASED SENSORS FOR THE DETECTION OF VAPOURS OF EXPLOSIVE CHEMICALS-REG	DST	Ongoing
6	DST/ Development and evaluation of injectable biopolymer based scaffolds for cartilage tissue engineering	DST	Ongoing
7	Financial assistance for organization of 'One Day Satellite Workshop on Cancer & Nanotechnology : Therapeutics and Diagnostics " on 17.02.2010 by Indian Institute of Technology - Bombay, Mumbai -400076.	DST	Ongoing
Sponsored Projects initiated in 2008-09			
Sr. No.	Project Title	Agency Name	Status
1	A lab on chip of Cardiac Diagnostics	Aeronautical Development Agency	Ongoing
2	In Vivo Choice of Translation Initiation Sites (TISA) in the Human Malaria Parasite <i>P. falciparum</i> "	BRNS	Ongoing
3	Population heterogeneity in <i>Saccharomyces Cerevisia</i> : Causes and Consequences of Phenotypic Variation"	BRNS	Ongoing
*	Development of Anti-Malarial Therapeutics Based on Chemically Modified Small Interfering RNAs.	DBT	Ongoing
4	Urease and cresol-red immobilized nanoengineered alginate microspheres as sensors for urea monitoring.	ICMR	Ongoing
5	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	Ongoing
Sponsored Projects initiated in 2007-08			
Sr. No.	Project Title	Agency Name	Status
*	Conversion of Cellulose and hemi-cellulose into sugars and ethanol	CSIR	Ongoing
1	Effects of Protein Kinase CK2 on Microtubule Dynamics and Cell Cycle Progression: Implications in Cancer Chemotherapy	CSIR	Ongoing

Sr. No.	Project Title	Agency Name	Status
*	Prediction of the kinetics of competitive metabolic networks in hydrocarbon degrading organisms : development of a structured model and experimental validation.	DBT	Ongoing
*	Genomic analysis of microbial resistance mechanisms using 'Streptomyces coelicolor as a model system'.	DBT	Ongoing
2	Polymer optical waveguide biosensors.	DBT	Ongoing
3	Computational investigations into the mechanisms of information processing in medium spiny projection neurons in relation to reward processing and learning.	DBT	Ongoing
4	Development of nanoparticulate gelling bio materials for traumatic injuries to the eye.	DRDO	Ongoing
5	FtsZ as Antibacterial drug target.	DST	Ongoing
6	Agrobacterium tumefaciens mediated transformation as a tool for targeted mutagenesis in Aspergillus niger	DST	Ongoing
7	Development of Nanoparticles and Nanovesicles for Delivery of Anticancer Drugs Through Inhalation Route	Private Organisations	Ongoing
Sponsored Projects initiated in 2006-07			
Sr. No.	Project Title	Agency Name	Status
1	Rational Development of Molecular Tools for the Chemoenzymatic Synthesis of Complex Carbohydrates Production and the Characterization of Human ST3Gal IV Variants having different Substrate Specificities	CSIR	Ongoing
*	Exploration of Design and Fabrication of Sensors for DEtection of Explosives	DRDO	Ongoing
2	Regulation of carbon & nitrogen metabolism in saccharomyces cerevisiae.	DST	Completed
3	Centre for Nano Technology (Nanoelectronics.....nanobiotechnology.	DST	Ongoing
4	Ab initio quantum chemical investigations on C-H... pieÅfÅ, Å, Å€ interaction between saccharides and aromatic amino acids: Implications in binding and recognition in biological system.	DST	Ongoing
5	Pseudomonas putida CSV86: Hydrocarbon first or sugar first.	DST	Completed
6	Project on the Development of "Micro-Cantilever based Sensors for the Detection of Vapours of Explosive Chemicals".	DST	Ongoing
7	Comparison of Herbal Oil Surfactants for Therapy in Adult Respiratory Distress Syndrome	International Collaboration Projects	Ongoing

Sponsored Projects initiated in 2005-06

Sr. No.	Project Title	Agency Name	Status
1	Career Award For Young Teachers (CAYT) Of AICTE To School Of Biosciences & Bioengg., IIT Bombay, Powai Mumbai-76.	All India Council for Technical Education	Ongoing
2	"Controlled Release of Immunomodulating Agents from Nanoengineered Alginate Carriers" DAE YSRA	BRNS	Ongoing

Sponsored Projects initiated in 2004-05

Sr. No.	Project Title	Agency Name	Status
1	DAE YSRA Entitled "Evaluation of Herbal Based Surfactants for Therapy in Meconium Aspiration Syndrome"	BRNS	Ongoing
2	Development of Optoelectronic Devices For Detection Of Water-Borne Pathogens	NAVAL MATERIALS RESEARCH LABORATORY	Ongoing
3	Enhancement of Benzaldehyde Biotransformation Project (M/S. Emmellen Biotech Pharmaceuticals Ltd.	Sponsored by Private Organisations	Ongoing

Sponsored Projects initiated in 2003-04

Sr. No.	Project Title	Agency Name	Status
1	"Studies on Immune Cell Signalling Mechanisms"	BRNS	Ongoing

Sponsored Projects initiated in 1996-97

Sr. No.	Project Title	Agency Name	Status
1	Metabolism of 4-Aminobutyrate and related enzymes in Acidogenic Aspergillus Niger	CSIR	Ongoing

Sponsored Projects initiated in 1995-96

Sr. No.	Project Title	Agency Name	Status
1	Identification of the Intracellular inducer of Saccharomyces cerevisiae galactose regulon gene expression system.	CSIR	Ongoing
2	Metabolism of 4-Aminobutyrate and related enzymes in Acidogenic Aspergillus Niger.	CSIR	Ongoing
3	Citric acid fermentation by yeast	CSIR	Ongoing

Sponsored Projects initiated in 1994-95

Sr. No.	Project Title	Agency Name	Status
1	Electrical properties and neurotransmitter ... in smooth muscle	DST	Completed
2	Construction of novel strains of <i>Saccharomyces cervisiae</i> for the purpose of expressing proteins in high yield at a diminished cost.	DST	Completed

Sponsored Projects initiated in 1993-94

Sr. No.	Project Title	Agency Name	Status
1	Protein Kinase(s) mediated regulation of phosphatidylinositol-4-kinase in lymphocytes"	BRNS	Ongoing
2	Mechanisms of Citrate overproduction in <i>Aspergillus Niger</i>	DST	Completed
3	Biophysical investigation of sympathetic nerve - smooth muscle junctions	DST	Completed

Sponsored Projects initiated in 1988-89

Sr. No.	Project Title	Agency Name	Status
1	Development of Hemorheological and Biochemical norms in Progression and Regression of various types of Cerebrovascular Episodes	CSIR	Ongoing

Sponsored Projects initiated in 1985-86

Sr. No.	Project Title	Agency Name	Status
1	M.Sc./M.Tech. (Biotech.) Programme	DBT	Ongoing

Sponsored Projects initiated in 1975-76

Sr. No.	Project Title	Agency Name	Status
1	Regional Sophisticated Instrumentation centre	DST	Ongoing

Patents:

Patents filed: 8

Extension activities**Student exchange programme****Sanjeeva Srivastava**

Initiated student exchange programme between IIT Bombay and University of Alberta, Canada

Aijaz Rashid

Research Scholar of Dulal Panda visited the University of Alberta, Canada, for 3 months under institute exchange programme.

Patankar S.

Co-organizer of the Young Investigators Meeting 2011, with Ron Vale (UCSF, San Francisco), Saima Aijaz (JNU, New Delhi) and Mrinalini Puranik (NCBS, Bangalore). The Young Investigators Meeting (YIM) is a national initiative to attract Indian postdoctoral researchers working abroad to return to India and start independent research programmes. YIM also aims to mentor young investigators working in India and build networks to strengthen Indian science.

Visitors to the Department

There were a number of visitors to the department. Some of them are as follows:

Ms. Arundhati “Shamoni” Maheshwari, M.Sc. Biotechnology, USA (Department of Molecular Biology and Genetics, Cornell University). She delivered a lecture on “An Investigation into the Molecular basis of Hybrid Incompatibility.”

Prof. John Kennelly, Dean, Canada (Faculty of Agricultural, Life & Environmental Sciences, University of Alberta). He delivered a lecture on “An Overview of Faculty of Agricultural, Life & Environmental Sciences (ALES) at the University of Alberta.”

Prof. Nat Kav, Associate Dean (Academic), Canada (Agricultural, Food & Nutritional Science, University of Alberta). He delivered a lecture on “Proteomics and Recombinant Antibodies for Agricultural Biotechnology.”

Frank Gu, Ph.D., Assistant Professor, Canada (Department of Chemical Engineering, Waterloo Institute of Nanotechnology, University of Waterloo). He delivered a lecture on “Polymeric Nanomaterials for Cancer Therapy.”

Sorab N. Dalal, ACTREC (Tata Memorial Centre). He delivered a lecture on “Dissolution of Cell-cell Adhesion and Metastatic Progression: Is it Just Breaking Contacts?”

Prof. M.A. Vijayalakshmi, Director, Vellore (Center for Bio Separation Technology (CBST), Vellore Institute of Technology). She delivered a lecture on “Pseudobiospecific Affinity Chromatography”.

Dr. Harish Joshi, Ph.D., Associate Professor, USA (Department of Cell Biology, Emory University). He delivered a lecture on “Hopeful Trip from Herbs to Humans”.

Dr. Rituparna Sinha Roy, Postdoctoral Fellow, Cambridge (Department of Medicine, Harvard Medical School, Brigham and Women’s Hospital). She delivered a lecture on “Engineering Novel Biomolecules for Biology and Medicine.”

Dr. Pravin A. Nair, Ph.D., Research Associate, USA (Sloan-Kettering Institute New York). He delivered a lecture on “Mechanistic Insights to DNA Ligases through Biochemical and Structural Studies”

Dr. Suchita Bhattacharyya, CA, (Salk Institute for Biological Studies). She delivered a lecture on “Differential Requirements for Key Proteins of the Clathrin Pathway in Ebola GP versus Marburg GP Mediated Viral Infection”.

Prof. Umesh Desai, USA (Department of Medicinal Chemistry and Institute for Structural Biology and Drug Discovery, Virginia Commonwealth University).

He delivered a lecture on “Rational Design of New Anticoagulants”.

Prof. Christopher E. Rudd, molecular Immunology Head, Cell Signalling Section, UK (Department of Pathology University of Cambridge). He delivered a lecture on “T Cell Signals for Motility and Interactions in Lymphnodes.”

Babu Ponnusamy, Ph. D., Postdoctoral Fellow, USA (Department of Medicinal Chemistry, University of Utah). He delivered a lecture on “Glycomics of Cells of the Immune System”.

Dr Megha, Programme Manager, (The Wellcome Trust/ DBT India Alliance). She delivered a lecture on “Empowering the Best Scientists to Succeed in India”

Professor Baishnab C Tripathy, New Delhi (School of Life Sciences Jawaharlal Nehru University). He delivered a lecture on “Improving protein contents, nitrogen use efficiency and carbon metabolism in plants-a transgenic approach”.

Dr. Radhika Madhavan, Bangalore (National Center for Biological Sciences TIFR). She delivered a lecture on “Large Scale Functional Mapping of Hippocampal CA3-CA1 Connections”

Dr. Satya Krishna Savanur, Senior Faculty, Thane (Department of Library and Information Science, Joshi-Bedekar College). He delivered two lectures on “Writing with a Purpose” and “Injecting Cohesiveness in Writing”.

Rakesh Kumar Singh, Ph.D., Visiting Fellow, USA (Department of Biomedical Sciences, Florida State University). He delivered a lecture on “Regulated Histone Proteolysis and its role in Genome Maintenance”.

Dr. Deepak Kumar Sinha, Paris (Laboratoire de Physique Statistique, Ecole Normale Supérieure). He delivered a lecture on “Photocontrol of protein activity in a single cell of a live organism”.

Bidisha Banerjee Sinha, Paris (“Membrane and Cellular Functions” Group, Institut Curie). She delivered a lecture on “Understanding mechanosensing by caveolae”

Prof. P. Gunasekaran, Head (Biological Sciences, Madurai Kamaraj University). He delivered a lecture on “Metagenomics approach for antimicrobial drug development”.

Dr. Malini Laloraya, Scientist EII, Kerala (Rajiv Gandhi Centre for Biotechnology).

She delivered a lecture on “Estrogen mediated networks at embryo implantation”

Dr. Harmit Malik, Associate Member, Division of Basic Sciences, Early Career Scientist, HHMI (Fred Hutchinson Cancer Research Center, Seattle). He delivered a lecture on “Evolution of centromeres and Origin of Species in Animals”.

Prof. Pankaj Kapahi, PhD, Associate Professor, California (Buck Institute for Age Research, Redwood Blvd, Novato). He delivered a lecture on “A conserved role for TOR in mediating the lifespan extension benefits of dietary restriction”.

Dr Keith Brain, Ph.D., MB/BS, Senior Lecturer, UK (Neuropharmacology, School of Clinical and Experimental Medicine, University of Birmingham). He delivered a lecture on “Electrical and electrochemical methods for monitoring neurotransmitter release: beyond carbon fibres”

Prof. Michael Chan, USA (Department of Chemistry, Ohio state university, Columbus). He delivered a lecture on “Pyrrolysine: From Discovery to Biotechnology”.

Dr. Rahul Ribeiro, Assistant Professor, Delhi (Mechanical Engineering Department, Indian Institute of Technology). He delivered a lecture on “Bone joint failure and repair materials”.

Dr. B.J.Rao, Professor, Mumbai (Dept. Biol. Sciences, Tata Institute of Fundamental Research). He delivered a lecture on “Biology of Genome Dynamics: A peep into its various regimes from nano-sec to evolutionary time scales”

Dr. Supratim Ray, Post-doctoral Research Associate, Boston (Howard Hughes Medical Institute and Department of Neurobiology, Harvard Medical School). He delivered a lecture on “Studies of attention at multiple scales of neural integration”

Govind V. Kaigala, Ph.D., Switzerland (IBM Research Laboratory – Zurich). He delivered a lecture on “Lab-on-a-chip/Microfluidic technologies For chemical and biochemical assays”

Dr. Jaydeep Bhattacharya, Postdoctoral Fellow, Germany (Institute of Bio and Nanosystem-2, Forschungszentrum Juelich). He delivered a lecture on “Interdisciplinary Aspects of Nano-Biotechnology for the Development of Bio-Sensor”.

Dr. Ranjita Bhattacharya (Ghosh Moulick), Postdoctoral Fellow, Germany (Institute of Bio and Nanosystem-2, Forschungszentrum Juelich). She delivered a lecture on “Field Effect Transistor Arrays For Biomolecular Sensing”.

Dr. K.T.Nishant, Post-doctoral fellow, NY (Dept. of Molecular Biology and Genetics, Cornell University, Ithaca). He delivered a lecture on “The eukaryotic genome is remarkably stable in vegetative growth and meiosis”.

Dr. Vandana Sharma, California (Sanford-Burnham Medical Research Institute, La Jolla). She delivered a lecture on “In search for a Model and Therapy for Congenital Disorders of Glycosylation (CDG) – Few models and Fewer therapies.”

Dr. Sharad Gupta, Lecturer and Academic Coordinator (University of California, Riverside). He delivered a lecture on “Optical Characterization and Imaging of Native and Engineered Tissues”.

Prasenjit Bhaumik, Ph. D., Postdoctoral Fellow, USA (Macromolecular Crystallography Laboratory, National Cancer Institute at Frederick, NIH). He delivered a lecture on “Development of Antimalarial inhibitors targeting *Plasmodium* parasite plasmepsins”.

Dr. Carsten Daub, Japan (Riken Institute). He delivered a lecture on “Novel Regulatory Mechanisms in the Mammalian Transcriptome”.

Dr. Sandhya Padmanabhan Koushika, Bangalore (National Centre for Biological Sciences, Tata Institute of Fundamental Research). She delivered a lecture on “Pre-synaptic vesicle transport: role of motors and adaptors “

Dr. Ullas Kolthur Seetharam, Mumbai (Department of Biological Sciences Tata Institute of Fundamental Research Homi Bhabha Road, Colaba). He delivered a lecture on “Importance of Sirtuins in governing organismal physiology: From metabolic homeostasis to lifespan determination and from mitochondrial functions to microRNA transcription”

Murali Krishna Ghatkesar, PhD, Research Associate, USA (University of Virginia Charlottesville). He delivered a lecture on “Real-Time Label-Free Biosensing with Nanomechanical Microcantilevers”.

Dhiren R. Thakker, Ph.D., Ferguson Distinguished Professor and Associate Dean, USA (Economic Development and International Partnerships, UNC Eshelman School of Pharmacy, The University of North Carolina at Chapel Hill). He delivered a lecture on “Absorption of Therapeutic Agents Across the Intestinal Epithelial Barrier: A Tortuous Journey”.

Prasun K. Mukherjee, Ph.D., Mumbai, (Nuclear Agriculture and Biotechnology Division, Bhabha Atomic Research Centre). He delivered a lecture on “The plant beneficial fungi *Trichoderma* spp.- genes, genomes and beyond”.

Rui L. Reis, CEng, MSc, PhD, DSc, MD (Doctor h.c), Associate Professor with Habilitation, Director, 3B's Research Group, Portugal (Biomaterials, Biodegradables and Biomimetics, Dept. of Polymer Engineering, University of Minho). He delivered a lecture on "Tissue Engineering and Regenerative Medicine".

Beena Krishnan, Senior Post Doctoral Fellow, Amherst (Gierasch Lab, Dept. of Biochemistry & Molecular Biology, University of Massachusetts). She delivered a lecture "Unraveling the mechanisms of folding and function of Serpins: In vitro and in vivo".

Prof. Dylan Edwards, Head, England (School – Biological Sciences at the University of East Anglia, Norwich). He delivered a lecture on "Latest in Research on topics of Biotechnology and Bioinformatics."

Dr. Sutapa Chakrabarti, Post-doctoral Fellow, Germany (Max Planck Institute of Biochemistry, Structural Cell Biology, Martinsried). She delivered a lecture on "Molecular mechanisms and regulation of the RNA-dependent ATPase activity of the nonsense-mediated mRNA decay factor, Upf1".

Haridas B. Rode, Ph.D., Post-Doctoral Associate (Chemical Genomics Centre of the Max Planck Society, Dortmund). He delivered a lecture on "Kinase inhibition: Targeted cancer therapy."

Anirban Banerjee, Post Doctoral Researcher, USA (Center for Microbial Sciences, San Diego State University, California). He delivered a lecture on "Passport Across Blood-Brain Barrier: The GBS Way"

Collins Assisi, Assistant Project Scientist, USA (Cell Biology and Neuroscience, University of California, Riverside). He delivered a lecture on "The role of network architecture in olfactory information processing".

Suhita Nadkarni, Postdoctoral Scholar, California (Computational Neurobiology Lab, The Salk Institute for Biological Studies, San Diego). "Sophisticated Synapses - A quantitative insight into complex components of neuronal networks".

Prof. David L Kaplan, Professor and Chair, USA (Department of Biomedical Engineering Tufts University, Director : NIH Tissue Engg. Resource Centre). He delivered a lecture on "New Strategies for Tissue Engineering".

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

National

Sandipan Ray and Sanjeeva Srivastava

Oral presentation, "Serum proteome analysis of vivax and falciparum malaria", *Clinical Proteomics: technology and beyond*, held during Nov 26-27, 2010 at ACTREC, Mumbai.

Sanjeeva Srivastava

Oral presentation, "High throughput proteomics for translational research", *CDRI-NIPER symposium*, held during March 3-5, 2011 at Lucknow, U.P.

"Protein Identification & Characterization" Workshop on LC/MS, Center of excellence, Agilent Technologies, Bangalore, Feb 23-24, 2011.

Manjeet Kumar

Presented the poster entitled "Comparative genomics analysis of completely sequenced microbial genomes reveals the ubiquity of N-linked glycosylation in prokaryotes" (Authors: M.Kumar and P.V.Balaji) at the Indo-US Symposium on *Modern Trends in Macromolecular Structures (MTMS - 2011)* held at IITB, February 21-24, 2011.

Chaudhari, R., Daily, J. P. and Patankar, S.

"Anti-oxidant networks in *Plasmodium falciparum*", *DAE-BRNS Life Sciences Symposium-2010*, BARC, Mumbai.

Prabhakar, P.K.

Presented the poster entitled "Rational design of *Campylobacter jejuni* α -2,3/2,8 sialyltransferase mutants that enhance the affinity for lactose" (Authors: P.K. Prabhakar, A. Srivastava, P.V. Balaji, K.K. Rao) at the *Bioinformatics Symposium "Accelerating Biology"*, held during Dec. 14-16, 2010 at Centre for Development of Advanced Computing (C-DAC), Pune, India.

Taylor E, Kaviratna A, Banerjee R, Webster T.J.

"Vesicular lipid nanoparticles (liposomes) for the treatment of medical device infections", *2010 MRS Fall Meeting Proceedings* (2011).

International

Sanjeeva Srivastava

Oral presentation "SPRI-microarrays", *Joint Indo Canadian Meeting on Development of Low Cost Lab on a Chip Medical Devices for Health Monitoring*, held during January 7–11, 2011 at IIT Bombay, India.

Sandipan Ray, Komal Pawar, Karthik Kamath, Santosh Taur, Nithya Gogtay, Urmila Thatte, Swati Patankar and Sanjeeva Srivastava

Poster presentation “Comprehensive serum proteome analysis of vivax and falciparum malaria”, *International meeting - recent developments in malaria research*, held during Dec 1-3, 2010 at, ICGEB, Delhi.

Sanjeeva Srivastava, Manuel Fuentes and Joshua LaBaer

Poster presentation “Nucleic Acid Programmable Protein Arrays and surface plasmon resonance imaging technology to discover biomarker and unravel protein interaction network,” *Advances in Microarray Technology*, held during May 25-26, 2010 at Dublin, Ireland.

Santanu K. Ghosh

Participated Young Investigator Meeting, 2011 at Bhubaneswar, India - “Unravelling mechanism of faithful partitioning of chromosomal and extra-chromosomal DNA elements”

Amit Prabhakar and Soumyo Mukherji

“Effect of bend radius on the sensitivity of C-shaped embedded polymer waveguide based lab on a chip sensors.”, MNE2010 - 36th International Conference on Micro & Nano Engineering, Genoa.

Jitendra Satija and S. Mukherji

“U-Bent Fiber Optic LSPR Sensor: Optimization of Sensor Parameters”, *10th International Conference on Fibre Optics and Photonics:PHOTONICS-2010*, Guwahati, India.

Indrajit Boiragi, Roshan Makkar, Bikash Dev Choudhury, Soumyo Mukherji, and K.Chalapathi.

“Evanescent Field Absorption Based Photonic Polymer Waveguide Biosensor”, *10th International Conference on Fibre Optics and Photonics: PHOTONICS-2010*, Guwahati, India.

Rani Dutta, Reshma Bharadwaj, Soumyo Mukherji, and T. Kundu

“Study of Localized surface Plasmon resonance based optical fiber sensor,” *10th International conference on fiber optics and photonics (PHOTONICS 2010)*.

Invited Lectures

National

Dulal Panda

“Inhibition of microtubule dynamics blocks mitosis and retards cell migration: Implications for cancer chemotherapy”, Indian Association for Cancer Research meeting in Indian Institute of Chemical Biology, Kolkata.

“Tweaking microtubule dynamics inhibits mitosis and cell migration: Implications for cancer chemotherapy”, IIT Kanpur, January 2011.

“Inhibition of FtsZ assembly dynamics: A promising approach for antibacterial therapy”, North Eastern Hill University, Shillong, March 2011.

Banerjee, R.

“Plenary lecture on Nanomedicine”, in *National Science Congress, 2011*

Srivastava Sanjeeva

Oral presentation, Rajiv Gandhi Center for Biotechnology (RGCB), Trivandrum, Jan 2011, “Developing novel proteomic techniques to translate bench-side promises into bed-side reality”.

Oral presentation, Amrita University, Kollam, Jan 2011, “Virtual proteomics laboratory: gel-based proteomic techniques”.

Oral presentation, Yashraj Biotechnology Ltd., MIDC, Navi Mumbai, Dec 2010, “Proteomics and biomarker discovery: promises and challenges”.

Oral presentation, “Clinical Proteomics: technology and beyond”, *ACTREC*, Mumbai, Nov 2010.

International

Dulal Panda

“Tweaking microtubule dynamics inhibits mitosis and cell migration: Implications for cancer chemotherapy”, University of Binghampton, USA, September 2010.

Phale, P.

“International Congress of Environmental Research”, in University of Mauritius Mauritius, Sept 16-20, 2010.

“International conference on Genomic Sciences, VII convention of BRSI”, in Madurai Kamraj University, Madurai, 12-14 Nov 2010.

“79TH Annual Meeting of the Society of Biological Chemists”, in India, Indian Institute of Science, Bangalore, Dec 13-15, 2010.

“National symposium on Trends in Biological sciences”, in S P Univesristy, Anand Jan 28-29 Jan 2011.

Invited lecture and Chairperson at International conference on “Recent trends in developing bioremediation strategies for Hexachlorocyclohexene (HCH) and other chlorinated contaminants”, Indo-Swiss collaboration in Biotechnology, in Univ of Delhi, New Delhi, Feb 9-11, 2011.

Srivastava Sanjeeva

“Protein microarrays for biomarker discovery”, in Conway Institute, University College Dublin, Ireland, May 2010.

Banerjee, R.

“Nanotechnology platforms for drug delivery”, *Indo-US Symposium for Innovative Medicines*, 2011.

Balaji, P.V.

“Identification of glycosylation loci in prokaryotic genomes by comparative genomics approach” at IIT Delhi, *Indo-Swiss Bioinformatics Symposium*, October 2010

“Mathematics in biology – another perspective: identification of ‘recognition templates’ at YASHADA, Pune, Mathematics in *Drug Discovery workshop*, September 2010.

“Frontiers in Modern Biology”, *IAS symposium*, at St. Xavier’s College, Mumbai, 2010.

“Infectious Diseases”, *Conference at TIFR, Mumbai 2010, Young Investigators Meeting 2010, Kolkata*

International Conference on Recent Developments in Malaria Research, International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi

International Conference on Current Research in the Biosciences, St. Xavier’s College, Mumbai Feb 2011

Young Investigators Meeting 2011, Bhubhaneshwar

Significant Awards/ Distinctions**Dulal Panda**

Outstanding researcher award, DAE, 2010

Banerjee R.

Indo-American Frontiers of Engineering Award, 2011

Srivastava Sanjeeva

Editor-in-Chief

International Journal of Genomics and Proteomics

Associate Editor

Journal of Integrated OMICS

The International Journal of Biotechnology Applications

The International Journal of Drug Discovery

International Journal of Proteins and Peptides

International Journal of Systems Biology

Section editor

Current Pharmacogenomics and Personalized Medicine

Honorary Work**Dulal Panda**

Examining thesis, reviewing paper for international journals

Banerjee R

Associate Editor, J of Biomaterials and Tissue Engineering, 2011

Editorial Board, Drug Delivery and Translational Research, Springer Verlag, 2010 Editorial Board, Engineering and Technology, Inventi Journals, 2010 Editorial Board, Biomaterials and Biodevices, 2010

Phale, P.

Editor, Indian Jr of Microbiology

GATE and JEE center representative and other activities

Reviewer for several national and international journal

Reviewer/examiner for Ph D thesis

DST, DBT, BRNS... funding agencies

Sanjeeva Srivastava

Reviewed papers for international journals – *Biologia Plantarum* (March 2011), *Current Pharmacogenomics and Personalized Medicine* (March 2011), *Analytica Chimica Acta* (Feb 2011), *Acta Biochimica et Biophysica Sinica* (Jan 2011), *Colloids and Surfaces A* (Nov 2010), *Advanced Science Letters* (Aug 2010), *Thin Solid Films* (Aug 2010)

Reviewer for grants submitted to Department of Science and Technology (DST), Department of Biotechnology (DBT), India; Israel Science Foundation (ISF)

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 modeling; 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.

16. Padinhateeri, Ranjith

Nucleosome dynamics and Chromatin assembly, Dynamics of Actin and Microtubules, Mechanics of DNA

17. Shamik Sen

Cell & Matrix Mechanics and Computational Modeling

18. Ashutosh Kumar

Structural Biology, Biomolecular NMR Spectroscopy

19. Kiran Kondabagil

Mechanisms of assembly of large DNA viruses, virus engineering; viral nano-containers for targeted delivery

Associate Faculty**20. Jayesh Bellare**

Nanotechnology and micro-engineering; biomedical devices surfactants; Cryo-electron and optical microscopy

21. Santosh Noronha

Biochemical engineering, recombinant biotechnology, computational biology

22. H. S. Shankar

Biochemical Engg., vermiculture

23. A. K. Suresh

Biochemical Engg., multiphase reactions

24. K. V. Venkatesh

Biochemical and food engineering

25. P. Wangikar

Biothermodynamics; Biophysical Chemistry

26. S. Chaudhari

Medical Image & Signal Analysis

27. U. B. Desai

Medical Image & Signal Analysis

28. V. M. Gadre

Communication Engineering Control & Instrumentation

29. P. C. Pandey

Bioinstrumentation, Medical Image & Signal Analysis

30. A. Q. Contractor

Electrochemistry, Conducting polymers, Biosensors

31. S. Durani

Drug design; de nova Protein design; Enzyme catalytic principles; Active site characterization

32. Nand Kishore

Biothermodynamics; Biophysical Chemistry

33. Sambasivarao Kotha

Organic Synthesis; non-coded amino acids.

34. Anil Kumar

Bio Polymers

35. C. P. Rao

Electrochemistry, Conducting polymers, Biosensors

36. Y. U. Sasidhar

Molecular Biophysics; Protein folding.

37. A. K. Singh

Bioorganic chemistry; Photoreceptor membrane proteins; Photochemistry and photobiology.

38. Sumathi Suresh

Remediation of pesticides using biological & chemical methods. Biological treatment for removal of textile dyes, biodegradation of hydroxybenzoate and phthalates

39. Rajani R. Joshi

Computational Biology, Bioinformatics, Biostatistics

40. . G. Ray

Ergonomics

Distinguished Guest Professor

41. . Padmanaban

Malaria research

42. Dr. Hartmut Michel, Noble Laureate

Photosynthesis research

Adjunct Faculty

43. Dr. Vivek Soni

Biomaterials & Artificial Organs

44. Dr. Yash Lokandwala

Cardiovascular Physiology

45. S. Arunkumar

Computers in Biology and Medicine, Telemedicine, Intelligent systems and pattern recognition approaches to the analysis of medical and biological data

Alumni Visiting Professor

46. Nitish V Thakor

Medical Instrumentation, Neuroengineering, Neural Signal Processing, Devices, Microsystems and Prostheses

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 admission 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 total number of international journal publications this year is around 98. This is equivalent to about 2.88 papers per faculty in a year.

The department-industry interactions were multifold this year including continuing education courses (both open- and in-house), consultancy, and technology transfer.

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

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 (Ongoing)	: 62
Sponsored Projects (New)	: 18
Sanctioned amount (2010-11)	: Rs. 7,22,48,630
Completed Projects	: 29
Faculty involved	: 34

Academic Programmes

Degrees Awarded

B.Tech.	:	67
Dual Degree (B.Tech., M.Tech.)	:	20
M.Tech.	:	34
M.S. (by Research)	:	00
Ph.D.	:	20

Project Title	Agency Name	Project Status
“CSIR Junior Research Fellowship in r/o Ms. Amrita singh (Roll No. 08530020)”	Council of Scientific and Industrial Research	Ongoing
“Prediction of thermodynamic properties for industrially important polymerization systems using molecular simulation”	Council of Scientific and Industrial Research	Ongoing
“Solar Bio-fuel and Carbon Sequestration with Cyanobacteria : Role of Genetic Networks.”	Deptt of Biotechnology	Ongoing
“DBT-BINC Junior Research Fellowship of Mr. Danish Menon.”	Department of Bio Technology, GOI, New Delhi	Ongoing
Grid-enabled aerosol modeling system for climate change studies.	Department of Information Technology	Ongoing
SERC Scheme for the Introduction to Immunology for Physical Scientist & Engineers is schedule to be held in May 2010.	Department of Science & Technology	Ongoing
Research and Development support SERC (FIST) Programme.... Chemical Engg. Dept.	Department of Science & Technology	Ongoing
DST Screening Committee Meeting for Fast Track Scheme for Young Scientist-Engineering Sciences on 6th July' 2010 at IIT Bombay	Department of Science & Technology	Project Closed
Electric Field Induced Vesicle and Drop Deformation.	Department of Science & Technology	Ongoing
DST / Characterization of Chemotaxis in Escherichia coli to controlled gradients of ligands in the presence of oxygen	Department of Science & Technology	Ongoing
SERC School on Electrochemical Systems	Department of Science & Technology	Ongoing
Multifunctional nanoparticle probes for in vivo cancer stem cell imaging and targeted treatment	Department of Science & Technology	Ongoing
JC BOSE Fellowship	Department of Science & Technology	Ongoing
Flexible Carbonaceous Hybrid Membranes for Separation Application	Department of Science & Technology	Ongoing
Flexible Carbonaceous Hybrid Membranes for Separation Applications	Department of Science & Technology	Project Closed
IFCPAR Research Project No.4201-1-”Breakup of moving liquid sheets under acoustic excitation”	INDO-FRENCH Centre for the Promotion of Advanced Research	Ongoing
Chemical Engg. Lab I	Ministry of Human Resource Development	Ongoing

Project Title	Agency Name	Project Status
Electronics design using DSP, FPGA, CPLD and Micro controllers through simulation and direct access of the hardware	Ministry of Human Resource Development	Ongoing
Discipline wise co-ordination	Ministry of Human Resource Development	Ongoing
Studies on Underground Coal Gasification for Indian Coals-II	Oil & Natural Gas Commission, Ahmedabad	Ongoing
Process Improvements and Technology Dissemination in Jaggery Making	Rajiv Gandhi Science and Technology Commission	Ongoing
Development of Biotransformation process for synthesis of Chirally pure compounds	Technology Information, Forecasting and Assessment Council	Ongoing

Consultancy projects

The department undertook 22 jobs generating Rs. 71,70,666. The total number of faculty involved is 09.

Extension activities

Symposium

Research Scholars' Symposium 2011
Azeotropy 2010

Visitors to the Department

Prof. R. Prabhakar, Chemical Engineering, Monash University, "Polymer solutions in extensional flows: a bit of stretching helps with concentration" 3rd Mar 2011.

Dr. William D Provine, Director of DuPont Biochemical Science and Engineering, "Metabolic and Process Engineering for Commercial Outcomes", 25 Feb 2011.

Yatin R. Gokarn, Associate Director Late-Stage Pharmaceutical Development Genentech, Inc., "Good proteins, bad environment: the role of ions in modulating protein behavior in dilute salt solutions.", 17 Feb 2011.

Dr. Rahul Nabar, Deptt of Chemical and Biological Engineering, University of Wisconsin-Madison, "Application of quantum mechanical calculations to selected problems in catalytic petroleum processing.", 20 Jan 2011

Dr. Guruswamy Kumaraswamy, Scientist, Complex Fluids and Polymer Engineering, Polymer Science and Engineering National Chemical Laboratory, Pune,

"Making and assembling materials in surfactant hexagonal phases.", 13 Jan 2011

Dr. Ketan Pimparkar, Graduate Student, Department of Chemical Engineering and Materials Science, Michigan State University, "Development of a High Throughput Photochemical Microreactor System.", 6 Jan 2011

Dr. Anindita Bandyopadhyay, Washington University in Saint Louis, U.S.A, "Photobiological hydrogen production in *Cyanothece* 51142, a unicellular nitrogen fixing cyanobacterium", 3 Jan 2011

Dr. H. Scott. Fogler, Distinguished Professor, Department Of Chemical Engineering The University Of Michigan, Ann Arbor, Michigan, "Fused Chemical Reactions: From The Pharmacokinetics Of Acute Toxicology To Wax Removal In Sub-Sea Oil Pipelines." 9 Dec 2010

Prof. Arup Chakraborty, Chemical Engineering, Chemistry, and Biological Engineering, MIT Ragon Institute of MGH, MIT, & Harvard, "Understanding adaptive immunity: A crossroad of the physical, life, and engineering sciences", 27 Oct, 10

Mr. B. Nagraj, R & D activities in RCF Trombay; Plant Processes at RCF Trombay, "Impact of R & D on Fertilizer Industry", 21 Oct 2010.

Dr. Rishi Jain, Postdoctoral Scientist, Biosciences Division, Oak Ridge National Laboratory, "Biomedical and Bioenergy Application of Genome Scale Metabolic Analysis", 14 Oct 2010.

Prof. Sung-Min's Choi, Department of Nuclear and Quantum Engineering, KAIST, Daejeon, Korea, "Neutron and X-ray Scattering Investigations of

Hierarchical Self Assembly of One-Dimensional Nanoparticles in Soft Matter.”, 6 Oct 2010

Prof. Upendra Natarajan, I.I.T. Madras, Chennai, “Molecular Simulations of Polymeric Systems.”, 23 Sep 2010

Prof. Talmon, Russell Berrie nanotechnology Institute, Technion-Israel Institute of Technology, Haifa 32000, Israel, “Cryo-EM: an Update”, 21 Sep 2010

Dr Gaurav Goel, Post-doctoral fellow, Case Western Reserve University, “From polymer collapse to confined fluids: investigating the implications of interfacial structuring.” 7 Sep 2010

Mr Ian Grundy, Sr. V P, Teraview Ltd., Cambridge, “Terahertz Spectroscopy and Imaging : Latest development in instrumentation and applications”, 26 Aug 2010

Dr Sachin Velankar, Dept. of Chemical Engineering University of Pittsburgh, “Interfacial phenomena and structure control in immiscible polymer blends: Applying insights from oil/water systems.”, 19 Aug 2010.

“Reversal of experimental diabetes in mice using human stem cells and immunisulatory macrocapsule: A step towards bio-artificial pancreas”, 5 Aug 2010

Dr. Subramanian Ramakrishnan, Assistant Professor Department of Chemical and Biomedical Engineering, FAMU-FSU College of Engineering, “Connecting Nanoscale Motion and Rheology of Gel-Forming Colloidal Suspensions” 12 Aug 2010.

Dr Shreekumar, NIT, Surathkal, “Understanding Sustainability from a Thermodynamic Viewpoint by Dr Shreekumar, Freelancer”, 23 Jul 2010

Dr. Anugrah Singh, Department of Chemical Engineering, Indian Institute of Technology, Guwahati, “Dynamics of suspension of anisometric particles in bounded flow”, 21 Jul 2010

Jaisree Iyer, Post Doc Associate, MIT, “Molecular Thermodynamic Modeling of the Micellization Behaviour of Surfactants” 9 Jul 2010

Prof. Mathew J. Palakal, School of Informatics/ Department of Computer & Information Science Indiana University, Purdue University Indianapolis, Indiana, USA, “Discovering Novel Molecular Signatures using Text Mining and Bioinformatics Approaches” 7 May 2010

Dr. Basavaraj M Gurappa, Department of Chemical Engineering University of Delaware, “Self assembly of particles and surfactants “, 13 Apr 2010

Prof. Doraiswami Ramkrishna, School of Chemical Engineering Purdue University, “The Metabolic Modeling Landscape by Prof. Doraiswami Ramkrishna, School of Chemical Engineering Purdue University.”, 25 Mar 2010

Mr. Anup K. Singh, Manager Biosystems Research & Development Department, Sandia National Laboratories Mailstop 9291 7011 East Ave, Livermore, CA, “Lab-on-a-chip Devices for Medical Diagnostics & Studying Cell Signaling “ 17 Mar 2010

Prof. Nivedita's R. Gupta, Department of Chemical Engineering, University of New Hampshire, Durham, NH, US, “Drops Rising in Channels”, 4 Mar 2010

Prof. Supreet Saini, Department of Chemical and Biomolecular Engineering, University of Illinois at Urbana-Champaign, USA, “Coordinated Regulation and Control of gene expression in Salmonella Pathogenesis” 25 Feb 2010.

Prof Roy & Prof. Sunthar's, “On Implementing and Managing a Departmental HSE System” by Prof. Sandip Roy & P Sunthar, Dept of Chemical Eng, IIT Bombay”, 29 Jul 2010

Prof. Gupta's, “Polymerization Reaction Engineering — a Personal Journey” 17 Jun 2010

Conferences /Symposia/Workshops and Seminars (participated)

Kannan M. Moudgalya

“Virtual labs: Single Board Heater System”, *National Conference on Computational Intelligence and Signal Processing*, Assam Don Bosco University, 3 March 2011.

Sachin Patwardhan

“Soft Sensing and Nonlinear State Estimation: A Review and New Results”, *International Conference on Process Automation, Control and Computing, (IEEE-PACC 2011)*, Coimbatore, India, 20-22 July, 2011.

“Nonlinear Bayesian State Estimation: A Tutorial Review”, *International Conference on Trends in Industrial Automation (TIMA 2011)*, Chennai, 6-8 Jan., 2011.

Ganesh Viswanathan

European Conference in Computational Biology, Ghent, Belgium.

A. K. Suresh

Symposium on the Global Energy Future, organized by the McDonnell Academy Global Energy and Environment partnership (MAGEEP), Washington University in St Louis, St Louis, Missouri, USA. [1-5 Oct, 2010]

Invited Lectures

National

Ganesh Viswanathan

“Transversal hot zones formation in catalytic packed bed reactors”, Recent trends in Experimental and Computational Techniques in Chemical Engineering, Dept. of Chem. Engg., NIT Calicut.

“Recent Trends in Experimental & Computational Techniques in Chemical Engineering”, National Institute of Technology Calicut, Kozhikode.

Kannan M. Moudgalya

“National Mission on Education through ICT, FOSS in Education”, NIT Calcut, 12 September 2010.

Spoken Tutorials for “IT Literacy and Employment, Open Paradigms in Education”, India International Centre, New Delhi, 31 Jan. - 2 Feb. 2011.

Rochish Thakkar

Invited lecture at NCL, November 26, 2010
“Electrohydrodynamics in drops and layered interfaces”

Sameer Jadhav

“Polymer brushes in drug delivery and tissue engineering,” *Mumbai Pune Soft Matter Meet*, IISER Pune, January 2011.

Significant Awards and Distinctions

Ganesh Viswanathan

IEI Young Engineers Award, The Institution of Engineers (India), 2010

A. K. Suresh

Fellowship of the Indian National Academy of Engineering

Mahesh S Tirumkudulu

IRCC Young Investigator Award of IIT Bombay

Honorary Work

Sachin Patwardhan

Session titled “Nonlinear Model Predictive Control” in *DYCOPS-2010, Leuven, Belgium, 5-7 July, 2010. (Session Chairmam)*

Keynote Session on Nonlinear Model Predictive Control in *DYCOPS-2010, Leuven, Belgium, 5-7 July, 2010. (Session Chairmam)*

Served as “IPC Program Area Co-chair” (associate editor for conference proceedings) in *Advances in Model-based Control area in DYNamics and CONtrol*

of Process Systems (DYCOPS-2010), Leuven, Belgium, 5-7 July, 2010.

Ganesh Viswanathan

Reviewed papers for Bioinformatics, BMC Systems Biology, Food and bioproducts processing.

A. K. Suresh]

Reviewer for AIChE J, I&EC Research, etc.

Kannan M. Moudgalya

Member, Standing Committee, National Mission on Education through ICT.

Member, Academic Council, IGNOU.

Sameer Jadhav

Reviewed Original Research Articles For Bioresource Technology.

Mahesh S Tirumkudulu

Review of articles submitted to *Langmuir*, *Soft Matter* and *Physics of Fluids*

Faculty Members and their specializations

1. Jhumpa Adhikari

Statistical Thermodynamics, Molecular Simulations

2. Rajdip Bandyopadhyaya

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

3. Jayesh Bellare

Separations, Surface Science, Nanoparticles, Microscopy, Drug Delivery

4. Sharad Bhartiya

Process Control, Modelling, Identification

5. Mani Bhushan

Process Safety Analysis, Process Control, Optimisation, Identification

6. S Ganeshan

Heat and Mass Transfer

7. Ravindra D. Gudi

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

8. Sameer Jadhav

Surface Science, Computational Flow Modelling (CFD), Drug Delivery, Biomolecular Engineering

9. **Vinay A. Juvekar**
Surfactants, Separations, Rheology, Electrohydrodynamics, Multiphase Reaction, Surface Science, Polymer Physics
10. **Devang V. Khakhar**
Surfactants, Rheology, Granular Flow, Reactor Modelling, Polymer Processing, Nano-composites, Drug Delivery
11. **Sanjay. M. Mahajani**
Separations, Computational Flow Modelling (CFD), Multiphase Reaction, Catalysis, Renewable Resources, Coal Gasification
12. **Ranjan Kumar Malik**
Separations, Modelling, Energy Integration
13. **Anurag Mehra**
Surfactants, Multiphase Reaction, Nanoparticles, Molecular Simulations, Food Engineering
14. **Sarika Mehra**
Systems Biology, Computational Biology, Biomolecular Engineering
15. **Arun Sadashio Moharir**
Separations, Reactor Modelling, Optimisation, Modelling, Pollution
16. **Kannan M. Moudgalya**
Process Control, Modelling
17. **Mamata Mukhopadhyay**
Separations, Food Engineering
18. **V. M. Naik**
Surfactants, Separations, Electrohydrodynamics, Colloids, Surface Science, Polymer Processing, Nanoparticles, Food Engineering
19. **Hemant Nanavati**
Statistical Thermodynamics, Polymer Processing, Polymer Physics, Nano-composites, Molecular Simulations, Renewable Resources
20. **Janaky Narayanan**
Surfactants, Rheology, Surface Science, Microscopy
21. **Santosh Noronha**
Renewable Resources, Green Engineering, Systems Biology, Computational Biology, Biomolecular Engineering, Biochemical Engineering
22. **Sachin C. Patwardhan**
Process Control, Modelling, Identification
23. **V Govardhana Rao**
Separations, Rheology, Heat and Mass Transfer
24. **Sandip Roy**
Surfactants, Separations, Process Safety Analysis, Surface Science, Statistical Thermodynamics, Renewable Resources
25. **Hariharan S. Shankar**
Pollution, Biochemical Engineering
26. **P. Sunthar**
Surfactants, Granular Flow, Fluid Mechanics and Stability, Computational Flow Modelling (CFD), Polymer Physics, Drug Delivery
27. **A. K. Suresh**
Heat and Mass Transfer, Multiphase Reaction, Catalysis, Nanoparticles, Biochemical Engineering
28. **Rochish M Thaokar**
Surfactants, Electrohydrodynamics, Computational Flow Modelling (CFD), Colloids, Statistical Thermodynamics, Nanoparticles, Drug Delivery
29. **Mahesh S Tirumkudulu**
Surfactants, Rheology, Computational Flow Modelling (CFD), Colloids, Coatings, Thin films, Surface Science, Drug Delivery
30. **Chandra Venkataraman**
Aerosols, Surface Science, Nanoparticles, Nano-composites, Drug Delivery, Renewable Resources, Pollution, Climate Change
31. **K. V. Venkatesh**
Food Engineering, Systems Biology, Biomolecular Engineering, Biochemical Engineering
32. **Madhu Vinjamur**
Porous Media, Heat and Mass Transfer, Coatings, Food Engineering, Renewable Resources
33. **Ganesh A Viswanathan**
Reactor Modelling, Multiphase Reaction, Systems Biology, Computational Biology, Biomolecular Engineering
34. **Pramod Wangikar**
Process Control, Modelling, Computational Biology, Biomolecular Engineering, Biochemical Engineering

Gh Chemistry

Introduction

The Department of Chemistry comprises 32 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. The DST has rated the department as one of the top chemistry departments in the academic sector.

Academic Programme

Students Intake

M.Sc. (Integrated Programme)	: 32
M.Sc. (2-year Programme)	: 38
Ph.D.	: 40

Degrees Awarded:

M.Sc.: 5-yr. Int. programme	: 19
2-yr. M.Sc. programme	: 33
Ph.D.	: 15

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. 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. An integrated M.Sc.–Ph.D. programme will also begin from the academic year 2012-13 with entrance through JAM. The syllabi of all these are reviewed and updated periodically in order to meet the changing scenario in chemistry.

The Department of Chemistry 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 participation in symposia. Every year around 125-130 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 reviewing of 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

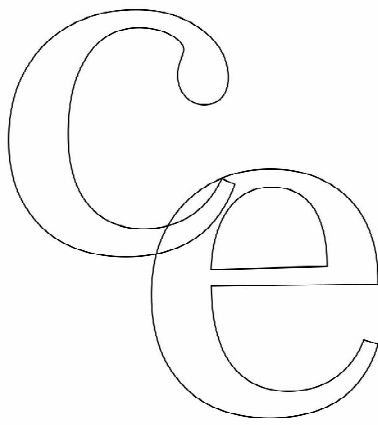
Sponsored Projects:

Ongoing Projects	: 77
New Projects	: 35
Completed Projects	: 28

Consultancy:

No. of Jobs	: 03
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The faculty of the Department of Chemistry is involved in attracting research funding through various national and international sponsoring agencies in addition to industrial support. During 2010-2011, the department has added 35 new sponsored projects with a total financial outlay of Rs. 11.1 crores and completed 28 projects. Seventy seven projects are under investigation by various faculty members. The number of faculty involved was 33. An income of 4,57,108 was generated through three jobs involving three faculty members. The students, registered in large number for the department's Ph.D. Programme, have been financed through sponsored projects and individual CSIR and UGC fellowships.



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 of Civil Engineering offers broad-based undergraduate B.Tech. degree programme. A dual degree (B.Tech.-M.Tech.) programme is also run in structural engineering. Postgraduate M.Tech. (admissions through GATE/sponsorships) and Ph.D. (through selections/sponsorships) programmes are offered in the following five specializations:

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

This year, 61 M.Tech. and 18 Ph.D. students were admitted in the above specializations. In the first year, 101 students were on rolls in the B.Tech., 16 in the dual degree B.Tech./M.Tech. programmes. The students graduated from the department are as follows:

Degree Awarded

B.Tech.	: 71
M.Tech.	: 36
Ph.D.	: 17

Dual Degree

B.Tech.	: 20
M.Tech.	: 20

R&D Activities

Sponsored Research

Sponsored Research Projects

New	: 10
Ongoing	: 48
Completed	: 9

Project Title	Sponsoring Agency	Status
Behaviour of shallow footings subjected to underground and overground blast loading	DST	Ongoing
Development of a New Methodology for Determining Distribution Coefficient (K_d) for Radionuclides in Soils	BRNS	Ongoing
Integrated Flood Assessment Modeling for Urban Watershed Using Finite Element method, GIS and Remote Sensing	DST	Ongoing
Hydraulic Model Investigations for Design of Raft Foundations for Bridges”, Ministry of Shipping, Road Transport & Highways	Ministry of Shipping, Road Transport & Highways	Ongoing
Development of Reliability Based Guidelines for the Design and Flaw Evaluation of Nuclear Piping System	BRNS, DAE	Ongoing
Affordable Urban Modular Residential Buildings in Steel in India	Arcelor Mittal R&D, Belgium	Ongoing
Evaluation of Coal ash as a landfill liner material for waste containment systems	DST	Ongoing
Risk of clay liner cracking and environmental hazard	IFCPAR	Ongoing
Dynamic properties of soils of Mumbai region: pilot study	MoES	Ongoing
Stresses and deformation of tunnels subjected to earthquake loading	DST-NSC	Ongoing
Second generation area traffic control system	DIT, Gov. of India	Ongoing
Real-time transit route information and Trip planner	DIT, Gov. of India	Ongoing
Real time traffic counting and monitoring station	DIT, Gov. of India	Ongoing
Development of the Virtual Laboratory on Traffic Engineering	MHRD	Ongoing
Development of the Web based course Traffic Engineering and Management	NPTEL	Ongoing

Consultancy Work

A total of 274 consultancy projects worth about Rs. 9,15,59,290 were undertaken during the year by the Civil Engineering Department. The number of faculty members involved in the above consultancy work was 23.

Short-Term and CEP Courses

QIP & CEP Course “Climate Change and Water Management”, held during 28 February – 4th March 2011 Oct. 12-16, 2009 (**Prof. Subimal Ghosh & Prof. Eldho T.I**)

CEP Course (Open), on “Urban Drainage Management-State-of-the-Art” IIT Bombay, 2-4 September 2011. (**Convener: Prof. Kapil Gupta**)

An in-house CEP course entitled “Urban Transportation Modelling System” was conducted for the planners and engineers from the Planning Division of Pune Municipal Corporation during January 11- 13, 2011. (**Convener: Prof. KVK Rao**)

CEP-QIP short-term course on “Risk Assessment and Management in Geotechnical Engineering”, at IIT Bombay, March 14-18, 2011. (**Convener: Prof. Dasaka S. Murty**)

Five-day CEP/QIP course on Advances in Geotechnical Engineering (April 12-16, 2010) (**Convener: Prof. Juneja A**)

QIP Short Term Course on “Innovations in Traffic Flow Modeling” 05-09 July 2010, Indian Institute of Technology Bombay. (**Convener: Prof. Tom V Mathew and Prof. P. Vedagiri**)

Visitors to the Department and their Presentations

Dr. Ji Chen, Department of Civil Engineering, The University of Hong Kong, Pokfulam, Hong Kong, China, “Observed climate change and urbanization effects on regional climate in south china” on 8th July 2010

Prof. Schwing, Karlsruhe University, “Soil Nailing in Germany” on 15th July 2010

Dr. Jeremy Blum, Assistant Professor of Computer Science at the Penn State University, Harrisburg, “Agent-based optimization of transit route network design” on 9th August 2010

Vikrant Vaze, Doctoral candidate at the Massachusetts Institute of Technology (MIT), “Game theoretic models of airline frequency competition for airport congestion mitigation” on 23rd August 2010

Mr. C.M. Dordi, Vice President (Technical Services), Ambuja Cements Ltd., “Future challenges for young civil engineers” on 27th August 2010

Prof. Saman Bandara, University of Moratuwa, Sri Lanka, “Assessing Accessibility and Connectivity of Nodes of Transportation Networks under Disaster Risk” on 3rd September 2010

Prof. Jyant Kumar, IISc Bangalore, “Limit analysis with finite elements: applications in geomechanics” on 8th October 2010

Dr. Nitesh Chawla, Assistant Professor in the Department of Computer Science and Engineering at the University of Notre Dame, “Data mining algorithms for climate sciences” 19th October 2010

Prof Dimitris Tsamboulas, National Technical University of Athens, “Evaluation and impacts of transport infrastructure projects”, 22nd October 2010

Dr. Jitendra Bajpai, Area Director, World Bank, “Transport in development: a world bank perspective” 11th January 2011

Prof. Musharraf Zaman, University of Oklahoma, “Field performance of asphalt pavement containing mine tailings” on 14th January 2011

Prof Jose Manuel Viegas Professor of Transportation Systems, IST, Lisbon, “Revisiting some of the fundamentals of transport modeling: Optimizing Transportation Analysis Zones and getting rid of them” on 18th January 2011.

Mr. Deepak raj, General Manager Keller India, “Ground improvement techniques for various infra-structure projects” on 5th March 2011

Mr. Sudhir P Badami, Chief consultant, Mumbai, “Setting right priorities for mumbai transportation” on 5th March 2011

Ms. Alpa Sheth, Managing Director, VMS Consultants Pvt. Ltd. “State of practice of structural design engineering in India” on 6th March 2011

Invited Lectures

Banerjee, Sauvik

“Finite Element Modeling of Wave Propagation and Vibration Problems With Applications to Structural Health Monitoring”, Veermata Jijabai Technological Institute, Matunga, Mumbai, January 21, 2011.

“Ultrasonic Guided Waves for Large Area NDI of Metallic and Composite Structures”, ISRO Satellite Centre, Bangalore, February 2, 2011.

Choudhury, D.

“Seismic Behaviour of Piles in Liquefied Soils for Infrastructural Applications”, on 18th March, 2011, at Oklahoma Transportation Center (OkTC), Oklahoma 73110, USA.

“Recent Advances in Seismic Slope Stability Analysis”, on 12th February, 2011, at Central Building Research Institute (CBRI), Roorkee, India.

“Applications of Geotechnical Earthquake Engineering Research for Disaster Mitigation and Management”, on 23rd October, 2010, at Chongqing, China.

“Recent Researches on Geotechnical Earthquake Engineering” at IIT Bombay, on 26th July, 2010, at Department of Civil Engineering, Monash University, Melbourne, Victoria 3800, Australia.

“Geotechnical Earthquake Engineering: Recent Researches” at IIT Bombay, on 23rd July, 2010, at School of Civil Engineering, University of Wollongong, NSW 2522, Australia.

Eldho, T.I.

Invited Lecture, *Watershed Based Rainfall-Runoff Modeling/ Flood Simulation Using FEM, GIS and Remote Sensing*, Sardar Vallabhai National Institute of Technology, Surat, India, 28th August 2010.

Invited Lecture, *Integrated Watershed Modeling for Rainfall-runoff using FEM, GIS and Remote Sensing*, Center Water Resources Development and Management, Kozhikode, Kerala, 4th June 2010.

Juneja A

Delivered Invited Lecture on “Geotechnical centrifuge modelling” at the Department of Civil Engineering, National Kaohsiung University of Applied Sciences, Kaohsiung, Taiwan (May 2010)

Pani B.S

Invited lecture, “Effective Effluent Management for Environment Sustenance”, *International Congress of Environmental Research*, Sep 2010, Reduit (Mauritius).

Singh, D.N.

Delivered a lecture on “Instrumentation for Various Geoenvironmental Engineering Issues”, CWPRS, Pune, December 2010.

Viswanadham. B.V.S.

A lecture entitled “Centrifuge model studies on landfill cap covers” was delivered at the LTHE, Department of Civil Engineering, University of Joseph Fourier 1, Grenoble, France on June 4 2010.

An invited lecture entitled “Studies on landfill containment systems” was delivered at the Department of Civil Engineering, Goa University on November 3, 2010.

Extension Activities

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

Conferences and Workshops

Indian Geotechnical Conference (IGC – 2010), GEOTrendz, December 16 – 18, 2010. (Organizing Secretary: B.V.S. Viswanadham, Joint Organizing Secretaries: Dasaka, S.Murty and Deepankar Choudhury)

International Symposium on Forensic Geotechnical Engineering, IIT Bombay, 14-15 December, 2010. (Organizing Secretary: Dasaka, S.Murty and B.V.S. Viswanadham).

Ninth International Workshop on Transportation Planning and Implementation Methodologies in Developing Countries (TMPDC), Mumbai, India, December 15-17, 2010 (Organized by Transportation Systems Group)

ATC-18 *International Workshop on Mega Foundations: Recent Advances on large and deep foundations*, September 16, 2010. (Organizing Secretary: Juneja A)

Organized *Research Scholars’ Confluence: 2010* on Nov 13, 2010. (Organizing Secretary: M.C. Deo)

Organised International workshop on CORFU-”Collaborative Research on Urban Flooding” at IIT Mumbai under FP7 EU Research Programme, 4-5 February 2011. (Organizing Secretary: Gipta Kapil)

Conferences/Symposia/Workshops/ Seminars (Participation and presentation)

Adarsh S., and M. Janga Reddy

“Optimal Design of Composite Channels Considering Slope Stability Criterion”, *GEOTrendz, IGC-2010*, IIT Bombay, Mumbai, India, pp: 945-948.

Adhana, S., Mandal, T., Mandal, J.N.

“Three Dimensional Circular Geocell Reinforced Fly Ash Slopes”. *All India Seminar on Geosynthetics – Innovative and Environmentally Sustainable Solution for Civil Engineering Projects*.

Banerjee, Sauvik

“Ultrasonic Guided Waves for Large Area NDI of Metallic and Composite Structures – Modelling, Simulation and Signal Processing”, Pre-Conference Tutorial on ‘Signal Analysis, Simulation and Modeling’, *National NDE Seminar*, NDE-2010, Kolkata, December 7, 2010.

“Impact of climate change on hydro-hazards: hydrological extremes and water related disasters-adaptation and mitigation measures”, *UNESCO International Workshop on Adaptation and Mitigation Options for Tackling the Impacts of Climate Change on Water Resources*, March 14-15, 2011, New Delhi

Bajoria K M, Jain P, Lahoti A and Prajapati D.

“Tension Test on Whole Round Bamboo”, Oral Paper presented at *Sixth International Engineering and Construction Conference*, Paper No. VII-C4, American Society of Civil Engineers, Egypt, 28-30 June 2010.

Bajoria K M, Lahoti A, and Jain P.

“Modern In-fill Jointing techniques in Bamboo Constructions”, Oral Paper presented at *Sixth International Engineering and Construction Conference*, Paper No. VII-B4, American Society of Civil Engineers, Egypt, 28-30 June 2010.

Banerjee, S. and Morabada, U.

“Damage Detection in Composite Structural Components Using Frequency Response Function Curvature Method”, *International Conference on Theoretical, Applied, Computational and Experimental Mechanics*, December 27-29, IIT Kharagpur, India, 2010.

Banerjee, S., Garg, S., Vashishtha, S. and Pol, B. C.
“Theoretical Modeling of Guided Wave Propagation in Honeycomb Composite Sandwich Structures”, *International Conference on Theoretical, Applied, Computational and Experimental Mechanics*, December 27-29, IIT Kharagpur, India, 2010.

Bhamre S, Kharmale SB, Ghosh S.

“Seismic lateral force distribution for performance-based plastic design”, *14th Symposium on Earthquake Engineering*, Roorkee, India, December 17-19.

Chandiramani, N. K.

Participated, presented paper, and chaired session on “Vibration Control” in *6th International Conference on Vibration Engineering and Technology of Machinery (VETOMAC-VI)*, IIT Delhi, December 13-15, 2010, New Delhi.

Participated, presented paper, and chaired session on “Noise and Vibration Suppression and Control” in *17th International Congress on Sound and Vibration*, paper 441, July 18-22, 2010, Cairo. Another paper presented by co-author (PhD student).

Choudhury, D.

Participated and made oral presentation of two technical papers in *GeoFrontiers-2011, Annual Congress of the Geo-Institute of ASCE*, March 13-16, 2011, Dallas, Texas, USA organized by GI-ASCE.

Participated and delivered Keynote Lecture at *National Conference on ‘Landslide Hazard, Consequences and Challenges’*, 10-12 February, 2011, Central Building Research Institute (CBRI), Roorkee, India.

Participated and presented a technical paper in *BGC – 2010, Bangladesh Geotechnical Conference of the Bangladesh Geotechnical Society*, Dhaka, November 4–5, 2010.

Participated and delivered Plenary Lecture at *1st International Conference on Disaster Prevention Technology and Management (DPTM-2010)*, 23-25 October, 2010, Chongqing, China.

Dasaka, S. Murty

Delivered a lecture on “Reliability Based Design in Geotechnical Engineering”, as part of *CEP-QIP short-term course on Advances in Geotechnical Engineering*, at IIT Bombay, on April 18, 2010.

Delivered a lecture on “Shallow Foundations – Analysis and Design” as part of *In-house Continuing Education Programme* for M/s. FL Smidth Pvt. Ltd., Mumbai, at IIT Bombay, on July 10, 2010.

Delivered the keynote address on “Effect of Loading Mechanism on Plate Load Test Results” at the state level *Seminar on Recent Trends In Civil Engineering*, Department of Civil Engineering of Shahajirao Patil Vikas

Pratishthan’s S.B. Patil College of Engineering Indapur, Maharashtra, February 19, 2011.

Das, N.K., Mandal, J.N. and Mandal, T.

“Experimental and FEM Analysis of the Geotextile Geotube”, *Indian Geotechnical Conference – 2010, GEOTrendz*, December 16–18, pp. 339-342.

Deo. M.C

Attended *Water-2010* Conference at Quebec, Canada during July 5-7, 2010

Attended *Hydro-2010* Conference at Mullana, December 16-18, 2010.

Key Note Speech in *Hydro-2010* Conference held at Mullana, During Dec. 16-18, 2010

Deepthi R and M C Deo

“Derivation of design wind and wave parameters considering climate change”, *Ninth International Conference on Hydro-Science and Engineering, ICHE 2010*, Aug 2-5, 2010.

Felice, C. W., Singh, D. N. and Brennimen, H.

“Geology and Geotechnical Conditions Encountered During the Bandra-Worli Sea Link Project”, *ISRM International Symposium 2010* and *6th Asian Rock Mechanics Symposium*, 23-27 October, 2010, New Delhi, India.

Eldho, T.I.

Participated and chaired a Session in Int. Conf. “*An International Perspective on Water Resources & the Environment*”, National University of Singapore, January, 4-6, 2011.

Participated and chaired a Session in *Ninth International Conference on Hydro-Science and Engineering*, held at IIT Madras, Chennai, India on August 2-5, 2010.

Second International Conference on Coastal Zone Engineering and Management (Arabian Coast 2010), Sultan Qaboos University, Muscat, Oman, November 1-3, 2010

Invited Lecture, “Fluid Mechanics Studies and Applications”, Nirma University, Ahmedabad, 10th February 2011.

Gopal R. Patil

Attended 90th *Transportation Research Board Annual Meeting*, Washington, DC, January 2011.

Attended a workshop, *Accelerated Commercialization of Technology and Innovation (ACTIV)*, organized by AcceleratorIndia (UK) and Venture Center (India) in Pune, India during September 30 and 1st October 2010

“Real-time traffic counting and monitoring system”, *National workshop on Intelligent Transportation Systems*, Pune, June 2010)

“Transportation Network Design Problem”, *QIP short term course*, IIT Bombay, July 2010

“Real-time Traffic Counting and Monitoring System”, *QIP short term course*, IIT Bombay, July 2010

Emission based Traffic Assignment Models, *9th International Workshop on Transportation Planning and Implementation Methodologies in Developing Countries (TMPDC)*, Mumbai, India, December 15-17, 2010

Gupta Kapil

“Impact of climate change on hydro-hazards: hydrological extremes and water related disasters-adaptation and mitigation measures”, *UNESCO International Workshop on Adaptation and Mitigation Options for Tackling the Impacts of Climate Change on Water Resources*, March 14-15, 2011, New Delhi

Ghosh, S.

Keynote lecture on “Steel plate shear wall” in the *International Conference on the Innovative World of Structural Engineering*, Aurangabad, India, 2010.

“Keynote lecture on *Probabilistic characterization of primary stress index B_2 in nuclear piping*” in the *2nd AFRRE Meeting* at IIT Kharagpur, India, 2011.

Participated and gave a talk in the *2nd Annual AFRRE Meeting*, Kharagpur, India, March 21-22, 2011.

Participated and chaired a session in the *International Conference on Post-Disaster Reconstruction* on the 10th Anniversary of Bhuj Earthquake 2001, Gandhinagar, India, April 14-16, 2011.

Gupta K.

“15-min ahead extreme rainfall forecast using support vector machine for urban flood disaster management in Mumbai” (with Vinay Nikam), *INEMREC-2011*, 24-25 February, 2011, Chennai, pp. 202-203. *International Conference Geosynthetics- Geosynthetics: Advanced Solutions for a Challenging World*, May 23-27, 2010, Guarujá, Brazil, 1039-1044, 2010.

Janga Reddy, M.

Participated in a *National Workshop on “Geo-Statistics & Soft Computing Techniques for Spatial Data Management* and delivered an invited lecture on “Multivariate Frequency Analysis of Droughts Using Copulas”, Workshop held at SV University Thirupathi, India during 22-24 Nov’ 2010.

Delivered an invited lecture on “Impact Assessment of Climate Change on Regional Droughts in India” in a *QIP/CEP course- Climate Change and Water Management*, held at IIT Bombay, during February 28 – March 04, 2011.

Jothiprakash V and Magar

“Reservoir Inflow Prediction Using Time-Delay Recurrent Neural Network with Spatially Distributed Rainfall Data”, *National Workshop on Geo-Statistics and Soft Computing Techniques for Spatial Data Management*, Sri Venkateswara University, Tirupati, Nov 22-25.

Jothiprakash, V.

“Soft Computing Techniques in Water Resources Engineering”, *National Conference on Civil Engineering for Infrastructural Developments (CID-2010)*, D.Y. Patil College of Engineering, Akurdi, Pune, 30 – 31 Aug 2010.

“Conceptual design of airport drainage network”, *Short Term Course on Basics of Flood Modeling*, NITTR, Chennai, on 3rd October 2010.

“Reservoir Inflow Prediction Using Time-Delay Recurrent Neural Network with Spatially Distributed Rainfall Data”, *National Workshop on Geo-Statistics and Soft Computing Techniques for Spatial Data Management*, Sri Venkateswara University, Tirupati, 23rd Nov. 2010.

“Design of storm water drainage network in low lying areas”, *Short Term Course on Urban Storm Drain Designing and Modeling*, SVNIT, Surat, on 10th Jan. 2011.

Attended and presented papers in the following conferences: *Workshop on Integrated Water Resources Management (Crossing Boundaries)*, Anna University, 26th April 2010.

International 7th Annual Meeting AOGS 2010, Hyderabad, India, July 5-9, 2010, pp144.

National Workshop on Geo-Statistics and Soft Computing Techniques for Spatial Data Management, Sri Venkateswara University, Tirupati, 22-24 Nov. 2010.

Juneja, A. & Raghunandan, M.E.

“Effect of sample preparation on strength of sands”, *Indian Geotechnical Conference*, 16-18 December, Mumbai.

Jain, S., Paliwal, V. and Ghosh, Subimal

“Selection of Spatial Extent of Predictor Variables in Statistical Downscaling”, *The Ninth International Conference on Hydro-Science and Engineering (ICHE 2010)*, Indian Institute of Technology Madras, Chennai, India. 2-5 August 2010

Jothiprakash, V and A. Kote

“Equation-Based and Program-Based Genetic Programming Model for an Intermittent Reservoir Inflow Prediction” *ASCE-EWRI International Perspective on Environmental and Water Resources, IPWE 2011*, NUS, Singapore, Jan. 4-6, 2011.

Juneja, A. & Roshan, N.S.

“Study on tunnelling induced ground deformation in reinforced soils”, *International Conference on Physical Modelling in Geotechnics 2010*, Zurich, Springman et al. (eds.), Taylor & Francis Group, 555-560

Kant Tarun

Participated in *International Union of Theoretical Applied Mechanics (IUTAM)* General Assembly in Paris, France on 16-19 July 2010 as a Member, representing Indian National Science Academy (INSA).

Kannan, S. and Ghosh, Subimal

“Multi-site daily rainfall prediction for climate change scenarios using the non-parametric k-nearest neighbours”, *The Ninth International Conference on Hydro-Science and Engineering (ICHE 2010)*, Indian Institute of Technology Madras, Chennai, India. 2-5 August 2010

Khedkar M.S. and Mandal J.N.

“Behavior of Cellular reinforced soil wall under uniformly distributed load”, *9th International Conference Geosynthetics- Geosynthetics: Advanced Solutions for a Challenging World*, May 23-27, 2010, Guarujá, Brazil, 1693-1698, 2010.

Mir, B.A. & Juneja, A.

“Strength behaviour of composite ground reinforced with sand columns”, *Indian Geotechnical Conference*, 16-18 December, Mumbai.

Mondal A, Ghosh S.

“Response reduction factor of a RC framed structure based on local damage”, *14th Symposium on Earthquake Engineering*, Roorkee, India, December 17-19.

Pani B.S., Lai, A.C.H. and Wong, C.K.C.

“Turbulent Jets: Point-source and CFD Simulation Results”, *International Congress of Environmental Research*, Sept. 2010, Reunion (Mauritius).

Rao K. V. Krishna

Participated and presented two papers in the *12th World Conference on Transport Research* held during 11–15 July 2010 in Lisbon, Portugal.

Rao, E. P.

Participated by invitation in *Indo-US Bilateral Workshop 2010 on Sedimentation, Erosion, Flooding, and Ecological Health of Rivers (WSEHR-10)* at Indian

Statistical Institute, Kolkata, during November 1 – 3, 2010.

Delivered a lecture to the participants of *QIP and CEP Short Term Course on Climate Change and Water Management*, Civil Engineering Department, IIT Bombay, Mumbai, 28 February – 4 March, 2011.

Rastogi, A. K.

MRBC Dispersion Parameters Assessment by SA, GA and GNM Inverse Modeling - V P Huggi and Rastogi A K – Oral presentation in the *5th International Conference in Environmental Science and Technology (5th ICEST 2010)* Organised by American Academy of Sciences, held at Hilton Hotel, Houston, Texas, USA July 13 – 16, 2010.

Raghuandan, M.E. & Juneja, A.

“Site Specific Ground Response Analysis: An Example of Test Area in Mumbai”, *6th International Congress on Environmental Geotechnics*, New Delhi.

Ram Rathan Lal B., Deshmukh V.B., Mandal J.N., Mandal T., Tank J.J., Bhagat B., Jadhav R.

“Experimental and Finite Element analysis of Geocell reinforced fly ash retaining wall”, *The 26th International Conference on Solid Waste Technology and Management*, March 27-30, 2011, Philadelphia, USA, 403-413.

Rathore M, Roy Chowdhury A, Ghosh S.

“Approximate methods for estimating hysteretic energy demand on uniaxial plan-asymmetric buildings”, *9th US National and 10th Canadian Conference on Earthquake Engineering*, Toronto, Canada, July 25-29, 2010.

Ravikumar P and Tom V. Mathew

“Adaptive Traffic Control System for Developing Countries”, *17th ITS World Congress*, Busan, 2010.

Ricci, F., Monaco, E., Tancredi, S., Lecce, L., Banerjee, S., and Mal, A. K.

“Vibration and Ultrasonic Based Methodologies for Damage Detection”, *Fifth European Workshop on Structural Health Monitoring*, Sorrento, June 29-July 2, Sorrento, Naples, Italy, 2010.

Roshan, N.S. & Juneja, A.

“Experimental study on tunnelling induced ground deformation in reinforced soil”, *17th South East Asian Geotechnical Conference*, May 2010 (paper ID 4P-234)

Roy P., Ghosh S.

Probabilistic characterization of primary stress index B_2 for nuclear pipe bends, *International Conference on the Innovative World of Structural Engineering*, Aurangabad, India, September 17-19, 2010.

Roy P., Ghosh S.

“Probabilistic characterization of primary stress index B_2 for nuclear pipe bends subjected to in-plane opening moment”, *2nd International Conference on Reliability Engineering, Safety and Hazard*, Mumbai, India, December 14-16, 2010.

Sanghpriya H.K and Tom V. Mathew

“Real world driving cycle for 2-wheelers and its importance in developing emission factors”, *3rd International Congress of Environmental Research (ICER-10)*, 16-18 September 2010, Mauritius.

Sivakumar B, V. Jothiprakash, and V. Rajendran

“Transboundary Water Development and Management Science, Politics, and Society” *ASCE-EWRI International Perspective on Environmental and Water Resources, IPWE 2011*, NUS, Singapore, Jan. 4-6, 2011.

Sivakumar, B, V. Rajendran, V. Jothiprakash, and A. Sharma

“Challenges in Studying the Impacts of Global Climate Change on Water Resources” *ASCE-EWRI International Perspective on Environmental and Water Resources, IPWE 2011*, NUS, Singapore, Jan. 4-6, 2011.

Snehal V. Mevada and R.S. Jangid

“Seismic response of asymmetric building with semi-active damper”, *14th European Conference on Earthquake Engineering (14ECE)*, Ohrid, Paper No. 1259, August 30 to September 03, 2010.

Tancredi, S., Ricci, F., Monaco, E., Lecce, L., Banerjee, S., and Mal, A. K.

“Lamb Waves Propagation for Low Velocity Impact Damages Analysis in Carbon Fibers Reinforced Plates: Experimental and Numerical Experiences”, *Fifth European Workshop on Structural Health Monitoring*, Sorrento, June 29-July 2, Sorrento, Naples, Italy, 2010.

Thinakaran. E, and V. Jothiprakash

“Diffusion analysis of suspended solids from a point source in a river”, *International Conference on Sustainable Water Resources Management and Climatic Change Adaptation*, NIT Durgapur, Feb. 17-19, 2011.

Varma M.N, Jangid R.S, Ghosh S.

“Thrust line using linear elastic finite element analysis in masonry structures”, *7th International Conference on Structural Analysis of Historical Constructions*, Shanghai, China, October 06-08, 2010.

Vedagiri, P.

Participated in the international seminar on *Introduction of Guidelines for Expressways*, Mumbai, 14 May 2010.

Participated and presented a paper in International Workshop on *Transportation Planning Methodologies and Implementation for Developing Countries (TPMDC-2010)* towards sustainability, IIT Bombay 15 - 17 December, 2010.

Participated in the international seminar on *Green Building And Sustainable Infrastructure*, Taj Mahal Palace, Mumbai, 13 April 2011.

Viswanadham, B. V. S.

Attended and participated in 7th International conference on *Physical modeling in Geotechnics (ICPMG)*, Zurich, Switzerland, June 28-July 1, 2010 presented three papers orally at the conference and presented a general report on ‘Dams and Embankments’ on June 29 2010 during the conference. Attended and participated in 6th International congress on *Environmental Geotechnics* at New Delhi during November 8-12, 2010

Attended and participated in 1st US-India Workshop on *Global Geoenvironmental Engineering Challenges (GGEC)* held at New Delhi on November 7 2010.

A lecture entitled “Studies on Waste Containment Systems and Relevance to India” was delivered at the *Workshop Relevance of Scientific MSW landfilling to Indian Mega Cities* conducted at IIT Bombay on November 1 2010

A keynote lecture entitled “Potential of Geosynthetics for Infrastructure Projects” was delivered on January 24, 2011 at 14th *All India Builders Conference* held in Chennai.

Vinay KP, Kharmale SB, Ghosh S.

“Expanded mesh shear wall: a new system for low seismic applications”, *14th Symposium on Earthquake Engineering*, Roorkee, India, December 17-19, 2010.

Significant Awards / Distinctions**Bajoria K.M.**

Appointed as chairman of Indian ASTR (Association of Structural Rehabilitation)

Choudhury D.

APACM Award for Young Investigators in Computational Mechanics – 2010, The Asian Pacific Association for Computational Mechanics (APACM), Sydney, Australia, July 2010.

U. P. Government National Award – 2010, Indian Society for Technical Education (ISTE), New Delhi, India, December 2010.

Elected as Honorary Secretary of Technical Committee TC 212 on Deep Foundations for 2010 – 2013,

International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), London, U.K., June 2010.

Dasaka, S. Murty

Patent: **Dasaka, S.M.** and Trudeep N. Dave: A triaxial geocomposite testing apparatus for simultaneously calibrating multiple pressure transducers, Indian Patent Application No 223/MUM/2011, Filed on 25 January 2011.

Jothiprakash, V.

The Union Ministry of Water Resources: Department of Irrigation Prize by Institution of Engineers (India) for the paper published in Civil Engineering Division, during the 25th Indian Engineering Congress, Kochi, 17th Dec. 2010.

Subimal, Ghosh

The outstanding reviewer award for Journal of Hydrologic Engineering, American Society of Civil Engineers (ASCE), 2010.

BOYSCAST Fellowship 2010 from Department of Science and Technology, Government of India for carrying out research related to climate change in Oak Ridge national Laboratory, TN, United States of America.

Singh, D. N.

Fellow, Indian National Academy of Engineering (INAE), New Delhi. *Fellow*, American Society of Civil Engineers, ASCE

Honorary Work

Banerjee Sauvik

Reviewed papers for Journal of Journal of Structural Health Monitoring, Structural Control and Health Monitoring. Taught three lecture sessions of the Industry Technical Training for FLSmidth Engineers, conducted by Civil Engineering Department from April 17-July 17, 2011.

Chandiramani, N. K.

Reviewer for : AIAA Journal, Journal of Sound and Vibration, ASME Journal of Dynamic Systems, Measurement and Control, Mechanics of Advanced Materials and Structures, Applied Mathematical Modeling, Sadhana, Structural and Multidisciplinary Optimization, Composite Structures, ASCE Journal of Computing in Civil Engineering, Journal of Institution of Engineers (India)

Choudhury, D.

Editorial Board Member of 'ISSMGE Bulletin' (Quarterly Newsletter), published by International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), London, U.K. Editorial Board

Member of 'International Journal of Geotechnical Earthquake Engineering (IJGEE)' (ISSN: 1947-8488), IGI publishing. Editorial Board Member of Journal 'Disaster Advances' (ISSN: 0974-262X), published from India. Managing Editor for December 2010 issue (Volume 4, Issue 4) of 'ISSMGE Bulletin', published by International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), London, U.K. Responsible Member to shortlist the ASCE Papers for nomination of Awards from UNSAT committee of Geo-Institute, American Society for Civil Engineers (GI-ASCE), USA. Reviewer of technical papers for several Journals like (i) Soil Dynamics and Earthquake Engineering, Elsevier (ii) Journal of Geotechnical and Geoenvironmental Engineering, ASCE, (iii) International Journal of Geomechanics, ASCE, (iv) Engineering Geology, Elsevier (v) Geotechnical Engineering, Proc. of Institute of Civil Engineers (ICE), (vi) Ground Improvement, ICE (vii) Geotechnical and Geological Engineering, Springer (viii) Landslides, Springer (ix) Bulletin of Earthquake Engineering, Springer (x) Scientia Iranica, Transaction A (xi) Waste Management, Elsevier, (xii) FUEL, Elsevier, (xiii) Acta Mechanica Solida Sinica, Elsevier, (xiv) Civil Engineering Journal of Institute of Engineers, IEL, India and (xv) Indian Geotechnical Journal, IGS, India. Reviewer for GeoFrontiers 2011: Annual Conference of Geo-Institute (GI), ASCE, USA. Reviewer for GeoRisk 2011: Conference of Geo-Institute (GI), ASCE, USA. Reviewer for 64th Canadian Geotechnical Conference and 14th ISSMGE Pan American Conference (2011 Pan-Am CGS Geotechnical Conference), October 2 - 6, 2011, Toronto, Ontario, Canada organized jointly by ISSMGE and Canadian Geotechnical Society, Canada. Reviewer for 13th International Conference of International Association for Computer Methods and Advances in Geomechanics (13IACMAG 2011), May 9-11, 2011, Melbourne, Australia organized by IACMAG, USA. Reviewer for Sponsored Research Project Proposal of 2010-2011 for SERC Division of Department of Science and Technology (DST), Govt. of India. Member of Technical Committee TC 203 on Geotechnical Earthquake Engineering of International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), London, U.K. Technical Advisory Committee (TAC) Member, 4th International Conference on Grouting and Deep Mixing (Grout2012) during February 15 – 18, 2012, New Orleans, Louisiana, USA, jointly organized by Deep Foundations Institute (DFI) and International Conference Organization for Grouting (ICOG), USA. 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.

Dasaka, S. Murty

Elected Member of Executive Committee, Indian Geotechnical Society, for the term 2011-12. Reviewer: (i) Journal of Geotechnical and Geoenvironmental Engineering, ASCE , (ii) International Journal of

Geotechnical Earthquake Engineering (IJGEE), (iii) International Journal of Earth Sciences and Engineering, (iv) International Conference on Physical Modelling in Geotechnical Engineering (ICPMG2010), (v) International Conference on Advances in Geotechnical Engineering (GEOFRONTIERS-2011), (vi) Indian Geotechnical Conference (IGC-2010)

Deo, M. C.

Editor, International Journal of Ocean and Climate Systems, Multi-Science Publishing, U K. Associate Editor of ASCE Journal of Computing in Civil Engg. Chairman, Editorial board of ISH Journal of Hydraulic Engineering, Member, Editorial Board, International Journal of Ships & Offshore Structures, Taylor & Francis, Member, Editorial Board, Open Ocean Engineering Journal, Bentham Press, UK. Member, Editorial Board, Journal of Advances in Civil Engineering, Hindawi Pub. New York, Member, Editorial Board of past Civil-Comp conference-2010, Portugal, Editor: Special issues of the ISH Journal of Hydraulic Engineering -2010. Independent Director, Konkan Railways. Reviewed around 30 papers for international and national journals. Reviewed Ph D theses of IITM (2), IITR, NITTTR. Member, Scientific Advisory Committee, NIOT. Member, Project Management Board, NIOT, Member, faculty selection committee of IITKGP (2), Member, Scientist Selection Committee, CSIR.

Eldho, T. I.

Associate Editor of International Journal of Ecology and Development. Editor-in-Chief of the Journal "International Journal of Water Resources and Environmental Management" published by Research Science Press. Referee Ph.D. Thesis, IIT Roorkee; NIT Surathkal, IIT Madras, JNTU, Hyderabad, ISI Kolkotta, University of Malaya, Malaysia. Technical Review Committee Member of ICAR, Rubber Dam project implemented by Indian Rubber Manufacturing Research Association, Thane. Technical Committee Member of Ninth International Conference on Hydro-Science and Engineering, held at IIT Madras Reviewed Project proposal for DST, New Delhi, 2010. Member, UGAPEC, IIT Bombay. Youtube webcasted the Video Course on "Fluid Mechanics", and rated as popular engineering course video. Reviewed research papers for the following Journals in 2009-2010. Journal of Water Management, Institution of Engineers, UK International Journal of Water and Environmental Management, Journal of Water Resources Management, International Journal of Ecology & Development, ASCE Journal of Irrigation and Drainage, Journal of Environmental Modeling & Software, ASCE Journal of Practice of Hazardous, Toxic, and Radioactive Waste Management, Int. J. Hydrological Processes, ISH Journal of Hydraulics Engineering, Journal of Institution of Engineers (India) – Civil Engineering Section, ASCE Journal of Hydrologic Engineering, International Journal of Earth Sciences and Engineering, Journal of Earth System Science, Journal

of Geomatics, Sadhana - Academy Proceedings in Engineering Science, Journal: Frontiers of Environmental Science and Engineering in China, Journal of Agricultural Science and Technology, Journal of Contaminant Hydrology, Journal of Spatial Hydrology, Journal of Natural Hazards, Journal of Pedosphere, Journal of Water Resources Research

Gopal R Patil

Papers reviewed for : Journals: Network and Spatial Economics, Transportation Research Record, Transportmetrica, Journal of Advanced Transportation, Current Science. Conferences: Transportation Research Board annual meeting, Washington DC; ICTPA 24th Annual Conference, Los Angeles

Gupta Kapil

Membership of working groups/expert committees as follows: Member -UNESCO Working Group: Sustainable Urban Water Strategies, VII IHP, 2008-2013. Member- Editorial Board: Urban Water Journal. Convener and Member, Expert committee for drafting the "Guidelines for urban flood disaster management" for National Disaster Management Authority, Government of India, New Delhi. Member, Expert committee on drafting the "Urban Drainage Manual", CPHEEO, Ministry of Urban Development, Government of India, New Delhi.

Ghosh S

Reviewer: (i) ASCE Journal of Bridge Engineering, (ii) ASCE Journal of Structural Engineering (iii) Engineering Structures (iv) ISET Journal of Earthquake Technology (v) Sadhana. Examiner of Ph.D./Masters thesis from (i) IIT Roorkee and (ii) VJTI, Mumbai. Reviewer of course-materials developed under the National Mission on Education using Information and Communication Technology (NME-ICT). Expert member of Department Undergraduate Programme Committee (DUPC) and Department Postgraduate Programme Committee (DPPC-Structural Engineering) of Dept of Civil Engineering, College of Engineering, Pune

Janga Reddy, M.

Reviewed project proposals to DST; Reviewed technical papers for Journals: Journal of Hydrologic Engineering (ASCE), ASCE Journal of Water Resources Planning and Management, Journal of Hydrology, Journal of Hydroinformatics, Water Resources Management, Irrigation & Drainage, Environment Modeling and Software, ISH Journal of Hydraulic Engineering, Journal of Earth System Science.

Jangid, R. S.

Reviewer for research papers of Advances in Structural Engineering, ASCE Journal of Structural Engineering, Bulletin of Earthquake Engineering, Earthquake and Structures, Engineering Structures, International Journal of Physical Sciences, International Journal of Structural Stability and Dynamics, Journal of

Engineering for The Maritime Environment, Journal of Seismology and Earthquake Engineering, Journal of Sound and Vibration, Journal of Vibration and Control, Marine Structures, Mechanical Systems and Signal Processing, Structural Control and Health Monitoring, Soil Dynamics and Earthquake Engineering, Proceedings of The Institution of Mechanical Engineers, Part M, Structural Engineering & Mechanics, Sadhana- Academy Proceedings in Engineering Science, Scientific Research and Essays, and The Open Ocean Engineering Journal. Editorial Board Member, The Open Ocean Engineering Journal. Editorial Board Member, The Open Construction and Building Technology Journal. Editorial Board Member, Earthquakes and Structures Journal. Independent Director, ETC Network Limited.

Jothiprakash, V.

Co-opted member ISH, CWPRS, Pune, 2010-2012. Indian Examiner for Ph.D and M.S thesis of IIT Madras and Anna University. Reviewer: Hydrological Sciences Journal, Journal of Hydrology, Sadhana, ASCE Journal of Hydrologic Engineering, ASCE Journal of Hydraulic Engineering, Natural Hazards, Water Resources Research, Water Resources Management (Springer Publications), Journal of Institution of Engineers (India) Civil Engineering Division, Journal of Indian Society of Hydraulics. NSS coordinator IIT Bombay.

Juneja A.

Reviewer of papers in Journals: (i) Geotechnical Testing Journal, ASTM, American Institute of Physics, NY; (ii) Journal of Materials in Civil Engineering, ASCE; (iii) Ground Improvement Journal; (iv) Geotechnical and Geological Engineering, Springer Science; (v) Geomechanics and Engineering, an International Journal; (vi) Canadian Geotechnical Journal; (vii) Journal of Civil Engineering, Institution of Engineers (India). Reviewer of papers in Conferences: (i) International Conference on Physical Modelling in Geotechnics, Zurich (2010); (ii) Indian Geotechnical Conference, Mumbai (2010) Reviewed more than 40 papers for IGC 2010. Core Member ATC-18 on Deep excavations and Mega Foundations of ISSMGE. Member TC 305 on MegaCities of ISSMGE

K. V. Krishna Rao

Member of the Panel for Sustainability, CED 46:P19, Part 11 - Approach to Sustainability, National Building Code 2005, Bureau of Indian Standards. Member of the Standing Technical Advisory Committee on Road Works, Municipal Corporation of Greater Mumbai. Member of the IRC technical committee on *Transport Planning, Traffic Engineering & Road Safety* (H-1). Member of the IRC technical committee on *Urban Roads* (H-8)

Pani B. S.

Reviewer (i)Journal of Hydraulic Engineering, ASCE (ii)Journal of Hydro-environment Research, IAHR

(iii)Advances in Water Resources (iv)Canadian Journal of Civil Engineers

Rastogi. A. K.

Member Advisory Committee, Dept. of Civil and Environment Engineering, VJTI, Mumbai. Member Board of Studies of Dept. of Civil and Water Management Engineering, SGGS Institute of Engineering and Technology, Nanded. Invited as Expert on academic evaluation process Dept. of Civil and Water Management Engineering, SGGS Institute of Engineering and Technology. Member Expert Panel – *Indian National Committee on Groundwater*, Govt. of India. Member Expert Panel – *Indian National Committee on Hydraulics*, Govt. of India. Reviewer: (i) Jr. of Porous Media (ii) Asian Jr. of Water Environment and Pollution (iii) Canadian Geotech. Jr. Hydrogeology Jr. (iv) International Journal of Water (v) Journal of Water Resource and Protection (vi) ISH-Jr. of Hydr. Engg. (vii) Journal of Hydrology. (viii) Jr. of Inst. of Engineers – Civil Engg. Divn (ix) KSCE Jr. of Civil Engineering. Selected to appear in Who's Who World Class Alliance – 2011 by Continental Broadcasting Network Inc US.

Singh, D.N.

Editorial Board Member (i) International Journal of Geomechanics, ASCE (ii) Geotechnical Testing Journal, ASTM International (iii) Geomechanics and Geoengineering (Taylor & Francis). (iv) Korean Society of Civil Engineering (KSCE) Journal of Civil Engineering (v) International Scholarly Research Network (ISRN) Civil Engineering. (v) International Journal of Geotechnical Engineering (vi) Geomechanics and Engineering (GAE), *An International Journal of Computational and theoretical Geomechanics, Foundation Engineering Engineering Applications, Site Characterization*. **Guest Editor:** Special Issue: *Contemporary Issues in Ground Improvement Techniques: Ground Improvement (Thomas Telford Ltd.)*, Volume 163, Issue G14, November 2010. Special Issue: **Characterization of Unsaturated Soils:** Geotechnical and Geological Engineering (SPRINGER), Guest Editors: D. N. Singh and **Sai K. Vanapalli**, **Volume 29, Number 2, March 2011.**

Subimal Ghosh

Reviewer of Water Resources Research, Journal of Geophysical Research, Journal of Hydrologic Engineering, Journal of Hydrology, Climatic Change etc.

Tom V. M.

Member of the International Technical Committee(ITC), IEEE Intelligent Transportation Systems Conference, ITSC 2011, 2011, Washington DC, USA. Member, Technical Scrutiny Committee for the Development of Multi-level Car Parking in Greater Mumbai, Municipal Corporation Of Greater Mumbai, 2010. Member, Technical Scrutiny Committee for the Local Area Traffic

Improvement Project in Greater Mumbai, Municipal Corporation Of Greater Mumbai, 2010.

Vedagiri. P.

Reviewer: Journal of Transport, Journal of Public Transport, ASCE Journal of Computing in Civil Engineering, Journal of Advanced Transportation.

Faculty Members and their Specializations

1. Ajit Srividya

Structural reliability, Optimization, Quality systems

2. Bajoria, K. M

Structural engineering: Computer aided design, Non-linear analysis, Smart structures, Green Structures, Structural Rehabilitation, Cold-formed steel structures.

3. Banerji, P.

Structural engineering: Earthquake analysis, Risk assessment, Artificial neural networks, Nuclear structures.

4. Banerjee S

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.

5. Chandiramani, N. K.

Active vibration control, Nonlinear dynamics, Stability; Computational mechanics; Solid mechanics.

6. Deepankar 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, Soil Dynamics, Machine Foundations, GIS-GPS based Hazard analysis, Soil Liquefaction, Centrifuge Modeling, Numerical and Analytical modeling of geotechnical problems.

7. 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.

8. Deo, M. C.

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)

9. Desai, Y. M.

Structural engineering: Wind induced vibrations, Computational mechanics, Nonlinear analysis, Finite elements, Parallel computing, Fiber reinforced polymer composites, Composites in construction.

10. Dewaikar, D. M.

Geotechnical engineering: Offshore foundations, Ground improvement, Seepage.

11. Dhingra, S. L.

Transportation systems engineering: Modeling, Simulation, Economics, Environmental impact assessment, GIS, Expert systems, Artificial intelligence, Genetic algorithms, Fuzzy set theory.

12. Eldho, T. I.

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.

13. Ghosh Siddhartha

Structural engineering: Performance-based seismic design, Reliability-based seismic design, Plastic design of steel structures, Analysis and design of special plate shear walls.

14. Gopal Rao, K.

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.

15. Goyal, A

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.

- 16. Gupta Kapil**
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.
- 17. Inamdar, M.**
Structural engineering: Solid mechanics, Cellular adhesion and motility, Mechanics of soft materials, Dissipation in structural and mechanical systems.
- 18. Janga Reddy Manne**
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.
- 18. Jangid, R. S.**
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.
- 19. Jothiprakash, V.**
Water resources engineering: Water resources systems analysis, Reservoir operation, Policy issues, Multi-objective analysis, Stochastic hydrological modeling, Irrigation water management.
- 20. Juneja A.**
Geotechnical engineering: In-situ and laboratory engineering properties of soil, Numerical and physical modeling in geotechniques, Earthwork, Ground improvement.
- 21. Kant Tarun**
Institute Chair Professor of Civil Engineering
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.
- 22. Krishna Rao, K.V.**
Transportation systems engineering: Travel demand modeling, Evolutionary algorithms, Neural networks and GIS in transport planning, Traffic design and analysis.
- 23. Mandal, J.N.**
Numerical/Experimental studies on geosynthetics, Centrifuge modeling of geosynthetics reinforced soil wall and slopes, Geosynthetics in Landfill-Municipal/Hazardous (Industrial)/Low level radioactive waste, Tsunami reconstruction with geosynthetics containment systems, Ground improvement techniques using PVD, encased stone column, smart-geosynthetics and Electrokinetics technique, Nano technology and geosynthetics, Geosynthetics in coastal/marine/hydraulics and waterway erosion control, Environmental remediation and waste containment, Geosynthetics in dewatering, Highway/Railways/Air ways/Pavements Embankments and reflection cracking/pothole/asphalt overlay, Geosynthetics in mining, Bio and agriculture engineering.
- 24. Pani, B. S.**
Water resources engineering: Diffusion of jets and plumes, Multiple diffusers, Offshore pipelines, Scour problems, Cooling water structures.
- 25. Rao, E. P.**
Remote sensing: Remote sensing applications to water resources, Runoff modeling, Water distribution systems optimization.
- 26. Rastogi, A. K.**
Aquifer Remediation Strategies, Inverse Modeling of the Aquifers and Auto Calibration of Field Models, Solute Transport Modeling involving Hydrodynamic Dispersion in Aquifers, Ground Water Flow Modeling of Unconfined and Confined Aquifers, Well Hydraulics Modeling, Groundwater Systems Planning and Management and Coastal Aquifer Hydrodynamics Modeling
- 27. Patil G. R.**
Transportation systems planning, Network optimization, Freight transportation modeling, Traffic operations, Demand modeling, Traffic emissions
- 28. Ravi Sinha**
Structural engineering: Earthquake engineering, Vibration control and isolation, Structure rehabilitation and condition monitoring, Disaster management.

29. Singh, D. N.

Geotechnical engineering: Environmental geotechnics, Radioactive waste disposal, Solid waste utilization, Geotechnical centrifuge modeling.

30. Subimal Ghosh

Water resources engineering: Uncertainty modeling, Water resources systems, Hydroclimatology.

31. Tom. V. Mathew

Transportation systems engineering: Traffic flow modeling and simulation, Transportation network optimization, control and management.

32. Venkatachalam, G.

Geotechnical engineering: Finite element analysis, Digital image processing, Digital terrain modeling, Centrifuge, Numerical and GIS modeling of landslides.

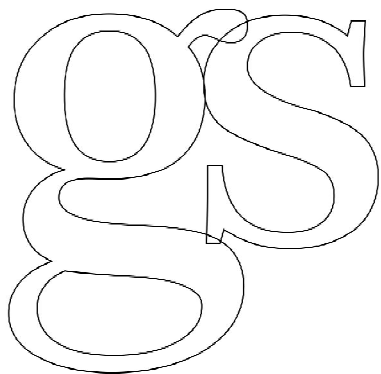
33. Vedagiri P.

Public Transportation Systems Planning and Operation, Traffic Monitoring, Management and Control, Road Safety Audit, Traffic Flow Modeling and Simulation, Intelligent Transportation Systems (ITS).

34. Viswanadham, B. V. S.

Geotechnical engineering: Centrifuge modeling, Soil reinforcement, Ground improvement, Environmental geotechnics-waste materials' behaviour, waste containment systems.

- 27. Krithi Ramamritham**
Databases, real-time systems, and distributed applications, Dynamic Data in sensor networks, embedded systems, mobile environments and the web.
- 28. Bhaskar Raman**
Computer networks, Wireless systems, Communication system design for developing regions
- 29. Ganesh Ramakrishnan**
Statistical Relational Learning, Graphical Models, Some other topics in Machine Learning such as Support Vector Machines, Information Extraction
- 30. Abhiram G Ranade**
Algorithms and Combinatorial Optimization
- 31. Krishna Shankaran Narayanan**
Formal Methods, Bio-inspired Computing
- 32. Anirudha Sahoo**
Computer networks, Voice routing, QoS in networks, wireless networks, wireless sensor networks, WiMax
- 33. Amitabha Sanyal (Head of the Department)**
Functional Programming, Compilers, and Programming Languages
- 34. Sunita Sarawagi**
Databases, data mining, and machine learning. Her current research interests are web information extraction, data integration, graphical models and structured learning.
- 35. Nandlal L Sarda**
Databases, Information Systems, Software Engineering
- 36. Sivakumar G.**
Automated Reasoning, Logic Programming, Rewrite Systems, Networks, Distributed Systems
- 37. Milind Sohoni**
Combinatorial Optimization, Mathematical Programming, Algorithms
- 38. Sudarshan S.**
Database Systems
- 39. Sundar Vishwanathan**
Algorithms, Combinatorics, Complexity Theory.



Earth Sciences

Academic Activities

The Department of Earth Sciences offers the following five academic programmes. A new programme, 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.	: 16
M.Tech. (Geoexploration)	: 19
M.Tech. (Petroleum Geoscience)	: 12
M.Sc. (Appl. Geology)	: 30
M.Sc (Appl. Geophysics)	: 14

Degrees Awarded

Ph.D.	: 02
M.Tech.	: 21
M.Sc. (Appl. Geology)	: 20
M.Sc (Appl. Geophysics)	: 10

The M.Sc. curriculum emphasizes on basic science while the M.Tech. (Geoexploration) programme 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. The Company also provides fellowships to two M.Tech. students of Petroleum Geoscience course and has provided grant for the 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 programme 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.)	: 39
New Projects (No.)	: 08
Completed Projects (No.)	: 03
Faculty involved	: 20
Sanction outlay	: Rs. 5,37,82,968/-

Consultancy

No. of Jobs	: 29
No. of faculty involved	: 04

Income generated : Rs. 47,86,433/-

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 high precision GPS and GIS facilities and a computer lab with Sun Workstation.

A few of the newly sponsored research projects initiated in 2010-11 are listed below:

Project Title	Agency Name
Organic geochemistry of the lignite bearing Palaeogene Shales of Kutch, Gujarat	Oil India Development Development Board (OIDB)
Geoelectrical mapping of the deep subsurface along the Eastern Ghats Mobile Belt region using Magnetotelluric studies	Ministry of Earth Sciences
Colouration in Zambian Emeralds from KAGEM Mines	Consultancy, South Africa
Structural Geology and Extrusion Mechanism of the Himalayan Shear Zone in the Bhagirathi Section”.....Sponsored by “ <i>SERC Fast Track proposal for Young Scientists Scheme, DST</i> ”. Higher Himalayan Shear Zone in the Bhagirathi Section	Department of Science & Technology

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
11. High Precision Real Time Kinematic Global Navigation Satellite System
12. Fission Track Thermochronology
13. Scintrex CG5-Autograv Gravimeter (Land)

Visitors to the Department

Dr. K.S.R. Murthy, CSIR Emeritus Scientist, National Institute of Oceanography, Visakhapatnam. He delivered a lecture on “Impact of Intraplate Seismicity on the Tectonics of Indian Passive Margins”.

Ms. Isabelle, an Austrian Engineering, She delivered a talk on “The Revolution of Green Buildings” on 14-5-2010.

Mr. Sudipta Dasgupta, Senior Geologist at RIL. He delivered a talk on “Deepwater Gravity Flow Deposits” on 30-7-2010.

Dr. Kathakali Bhattacharyya, University of Rochester, USA. She delivered a lecture on “Geometry & Kinematics of the Fold-Trust Belt & Structural evaluation of the Major Himalayan Fault zones” on 4-8-2010.

Mr. Bitasta Banerjee. He delivered a lecture on “Translating geological data into extractable reserve

Thriving for cutting edge in Mineral resources management” on 11-8-2010.

Dr. Roberto Weinberg, Professor, Monash University, Australia. He delivered a talk on “Himalayan Geology” on 18-8-2010.

Dr. Sachin Gunthe. He delivered a lecture on “Aerosol-cloud-precipitation interaction” on 27-8-2010.

Dr. Lalu Mansinha, Emeritus Prof. Dept. of Earth Science, University of Western Ontario, Canada. He delivered a lecture on “Gravity Waves” on 6-9-2010.

Dr. Gita Kewalaramni, Mumbai University, Mumbai. She delivered a lecture on “Urban Renewal Studies in Mumbai” on 8-9-2010.

Dr. A.B. Roy, Emeritus, Presidency College Kolkata. He delivered a lecture on “Neotectonics” on 1-9-2010.

Ms. Sonali DeSouza, Wolfram research, USA. She delivered a lecture on “A Technical Talk on Mathematica 7” on 28-9-2010.

Dr. R. S. Sharma delivered a lecture on “Himalayan Orogeny” on 9-11-2010.

Dr. J.R. Kayal CSIR Emeritus, Jadhavpur University, Kolkata. He delivered a lecture on “Seismic Environments in India” on 16-3-2011.

Conferences Participation

National

Jadhav, G. N., Chairman of Session on “Characterization of Mineral/ Coal/ Ore during the *XIth International Seminar on Mineral Processing Technology, (MPT-2010)*, held at NML, Jamshedpur, Jharkhand, India, from 15th to 17th Dec.2010.

Mukherjee, S.

“Study of Selected Structures in and around Ambaji”, Gujrat. *National Conference on Rock Deformation and Structures (RDS-I)*. 29-31 Oct 2010. Jadavpur University.

Mukherjee, S.

“Genesis of Flanking Structures and Microstructures”. *National Conference on Rock Deformation and Structures (RDS-I)*. 29-31 Oct 2010. Jadavpur University.

Saraswati, P. K.

Keynote Address, *National Conference on Stratigraphy, Palaeontology and Palaeo-environment*, Jaipur, 3-5 February 2011

Workshop on Climate Change and Palaeoclimate, Geological Survey of India, 22-24 September 2010.

Workshop on Palaeontology and Stratigraphy: Basics to Applications, February 27-28, 2011. BHU, Varanasi.

Mukul, M.

Fault Zones and Landslides in *Seminar on Sustainability and Landslide Disaster Management*, Save the Hills, Kalimpong, May 7, 2010.

Singh, T. N.

“Landslide simulation and mitigation for road cut slope in Himalayan region”, *National Seminar on Late Quaternary Geology of Himalayan Orogen and the Foreland Basin*, Lucknow, U.P, 16-17 February 2011

“Numerical simulation of coal reservoir for long term storage of Carbon di-oxide”, *International Conference on Unconventional Fossil Fuel Sources and Carbon Management*, Ahmadabad, Gujarat, 21-22 February 2011.

International**Dutta, S.,**

Gordon research Conference (Organic Geochemistry) at Holderness, New Hampshire, USA.

Mukherjee, S.

“Estimating Viscosity of the Tso Morari Gneiss Dome”, western Indian Himalaya. *Tectonic Studies Group Conference*, 05-07 January 2011, Durham, UK.

“Tectonic Problems the Higher Himalayan Shear Zone”, Bhagirathi Section, Indian Himalaya. *Annual Meeting of the Tectonic Studies Group*, Durham, UK, 05-07 January, 2011.

Saraswati, P.K.

Presented paper at *FORAMS-2010: International Symposium on Foraminifera*, at Bonn, September 5-10, 2010.

Sheth, H.

Geological Society of America Conference “Tectonic Crossroads: Evolving Orogens of Eurasia-Africa-Arabia” at Ankara, Turkey, in October 2010, and gave an oral presentation on A Newly Discovered Mafic Alkalic Monogenetic Volcanic Field in the Kachchh Region of the Northwestern Deccan Traps.

Khasnobis, U., Saraswati, P.K. and Banerjee, S.

“Microfacies Analysis of Early Miocene Carbonates of Kutch”. *The 2nd South Asian Geoscience Conference and Exhibition, GEOIndia2011*, 12-14th January, 2011, New Delhi, 632p.

Roy, S.K. and Banerjee, S.

“Sedimentary Facies and Penecontemporaneous Deformation Features in Andaman Flysch at South point, South Andaman Island and their Implications for Depositional Environment”. *The 2nd South Asian Geoscience Conference and Exhibition, GEOIndia2011*, 12-14th January, 2011, New Delhi, 629p.

Singh T.N., Pradhan S.P. and Vishal V.

“Stability of Slope in a fire prone open cast mine in Jharia Coal field”, India, *Slope Conference, 2010*, Chiangmai, Thailand

Invited Lectures**National****Jadhav, G. N.**

“Economic Geology and Mineral Exploration” and “Groundwater Exploration” at School of Earth Science, Solapur University, Solapur, Maharashtra.

Mukherjee, S.

“Microstructural Engineering”, organized by Metallurgy Dept., IIT Bombay. 22-23 Nov 2010.

Mukul, M.

“Retrodeformable Balanced Cross Section: A powerful tool for Petroleum Exploration in Fold-and-Thrust Belts, Society of Petroleum Geophysicists”, ONGC, Panvel, Mumbai, March 26, 2011.

Global Positioning System and its Applications, Tata Institute of Social Sciences, Mumbai, September 30, 2010.

Singh, T. N.

“Simulation of Tunneling by a numerical modeling”, Mumbai University, India, Jan, 2011

“Revitalization of Mining operation for sustainable development of India”, *Global Mining Discussion*, Hotel-Hilton, Mumbai, 2011

“Numerical simulation of CO₂ Sequestration in De, coaled Mine. Hyderabad”, Aug. 2010

“CO₂ sink capacity estimation using PFC code”,
Academic Staff College, BHU, Varanasi- 2010

International

Chandrasekharam, D.

“Low Enthalpy Geothermal Resources for Power Generation: Geo-Powering the rural communities” ICS-UNIDO, Ethiopia, 8-12 June 2009.

Mathew, G.

“The Inter and Intracratonic Tectonics in India : Eastern Himalaya and Kachchh” at Freiberg, Germany.

Singh, T. N.

“Prediction and Analysis of Landslides along the Road Cut Hill slopes”, ASIAHORCs, Kuala- Lumpur, Malaysia, Nov. 1-5, 2010.

“Predicting the behavior of Landslides in India using Numerical Modeling Tools”, Norwegian Geotechnical Institute, Oslo, Norway, May, 2010.

Significant Awards/Distinctions

Banerjee, S.

IIT Bombay Research Paper Award for the year 2010.

Mathew, G.

DAAD Research Stay Fellowship, 2010

Mukherjee, S.

Young Faculty Award, IIT Bombay. Sept 2010

Sheth, H. C.

Krishnan Medal, 2010, received from the Indian Geophysical Union at Hyderabad, December 2010.

Honorary work

Banerjee, S.

Editorial board, Journal of the Geological Society of India
Global Ambassador, Society for Sedimentary Geology, USA

Jadav, G. N.

Vice-President, Indian Institute of Mineral Engineers (IIME)-Mumbai-Pune Chapter
Member, Editorial Board, Journal of Geological Society of India, Bangalore, Karnataka.
Executive Committee member, Indian Institute of Mineral Industry, (IIME), Jamshedpur, Jharkhand,
Member, Board of Examiners (Ph.D. Thesis) M. S. University, Baroda, Gujarat
Member, Editorial Board, Journal of Geological Society of India, Bangalore, Karnataka.

Member, Board of Examiners (M.Sc and M.Phil.), Solapur University, Solapur, Maharashtra,
Member, Board of Studies (Geology), Solapur University, Solapur, Maharashtra,
Member, Board of Studies (Geology), St. Xavier's College, Fort, Mumbai, Maharashtra,
National Steering Committee member of “ XIth International Seminar on Mineral Processing Technology, (MPT-2010), held at NML, Jamshedpur, Jharkhand, India, from 15th to 17th Dec.2010.
Dept. of Earth Sci's Co-ordinator for “TECHCONNECT-2011”, held in IIT-Powai, Bombay from 7th Jan. to 9th Jan,2011.
Sap Committee Member, UGC, Govt. of India, New Delhi.

Mathew, G.

Reviewed papers for
Geological Society of India, Current Science
Tectonophysics, International Journal of Remote Sensing

Mohan, G.

Member of Panel of Editors for “Geohorizons”

Mukherjee, S.

Associate Editor, International Journal of Earth Sciences
Associate Editor, Research Journal of Applied Sciences, Engineering and Technology
Reviewer for
International Journal of the Physical Sciences
Indian Journal of Science and Technology

Mukul, M.

Associate Editor, Journal of Earth System Science
Member, Organizing Committee, 4th Indo-American Kavli Frontier of Sciences Symposium
National Academy of Sciences, USA, Irvine, California, USA, February 2011

Pande, K.

Member, DST Fast Track Proposal Committee
CSIR Member, PAC Earth Atmosphere Ocean and Planetary Sciences.

Pandalai, H. S.

Member, Editorial Board, Journal of Mathematical Geosciences,
Member, Academic Council, Indian School of Mines, Dhanbad
Member IGCP-540 on “Gold-bearing Hydrothermal fluids of Orogenic Deposits”

Review of manuscripts:

Journal of Earth System Science, Journal Geological Society of India, Journal of Asian Earth Sciences

Paper Setter: Indian School of Mines, Dhanbad

Chairman, Health and Hospital Advisory Committee,
IIT-B up to August 2010

Patel, S. C.

Member, National Working Group for IGCP-557 entitled
“Diamonds, Xenoliths and Kimberlites”
Member, Advisory Editorial Committee, Gondwana
Geological Magazine, Nagpur

Ramakrishnan, D.

Conducted DST sponsored CEP course on
Hyperspectral Remote Sensing and Natural Resource
Management (HYPERPECTRA-2010).

Saraswati, P. K.

Editorial Board, Journal of Petroleum Geology (Wiley);
Journal Geological Society of India; Energy
Exploration & Exploitation (Multi-Science, UK);
Journal Palaeontological Society of India; Indian
Journal of Geosciences (GSI).
Member, Board of Governors, RGIPT
Member, Expert Committee (WOS-A), DST

T. N. Singh

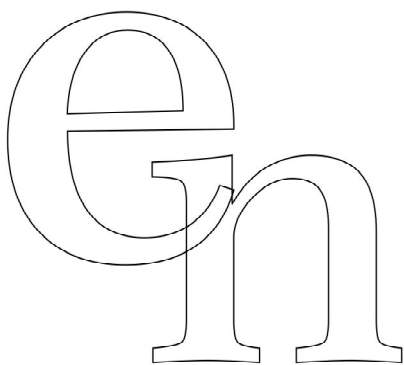
Member of Editorial Board
International J. of Advanced Research in Geology,
Institute of Advanced Scientific Research, Irvine
California, USA. 2010
Himalayan Geology, WIHG, 2011
International Journal of Geomaterial, Scientific
Research Publishing, 2011
The Indian Mining and Engineering Journal,
Bhubaneswar, India
International Journal of Earth Science and Engineering

Faculty members 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-Melt Inclusions,
Economic Geology
7. **George Mathew**
Crystallography and Mineralogy

8. **G. Mohan**
Seismology, General Geophysics
9. **Soumyajit Mukherjee**
Structural Geology
10. **Malay Mukul**
Structural Geology, Neotectonics, GPS Geodesy
11. **H. S. Pandalai**
Ore Geology, Mining Geostatistics
12. **Kanchan Pande**
Isotope Geology, Geochronology, Geochemistry
13. **Suresh C. Patel**
Metamorphic Petrology
14. **Munukutla Radhakrishna.**
Gravity, Magnetic, Geodynamics
15. **D. Ramakrishnan**
Geomorphology and Remote Sensing
16. **Pratul K. Saraswati**
Micropalaeontology, Stratigraphy, Petroleum
Geology
17. **Hetu. C. Sheth**
Igneous Petrology and Volcanology
18. **Trilok Nath Singh**
Engineering Geology, Rock Mechanics
19. **B. K. Sahu (Professor Emeritus)**
Sedimentology, Mathematical Geology, Mineral
Deposit Modelling

- 47. R. K. Shevgaonkar**
Fiber Optic Communication; Photonics;
Non-linear fiber optics; Antennas; Image
Processing; Radio Astronomy; Wireless
Communication
- 48. V. R. Sule**
Cryptography: Cryptographic Algorithms,
Elliptical curve based schemes, Algebraic
cryptanalysis of block and stream ciphers by
satisfiability methods, Boolean equations and
analysis. Control Theory: Feedback system
design, Computational Methods for dynamic
systems.
- 49. Anshuman Shukla**
Multilevel converters, Modulation and control
of power electronic converters, Power
electronics applications in power systems
(FACTS, HVDC, custom power devices, etc.),
Renewable energies, Energy storage, Control of
electric drives, Hybrid and solid-state circuit
breakers and current limiters.
- 50. Maryam Shojaei**
Analog and Mixed-Signal Circuit Design, VLSI,
Circuit Design Optimization, EDA/CAD for
Circuit Design
- 51. S. A. Soman**
Power System Analysis, Restructuring of Power
Systems, Power System Protection,
Optimization, Object Oriented Design,
Computational Methods
- 52. Ashwin Tulapurkar**
Physics and applications of spintronics
devices, spin-injection, spin-current induced
magnetization switching. High speed
measurements of switching. Noise in nano-
devices. Ferromagnetic resonance.
- 53. Juzer Vasi**
Physics and technology of CMOS devices
Nanoelectronics.
- 54. Ajit Kumar Verma**
Reliability in Engineering Design
- 55. Saravanan Vijayakumaran**
Digital Communications
Computer Networks
Parallel Simulation Algorithms



Energy Science & Engineering

Introduction

The Department of Energy Science and Engineering is a young department which started in 2008. It has been existing as an Interdisciplinary Programme for over the last 25 years. With the approval of the Board of Governors in 2008, the programme was upgraded to a department which now has (i) Integrated B.Tech.-M.Tech.(dual degree), (ii) Integrated M.Sc.-Ph.D. dual degree programme, in addition to the conventional, (iii) M.Tech. (Energy Systems Engineering), and (iv) Ph.D.

The programme is aimed at providing high quality innovators/engineers with an understanding of energy systems, who can contribute meaningfully to the nation's 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 analyse energy systems. About 413 alumni of the programme are currently working in various positions in industry and research institutions.

The course is interdisciplinary in nature, and students and faculty members are from diverse engineering (Energy, Mechanical, Chemical, Electrical, Civil, etc.) and science (Physics, Chemistry, Maths, etc.) disciplines. During the programme the students are exposed to core areas of energy management including energy auditing, energy systems modelling and analysis, and non-conventional energy sources. In addition, students take elective courses in their area of specialisation. 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 recognised by the industry with fellowships and sponsorship from Forbes Marshall, ONGC, Cummins and the Ministry of New and Renewable Energy. In the 2010 batch, 27 students were admitted to the M.Tech. programme, 28 students to

the Ph.D. programme, 14 to the M.Sc.-Ph.D. dual degree programme and 25 students to the B.Tech.-M.Tech. dual degree programme. The 2008-2010 batch was placed in various companies/ institute(s) like TERI, Delhi; Solar Semiconductor (R&D) TCE (Engg.), Hyderabad; Emerson (Engg.), Hyderabad; Reliance Solar, Mumbai; Vignan University, Andhra Pradesh; DBHMS, Noida; BGR Energy Systems, Hyderabad, etc.

The department celebrated the "Energy Day" on 19th March 2011 at Victor Menezes Auditorium. About 100 delegates from various industries and organisations attended the research presentations of the final year graduating DESE students.

Academic Programme

Dual Degree Programme (B.Tech.-M. Tech.)

1st batch yet to pass out

Degrees Awarded:

M.Tech.	- 24
Ph.D.	- 2

Minor courses: 02

- EN403 Energy Resource, Environment and Economics
- EN301 Introduction to Renewable Energy Technologies

Scholarships:

MERC 2

NCPRE 2

Special Initiatives

Energy Day 2011

The department celebrated the annual event, Energy Day on 19th March 2011. Energy Day aims to disseminate the postgraduate research to the industry and to strengthen industry-academia relationship. The programme involved presentations by the postgraduate students showcasing their research work, poster presentations and a panel discussion. The purpose of these presentations is to bridge the gap between the industry and the academia in terms of technology transfer. This also helps the people from IIT to understand what future research work is to be carried out to support the industries in particular and society in general. This year 17 presentations were

made including 15 M.Tech. students and 2 Ph.D. students. Research works presented by the student this year include solar thermal, solar PV, demand side management, energy policy, small hydro turbine, heat integrated water networks and thermal decomposition of ammonia borane. More than 100 participants including industries professionals, academia and participants from IITs were present at Energy Day - 2011.

Sponsored Research Projects

Sponsored Research Projects	: 32
New	: 7
Ongoing	: 24
Completed	: 1

List of sponsored research projects

Sr. No.	Project Title	Sponsoring Agency	Status (New/Ongoing/Complete)
1	"Solar Cells using poly-Si and epi-Si films"	International Collaboration Projects (Applied material)	Ongoing
2	"Young Investigator Award 2009 / Social Experiment to Demonstrate New strategies for penetration of rural PV market".	IRCC Award	New Project
3	"National Centre for Photovoltaic Research and Education (NCPRE)"	Ministry of New and Renewable Energy	New Project
4	Drop dynamics in complex flow fields	IGCAR	New Project
5	Stability and Performance of Photovoltaic's (STAPP)	DST-Research Councils United Kingdom	New Project
6	Design and Development of Vacuum Pyrolysis Plant to Process Various Agricultural and Agro-Industrial Biomass to Demonstrate Its Technical and Economical Feasibility	MNRE	New Project
7	Studies on Underground Coal Gasification for Indian Coals-II	ONGC	New Project
8	Cummins Engine Research Facility	Cummins	Ongoing
9	Design and development of Stirling engine for net 1.5 kW electrical output	MNRE	Ongoing
10	Development of design methodology to optimally integrate solar thermal concentrator with industrial process heat applications	MNRE	Ongoing

Sr. No.	Project Title	Sponsoring Agency	Status (New/ Ongoing/Complete)
11	Characterization of Thin Film Si for Solar Cell Application	Applied Materials	Ongoing
12	Characterization of solar cells and material by active infrared thermography	IRCC, IITB	Ongoing
13	Dynamic Data Driven Model Based Predictive Control of Nuclear Steam Generator: (Co-Investigator) Board of Research in Nuclear Sciences (BRNS),	Govt. of India	Ongoing
14	Solar Heat For Drying Na ₂ SO ₄	Seed Heavy Water Board	Ongoing
15	Development of a Megawatt-scale Solar Thermal Power Testing, Simulation and Research Facility	MNRE	Ongoing
16	Wastewater, minimization in batch plants through on-site treatment, reuse and recycle processes	Department of Science & Technology (DST)	Ongoing
17	“Development of a Mega-Watt scale national Solar Thermal Power Testing, Simulation and Research Facility”	MNRE	Ongoing
18	“Development of Efficient and Cost-Effective Electrocatalysts for Oxygen Reduction Reaction (ORR) in Low Temperature Fuel Cells”	DST	Ongoing
19	“Development of electrocatalysts for low temperature fuel cells”	IRCC	Ongoing
20	“Nanomaterials For energy Applications Training Program”	CSIR	Completed
21	“Hydrogen Storage properties of Complex Hydrides”	MNRE	Ongoing
22	“SG/ Template synthesis of hollow Metal nanoparticles as high performance Rechargeable Li-ion Battery anode materials”	IRCC-IITB	Ongoing
23	“Nanoscale fabrication of aligned nanoarchitected copper current collectors covered with metal phosphides as anode for next generation Lithium-ion battery applications”	Nano-mission DST	Ongoing
24	“Development of low cost cathode materials for Li-ion batteries”	Renault Nissan Tech. & Business Centre I Pvt. Ltd.	Ongoing
25	“Development of Solid State Nanocrystalline Semiconductor Sensitized Solar Cells by Inverted Morphology”	DRDO	New Project

Sr. No.	Project Title	Sponsoring Agency	Status (New/ Ongoing/Complete)
26	End Use Efficiency – Industrial	International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria	Ongoing
27	SG/Setting up custom made Atomic Layer Deposition facility for various energy related applications	IRCC-IITB	Ongoing
28	Low temperature ALD of SiN and SiO ₂ using novel nitrogen, oxygen and silicon precursors.	Applied Materials	Ongoing
29	Deposition of Multilayer Quantum Well Structures of Metal Chalcogenides by ALD.	Board of Research in Nuclear Sciences	Ongoing
30	Direct Regeneration of the Ultra Thin Semiconductor Absorber Layer by Electronic Conductors for Solid State Semiconductor Sensitized Solar Cells	Department of Science & Technology	Ongoing
31	Investigation of dynamic stability phenomena in microgrid during islanding and resynchronizing.	IRCC-IITB	Ongoing
32	Peer-to-peer control of distributed energy resources for improving voltage and frequency profile in microgrids.	SERC, DST	Ongoing

Consultancy Projects

The total revenue from consultancy projects is Rs. 2 lakh.

Patents

- 360° Sun tracking and self-cleaning of solar PV panels (**1838/MUM/2010**), C.S. Solanki and R.G.Tejwani filed June 2010.
- Novel Front Metal Contact Patterning Scheme For C-Si Solar Cells (**1787/MUM/2010**), C.S.Solanki, filed on June 2010.
- A solar cell having three dimensional junctions and a method of forming the same (**3467/MUM/2010**) C. S. Solanki and Som Mondal filed on 21st Dec 2010.
- Method for forming metal contact on a surface of a solar cell covered by an anti-reflective coating (ARC) layer (**3506/MUM/2010**) C. S. Solanki and Vikrant Choudhary filed on 22nd Dec 2010.
- ‘Heterogeneous acid catalyst for producing biodiesel from vegetable oils and process for the

preparation thereof’ (Indian Patent Application No. 2134/MUM/2010), Gupta Purshottam Das (TCE), Mahajani Sanjay (Chem. Engg), Ganesh Anuradda and Singh Dheerendra (DESE) filed on 27th July, 2010.

- Flow Field Design in Fuel Cells, Application Number 2762 / MUM / 2010, CBR Number: 11503, P.C. Ghosh filed on 04/10/2010 at 17:45:38

Visitors to Department

Mr. Chandra Bhushan, Associate Director, Centre for Science and Environment, New Delhi, delivered lecture on “Challenge of the New Balance: Study of six most energy intensive sectors to determine India’s low carbon growth options” (June 01, 2010).

Mr. Mark G. Roper, Hiden Isochema Ltd., UK, delivered lecture on “The Characterization of Solid Surface through Gas Adsorption Measurements” (June 04, 2010).

Dr. Paresh S. Nasikkar, Centre for Renewable Energy System Technology, Loughborough University, UK delivered lecture on “The Development of Copper Indium Diselenide (CuInSe₂) based Absorber Thin

Films for use in Photovoltaic Solar Cells” (June 14, 2010).

Prof. Ralph Gottschalg, Loughborough University, UK, delivered lecture on “Photovoltaics – Why laboratory efficiency is not the entire story” (September 03, 2010).

Dr. Indu R. Keoti (Pillai), delivered lecture on “Development of a Solar Concentrator for Medium Temperature Application” (September 08, 2010).

Dr. Meril Mathew, Post Doctoral Fellow, DESE, delivered lecture on “Plasmonic Coatings for Solar Cells” (September 15, 2010).

Dr. Mukund Acharya, Chief Technologist, Energy & Environment, Honeywell Aerospace, delivered lecture on “Energy Efficiency and Greenhouse Gas Reduction in Aviation: A Survey” (September 20, 2010).

Dr. Mukund Acharya, Chief Technologist, Energy & Environment, Honeywell Aerospace, delivered lecture on “Biofuel Technology & Processes at Honeywell” (September 21, 2010).

Mr. Omobolanle Adekola, Students of University of Pretoria, South Africa, delivered lecture on “Wastewater minimization in multipurpose batch plants with a regeneration unit” (December 06, 2010).

Mr. Donald R. Nonyane, Student of University of Pretoria, South Africa, delivered lecture on “Long term scheduling techniques for wastewater minimization in batch processes” (December 06, 2010).

Mr. Esmael Reshid, Student of University of Pretoria, South Africa, delivered lecture on “A Novel Technique for Prediction of Time Points for Scheduling of Multipurpose Batch Plants” (December 06, 2010).

Dr. Nirav D. Vora, National Renewable Energy Laboratory, USA, delivered lecture on “Thin film Solar Photovoltaic” (December 09, 2010).

Mr. Paul Lucchese, CEA, Directeur des Nouvelles Technologies de l’Energie, France, delivered lecture on “The french expertise in cutting-edge technologies for new energy: Hydrogen, fuel cells, biofuels and solar” (December 13, 2010).

Dr. Balasubramaniam Kavaipatti, LBNL, USA, delivered lecture on “Thin film growth of oxides – Materials development for novel multiferroics and green energy conversion applications” (December 20, 2010).

Dr. Balasubramaniam Kavaipatti, LBNL, USA, delivered lecture on “Thin film growth of oxides – Materials development for green energy conversion applications” (January 19, 2011).

Dr. Fumihiko Haga, Advanced Materials Laboratory, Nissan Research Center, Nissan Motor Co. Ltd., Japan, delivered lecture on “Nissan Approach for CO₂ Reduction and Research Activities on Li-ion Batteries” (February 23, 2011).

Prof. S. P. Sukhatme, Ex-Director IIT Bombay and Professor Emeritus, Mechanical Engineering, IIT Bombay, delivered lecture on “The Energy Scenario in India: the present and the future” (March 02, 2011).

Prof. K. S. Gandhi, Chemical Engineering Department, IISc, Bangalore, delivered lecture on “Structure of Transport Phenomena- An introduction to the beginners” (April 07, 2011).

Extension Activities

Workshops

Delivered a talk in “Sevilla’11 ‘India Spain Workshop on Renewable Energies” held at Sevilla, Spain during 1-3rd March 2011.

Workshop on ‘Industrial Applications of Solar Thermal Concentrators’, Participants about 100, August 16, 2010, Convenor: Prof. S. Bandyopadhyay, Prof. S B Kedare

“Hydrogen Generation by electrolyzer integrated PV”, DST sponsored national solar hydrogen workshop, November 08, 2010, IIT Kanpur.

DST-EPSRC fuel cells Initiative scoping workshop, 15-16, September, 2010, Chennai.

Short-term courses

4 months **Wind Energy Conversion (EN-615)** [On Mondays & Thursdays from 17.00 - 18.25 Hrs.] 3-1-2011

CEP courses

Solar Photovoltaic Technologies: Introduction to Current Status 16 -18 September 2010

Energy Management 22-26 November 2010

Fuel Cell 16 and 17 December 2010

Solar PV Power Conditioning and Balance of Systems 24 – 26 February 2011

“Basic Electrochemistry in Fuel Cell” in Fuel Cell Technologies, IITB, March 2011, Mumbai

Solar Photovoltaics Technologies: Introduction to entrepreneurs, IITB, August 21 and 22 2010

Anuradda Ganesh

Indian Co-Chair for the 2nd Indo-German Frontiers of Engineering Symposium (IGFOE 2010) held in Postdam, Germany.

Panellist for the Panel Discussion – ‘R&D Needs for Future Clean Utilization of Coal’ in the 3rd International Symposium: Global Energy Future, St. Louis Missouri, USA, October 1 - 4, 2010.

Rajesh Gupta

Organized a joint meeting with 10 leading Indian PV companies for joint collaborative work in photovoltaic area.

Organized a joint meeting with 3 leading Institutes of India and Loughborough University, UK for collaborative work in the area of photovoltaic.

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

National

Shendage D. J., Kedare S. B. and Bapat S. L.

“Motoring Test of a Stirling Cycle Engine System while acting as a Cooler”, 23rd National Symposium on Cryogenics-2010, National Institute of Technology – Rourkela, Orissa, October 28-30, 2010

Nandi D. K., Gupta R. and Somasundaran P.

“Investigation and characterization of shunts in multi-crystalline Si solar cells by Lock-in Thermography and PSpice simulation”, International Symposium on Energy Materials: Opportunities and Challenges ISEM-2011, Kolkata, January 2011

Solanki Chetan Singh

Participated in *Science Technology and Society conference 2011* at Christian Collage, Indore

Participated in the conference *SOLARCON India 2010*, Hyderabad International Convention Center, Hyderabad, 28-30 July 2010 (as speaker and conference program committee)

“Electrocatalysis for low temperature fuel cells”, Indo-US Roundtable on Alternative Energy, September 21-23, 2010, NIAS-IISc, Bangalore.

Banerjee Rangan

Organised one week Continuing Education Programme on Energy Management, November 22-26, 2010, IIT Bombay.

International

Sateesh Daggupati, Ramesh Naidu Mandapati, Sanjay M. Mahajani, Anuradda Ganesh, Preeti Aghalayam, Pal A.K., Sharma R.K.

“Quantification of the Effects of Various Thermal Boundary Conditions in the Underground Coal Gasification Cavities Using a Compartment Model” accepted for oral presentation in the 27th Annual International Pittsburgh Coal Conference held from 11th–14th October, 2010 in Istanbul, Turkey.

Sateesh Daggupati, Ramesh Naidu Mandapati, Sanjay M. Mahajani, Preeti Aghalayam, Anuradda Ganesh, Mathur D.K., Sharma R.K.

“Computational Flow Modeling of Underground Coal Gasification (UCG) Process”, accepted for oral presentation in the 27th Annual International Pittsburgh Coal Conference held from 11th–14th October, 2010 in Istanbul, Turkey.

Ramesh Naidu Mandapati, Preeti Aghalayam, Sateesh D., Naresh D., Sanjay M. Mahajani, Anuradda Ganesh, Sharma R.K.

“Studies on Gasification of Char in Fixed Bed Reactor”, accepted for oral presentation in the 27th Annual International Pittsburgh Coal Conference held from 11th–14th October, 2010 in Istanbul, Turkey.

Sateesh Daggupati, Ramesh Naidu Mandapati, Sanjay M. Mahajani, Anuradda Ganesh, Preeti Aghalayam, Pal A.K., Sharma R.K.

“A Study on the Temperature Profile and Heat Transfer Coefficients in Underground Coal Gasification Cavities”, accepted for poster presentation in the 27th Annual International Pittsburgh Coal Conference held from 11th–14th October, 2010 in Istanbul, Turkey.

Sateesh Daggupati, Mandapati, R.N., Naresh H.D., Mahajani S.M., Ganesh, A., Aghalayam, P., Pal A.K., Sharma R.K.

“A Study On The Temperature Profile And Heat Transfer Coefficients In Underground Coal Gasification Cavities” accepted for poster presentation in 8th ECCRIA -10 held during 6th-8th September 2010, University of Leeds, UK.

Sateesh Daggupati, Mandapati, R.N., Naresh H.D., Mahajani S.M., Ganesh, A., Aghalayam, P., Sapru R.K., Sharma R.K.

“Laboratory studies on effect of various operating and design parameters on product gas composition in the context of underground coal gasification” accepted for poster presentation in ISCRE-10, 13th-16th June 2010, Philadelphia, PA, USA.

Sahoo, A K and Bose, M.

Presented a paper “Conjugate heat transfer in annulus of two concen”, International Conference on Renewable Energy held in January 2011 at Jaipur, India”

Sreeraj E.S., Chatterjee, K. and Bandyopadhyay S.
“Sizing of Isolated Renewable Hybrid Systems”, paper presented in the 2nd *International Conference on Nuclear and Renewable Energy Resources*, Ankara, Turkiye, July 5-7, 2010.

Sahoo L., Bandyopadhyay S., and Banerjee R.
“Energy Performance of Dump Trucks in Opencast Mine”, paper presented in the 23rd *International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2010)*, Lausanne, Switzerland, June 14-17, 2010.

Shendage D. J., Kedare S. B. and Bapat S. L.
“Investigations on Performance of Stirling Engine Regenerator Matrix”, Full paper accepted for *ASME/JSME 8th Thermal Engineering Joint Conference*, March 13-17, 2011, Honolulu, Hawaii

“Design issues of 1.5 kWe Solar Dish Stirling Engine”, *European Energy Conference*, Barcelona, Spain, 20-23 April 2010

Banerjee Rangan
Participated in the UNIDO workshop with Chinese industry and presented the End-Use Efficiency results of the Global Energy Assessment in Beijing during May 10–12, 2010.

Signdeo D. and Ghosh P. C.
Presented a paper “Analysis of startup time for high temperature polymer electrolytemembrane fuel cell,” *Fuel Cells Science & Technology Conference* during October 6-7, 2010, Zaragoza, Spain.

Presented a paper “Analysis of startup time for high temperature polymer electrolytemembrane fuel cell,” *Fuel Cells Science & Technology Conference* during October 6-7, 2010, Zaragoza, Spain.

Manna Joydev, Gangal C. Aneesh, Edla Raju, Sharma Pratibha
“Effect of additives on thermal decomposition of LiBH₄” International symposium on energy materials : Opportunities and Challenges” (ISEM-2011), CGCRI, Kolkata, 1-2 March 2011.

Alok Mani Tripathi, M.S. Chandrasekhar and Sagar Mitra
“Green Energy Storage Materials: Advanced Nanostructured Materials for Lithium-ion Batteries”, *SPIE Conference*, Florida, USA, April 2011

Symposia

Invited to deliver a talk on “Engineering Innovations in Empowering Rural India” in Conjura ’11, organized by TKM College of Engineering, Kollam, Karela on 25/02/2011.

Seminar

Route to high efficiency Crystalline Si solar cells IIT Bombay April 2010

Indo-Japan Symposium, 2nd-3rd March 2011, IIT Bombay, Convener: Prof. A. R. Kulkarni, IIT Bombay

Indo-Canada Workshop: Urban Electric Systems, January 6-7, 2011, Anna University, Chennai, Convener: Dr. S. Chandramohan, Anna University

Invited Lecture

National

Solanki Chetan Singh

“Solar photovoltaic solutions for Indian electricity demands” at IET, Alwar Rajasthan on 7th Oct 2010.

Kedare S. B.

“Solar Thermal Concentrators: Concepts and Features”, 3-hour lecture in 15-day training course “Solar Thermal Field Engineers’ training”, Centre for Climate Change, Engineering Staff College of India (ESCI), Gachibowli, Hyderabad, Feb 28 to March 14, 2011

“Appropriate Technology for Rural Reforms”, Theme Lecture in 2nd Inter-collegiate Vigyan Yatra ‘Rural Reconstruction’ in collaboration with Vigyan Bharati and CTARA, IIT-Bombay, RD National College of Commerce and Arts and WA College of Science, Bandra, Mumbai, February 15, 2011

“Large Scale Applications of Solar Concentrators”, First India International Summit – 2011, Vishveshvaraiya National Institute of Technology (VNIT), Nagpur, 28-30 Jan, 2011

“Solar Concentrators for Solar Thermal Power in India: Comparing and Contrasting New Technological Advances”, ‘RENEWCON-INDIA-2010’ Advances in Solar and Wind Power, ITC Maratha. Mumbai, August 26-27, 2010.

Banerjee Rangan

“Overview of Energy Scenario in India,” at Indian Institute of Chemical Engineers Mumbai Regional Center Seminar on ‘Energy Options for India’, Hotel Hilton, Mumbai, March 18, 2011

“Clean Energy Options for India,” at AIPSN Workshop on Climate Change, March 2, 2011.

“Economics of Fuel Cell Systems,” at CEP Course on Fuel Cell, IIT Bombay, December 17, 2010.

“Role of PV and Renewables in Energy Scenario,” at CEP Course on Solar Photovoltaic Technologies, IIT Bombay, September 16, 2010.

“Energy in India: Challenges and Opportunities,” at Alumni reunion organised by IIT Bombay and IIT Bombay Alumni Association at National Institute of Oceanography, Goa, September 5, 2010.

“Role of PV and Renewables in Energy Scenario,” at In-house CEP Course for MAHAGENCO, IIT Bombay, August 20, 2010.

“Clean Technology Options in a Carbon Constrained World,” at Tata Environment Month Launch, Mumbai, May 31, 2010.

Bose Manaswita

“Computational Fluid Dynamics and Heat Transfer”, Rajiv Gandhi Institute of Technology, Mumbai, 2010.

“Numerical simulation of multiphase flow”, Sardar Ballabhbai Patel College of Engineering, Mumbai, 2010

Sharma Pratibha

Invited Talk in **Inter Solar India 2010** on “Education and Training on PV in India ? How to Meet the Future Demand” held during 13-17 December 2010 at Mumbai.

Key note address in the International Conference on Sustainable Environment on “Energy Scenario and prospects of Hydrogen as a clean future fuel” held during 19-20 February 2011 at Aurangabad.

Mitra Sagar

“Nanomaterials for Energy Storage Challenges and prospects!” The Annual Symposium of the IITB-Monash Research Academy IIT Bombay-Feb 2011.

“Conversion reactions: a new pathway to realize energy storage in Li battery?” Indo-Japan mini symposium, IIT Bombay, March 2011.

“New Carbon materials for Energy Storage applications” in National Seminar on Novel Carbon Materials and their Applications, 25th and 26th Feb 2011, Department of Chemistry, Government College of Arts Science and Commerce, Sanquelim, Goa, India 403505.

Suryanarayana D.

Lecture on “Energy efficiency in Electrical Systems”, delivered at CEP course on “Defining Energy Futures in India and Canada” 23rd May 2011, IIT Bombay

“Distributed Generation & Microgrid - Issues, Solutions and Review of Existing Systems”, CEP Training Program-Grid Connected PV Power Systems-May 5-7, 2011, IIT Bombay

“Energy Efficient Lighting”, Continuing Education Program on Energy Management at IIT Bombay (November 2010)

International

Banerjee Rangan

“Renewable Energy in India: status and future,” at School of Energy and Environment at the City University of Hong kong, 17th May, 2010.

Participated in the UNIDO workshop with Chinese industry and presented the End-Use Efficiency results of the Global Energy Assessment in Beijing during May 10 – 12, 2010.

Presented GEA results in a meeting with the China Development Research Centre, PRC Beijing, May 12, 2010.

Bose Manaswita

“Rapid flow of granular materials and its application,” Mechanics of Materials Research Group, Department of Engineering, Leicester University, Leicester, UK, 2010.

Mitra Sagar

“Building better Rechargeable Lithium-ion batteries” 5th Asian Conference on Electrochemical Power Sources, National University of Singapore, Sept 2010

“Green energy storage materials: advanced nanostructured materials for lithium-ion batteries”, Paper 8035-6, Energy Harvesting and Storage: Materials, Devices, and Applications II, SPIE Defence Security + Sensing, 25 - 29 April 2011, Orlando World Center Marriott Resort and Convention Center, Orlando, Florida United States.

Significant Awards/ Distinctions

Honorary Work

Nayak J. K.

Member, R & D committee for Solar thermal Energy, MNRE

Reviewer for Journals such as Solar Energy, SESI journal

Bose Manaswita

Reviewed papers for Particulate Science and Engineering, April and December, 2010; Progress in CFD, January 2011

Neergat Manoj

Reviewed papers for ICAER

International journal of hydrogen energy

ACS catalysts

J. Physical chemistry

Sharma Pratibha

Reviewed papers for the following journals:
International Journal of Hydrogen Energy
Materials Science in Semiconductor Processing
Vacuum.

Mitra Sagar

Reviewed several research proposals for Indo-German project (CSIR) and DST 2010

Reviewed research proposal under “Solar Energy Research Initiative by DST”

“Hybrid or Hetero-junction In_2O_3 , InN and TiO_2 Nano-Wire Photovoltaic Device” submitted by Dr. Aniruddha Mondal et.al. -2010

Reviewed proposal for IUNAP-IITB 2010

Banerjee Rangan

Member of the International Panel of RCUK Review of Energy 2010 held at United Kingdom during October 24-29, 2010.

Associate Editor - Energy for Sustainable Development, International Journal of Sustainable Engineering and Member of Board of Editor of International Journal of Thermodynamics.

Member of Board of Governors, The University of Petroleum and Energy Studies (UPES), Dehradun.

Shaibal Sarkar

Reviewed several research proposals from CSIR, DST
Reviewed proposal for IUNAP-IITB 2010
Reviewed several research proposals for SERC, DST

Suryanarayana Doolla

Reviewer for IEEE Transactions on Industrial Electronics
Faculty Members and their Specializations

Faculty Members and their Specializations

- 1. Santanu Bandyopadhyay**
Pinch analysis and Energy integration, Modelling and analysis
- 2. Rangan Banerjee**
Energy Efficiency, Energy Modelling, Hydrogen Energy
- 3. Manaswita Bose**
Complex Fluid Dynamics, Flow of Granular Materials, Multiphase flows, Computational Fluid Dynamics, Molecular Dynamic Simulation of Particulate Flows and Coal Gasification and Combustion.

- 4. Suryanarayana Doolla**
Smart Grid, Micro-Grid and Distributed Generation, Power quality and communication protocols for industrial and commercial power systems
- 5. Anuradda Ganesh**
Thermo chemical conversion of biomass, Alternate fuels in engine
- 6. Prakash Chandra Ghosh**
Polymer Electrolyte Fuel Cell, Hydrogen generation and storage
- 7. Rajesh Gupta**
Photovoltaics, Infrared Thermography
- 8. S. B. Kedare**
Concentrating Solar Collectors, Industrial thermal hybrid systems
- 9. Sagar Mitra**
Nanostructured Materials, Lithium ion Batteries, Hybrid vehicles, Electrochemical Energy storage, Electrochemistry of Nanomaterials, Electrochemistry of Semiconductors
- 10. J. K. Nayak**
Passive solar architecture, Solar thermal
- 11. Manoj Neergat**
Fuel cells, Electrocatalysis, and Bio-fuel cells
- 12. Shaibal K Sarkar**
Sensitized Solar cells, Photoelectrochemistry, Nanocrystalline Materials for Photovoltaic applications, Transparent Conducting Oxides, Atomic Layer Deposition
- 13. Pratibha Sharma**
Hydrogen Storage, Thin films, Amorphous Semiconductors, Ion Irradiation, Chalcogenides
- 14. Suneet Singh**
Nuclear reactor thermal hydraulics and safety, Advanced numerical methods for neutron diffusion and fluid flow, Two-phase flow modeling.
- 15. Chetan Singh Solanki**
Solar Photovoltaics, Thin film silicon solar cells, PV solar concentrators, Porous silicon, Carbon nano tubes (CNT's)

Associate Faculty**Mechanical Engineering**

- 16. Atul Sharma**
Computational Fluid Flow and Heat Transfer

17. S. Suryanarayanan
Automatic Control, Mechatronics

18. A. Sridharan
Two phase Heat Transfer, Experimental Heat Transfer

19. S. V. Prabhu
Flow Metering, Gas Turbine Blade Cooling, Two Phase Flow and Heat Transfer

20. R. P. Vedula
Convective Heat Transfer for External and Internal Flows

21. A. W. Date
Numerical Fluid flow and heat transfer, Appropriate Technology

22. J. B. Doshi
Nuclear Reactor Theory, Nuclear Reactor Safety, Analytical Methods in Engineering

23. U. N. Gaitonde
Thermodynamics, Heat Transfer Engineering, Powerplant Engineering

24. Kannan N. Iyer
Nuclear Reactor Safety, Thermal-Hydraulics, Applied Numerical Methods

25. M. V. Rane
Waste Heat Recovery Systems, Refrigeration System, Heat Pumps

26. S. P. Sukhatme
Heat Transfer, Energy

Electrical Engineering

27. Vivek Agarwal
Power Conversion, Modelling and simulation of power electronic systems

28. M. C. Chandorkar
Electrical drives, Power electronic converters and control

29. B. G. Fernandes
Switch Mode Rectifiers & Power Supplies, Soft switching methods for SMPS

30. S. A. Khaparde
Deregulation in Power Industry: optimal bidding & congestion management

31. K. Chatterjee
Utility friendly converter topologies, Power Factor Correction techniques

32. A. M. Kulkarni
Power System Dynamics, Flexible AC Transmission Systems

32. S. V. Kulkarni
Transformer Design & Analysis, Finite element method computations

33. S. A. Soman
Power System Analysis, Restructuring of Power Systems

Chemical Engineering

34. Chandra Venkataraman
Aerosols and climate; Air pollution; Toxicity / risk assessment

35. Sanjay Mahajani

36. R. K. Malik
Process modeling, simulation, energy integration

Aerospace Engineering

37. K. Sudhakar
Multidisciplinary Design Optimisation

Metallurgical Engineering and Material Science

38. Rajiv O. Dusane
Synthesis & characterization of amorphous and microcrystalline thin films

Centre for Environmental Science and Engineering

39. Virendra Sethi
Combustion Aerosols, Energy and Environment

Centre for Technology Alternatives in Rural Area (CTARA)

40. N. G. Shah
Post Harvest Process Engineering, Small Scale Renewable Energy Applications and Agro-based Industrial Development

41. Anand B. Rao
Energy and Environment, Climate Change, Carbon Capture and Sequestration

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, have striven 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 the current faculty strength is 35.

The department has well equipped computing facilities, which include several statistical packages. It has an adequately equipped Psychology laboratory.

Academic Programmes

The Department of Humanities and Social Sciences at I.I.T. Bombay 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 providing 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. & 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 I.I.T. Bombay is contributing substantially to meeting this manpower requirement.

There are 20 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. degrees 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 41 regular, 20 external, 16 college teachers, 25 self-financing, and 3 project staff candidates, who are currently enrolled in the Ph.D. programme.

Since the inception of the Ph.D. programme in the department, 156 students have already obtained their Ph.D. degrees 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 IITs. They have made their mark as excellent academicians and professionals in their respective fields of specializations.

Degrees Awarded

M.Phil.	:	12
Ph.D.	:	11

R&D Activities

The department currently has ongoing sponsored projects with a sanctioned outlay of Rs. 58,40,400/-.

Details of Sponsored Research Projects initiated in 2010-11 in H&SS Dept.

Project Title	Agency Name	Project Status
Environmental Services, Vulnerability Reduction and Natural Resource conservation from NREGA Activities: Case study of Chitradurga District	The Ministry of Rural Development, Government of India	Completed
Flood Risks, Climate Change Impacts and Adaptation Benefits in Mumbai, OECD, 2, rue André Pascal, 75775 Paris Cedex 16, France, (http://www.oecd.org/document/30/0,3746,en_2649_33713_39718712_1_1_1_1,00.html)	Ministry of Environment & Forests, Government of India	Completed
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	Ministry of Environment & Forests, Government of India	Completed

Project Title	Agency Name	Project Status
The economics of ecosystems and biodiversity” for local policy in December 2010	UNEP, Minister for Environment, Shri Jairam Ramesh	Completed
“Climate Change Impacts in Coastal Zones” Government of India	Ministry of Environment and Forests,	Completed
Resettlement and Rehabilitation for New International Airport Project in Navi Mumbai	CIDCO – City and Industrial Development Corporation, Government of Maharashtra	Completed
Competitiveness, Efficiency and Productivity in the Indian Manufacturing Sector	Reserve Bank of India	Completed
“Evolution and Development of Sanskrit WordNet”	Ministry of HRD, Govt. of India	Ongoing
“Indian Language Corpora Initiative”	Ministry of CIT, Govt. of India	Ongoing
“Identifying Causal Factors and Cognitive Precursors of Dyslexia: Phycholinguistic and Psychophysical Approaches”	Department of Science & Technology	Ongoing
Technologies for sustainable development of Rahata block	Department of Science & Technology	
Prospective memory and aging in medical adherence: technology intervention for elderly individuals.	Department of Science & Technology	Ongoing
Bureau of Police Research and Development	Ministry of Home Affair, New Delhi	Ongoing
Socioeconomic & Cultural - The Ganga River Basin Management Project (GRBMP)	Ministry of environment & forests	Ongoing
“Towards a critical edition of the Kasikavrtti”	British Academy, UK (in collaboration with the University of Cambridge)	Ongoing
Understanding Creativity and Creative Writing: A Video-course	National Programme on Technology Enhanced Learning (NPTEL Phase 2)	Ongoing
Globalization, A Grassroots Conflict and Resistance in Orissa: Campaign against Pohang Steel Company (POSCO) (A study on Social/Environmental Movement)	IRCC , IIT Bombay	Ongoing
“Culture and Value: A Study in Wittgenstein, Gandhi and Sri Aurobindo”		Ongoing
Ganga River Basin Management Plan: Socio-Economic-Cultural Aspect	Ministry of Environment and Forests, Government of India	Ongoing

Consultancy Project

The faculty undertakes consulting jobs on various development issues.

Maharashtra Dyslexia Association (MDA).
Total Factor Productivity in India's Manufacturing Sector: Macro and Micro Dimensions,
Tata Economic Services, (Ongoing)

NPTEL Project

Ongoing Project: "Contemporary Indian Philosophy"

Extension activities

CEP Courses

Measurement of Productivity and Efficiency: Methodologies and Applications, August 17-19, 2010.

A seminar on the theme of 'Self and the Other' was organized by the Department of Humanities and Social Sciences, IIT-Bombay, from the 18th of January, 2011, to the 22nd of January, 2011. The seminar was funded by the Indian Council of Philosophical Research.

There were fourteen sessions apart from the Inaugural and the Valedictory sessions and there were ten invited speakers to present worked-out views pertaining to the theme of the *self* and the *other*. Other than paper presentation sessions, there were two panel discussions on questions pertaining to the notions of the *Self* and the *Other* with the Ph.D. scholars, research scholars, students and faculty. A session was also held to discuss the notion of 'inter' and 'multi' disciplinarily and the interdisciplinary nature of the notions of the *Self* and the *Other*. The papers were broadly classed as those pertaining to the reflections on the notions of the *self* and the *other* in the works of Western Philosophers/Western Philosophical Traditions, those pertaining to the operation of these notions in the Social Sciences and those pertaining to the construction of these notions in the Arts.

Visitors to the Department

Professor John Russon, Professor of Philosophy, University of Guelph, Canada

Delivered a talk on "Making a Home for Freedom: From Agency to Empire", at the Department of HSS, IIT-Bombay, on 15th of March 2011.

Delivered a talk on "Deathly Silence: Meaning and the Limits of Phenomenology in Kierkegaard, Heidegger, and Derrida", at the Department of HSS, IIT-Bombay, on 17th of March 2011.

Dr. Swati Ganguly, Reader in English, Visva-Bharati University on "Postcoloniality and the global market: The cinematic afterlife of Tagore's Chokher Bali" on 29 July 2010, in the seminar room of the HSS Dept.

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

National

Narayanan, K.

"Total Factor Productivity and Energy Intensity in Indian Manufacturing: A Cross-sectional Study", in the *Workshop on Economic Reforms and The Evolution of Productivity in Indian Manufacturing*, organized by Indian Institute of Technology Bombay, Mumbai; Centre for Multi-Disciplinary Development Research, Dharwad and IDPM, School of Environment and Development, University of Manchester, UK & Sponsored by Economic and Social Research Council, UK., [Jointly with Santosh K. Sahu]

"Climate Related Disasters, Health and Income Inequality: Reflections from select villages of Kendrapada District, Odisha" (2011) at Syposia of Health Transition and Sustainable Development, *The Eight Conference of IASSH* at the Department of Population Studies and Social Work, Sri Venkateswara University, Tirupati, Andhra Pradesh, India, [Jointly with Santosh K. Sahu]

"Decomposition of Industrial Energy Consumption in Indian Manufacturing: The Energy Coefficient Approach", Presented during the *47th annual conference of the Indian Econometric Society* during, at Devi Ahalya University, Indore, India, [Jointly with Santosh K. Sahu]

"The Dynamics, Growth and Impact of the Indian Aviation Industry", presented during the *47th annual conference of The Indian Econometric Society*, at Devi Ahalya University, Indore, India [Jointly with K. Dalal, K. Sudhakar, Santosh K. Sahu]

"Exchange Rate Volatility in India: A GARCH Analysis", presented during the *47th annual conference of The Indian Econometric Society* at Devi Ahalya University, Indore, India [Jointly with Priyadarshi Dash]

"R&D Expenditure and Firm Performance: A study of Electrical and Electronics Industry in India", presented during the *47th annual conference of The Indian Econometric Society*, at Devi Ahalya University, Indore, India, [Jointly with Pramod K. Naik & Puja Padhi]

"Labour and Energy Intensity: A Study of Pulp and Paper Industries in India" Paper presented during the *Joint Annual Conference of IASSI & Knowledge*

Forum, at IIT Bombay, [Jointly with Santosh K. Sahu], (http://www.hss.iitb.ac.in/FGKS_IITB_2010/papers/KNN_SKS.pdf)

“ICT enabled teacher training for Human Capital Formation: A Study of IIT Bombay Initiative”, Paper presented during the *Joint Annual Conference of IASSI & Knowledge Forum*, November 2010 at IIT Bombay, [Jointly with Kalpana Kannan]

“Vulnerability and Coping to Disasters: A Study of Household Behaviour in Flood Prone Region of India”, at the *Conference on Frontier Issues in Technology, Development and Environment* in the annual conference of IASSI, organized by the Madras School of Economics and the Forum for Global Knowledge Sharing at the Madras School of Economics, India, [Jointly with Unmesh Patnaik], (<http://www.mse.ac.in/Frontier/t20%20UP-KN.pdf>)

“Impact of Environmental Regulation on Technical Efficiency: A Study of Chemical Industry in and around Mumbai”, at the *Conference on Frontier Issues in Technology, Development and Environment in the annual conference of IASSI*, organized by the Madras School of Economics and the Forum for Global Knowledge Sharing at the Madras School of Economics, India, [Jointly with Nivedita Dutta], (<http://www.mse.ac.in/Frontier/q17%20ND-KN.pdf>),

“Decomposition of Industrial Energy Consumption in Indian Manufacturing: The Energy Intensity Approach” at the *Conference on Frontier Issues in Technology, Development and Environment in the annual conference of IASSI*, organized by the Madras School of Economics and the Forum for Global Knowledge Sharing at the Madras School of Economics, India, [Jointly with Santosh K. Sahu], (<http://www.mse.ac.in/Frontier/r18%20SKS-KN-MSE-Paper.pdf>)

“Decomposition of Industrial Energy Consumption in Indian Manufacturing: The Energy Consumption Approach” at the *46th Annual Conference of the Indian Econometric Society*, Jammu University, Jammu, India, [Jointly with Santosh K. Sahu]

Panda, Ratikanta

Participated and presented a paper entitled “Indian Culture: A Critical Study in *Hind Swaraj*” in the *Asian Philosophy Congress* held at New Delhi during March 6th to 9th 2010.

Participated and presented a paper entitled “Gandhi on Indian Culture” in *Orissa Philosophy Association* held at Department of Philosophy, V.N. College (Autonomous), and 23rd to 24th January 2011.

Participated and presented a paper entitled “Aurobindo’s Views on Indian Culture” at the *National*

Seminar on the theme of “Sri Aurobindo’s Vision and the Global Perspective” held at Sri Aurobindo Studies Center, Faculty of Arts, the M.S. University of Baroda during October 20th to 22nd, 2010.

Haripriya, G.S.

Presented the paper on the “How ecosystems and biodiversity can alleviate poverty” at *Conference on “The environments of the poor in the context of climate change and the green economy”*. Organized by the Asian Development Bank, New Delhi, 24th November, 2010.

Invited presentation on “Barriers to deployment of low carbon technology”, *Climate Change and Markets: Opportunities, Challenges, and Policy Concerns*, organized by Takshashila Academia of Economic Research (TAER) at TERI University campus at Vasant Kunj, New Delhi, February 11, 2011.

Kulkarni, Malhar

“Adverbs in Sanskrit Wordnet”, *ICON*, IIT Khargpur, 8th December 2010.

“Declensions of yusmad and asmad in Paninian and Candra grammar”, with Anuja Ajotikar and Tanuja Ajotikar, *All India Oriental Conference*, Tirupati, June, 2010.

Bhat, P.R.

“Metaphysics and Epistemology: Their Relationship”, *International Philosophy Day* 24th November, 2010 Department of HSS, IIT Bombay.

“Importance of Communication Skills” *Two Day Seminar on Effective tools and Techniques for Teaching in The Field of Engineering* 25th and 26th November 2010 Organized by Xavier Institute of Engineering Mahim (W).

Indian Philosophical Congress at Haridwar, Sectional President “Logic and Epistemology: A Philosophical Essay” on 9th Jan 2011. at Gurukul Kangri University, Haridwar

Indian Philosophical Congress at Haridwar, “Relevance of Philosophy” Special Session on 10th Jan 2011, at Gurukul Kangri University, Haridwar.

“Linguistic Representation: A Philosophical View” in the *seminar Linguistic Representations: The Road Ahead*. From 5th to 7th Jan. 2011 at Central University Hyderabad.

Jung, P.G.

Delivered two talks titled “Korzybski in Plato’s Cave: Authority and Truth in Korzybski” and “This is Not a Pipe: Aligning Foucault’s Analysis with Korzybski”, *National Workshop on Alfred Korzybski and His Impact on Language Communication and Cultural*

Studies, at English and Foreign Languages University (EFLU), Shillong, October, 2010.

Panda, Ranjan

“Communicative Intentionality: An Analysis of the Rules of Statement Making,” *Linguistic Representation: A Road Ahead*, Department of Philosophy, University of Hyderabad, Hyderabad from 5th – 7th January 2011.

Robinson, R.

“Planning and economic development: Ambedkar versus Gandhi”. Paper presented at a *seminar on Invoking Ambedkar – Contributions, receptions, legacies*. Institute of Development Studies, Kolkata, 11th and 12th March 2011.

“Indian Christians: Issues from a perspective of development”. Paper presented at a *national seminar on Minorities and the margins: Colonial encounter and post-colonial discourses*. Programme for the Study of Discrimination and Exclusion, School of Social Sciences, Jawaharlal Nehru University, 17th and 18th February 2011.

George, Siby K.

Presented a paper “Meaning and Context: Heidegger and Levinas on Self-Other Encounter”, *National Conference on Self and the Other*, held during January 19-21, 2011, at the Department of HSS, IIT Bombay.

Shastri, S.

“Revenge to Resolution: ‘Hamlet’ and ‘Extremely Loud and Incredibly Close’”, at the *National Seminar on The Renaissance and its Afterlife, DEOMEL*, Visva-Bharati, Santiniketan, 18-19 September 2010.

Trivedi, P.L.

Chaired the technical session on “Reform and Productivity” in the *Workshop on Economic Reforms and the Evolution of Productivity In Indian Manufacturing*, at the Indian Institute of Technology Bombay, organized by SJMSOM, Indian Institute of Technology Bombay, Mumbai, Centre for Multi-Disciplinary Development Research, Dharwad and IDPM, School of Environment and Development, University of Manchester, UK

Presented the paper on “Growth Effect of States Fiscal Policy in India: Empirical Evidence”, at *The Indian Econometric Society Annual Conference* held at Devi Ahilya University, Indore on Jan 6, 2011.

Delivered the lecture on “Green Productivity” as the Guest Speaker, at the *seminar on Green Productivity for Sustainable Energy and Environment*, organized by Oil and Natural Gas Corporation Ltd., at Hotel Fortune Select Exotica at Vashi, Navi Mumbai, held on 16-2-2011.

Invited participant for the *seminar on Japanese Firms in the Indian Financial Sector: Trends and Prospects*, organized by the **Indian Council for Research on International Economic Relations** is organizing at Hotel Taj President, Mumbai, on February 23, 2011.

Participated at the *National Seminar on Commodity Markets*, organized by the Knowledge for Markets, Financial Technologies Knowledge Management Company, Mumbai.

International

Narayanan, K.

“Emerging Dynamics in Asian Labour Markets”, *3rd International Conference of ANDA*, organized by the Graduate School of International Development (GSID), Nagoya University, Japan at Nagoya University, Japan [Jointly with Bino Paul]

“Determinants of Energy Intensity in Indian Manufacturing Industries: An Econometric Analysis” at *Second ANDA Annual International Conference on Skills Development for New Dynamism in Asian Developing Countries under Globalization*, organized by the Graduate School of International Development (GSID), Nagoya University, Japan & Royal University of Phnom Penh, Cambodia, [Jointly with Santosh K. Sahu], (http://www2.gsid.nagoya-u.ac.jp/blog/anda/files/2010/06/25_santosh-kumar-sahu.pdf)

“Vulnerability of Households to Disasters: An Analysis from Disaster Prone Region in India”, at the *International Conference on Human Security and Climate Change*, organized by The Royal Norwegian Society of Science and Letters, Trondheim, Norway, [Jointly with Unmesh Patnaik], (http://climsec.prio.no/papers/Patnaik%20and%20Narayanan_Trondheim_2010.pdf)

Panda, Ratikanta

Participated and presented a paper entitled, “Wittgenstein on Culture” in the 33rd *International Wittgenstein Symposium*, held at the Kirchberga m Wechsel/Lowe Austria, from 8th to 14th August 2010.

Participated and presented a paper entitled “Sri Aurobindo’s Critique of Modern Western Culture” in the *Asian conference on Arts & Humanities*, held at Osaka, Japan, 18-21st June 2010

Nath, Rajakishore

“AI, Mind and Person”, *Thirteenth Annual Conference on Consciousness and Experiential Psychology Section of the British Psychological Society*, St Anne’s College, University of Oxford, 10-12th September 2010.

Parthasarathy, D.

Presented a paper “Geography and Inequality: The Spatiality of Caste, Class and Capital in India”, *Trehan*

Initiative Conference on Indian Inequalities: Part II organized and hosted by the Center for South Asian Studies, University of Michigan, held at Novotel Hotel, Mumbai India, March 1-4, 2011

Presented a paper “Hunters, Gatherers and Foragers in a Metropolis: Commonizing the Private and Public in Mumbai”, *13th Biennial Conference of the International Association for the Study of the Commons*, Hyderabad, India, 10-14 January 2011

Presented a paper “Ethnicity, Politics, and Space: The Indian City and its Heterotopias”, *Winter Workshop on: Stop Or Go: The Social Dynamics of Urban Movement*, Tata Institute for Social Sciences (TISS), Max Planck Institute for the Study of Religious and Ethnic Diversity (MPI), and Partnership for Urban Knowledge Action and Research (PUKAR), Mumbai, 13-17 December, 2010

Haripriya G.S.

“From macro sustainability to micro sustainability”, presented the paper at *SANDEE@10 conference*, held at Kathmandu, 6th to 7th December, 2010.

Invited Speaker at the *International Symposium on Biodiversity, Economy and Business Perspective of Biodiversity and Economics from TEEB* during 17th to 19th February 2010, organized by Institute for Global Environmental Strategies, Tokyo

Invited speaker at the *2nd International Conference on Urban Biodiversity and Design* held at Nagoya, Japan from 18th to 22nd, 2010. Presented the “TEEB as Concepts and Tools for Assessing and Valuing Ecosystem Services”.

Invited speaker at the *Tenth Convention of Biological Diversity Conference of Parties* (a high level ministerial meet (COP-10), Nagoya, Japan, 21st October to 26th October 2010.

Invited to speak on “Valuation of biodiversity: issues at the local and global level” at the *13th International association of the study of common property resources conference* being held in Hyderabad during 10th and 14th January, 2011.

Invited speaker for the conference organized by GIZ SNRD Asia – *Sector Network Natural Resources and Rural Development Asia* “Innovative Partnerships – success through diversity”, Thailand, Bangkok, 3rd March, 2011

Third Sino-German workshop on “*Biodiversity Conservation – Ecosystem Services and Management*” from 21st to 24th June, 2010 in Beijing China

Talwar, Neelima

Presented a paper “The Brechtian Paradigm in Science-Drama”, *13th Symposium: International Brecht Society* 110

held during May 19-23, 2010 at Honolulu, University of Hawai at Mānoa, USA.

Purang, P.

Purang, P., & Shrivastava, A. (2010, July). “Effect of Age on Fairness Perceptions: A Comparative Study on Indian Banks”. Paper presented at the *27th International Congress of Applied Psychology*; Melbourne, Australia.

Jung, P.G.

Presented a paper “Why did Wittgenstein choose Augustine” at *33rd International Wittgenstein Symposium on Image and Imaging in Philosophy, Science, and the Arts* at Kirchberg am Wechsel, Austria, August 2010.

Panda, Ranjan

“Language and Morality: A Searlean Thesis on Communicative Ethics,” *Language, Metaphysics and Morality*, Department of Philosophy, University of Zagreb, Coratia, from 1st – 3rd December 2010.

“Performative As the Language of Pragmatism: A reading of the Indian Spirituality,” *Spiritual Pragmatism*, Indus Business Academy, Bangalore, 21st – 23rd February, 2011.

“The Virtue of an Epistemic Agent,” *Virtue Revolution*, Department of Philosophy and Religion, Houston Baptist University, Texas, 8th – 9th April, 2011.

Pattanaik, S.

Presented a paper, “Climate Change Ethics and Applied Environmental Ethics: A vision and Action for the emergent Practical Environmental Problems around the Globe”, presented in the conference *Integrating Development and Climate Change Ethics* at the Pennsylvania State University, USA. April 14-16, 2010.

Presented a Paper “What role does Ethics play in Adaptation & Mitigation: Debates & Discussion in Indian context”, at the *Winter Conference titled Regions & Environment* organized by Regional Studies Association, London, UK. 26 November 2010.

Trivedi, P.L., Pushpa Trivedi and Rajmal

Presented the paper on “Regional Development and the Conduct of Fiscal Policy: Econometric Analysis of Major States of India” presented at the *International Conference on Peace, Security and Economic Development in South Asia* held from March 4-6, 2011 at Punjabi University Campus, Patiala.

Patankar A.M., P.L. Trivedi

“Monetary burden of health impacts of air pollution in Mumbai, India: Implications for public health policy”, *Public Health*, The Royal Society for Public Health, Elsevier Ltd., Vol 125, No. 3, pp. 157-164

Pushpa Trivedi and Narayan Chandra Pradhan (2010), “Export and Growth Nexus in India: An Econometric Analysis”, *Millennial Asia*, Vol 1, No. 1, Jan-June.

Conference/Symposium/ Workshops(participated and papers presented)

National

Bhat, P.R.

Lectured on “Philosophical Methods” in *Workshop On Philosophical Research for PhD Students of Philosophy* at ICPR Lucknow, 20-22 August 2010 .

Haripriya G.S.

Invited speaker for the *workshop on Collection, Compilation, Validation and Dissemination of Forest Statistics* held in Kerala Forest Research Institute, Peechi, Kerala, during August 2-6, 2010

Ramanathan, A.

Gave special lecture as a key note address in the workshop on “*Research Methodology in Applied Econometrics*” held on January 25th, 2011 at University of Madras.

Parthasarathy, D.

Invited to give the inaugural lecture on “Educating towards Global Competency: An Interdisciplinary Approach”, at the Two Day State Level Seminar on “The Place of Peace Education in Fostering Global Competencies in Students”, Nagrik Shikshan Sanstha’s College of Education, Mumbai, 25 and 26 February 2011.

Kulkarni, Malhar

“Karaka Analysis and Dependency Parsing” 3 lectures in a *National workshop at the Centre of Advanced Study in Sanskrit*, University of Pune, in collaboration with the University of Hyderabad.

Invited to deliver 3 lectures on “Sharada Script” at the *National workshop on Manuscriptology and Palaeography* organized at the Oriental Institute of Vadodara in collaboration with National Mission of Manuscripts, Govt. of India, 22-24 November 2010.

Narayanan, K.

Social & Informal Sector Vulnerability, Workshop on *Climate change Vulnerability and Adaptation Planning for Urban Areas*, organized by SIMSR & IIT Bombay

National Conference on ICT for Social Empowerment of Rural Areas organized by TISS, Mumbai and Computer Society of India

“Adverse Health Effects of Air Pollution: Issues & Methods” at the *workshop on Air Quality Modeling*

to Improve the Decision Making Process for Air Quality Management, Organized by National Environmental Engineering Research Institute (NEERI) & United States Environmental Protection Agency (USEPA), supported by Ministry of Environment and Forest, New Delhi; Central Pollution Board, New Delhi & Maharashtra Pollution Control Board, Dukes Retreat, Khandala, India

“Applied Econometrics for Finance & Management” at the *Five Day National Workshop on “Applied Econometrics for Finance and Management”*, organized by Department of Commerce and Financial Studies, Bharathidasan University, Tiruchirappalli, TN, funded by The Indian Econometric Society and UGC, GoI

“Importance of Industry-relevant Training Among Management”, Nalanda School of Management, Surat

Assumption College, Kerala

International

Khan, A.

Participated in *INAPIC Kickoff Workshop at International Normal Aging and Plasticity Imaging Center*, University of Zurich, Switzerland from May 03 to 05, 2010.

Haripriya G.S.

Key expert at the national *workshop of The economics of ecosystems and biodiversity* organised by the EU-China Biodiversity Programme and the Foreign Economic Cooperation office, Ministry of Environmental protection of China held in Beijing on 10th March 2011.

Invited speaker at the *Sixteenth Poverty Environment Partnership Meeting (PEP 16)* held during 16 - 18 February 2011 in Vienna, Austria

Invited speaker at the international workshop on payments for ecosystem services – Towards an implantation strategy to be held by the German Federal Agency. During 13th to 14th December. 2010 at Isle of Vilm.

Jung, P.G.

Workshop on Hegel’s Phenomenology of Spirit

A week long Workshop on Hegel’s “Phenomenology of Spirit” was conducted by the Department of Humanities and Social Sciences, IIT-Bombay, in collaboration with the Shastri Indo-Canadian Institute from the 14th of March, 2011 to the 18th of March, 2011. The faculty for the workshop was Professor John Russon, Professor of Philosophy from the University of Guelph, Canada, who is the author of the much celebrated work “Reading Hegel’s Phenomenology”

(Indiana University Press, 2004). A detailed textual exposition and interpretation of Hegel's "Phenomenology of Spirit" was undertaken during the workshop.

Narayanan, K.

Panel Discussion on Skills Development, 3rd International Conference of ANDA, Nagoya University, Japan

Invited Lectures

National

Parthasarathy, D.

Invited to give a lecture on "Communication for Diversity and Equity: Ethical Issues and Social Sensitivity", at the Indian Society for Technical Education sponsored two week Programme on Effective Communication, Somaiya Polytechnic, Mumbai, 22 December, 2010

Kulkarni, Malhar

On "Critical edition", 3 lectures in a workshop on Manuscriptology and Palaeography organized at the Shree Vasant Rao Naik College of Arts and Sciences, Nagpur in collaboration with National Mission of Manuscripts, Ministry of Culture, Govt. of India, on 8-10 March 2011.

"New approach to study to Panini", Rajiv Gandhi Sanskrit Vidyapitha, Shringeri, 1st December 2010.

Invited to deliver two lectures on "The Critical edition of Kasika" in the Ashtekar Lecture Series, Department of Sanskrit, University of Pune, Pune, 17-18 March 2011.

Invited to deliver a lecture on "Fundamentals of Navya-Nyaya and its terminology: its significance in the philosophical discussion in pre-colonial Indian Philosophy" at the Department of Sanskrit, University of Mumbai, 8th October 2010. Mumbai.

Invited to deliver a lecture "How Navya-Nyaya entered Varanasi" on occasion of *International Philosophy Day*, at the Department of Humanities and Social Sciences, IIT Kanpur, Kanpur, 9th November 2010.

Talwar, Neelima

"Creativity As An Academic Discipline: Some Reflections", SVKM's Pravin Gandhi College of Law, University of Mumbai, Mumbai, February 10, 2011.

Bhat, P.R.

Two Invited lectures at North Bengal University on Philosophy of Wittgenstein

Purang, P.

Delivered a Talk titled "Presentation skills and listening skills" at the KJ Somaiya Polytechnic in a programme titled "Effective Communication - A Key To Success" on 20th December, 2010

Delivered a talk titled "Leadership Skills" at the KJ Somaiya Polytechnic in a programme titled "Effective Communication - A Key To Success" on 21st December, 2010.

Pattanaik, S.

Visiting faculty at Habitat School, Tata Institute of Social Sciences, July 2010, taught the course to PG students on 'Sustainable Development and Environment'.

Shastri, S.

Delivered Institute-level lecture on Mario Vargas Llosa, Nobel Laureate in Literature for 2010, on 10th November 2010.

Trivedi, P.L.

Analysis and Interpretation of Budgets: An Economist's View Point', delivered at the Indian Institute of Technology Indore, on 6-1-2011.

'National Income Accounts and Health Accounts: With Special Reference to India' delivered at the International Institute of Population Sciences, Deonar, Mumbai on 9-2-2011.

International

Narayanan, K.

Coastal Zones and Adaptation Issues, NATCOM, MoEF, GoI

Parthasarathy D.

Gave two lectures on "Philosophy of Science and Social Science", and "Qualitative Research methods", at the Training of Trainers Programme on "Interdisciplinary Field Research Methodology" for Water Professionals in South Asia, Cox's Bazaar, Bangladesh, 6-17 December, 2010. Programme organized by SACIWATERS India, Institute of Water and Flood Management, Bangladesh University of Engineering and Technology.

George, Siby K.

Presented a paper "Imagining Post-science: Contributions to Development Philosophy" at the Department of Philosophy, University of Guelph, Ontario, Canada, on 25 August 2010, as part of the Shastri Indo-Canadian Institute faculty mobility programme.

Presented a paper "'War-Peace' and Development" at the Department Speaker Series 2010-11, Department of Philosophy, Uni

Significant Awards/ Distinctions

Khan, A.

“Visiting Scientists” by Indian National Science Academy (INSA) under International Collaboration/ Bilateral Exchange Programme Dortmund, Germany during 2010-2011.

Awarded “Hermes Fellowship” by the Ministry of Foreign affairs, France, Centre National de la Recherche Scientifique (CNRS), and La Fondation Maison des sciences de l’homme (FMSH), France.

Awarded “scholar exchange scheme” Under ICSSR-ESRC (UK) bilateral collaboration programme University of Reading, UK February, 2010- May, 2010.

Kulkarni, Malhar

“Pandit Satavalekar Puraskar” awarded by Pandit Satavalekar Pratishthan, Pune for the excellence in the field of Sanskrit, September 2010.

Invited as a Visiting Professor, at the University of Lausanne, Switzerland for the period of three months- June 2010 to August 2010 under Indo-Swiss Joint Research Programme Scheme run by Govt. of India and Govt. of Switzerland.

George, Siby K.

“Faculty Mobility Programme Fellowship 2010-11” of Shastri Indo-Canadian Institute, in Department of Philosophy, University of Guelph, Ontario, Canada.

Sirola, V.

Fulbright-Nehru Senior Research Fellowship to Columbia University New York, September 2010- April 2011.

Ramanathan, A.

Have been nominated as an invited senate member of IIT-Gandhinagar for two years.

Robinson, R.

Margins of Faith: Selected by the editors of the International Bulletin of Missionary Research as among the fifteen outstanding books published in 2010 for mission studies. The 15 books have been specially recognized for ‘their contribution to the advancement of scholarship in studies of the Christian mission and world Christianity’.

Tipton Distinguished Fellow of Catholic Studies, Department of Religious Studies, University of California at Santa Barbara, March 27 to June 10, 2010.

Honorary Work

Parthasarathy, D.

Reviewed papers for Sociological Bulletin; Contributions to Indian Sociology; Science, Technology and Society

Examiner of Ph.D theses from IIT Kharagpur, and University of Hyderabad

Kulkarni, Malhar

Member of the Regulating Council of the Bhandarkar Oriental Research Institute, Pune.

Member, Examination Council, Vedashastrottejaka Sabha, Pune.

Member of the Steering Committee, 4th International Sanskrit Computational Linguistics Symposium proposed held at JNU, Dec.2010.

Jung, P.G.

Reviewed papers for the *Journal of Indian Council of Philosophical Research*, 2010-11.

George, Siby K.

Reviewed papers for the *Journal of Indian Council of Philosophical Research*, 2010-11.

Reviewed papers for the international journal *Law, Culture and the Humanities*, Sage Publications, 2010-11.

Reviewed book by Strydom, Piet. *New Horizons of Critical Theory: Collective Learning and Triple Contingency*. Delhi: Shipra Publications, 2009, pp. xxxi+332, Rs.350.00/ US\$ 17.50, ISBN: 978-81-7541-482-2. In *Journal of Indian Council of Philosophical Research*, XXVI: 2 (2009), pp.105-111. (Circulated in 2010-11)

Reviewed book by Sanyal, Manidipa. *The Web of Belief*. Kolkata, India: Allied Publishers, 2006, pp. 232+xii, Rs.250, ISBN: 81-8424-043-0. In *Journal of Indian Council of Philosophical Research*, XXVI: 1 (2009), with Pravesh Jung Golay. (Circulated in 2010-11)

Trivedi, P.L.

Nominated as an expert on the Subject Board of the Autonomous Department of Economics, University of Mumbai, by the Director of Department of Economics, University of Mumbai.

Nominated as a Member of the Academic Council of the International Institute of Population Sciences by the Secretary, Ministry of Health and Family Welfare Government of India.

Reviewer of Books for the Oxford University Press, New Delhi.

Member of the committee to develop course contents and reading material for the course on 'Health Economics', at the International Institute of Population Sciences.

Refereed research papers for the Indian Economic Review published by the Delhi School of Economics

Panda, Ranjan

Reviewed book by Pradhan, R. C., *Language, Reality and Transcendence: An Essay on the Main Strands of Wittgenstein's Later Philosophy*, *Indian Journal of Analytic Philosophy*, Vol. IV, No. 2, March 2011.

Khan, A.

Member of Editorial Boards of :
International Journal of Social Sciences, 2010
Psychological Studies, India
Journal of Psychology and Counselling, USA

Nath, Rajakishore

Developed following IGNOU, M. A. (Philosophy) Courses for Second year students

MPYE 013: Philosophy of Technology, Block 3, Unit 1

Artificial Intelligence: Key Notions (Unit-1)

Unit 2 Philosophical Implications

MPYE 014: Philosophy of Mind, Block 1, Unit 4.

Minds & computers

Other Assignments/Activities

Khan, A.

Post Doc Fellow

Stephan Alice Baker (Australia), "Emotions, Katharsis and Collective Fusion in Indian Context" from November 25, 2009 to- May 24, 2010.

Subuddhi K.,

Assisted Union Public Service Commission in setting up/revalidating a sociology question paper of an examination held by the commission. In response to the invitation of the omission, I worked in the commission's office at Dholpur House, Shahjahan Road, New Delhi on 17-6-2010 & 18-6-2010.

Faculty Members and their Specializations

Economics

1. A. Ramanathan

Managerial Economics, Applied Econometrics, Monetary Economics.

2. P.L. Trivedi

Open Economy Macroeconomics, International Trade and Finance, Indian Economy, Environmental Economics.

3. K. Narayanan

Industrial Economics, Multinationals and Technology Transfer, Industry – Environment Linkages, International Trade, Applied Econometrics.

4. Haripriya G.S.

Natural resource and environmental economics, Water resource Economics, Green Accounting, Environmental Policy.

5. Puja Padhi

Financial Economics, Monetary Economics

6. 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

Understanding Creativity and Creative Writing
Science as a Cultural Construct in
Literary-cum – Performative Genres

3. Sudha Shastri

Novel, Victorian Studies, Postmodern Literature and Intertextual theory

4. Vijayanthi Sarma

Syntactic theory, First language acquisition, Linguistic deficits, Language processing, Conservation of endangered languages (especially Dravidian minority languages)

5. Sharmila

Women's Studies, Autobiography Studies, "Crisis" in English Studies, African American Writing

6. Paulomi Chakraborty

Partition Literature, South Asian Fiction in English, Women's Studies

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**
Twentieth Century Continental Philosophy, Development Ethics
7. **Rajakishore Nath**
Philosophy of Artificial Intelligence, Philosophy of Mind, Cognitive Science
8. **Jung P.G.**
Wittgenstein, General Semantics, Ethics

Psychology

1. **Meenakshi Gupta**
Social Psychology, Organizational Behaviour, Human Resource Development
2. **T. Bhattacharya**
Health and Clinical Psychology, Psychosomatic disorders, Stress & Coping, subjective well-being, ergonomics, cross-cultural personality
3. **Pooja Purang**
Organizational Behaviour, Culture and Ethics in Organizations, HR issues, Personality
4. **Azizuddin Khan**
Cognitive Psychology, Clinical Psychology, Neuro Psychology, Ergonomics, Event Related Potential
5. **Mrinmoyi, Kulkarni**
Social Psychology, Fertility, Health Behaviours, Role of Psychology in Development

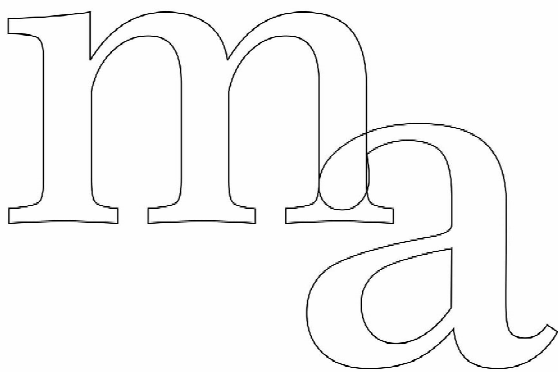
Sociology

1. **Subuddhi K.**
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, Law and Governance, Urban Studies, Vulnerability and Adaptation to Climate Change, Sociology of Inequality, Women and Gender Studies, Science, Technology, and Development
4. **Kushal Deb**
Urban Sociology, Ethnicity and Multiculturalism Sociological Theory, Sociology of Development.
5. **Sarmistha Pattanaik**
Political ecology, environmental politics with a focus on social inequality and natural resource conflicts, marginalization, environmental and indigenous social movements, sustainable development and climate change ethics.
6. **Ramesh Bairy**
Social Stratification; Contemporary Caste; Religious Institution

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 noted national and international institutes, universities and organizations; and extended educational activities beyond the departmental academic programmes.

Academic Programs

Student Intake

Ph.D.	: 11
M.Sc. (MA)	: 31
M.Sc. (ASI)	: 32

Degrees Awarded

Ph.D.	: 05
M.Sc.(MA)	: 18
M.Sc. (ASI)	: 22
M.Phil.	: 01

Besides B.Tech. courses, 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. In addition, the department has a vibrant 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 departments. The collaborating R & D institutions/organizations include: TIFR, IISc, ISI, ONGC, Institute of Mathematical Sciences, and foreign universities like 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, University of Twente, Netherlands, and nodal organizations such as CSIR, DAE, DBT, DST, for scientific exchange of ideas of national importance. 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 by evolving a pool of trained manpower in thrust areas. During this year, the department organized a workshop on Reliability Theory and Survival Analysis. Also organized is an Advanced Instructional School in Group Theory.

Sponsored Research Projects

Sponsored Projects

Ongoing	: 5
New	: 1
Completed	: 3
Faculty Involved	: 5

Consultancy

Jobs	: 2
Faculty Involved	: 2

Project Title	Sponsoring Agency	Status (New/ Ongoing/ Complete
Arithmetic of Automorphic forms	IFCPAR (Indo-French Centre for the promotion of Advanced Research)	Completed
<i>Extension and Web Implementation of PROPAINOR for ab-initio Prediction & Computational Function Elucidation of 3-D Structure of Proteins.</i>	Department of Biotechnology (DBT)	Successfully Completed
Instrumentation assisted Decision Support System deploying Data Mining Techniques for Pulse Examination & Diagnostics (Nadi Pariksha)	Ministry of Information Technology (MoIT)	Successfully Completed
“Robust parameter designs for quality and safety critical processes SR/FTP/MS-13/2009	DST	Ongoing Projects
“Identifying the Most Successful Combination Dose in a Phase I/II Clinical Trial”	IRCC	Ongoing Projects
The Oldroyd model of viscoelastic Fluids:	DST	On going
Theoretical and Computational Studies of Kelvin - Voigt model of viscoelastic fluids	DST -CNPq (Indo-Brazil)	On going
Numerical treatment of integral operators with non-smooth kernels	Indo-French Centre for Promotion of Advanced Research, New Delhi	Ongoing since September 2009
Liftings of operator tuples and structure theory of operator algebras	IRCC, seed grant	On going
Consultancy Projects		
Validation of Application Credit Scoring Models	Tata Motors Finance Ltd.	Complete
Statistical modeling of Online Advertising Data	Directiplex, Mumbai	new and ongoing

Visitors to the Department

Amit Kulshrestha, IISER Mohali, A Quick Introduction to GAP

Amitava Mukherjee, Dept of Mathematics and Mathematical Statistics, Umeå University, Sweden, “A Nonparametric Partially Sequential Test for Monitoring Phase-II Location under Pair-wise Dependence between Two Phases”

Anand Srivastav, University of Kiel, Germany, “Quantum-Evolutionary Computation of the Discrepancy of Arithmetic Progressions”

Anjan Gupta, TIFR Bombay, “A result of Kunz on the value semigroup of a one dimensional Gorenstein Ring”

Anuradha Garge, CBS Mumbai, “Filtered Rings”, “Filtered Rings II”

Arnab Mitra, TIFR Bombay, “Duality Correspondence for $(GL(m), GL(n))$ ”

Balwant Singh, IIT Bombay and CBS Mumbai, “Local Cohomology-I”, “Local Cohomology-II”, “Local Cohomology-III”, “Local Cohomology-IV”, “Local Cohomology-V”,

Bharath Sethuraman, IIT Bombay and California State university, Northridge, “Determinantal Rings and varieties-V”, “Determinantal Rings and varieties-IV”, “Determinantal Rings and varieties-III”, “Determinantal Rings and varieties-II”, “Determinantal Rings and varieties-I”,

Bill Casselman, Univ of British Columbia, “Structure Constants for Lie Groups”

Bobby Philip, Oak Ridge National Laboratory, “Multilevel Solution Algorithms on Adaptively Refined Grids: Analysis and Performance”

Dave Woods, University of Southampton, “Blocked Experimental Designs for a Non-Normal Response”

Dipendra Prasad, TIFR Mumbai, “On Models of Representations – I”, “Introduction to Algebraic Groups and Automorphic Forms – III”, “Introduction to Algebraic Groups and Automorphic Forms – II”, “On Models of Representations – IV”

Francois Coulouvrat, Univ of Paris, “Nonlinear acoustical guided waves”, “Shock solution for general nonlinear wave equation”

Frederique Oggier, NTU, Singapore, “On Gaussian Wiretap Lattice Codes”

H. Esnault, Univ. of Duisburg-Essen, “Rational points over finite and local fields and Hodge theory”.

Jaya Iyer, Univ. of Hyderabad, “Chow group computations for some varieties, via Abel-Jacobi maps”

Jean Fasel of EPFL, Lausanne, “Grothendieck-Witt groups and projective modules”

Kwai-Man Fan, National Chung-Cheng University, Taiwan, “On arrangements of complex hyperplanes whose fundamental group is a direct product of free groups”.

Leo Storme, Ghent University, Belgium, “The use of blocking sets in Galois geometries”

Manoj Keshari, IIT Bombay, “Proof of Ferrand Szpiro’s lemma”, “Local complete intersection affine curves are set-theoretic complete intersection -II”, “Smooth affine curves are set-theoretic complete intersections-I”

Manoj Kummini, Purdue University, “Regularity of Ext Modules”

Marcelo Aguiar, University of Texas A & M, “The Hopf Monoid of Generalized Permutahedra Theory”, “Hopf Algebras in Topology, Combinatorics, and Representation Theory”

Martin Charles Golumbic, Department of Computer Science, University of Haifa, Haifa, Israel, “Algorithmic Graph Theory and its Applications: Twenty Five Years of EPT Graphs”

Meera G. Mainkar, “Anosov Automorphisms on Nilmanifolds”

Michael Page, “Diffusion-driven flow in a stratified viscous fluid – and unexpected propulsion”

Murali K Srinivasan, I.I.T. Bombay, “Symmetric chains, Gelfand-Tsetlin chains, and the Hypercube

Nikolai Vavilov, St. Petersburg Univ., “Constructions of Exceptional Groups”

Parameswaran Sankaran, IMSc Chennai, “Ubiquity of Free Groups”

Peter Beelen, Technical Univ of Denmark, “Towers of algebraic function fields”

R. C. Cowsik, Mumbai University, “Bass’ Fundamental Theorem about Gorenstein rings- 1”, “Bass’ Fundamental Theorem-2”, “Bass’ Fundamental Theorem-3”, “Bass’ Fundamental Theorem-4 “, “Filtered Rings-I “

Rajan Sundaravaradhan, “On Tate’s thesis”

Rajendran Narayanan, Cornell university, “Shrinkage estimation in the Lasso set up”

Ravindra B. Bapat, Indian Statistical Institute, New Delhi, “Distance Matrix of a Tree and Beyond”, “Interplay of Ranks of Submatrices”

Rituparna Sen, UC Davis, “Functional Data Analysis for Volatility”

Santosh N. Kabadi, Faculty of Business Administration, University of New Brunswick Fredericton, NB,

Sue Lewis, University of Southampton, “Linearization of QAP and QTSP: Characterizations and Efficient Algorithms”

Sarang Sane, TIFR Bombay, “Euler characteristic and Multiplicity-III”, “Euler characteristic and Multiplicity-II.”, “Higher Euler Characteristics”, “Multiplicity, Euler characteristic of the Koszul homology and the multiplicity symbol”, “Splitting of Projective Modules”

Satrajit Roychoudhury, BDM Oncology, Novartis Pharmaceutical Company, Florham Park, NJ, Bivariate Semiparametric Bayesian Approach for Finding Minimum Effective Dose and Maximum Safe Dose.

Shastri, A.R., IIT Bombay, “Cancellation Theorems in Group Theory”

Sheetal Dharmatti, Institut de Mathematique de Toulouse, “H-infinity Feedback Boundary Stabilization of 2D Navier-Stokes Equation”

Shiv Prakash Patel, TIFR Mumbai, “Cuspidal Representations of $SL(2)$ via Compact Induction – II

Shreedevi Masuti, IIT Bombay, “Dualizing module of an artinian ring”, “Gorenstein artinian rings”

Shripad Garge, IIT Bombay, “Geometric Lemma of Bernstein and Zelevinsky – II”, “Geometric Lemma of Bernstein and Zelevinsky - III”, “Geometric Lemma of Bernstein and Zelevinsky”, “Intersection of Parabolic Subgroups”, “Intersection of Parabolic Subgroups – II”.

Siddhartha Gadgil, IISc, Bangalore, “The Word Problem”

Sue Lewis, University of Southampton, “Design of experiments for Generalised Linear Models”

T. N. Venkataramana, TIFR Mumbai, “Some Applications of the Ping-Pong Lemma”

T. R. Ramadas, ICTP, Trieste, Italy, “The Hodge Conjecture: a possible approach via non-linear PDE”.

Vikram Mehta, TIFR Bombay, “The fundamental Group schemes in algebraic geometry”

Vydas Cekanavicius Vilnius University, Lithuania, “Poisson Approximation for Weakly Dependent Random Variables”

Yuan Jin Yun, “A Sharp Upper Bound of the 1” Norm of the Inverse of Special Lower Triangular Toeplitz Matrices”

Yuan Jin Yun, Convergent Splitting Method and its Applications

CEP Courses

Rana Inder K.

CEP Long term certificate course “Math-for-ECM” for undergraduate students and teachers. April 17-30, 2010, held at IIT Bombay.

CEP workshop on “Professional Development and Technology Orientation” for teachers, December 27 – 29, 2010 held at Kennedy High School, Hyderabad.

CEP Workshop on “Math Modelling” for teachers, December 17-19, 2010, held at IIT Bombay.

CEP Workshop on “Professional Development and Technology orientation for school teachers” June 27-29, 2010 at DPS Ahmedabad.

Sabnis S V

CEP course done with Prof. P.P. Date (Mechanical Engineering)
Organization: Ordnance Factory, Ministry of Defence, Govt. of India, Ambernath. Gave five two and a half

hour talks, spread over May and June 2010, on Sampling Plans.

CEP In-house course

Organization: Edelweiss Securities Limited, Mumbai
Conducted a two day workshop on 3rd and 10th July 2010 from 9:30 am till 6:00 pm. The workshop topic was Time Serie Modelling.

Conferences / Symposia / Workshops / Seminars (Participated / Paper presented)

National

Anandavardhanan U.K.

Advanced Instructional School on Group Theory, Indian Institute of Technology Bombay, Mumbai, 10-29 May 2010.

76th Annual Meeting of the Indian Academy of Sciences, Goa, 12-14 November 2010.

Chakraborty D.

Workshop on Variational Analysis and Optimization with Application to PDE's (IIT Gandhinagar, 1-4 April, 2011)

Deshpande J.V.

Instructional seminar on Risk Analysis in Finance and Survival Analysis, IIT, Bombay, Nov 2010, Three 1 ½ hour lectures

National Seminar on Reliability and Survival Analysis, Calcutta University, Jan 2011, One 1 hour lecture

Ghorpade, Sudhir R.

A series of two lectures: “Finite fields”, *School on Algebra, Analysis and Topology*, The Kerala School of Mathematics, Kozhikode, January 2011.

Invited keynote address: “Algebraic Geometric Codes”, *UGC National Seminar on Advances in Computational Mathematics*, Latur, February, 2011

Chair, Programme Committee, and Member, Local Organising Committee of: *International Conference on Algebra and Algebraic Geometry*, in honour of Prof. Abhyankar's 80th birthday, University of Pune, Pune, December 17-22, 2010.

Co-organiser of: *Short course on Algebra and Algebraic geometry*, by Prof. Shreeram S. Abhyankar, Bhaskaracharya Pratishthana, Pune, December 9, 2010 – January 5, 2011.

Joshi R.R.

Invited research talk titled “*Pharmaco-Kinetic Modeling and Analysis to Evaluate Inhalation against Oral and I-V Modes of Drug Administration*”.

National Symposium on *Mathematics in Drug Discovery*. Organized by Piramal Life Sciences & NCL. (25-29 Sept., 2010; YASHDA, Pune)

Kulkarni Ravindra S.

Delivered an invited talk on “Development of the Idea of Symmetry, Geometric Examples” during Feb 19-20, 2010 in the Symposium on Symmetry, at IISER at Mohali, Punjab.

Delivered an Invited talk on “Introduction to Teichmuller Theory” during September 1-12, 2010 in the National Seminar on Complex Analysis and Special Functions, at the Central University of Rajasthan, Kishangarh, District Ajmer, Rajasthan,

Delivered three invited lectures on A) Riemann Mapping Theorem, B) Uniformization Theorem, C) Teichmuller Theory during March 21- April 2, 2011 in the Advanced Training in Mathematics for Lecturers in “Geometric Complex Analysis”, at the Department of Mathematics, University of Delhi.

Kulkarni Rekha P.

Attended ICM satellite international conference on ‘Functional Analysis and Operator Theory’ held at the Indian Statistical Institute, Bangalore, during 8th to 11th August 2010 and gave an invited talk on ‘Asymptotic Expansions of solutions of second kind integral equations’.

Gave 6 Invited Lectures in Advanced Instructional School on ‘Numerical Linear Algebra’ held at I.I.T. Guwahati during 2 – 22 December 2010. This school was sponsored by NBHM

Pani Amiya K.

Professor P.D. Verma Memorial Lecture on ‘Navier-Stokes Equations: A Million Dollar Open Problem’ at the Department of Mathematics, University of Rajasthan, Jaipur (August 7, 2010).

Invited Talk on ‘Can Mathematics help to extract more oil from Oil field?’ in the UGC Sponsored National Workshop on Challenges before Applied Mathematicians : Fluid Dynamics and Optimization Techniques during March 11-13, 2011.

A series of 15 lectures given on Mathematics foundation of Finite Element Methods in the International Workshop on Advanced Computational PDEs held in BITS, Goa Campus during February 7-13, 2011.

Rana Inder K.

e-India 2010 at Hyderabad, 4- August. Presented a paper on Technology, ICT and Math Education.

Sabnis S.V.

Gave one invited talk at a National Seminar on Reliability Theory & Practice held at University of

Calcutta on 28th and 29th January 2011. The title of my talk was “Extreme Testing Using Negative Binomial Data and related results”.

Sane Sharad S.

Invited Speaker at the ICM Satellite conference on Discrete Mathematics and Graph Theory at Cochin University of Science and Technology (CUSAT), 12 to 15 August, 2010

Delegate supported by the National Board for Higher Mathematics for the International Congress of Mathematics (ICM). 19 to 27 August, 2010

Participant in the ICM Satellite conference on Finite Geometries and Finite Groups at Indian Statistical Institute (ISI), Bangalore, 29 to 31 August. 2010

IMOTC teaching at Homi Bhabha Center for Science Education: 8 lectures in May, 2010

Invited speaker at the Discrete Mathematics and Graph Theory conference at the College of Engineering, Pune (COEP), June 8, 2010; topic: Strongly regular graphs

Olympiad Lectures at the all India Mathematics Olympiad training camp of Delhi Public School, Nerul, June 11 to 13, 2010

Mentoring Lectures in the DST sponsored INSPIRE program at the following places:

(a) Two lectures, Sri Mata Vaishnodevi University, Jammu and Kashmir, April, 2010

(b) Three lectures, Guru Ghasidas Central Univ., Bilaspur, Chhatisgarh, June 22 to 24, 2010

(c) Two lectures, Uttaranchal Central Univ., Srinagar, Pauri Gadhwai, Uttarakhand, Dec. 2010

(d) Dharampeth Science College, Nagpur, January, 2011

Gave a One semester e-learning course on Graph Theory for the students of Pune University and the students of IISER Pune as a part of Bhaskaracharya Pratishthan’s MHRD sponsored e-learning project, August 2010 to December, 2010

Participated in the Meeting of the Fellows of the Indian Academy of Sciences at the Indian Institute of Science, Bangalore, July 2 and 3, 2010

Sharma V.D.

Presided the inaugural session and delivered a technical talk at the Indian Society of Theoretical and Applied Mechanics Conference held at NIT, Hamirpur (HP) (Dec 18-21, 2010).

Shastri A. R.

Joint Coordinator of AFS-II school organized at Bhaskaracharya Pratisthan Pune in June 2010. Also gave 9 lectures in Algebraic Topology and conducted several hours of tutorial sessions.

Participated In the International Conference of Mathematicians at Hyderabad, August 2010.

Expert speaker in Differential Topology, at AFS-I at Department of Mathematics, Punjab University Chandigarh December 2010. Gave 12 lectures and conducted 8 tutorial sessions.

Expert Speaker in ATML on Complex Analysis and Geometry at University of Delhi, in March 2011. Gave 8 lectures and conducted six tutorials.

Vellaisamy P

Golden Jubilee Conference at IIT Kanpur in September 2010.

ISPS Conference in December 2010 at the University of Jammu, India.

International**Ameer Athavale**

Gave a talk based on two papers of mine at the conference FaO2010 (Functions and Operators 2010) held in Krakow, Poland, from June 21, 2010 to June 25, 2010.

Anandavardhanan U.K.

Automorphic Forms and Number Theory, ICM Satellite Conference, International Center, Dona Paula, Goa, 14-17 August 2010.

International Congress of Mathematicians, Hyderabad

Chakraborty D.

Workshop on the dbar-Neumann problem, Erwin Schroedinger / International Institute of Mathematical Physics, Vienna, Austria, 13-22 December, 2010

Dey Santanu

“Operator Theory Satellite Conference” from 9th to 13th August 2010 in IMSc Chennai. (participated)

“31st Conference on Quantum Probability and Related Topics” from 14th to 17th August 2010 in JNCASR Bangalore. (invited speaker)

Ghorpade, Sudhir R.

“Matrices and polynomials over finite fields and pseudorandom vector generation”, *Binational DFG Workshop and Round Table on Discrete Structures and Algorithms*, Bonn, Germany, June 2010.

“Matrices, Polynomials, and Recurrences over Finite Fields”, *Conference on Algebra and Algebraic*

Geometry with Applications: Celebration of the Eightieth Birthday of Professor Shreeram S. Abhyankar, Purdue University, West Lafayette, USA, July 2010.

Short Communication: “Affine Grassmann codes”, *International Congress of Mathematicians*, Hyderabad, August 2010.

“Jet schemes of determinantal varieties”, *International Conference on Commutative Algebra and Algebraic Geometry*, Indian Institute of Science, Bangalore, December 2010.

A series of five lectures: “Gröbner bases and coding theory”, *Indo-German Workshop on Computational Commutative Algebra* (NBHM Advanced Instructional School), Indian Institute of Science Education and Research, Pune, December 2010.

“Primitive recursive vector sequences”, *13th International Conference on Arithmetic, Geometry, Cryptography and Coding Theory*, Centre International de Rencontres Mathématiques, Luminy, France, March 2011.

Joshi R.R.

“Some Statistical Models of Gene Interactions Networks”. Intl. Symposium on *Accelerating Biology*. Organized by C-DaC. (14-16, Dec., 2010; VITS Hotel, Pune)

Keshari Manoj Kumar

CAAG 2010, IISc Bangalore 6 - 10th December, 2010. Gave a talk on “K---₀ of hypersurfaces defined by $x_1^2 + \dots + x_n^2 = \pm 1$ ”.

Kulkarni R.P.

Invited talk on ‘Asymptotic Expansions of solutions of second kind integral equations’ in the Satellite Conference of the International Congress of Mathematicians on ‘Functional Analysis and Operator Theory’ at ISI, Bangalore on 8 August, 2010.

Limaye B.V.

Invited talk on ‘Canonical discretization of some infinite-rank operators’ in the Satellite Conference of the International Congress of Mathematicians on ‘Functional Analysis and Operator Theory’ at ISI, Bangalore on 8 August, 2010.

Mukhopadhyay, S.

Presented a paper “Robust Designs for Generalized Linear Models: A Graphical Approach,” *International Conference on Robust Statistics* June 28 – July 2, 2010, Prague, Czech Republic

Pani Amiya K.

Invited talk entitled ‘Oldroyd model: Theoretical and Computational Issues’ in the Satellite conference

ICMPDE held in TIFR, Bangalore during Aug. 13-17, 2010.

Invited talk on ‘Some theoretical and computational issues in Oldroyd model of viscoelastic fluids in the International Workshop on CFD & Computational Mathematics during 10-11 September, 2010 held in Yonsei University, Seoul (S. Korea).

On Industrial Mathematics with a Case Study from Finance in the International Congress in Mathematics and Applications held in University of Parana at Curitiba during December 6-10, 2010.

‘Discontinuous Galerkin Method: An old Wine in a New Bottle’ in the international conference on Recent development in Applied and Computational Mathematics during January 4-7, 2011.

Invited Lecture on ‘Incompressible Miscible Displacement Problems in Oil Reservoir Studies: Some Theoretical and Computational Issues in the International Conference on Mathematical Modelling and Applications to Industrial Problems held in NIT, Calicut during March 28-31, 2011.

Participated and worked on two SABIC problems in the First KAUST Study Group in Mathematics for Industry held in KAUST (Saudi Arabia) during 23rd - 26th January 2011.

Raghunathan Ravi

“On the poles of L -functions satisfying Maass’s functional equation.” Satellite Conference to ICM 2010 Analytic and Combinatorial Number Theory, August 29- September 3, 2010, Institute of Mathematical Sciences Chennai.

Participation: Workshop on Analytic Questions in Arithmetic, July 23 - August 7, 2010, TIFR, Mumbai.

Automorphic Forms and Number Theory, ICM Satellite Conference, August 14-17, 2010, International Center, Dona Paula, Goa.

International Congress of Mathematicians, August 19-28, 2010, Hyderabad.

Invited Lectures

National

Anandavardhanan U.K.

Six Lectures on Bass-Serre Theory, Advanced Instructional School on Group Theory, Indian Institute of Technology Bombay, Mumbai, 10-29 May 2010.

Chakraborty D.

IISER Pune, TIFR, TIFR Bangalore Centre, IISc.

Ghorpade, Sudhir R.

“Maximal linear sections of Grassmannians”, *Colloquium talk*, Tata Institute of Fundamental Research, Mumbai, April 2010.

Joshi R.R.

Invited 6 Lecture-Series on *Advanced Applications of Neural Networks in Protein Structure Function Modeling*. Centre of Excellence in Bioinformatics, at Pune Univ. Campus, Pune. 4-5 Feb., 2010.

Keshari Manoj Kumar

Gave a series of lectures from 20-24th December on ring theory at Kerala School of Mathematics at a winter school for PhD students of Kerala.

Kulkarni R.P.

Six invited talks on ‘Numerical Linear Algebra’ in the Advanced Instructional School of the NBHM at I. I.T. Guwahati during 2 to 7 December, 2010.

Limaye B.V.

Six invited talks on ‘Numerical Linear Algebra’ in the Advanced Instructional School of the NBHM at I. I.T. Guwahati during 2 to 7 December, 2010.

‘Fundamental theorem of calculus for rectangles’ at IISER, Pune on 31 July 2010

Nataraj Neela

Invited Speaker in National Conference on “Advances in Differential Equations and Applications”, 7th and 8th October 2010, Periyar University, Salem.

Pani Amiya K.

Invite Talk on ‘On Industrial Mathematics with a case study from financial market in MN Mittal Institute of Technology, Jaipur on 6th August, 2010.

Ranjan Akhil

A course in Functional Analysis at IISER Pune. Jan-Mar 2011

Sabnis S.V.

Gave one talk at Applied Statistics Division, ISI, Kolkata on 22nd March 2011. The title of my talk was “Estimation of Parameters of a Mixture Distribution using Quantile Functions”.

Sharma V.D.

Invited Lecture on hyperbolic systems of PDEs and waves delivered at the 76th Annual Conference of the Indian Mathematical Society held at NIT Surat from 28-31 Dec. 2010.

Shastri A.R.

One lecture on Euler’s proof of Fundamental theorem of algebra at ISI Kolkata April 2010.

One lecture on Real Analysis proof of Fundamental Theorem of Algebra, video-taped at Bhaskaracharya Pratishthan Pune. June 2010.

One lecture on Linear Algebra proof of Fundamental Theorem of Algebra, video-taped at Bhaskaracharya Pratishthan Pune. June 2010.

Tony Puthenpurakal

“Matlis Duality-II”, “Some aspects of abelian categories and $\lim^{\text{III}}$ ”, “Some aspects of abelian categories and $\lim^1$ ”, “A short proof of the positivity of partial Euler characteristics”, “Canonical modules-1”, “Canonical Modules-II”, “Canonical Modules-II”, “Matlis Duality-III”, “Some aspects of abelian categories and $\lim^1$ ” at Mumbai University.

Verma, J.K.

“Gorenstein’s Theorem about conductor of plane algebraic curves-1”, “Gorenstein’s theorem on plane algebraic curves-2”, “Hilbert functions of graded modules-II”, “Gorenstein’s theorem on plane algebraic curves-3”, “Graded algebras with pure resolution-I”, “Graded algebras with pure resolution-II”, “Hilbert functions of graded modules-I”

International

Anandavardhanan U.K.

A local global question in automorphic forms, Automorphic Forms and Number Theory, ICM Satellite Conference, International Center, Dona Paula, Goa, 14-17 August 2010.

Dey Santanu

“Liftings of covariant representations of W^* -correspondences”, QP Conference Bangalore- 14th August 2010.

Ghorpade, Sudhir R.

“Introduction to affine Grassmann codes”, Christian-Alberchts Universität Kiel, Kiel, Germany, May 2010.

“Linear sections of Grassmann varieties”, *Séminaire d’Algebra et Geometrie*, Université de Versailles Saint-Quentin en Yvelines, Paris, France, March 2011.

Kulkarni R.P.

Invited talk on ‘Asymptotic Series Expansions for Solutions of Operator Equations’ at University of Saint Etienne, France on 7 June 2010.

Limaye B.V.

Invited talk on ‘Matrix formulation of eigenvalue problems for some infinite-rank operators’ at University of Saint-Etienne, France on 7 June 2010

Nataraj Neela

Invited speaker in International Conference of Women Mathematicians (ICWM) 2010, an official satellite conference of ICM, 17th-18th August, 2010, University of Hyderabad, Hyderabad.

Pani Amiya K.

A series of Lectures on Fixed Point Methods and Applications to PDEs in the Department of Mathematics, Chiangmai University, Chiangmai (Thailand) during 26th December, 2011 to 3rd January, 2011.

Ranjan Akhil

Simultaneous Bilinear Equations and Applications to the Riemannian Foliations of Spheres at Dept. of Mathematics, Ohio State University, Columbus, OH, USA. June 2010

Sharma V.D.

Key Note address at an International Conference on Recent Advances in Fluid Mechanics held at Osmania University, Hyderabad (Dec 23-24, 2010).

Verma J.K.

“On the vanishing and positivity of the coefficients of normal Hilbert polynomial, Local Rings and Local Study of Algebraic Varieties, International Centre for Theoretical Physics, 6-12 June, 2010.

“Polynomial equations, Gröbner bases and convex polytopes”, four lectures, Advanced Instructional School in computational commutative algebra, IISER Pune, 17-24 Dec. 2010.

“Polynomials and polytopes”, IISER Pune, 31 July, 2010,

“Pick’s Area Theorem and Farey fractions”, Workshop in Mathematics for high school teachers organized by Bombay Association for Science Education, 23 July, 2010.

“Gorenstein’s theorem about plane algebraic curves”, two lectures, Advanced Instructional School on Schemes and Cohomology, Kerala School of Mathematics, Calicut, 16-17 July, 2010.

“Gröbner bases and polynomial equations”, Ramakrishan Mission Vivekananda University, Belur Math, Kolkata, 2 April, 2010.

Significant Awards and Distinctions

Anandavardhanan U.K.

Excellence in Teaching Award, Indian Institute of Technology Bombay, Mumbai, 2010.

Ghorpade, Sudhir R.

Otto Mønsted Guest Professorship, Technical University of Denmark, Lyngby, Denmark, May-July 2010.

Elected a Fellow of the National Academy of Sciences India, October 2010

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, 2010-11.

Advisory Editor, Course material in algebra, Indira Gandhi National Open University, New Delhi, 2010-2011.

Member, Selection Committee for Mathematics Faculty, Veermata Jijabai Technological Institute (VJTI), Mumbai, September 2010.

Joshi R.R.

Member, National Task Force in Bioinformatics, Computational Biology and Systems Biology.

Chairperson, Board of Studies in Bioinformatics, Univ. of Poona, Pune.

Kulkarni Rekha P.

Visited University of St. Etienne, France from May 31 to June 20, 2010 as part of the Indo-French project supported by IFCPAR.

Limaye B.V.

Visited University of St.-Etienne, France from May 25 to 11 June, 2010 as part of the Indo-French Project supported by IFCPAR.

Member of Selection Committees of various IITs

Pani Amiya K.

Visiting fellow, OCCAM, Oxford University, Oxford (UK) (2010).

Visiting Professor, Federal University of Parana, Curitiba (Brazil)

Visiting Professor, Chiangmai University, Chiangmai (Thailand).

Plenary speaker in the International Conference on Recent Development on Applied and Computational Mathematics

Delivered Professor P.D. Verma Memorial Lecture on 'Navier- Stokes Equations: A Million Dollar Open Problem' at the Department of Mathematics, University of Rajasthan, Jaipur (August, 2010).

Raghunathan Ravi

Visited the University of Paris at Jussieu from May 5 to June 2 as part of the Indo-French project on the Arithmetic of Automorphic forms.

Sane Sharad S.

Elected Fellow of the Indian Academy of Sciences, Bangalore

Sharma V.D.

Elected President of the Indian Society of Theoretical and Applied Mechanics for the year-2010

Appointed as a Council Member of Indian Statistical Institute, Kolkata

Kumar K. Suresh

Visiting Researcher at Department of Mathematics, University of Twente, the Netherlands, during November 2010 – April 2011.

Honorary Work

Anandavardhanan U.K.

Reviewer for AMS MathSciNet

Reviewer for Zentralblatt MATH

Chaired a session on Short communications in Algebra at ICM Hyderabad.

Athavale Ameer

Reviewed 1 paper for MathSciNet and refereed 1 paper for the journal Integral Equations Operator Theory.

Ghorpade, Sudhir R.

Refereed for the journals: *Designs, Codes and Cryptography* (Springer), *Indian Journal of Pure and Applied Mathematics* (INSA), and the *Journal of Symbolic Computation* (Elsevier).

Referee and a viva-voce examiner for Ph.D. theses submitted to: (i) Panjab University, Chandigarh, and (ii) University of Pune, Pune

Joshi R.R.

Reviewer for "Proteins: Structure, Function, Bioinformatics" and "Journal of Biological Systems". Statistics expert for review of projects submitted to DST and DBT.

Member, faculty selection committees at some other IITs and at Univ. of Poona.

Kulkarni Ravindra S.

Served as Editor-in-Chief, Ramanujan Mathematical Society Lecture Notes Series.

(We have so far published 14 volumes, since 2005, in addition to Collected Works of S. S. Pillai.

Served as Editor, Journal of the Ramanujan Mathematical Society.

(The journal brings 4 issues every year.)

Served as a member of the DST's Programme Advisory Committee, Mathematical Sciences.

Served as a member of the Apex Committee of the IIT(B)-TIFR National Centre for Mathematics.

Served as Editor, Annales Academiae Scientiarum Fennicae, (Mathematics Section).

Kulkarni Rekha P.

Refereed papers for international journals

Nataraj Neela

Associate Editor, International Journal of Numerical Analysis and Modeling, Series B.

Reviewed papers for the journals:

Indian Journal of Pure and Applied Mathematics, Numerical Methods for Partial Differential Equations, Applied Mathematics and Computation, Journal of Mathematical Analysis and Application, Computational Methods in Applied Mathematics.

Pani Amiya K.

Editorial board member of 3 international journals and one national journal.

Refereed 3 Ph.D. Theses

Reviewer for the journals: SIAM Journal of Numerical Analysis, International J. Numerical Analysis and Modelling, Numerical methods in PDE, & Applied Mathematics and Computations, and others.

Selection committee member of universities and other Institutes.

Reviewer for several National and International projects.

Member of the organising committee of Thematic Year 2009-2010 on PDE Models Arising in Multiscale Problems, Controls, Inverse Problems and Fluid Dynamics under IISC Math Initiatives.

Member of the organising committee of International Conference on Multiscale Analysis and Homogenization held in IISC Bangalore during July 12-14, 2010.

Member of the organising committee of the Satellite conference ICMPDE held in TIFR, Bangalore during Aug. 13-17, 2010.

Member of the Scientific Committee of the World Congress on Mathematics and Applications held in Federal University of Parana at Curitiba (Brazil), during December 6-10, 2010.

Member of the organising committee of the International Conference on Recent Developments on Applied and Computational Mathematics held in Chiangmai University, Chiangmai during January 4-6, 2011.

One of the Co-ordinators of the International Workshop on Advanced Computational PDEs held in BITS, Goa Campus during Feb 7- March 5, 2011.

One of the co-ordinators of Modelling Week and Study Group Meeting on Industrial Problems held in IISC Bangalore during March 14- March 26, 2011.

Member of the Scientific Committee on the International Conference on Mathematical Modelling and Applications to Industrial Problems held in NIT Calicut during March 28-31, 2011.

Raghunathan Ravi

Reviewer for MathScinet

Rana Inder K.

Reviewer for Asia Technology Conference in Mathematics

Akhil Ranjan

Reviewed article for IJPAM

Sabnis S.V.

Reviewed one research article for Journal of Applied Statistics.

Organized a Workshop on Reliability Theory & Survival Analysis during 25-27 November, 2010. The number of participants who attended this workshop was 55 and they essentially comprised of faculty members and research scholars from institutions/universities such as ISI (Kolkata, Delhi), IIT (Bombay, Kanpur, Guwahati), Delhi, Pune, Panjab, CUSAT (Cochin University of Science & Technology), Central University of Hyderabad etc. NBHM provided financial support for this workshop.

Participated in a Refresher Course organized for college teachers by Department of Mathematics, University of Mumbai. Gave three one and a half hour talks on 7th, 9th and 11th March 2011 and the topic was Martingale Theory.

Sane Sharad S.

Advisory committee member of Central University of Tamilnadu (CUTN), Tiruvarur for the last one year, I continue to be a member of the following honorary positions.

National Coordinator of the Mathematics Olympiad program of the National Board for Higher Mathematics

Western Regional Library Committee member, National Board for Higher Mathematics

Referee work for the following two journals:

- (a) Discrete Mathematics
- (b) Designs, Codes and Cryptography

Review work for Zentralblatt Fur Mathematik: 6 Research papers reviewed

ICM Satellite Conference proceedings referee work:

(a) Combinatorics and Graph Theory Satellite conference at Cochin University of Science and Technology

(b) Conference on Finite Groups and Finite Geometries at Indian Statistical Institute, Bangalore

Selection committee member for the selection of M.Sc. (Economics) students at the Indira Gandhi Institute for Development Research, June 29 and 30, 2010

Mentoring work of two students in the area of Graph Theory under the student mentoring program of the Indian Academy of Sciences:

(a) Ankit Pat, Indian Institute of Technology, Kharagpur

(b) Anshul Srivastava, Indian Institute of Technology, Roorkee

Member of the International Scientific committee of the ICM Satellite conference on Discrete Mathematics and Graph Theory at Cochin University of Science and Technology (CUSAT), 12 to 15 August, 2010.

Nominated Member of the Academic Council of the Indira Gandhi Institute of Development Research (IGIDR).

Member of the Advisory Board of Ramanujan Mathematical Society.

Sharma V. D.

Served as a member of the S.S. Bhatnagar Award Committee for 2010

Reviewed papers for Zentralblatt (Germany) and Maths Reviews (USA).

Examiner of a Ph.D. thesis from IIT Kgp.

Shastri A. R.

Volume Editor-in- chief (along with P. Sanakaran, IMSc Chennai, and P. Zvengrowski, Calgary, Canada) of Perspectives in Geometry and Topology the Proceedings of the IITB Golden Jubilee International Workshop/Conference in Geometry and Topology, in Ramanujan Mathematical Society Lecture Notes Series No. 11

Verma J. K.

Convener, NBHM Committee, Advanced Training in Mathematics Schools, 2010-2013.

Reviewer for Mathematical Reviews.

Member, Editorial Board, Ramanujan Mathematical Society Lecture Notes Series.

Member of the Apex Committee for National Center for Mathematics.

INSA National Steering Committee on Mathematics Education.

Organized Advanced Instructional School sponsored by NBHM in Group Theory held at IIT Bombay during 10-29 May, 2010.

Organized International Conference on commutative algebra and algebraic geometry held at IISc, Bangalore during 6-10 December, 2010.

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. Debraj Chakraborty

Several Complex Variables

5. Das, Ashish

Design of Experiments

6. Dey, Santanu

Operator Algebras

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. Kaipa, Krishna

Complex Analysis

12. Keshari, Manoj Kumar

Commutative Algebra (Projective modules)

13. Kulkarni, Rekha P.

Numerical Functional Analysis, Spline Theory

14. **Mahajan, Swapneel**
Geometry and Topology
 15. **Mukhopadhyay, Siuli**
Statistics
 16. **Nataraj, Neela**
Finite Element Methods
 17. **Pani, Amiya K.**
Numerical Analysis, Partial Differential Equations,
Industrial Mathematics
 18. **Puthenpurakal, Tony J.**
Commutative Algebra
 19. **Raghunathan, Ravi**
Automorphic forms, Number Theory
 20. **Raman, Preeti**
Number Theory
 21. **Rana, Inder K.**
Harmonic Analysis, Mathematics Education
 22. **Ranjan, Akhil**
Differential Geometry
 23. **Sabnis, Sanjeev**
Reliability Theory, Industrial Statistics
 24. **Sharma, Vishnu D. (Institute Chair Professor)**
Quasilinear Hyperbolic Systems of PDEs/
Nonlinear Waves
 25. **Shastri, Anant R.**
Algebraic Geometry, Algebraic Topology
 26. **Sista, Sivaji Ganesh**
Partial Differential Equations
 27. **Sivasubramanian, S.**
Combinatorics
 28. **Srinivasan, Gopal K.**
Partial Differential Equations
 29. **Srinivasan, Murali K.**
Combinatorics
 30. **Subramanyam, A.**
Statistical Inference, Geostatistics
 31. **Sureshkumar, K.**
Stochastic Differential Game Theory,
Mathematical Finance.
 32. **Vellaisamy, P.**
Statistics and Probability
 33. **Verma, Jugal K.**
Commutative Algebra
- Institute Chair Professor**
1. **Kulkarni, Ravi S.**
Differential Geometry
- Professor Emeritus**
2. **Pai, Devidas V.**
Functional Analysis, Approximation Theory, Set-
valued Analysis
- Emeritus Fellow**
3. **Limaye, Balmohan V.**
Functional Analysis, Approximation Theory, Set-
valued Analysis
- Adjunct Faculty**
4. **Balwant Singh**
Commutative Algebra
 5. **Dipendra Prasad**
Number Theory
- Visiting Faculty**
6. **Bharath Sethuraman**
(Visiting Faculty [Professor])
Algebra & Algebraic Geometry
 7. **Jayant V. Deshpande**
(Visiting Faculty [Professor])
Probability and Statistics
 8. **Sharad S. Sane** (Visiting Faculty [Professor])
Combinatorics and Design Theory
- Distinguished Guest Professor**
9. **Manjul Bhargava**
Number Theory
 10. **M. Ram Murthy**
Number Theory
 11. **Tarlok Nath Shorey**
Theory of Numbers

me Mechanical Engineering

Introduction

The Department of Mechanical Engineering offers formal degree programmes leading to B.Tech., M.Tech., and Ph.D. It also offers a dual-degree programme. The department is constantly striving to improve its achievements in both manpower training and research and resetting its goals keeping in view the current national needs in the three specializations, viz., Thermal and Fluids Engineering, Design Engineering and Manufacturing Engineering. During the year under review, actions have been taken to further upgrade some of the existing laboratories, such as, 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. Keeping in view the expected expansion in the use of nuclear energy, a proposal has been moved to start the fourth specialization, viz., “Nuclear Engineering”.

Radiance 2011, a departmental annual function, was organized on March 13, 2011, 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, enable entertainment and learning through arrangement of invited lectures and workshops, and bring out challenges and opportunities in mechanical engineering.

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. The whole faculty have contributed as before to national R & D programmes of DAE, ARDB, ISRO, DRDO, AERB, DIT, DST, BARC and ONGC, industrial consultancy activities, continuing education programmes (CEP), national and international journals, and conferences. The department will play a major role in the operation of

National Center for Aerospace Innovation and Research to bring Indian industry to a level similar to the Indian Automotive Industry by incorporating new technologies and equipment. Prof Amit Agarwal has been elected as a member of the National Academy of Sciences, India.

Two books have been published by faculty this academic year. They are as follows:

- *Analytic Combustion* – Cambridge University Press, New York (2011)
- *Differential Equations for Scientists and Engineers*, Narosa Publishing House, New Delhi (2010).

Academic Programmes

Students Intake

B.Tech.	:	93
Dual Degree	:	45
(Computer - Aided Design and Automation - 23; Computer Integrated Manufacturing – 22; Thermal and Fluids Engineering – Nil)		
M.Tech.	:	83
Ph.D.	:	18

Degrees Awarded

B.Tech.	:	47
Dual Degree	:	45
(Computer - Aided Design and Automation – 15; Computer Integrated Manufacturing – 17; Thermal and Fluids Engineering – 13)		
M.Tech.	:	72
Ph.D.	:	13

The Liquid Nitrogen facility at Refrigeration & Cryogenics Laboratory was commissioned on January 03, 2011. This plant is supplied by M/s. Stirling Cryogenics & Refrigeration BV, Netherlands. The total cost involved in purchasing this plant is Rs.2,28,11,040. This plant is of the configuration StirLIN-4 which is fully automatic with one 2000-liter storage tank and one chiller unit. The facility was tested after commissioning for continuous operation and was inaugurated by the Director, IIT Bombay, on February 18, 2011, and since then the facility was made available to all the campus users. This plant is able to produce liquid nitrogen at 50 liters/hour rate.



R & D Activity

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 there is one ongoing project sponsored by DIT. A new project, sponsored by ISRO, is initiated to investigate the behavior of kerosene-based nanofluid for internal convective heat transfer enhancement.

- Two-phase Flow and Heat Transfer
- Simulation of Flows with Interfaces, Thermo-Chemical Modeling of Wood Burning Stove, Heat Transfer enhancement in Rotating Pipe with a Twisted Tape Insert.
- Fire dynamics, Jet Impingement Heat Transfer, Flow Metering, Gas Turbine Blade Cooling, Melting of Low and High Pr fluids
- 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
- OrthoCAD project: A novel modular rotating-hinge total knee prosthesis has been developed, suitable for limb-saving surgery of young patients affected by bone cancer. 3D visualization and surgery planning software has also been developed.

Sponsored Research Projects	: 52
New	: 10
Ongoing	: 12
Completed	: 30

Sr. No.	Project Title	Sponsoring Agency	Status (New/Ongoing/Complete)
1	“Design, Simulation and Testing of Micro Heat Exchanger for JT Cryocooler”	BRNS	New
2	“Identification of Chaos in Slosh and Sliding Mode Control of Slosh Using 2DOF Slosh Rig”	ISRO STC	Completed
3	“Development of High Aspect Ratio Micro-components at High Speeds Using Microstereolithography System for 3D Microfabrication”	DST	Completed
4	“Evaluation Of The Capability Of Moderator To Act As A Heat Sink To Remove The Decay Heat Of AHWR Fuel Bundles During An Accident Condition”	BRNS	Ongoing
5	“Carbon dioxide Capture and Conversion”	WUSTL	Ongoing
6	“Numerical Investigations on Melting and Solidification of low Prandtl number fluids”	BARC	Ongoing
7	“Investigations on Parallel Channel Instability and Steam Drum level Control Philosophy”	BARC	New
8	“Investigation on Sorption Compressor based J-T Cryocooler”	BARC	Ongoing
9	“Design and Development of Moving Magnet Type of Linear Compressor for Cryocoolers”	IIT Bombay	Ongoing
10	“Development of a Mixed Refrigerant J-T Type Cryocoolers”	DST	On-going
11	“Development of Two Stage Pulse Tube Cryocooler for 20K using linear Compressor”	BRNS	Completed
12	Rapid Manufacturing of Machined Aerospace Components	ISRO-IITB	Ongoing
13	Prediction of Interfacial Flows with and without Heat/ Mass Transfer	BRNS	Completed
14	“A Level Set Based Cartesian Grid Method For Moving Boundary Computations And Its Application To Bio-Fluid Simulation Of Fish-Like Locomotion”	DST	Ongoing
15	“Level Set Method Based 3 D Transient Simulation of Steam Water Stratified Developing Flow And Conjugate Heat Transfer In A Horizontal Pipe With A Nuclear Fuel Simulator Rod”	BRNS	Ongoing
16	“Lattice boltzmann method based simulations for a row of stationary and moving cylinders”	DST	Ongoing
17	“Study of Fluid Dynamics of Interfaces with and Without Mass Transfer”	BRNS	Ongoing
18	“Numerical Investigation Of Fluid Flow and Heat Transfer Characteristivs in Wavy Channels”	IRCC	Ongoing

Sr. No.	Project Title	Sponsoring Agency	Status (New/Ongoing/Complete)
19	“Synthetic Jet Based Cooling for High Heat Flux Electronic Components: A Novel Approach”	DIT	Completed
20	“Development of Kerosene Based Nanofluid for Enhancement of Internal Forced Convection Heat Transfer”	ISRO-IITB	Ongoing
21	“Development of a Direct Simulation Monte Carlo (DSMC) code for high-speed high Knudsen number flows”	ISRO-IITB	New
22	“Synthetic Jet Based cooling for High Heat Flux electronics Components : A Novel Approach”	DIT	Completed
23	“Investigation of Rarefied Gas flow through closed ducts as applied to outer space vehicles and microchannels”	ISRO	Ongoing
24	“Lattice boltzmann method based simulations for a row of stationary and moving cylinders”	DST	Completed
25	“Study of Pulsatile Blood Flow in Microchannels”	IITB	Ongoing
26	“PIV based measurements around cylinders in row and V-configurations”	NRB	New
27	“Enterprise Solutions”	Private	Ongoing
28	“Flexible Reconfigurable Fiber Laser-Assisted Manufacturing at Microscale”	DIT	Ongoing
29	“Micro/Nano Technology Development: Nano-polishing of Semi-spherical Single Crystals and Arrayed Microstructure Fabrication by Excimer Laser LIGA”	BARC	Ongoing
30	“Novel Process Variants of Micro-EDM”	DST	Ongoing
31	“Engineered Surfaces for Desired Functional Response”	ISRO	Ongoing
32	“Experimental and Numerical Investigation on Resistance Spot Welding of Automotive Aluminum alloys using AC and Medium Frequency DC spot welding machines”	ARDB	Ongoing
33	“Theoretical and experimental investigations of friction stir welding process”	DMRL	Ongoing
34	“Experimental and numerical investigation into fatigue ratcheting behavior of pressurized piping components”	BRNS	Completed
35	“Finite Element Modeling & Simulation of Spherical-Indentation Test”	IGCAR	Completed
36	“Modeling and Measurement of Contact Conductance Between Two Structural Components”	BRNS	Completed
37	“Optimal Design, Fabrication and Testing Electrostatic Micro-Actuators with Extended Travel Range.”	DST	New

Sr. No.	Project Title	Sponsoring Agency	Status (New/Ongoing/Complete)
38	“Development of Experimental Set-up to Optimize Engine-efficiency/Fuel-consumption in an Internal Combustion Engine with lower Emissions”	IRCC	Ongoing
39	“Network Enabled Medical Diagnosis and Education in Skeletal Imaging using X-Rays”	MIT	New
40	“Condenser Heat Recovery Based Desalination System”	RGSTC	New
41	Industrial Partner and Participation for MNRE Sponsored Project Liquid Desiccant based Solar Multi Utility Heat Pump”	MWE	New
42	“Development and Testing of 3 TR Liquid Desiccant based Solar Multi Utility Heat Pump”	MNRE	Ongoing
43	“Yarn Fault Classification with Artificial Neural Network”	IRCC	Ongoing
44	“webCNC – Internet Based Virtual CNC Laboratory”	MHRD	Ongoing
45	“Study and Optimization of DI Engine performance running on Jatropha bio-diesel blend and straight vegetable oil (SVO)”	VRDE	Completed
46	“Demonstration and assessment of economic viability of new energy efficient and less polluting brick making technology (vertical shaft brick kiln)”	RGSTM	Ongoing
47	Development of a Direct Simulation Monte Carlo (DSMC) code for high Knudsen number flows	ISRO	New
48	Experimental and numerical investigations on open pool fires	BARC	Ongoing
49	Experimental and numerical investigations on thermal radiation in furnaces	BARC	Ongoing
50	Influence of stiffness of the system and heat input waveform on transient CHF in horizontal channels under LPLF conditions	AERB	Ongoing
51	“Development of a 3-D Space-Time Kinetics Computer Model for the Analysis of Light Water Reactors”	(AERB)	Completed
52	Development of efficient power generator	ISRO	New

Consultancy Projects

The department undertook 18 jobs generating Rs. 72,00,000
The total number of faculty involved was 10.

Patents

“An apparatus for sieving particulate materials”, Indian Patent Application No 112/MUM/2010, P. S. Gandhi

“Counter flow heat exchanger for a miniature Joule-Thomson cryocooler” Indian Patent Application No.2133/MUM/2010, M. Atre, P. S. Gandhi, G.J. Phatak

“Cryogen Free Superconducting Transformer”, Indian Patent, Application No. 1401/MUM/2008, M. D. Atrey, published on 23 rd July 2010

“A synthetic jet actuator and a semiconductor module comprising the same”, Indian Patent Filed, Authors: Mangesh Chaushari, Amit Agrawal, Bhalchandra Puranik

“An inpack semiconductor module and a method of manufacturing the same”, Indian Patent Application No. 298/MUM/2010, Filed on 4 February 2010, S.G. Singh, S. Duttgupta, and A. Agrawal

“Surgical Rod Cutter based on Inverse Slider Crank Mechanism”, Invention Disclosure Filed, R. K. Singh

“Conformal Hydrodynamic Polishing Process and Machine”, Invention Disclosure Filed, under review with BARC for their consent, R. K. Singh

“Method and device for generating laser beam of variable intensity distribution and variable spot size”, Indian Patent Filed , R. K. Singh

“An electrically conductive coating for spot welding applications”, (applied jointly between Indian Institute of Technology Bombay and Aditya Birla Science and Technology Corporation Pvt Ltd), A. De

“Apparatus And Method For Orthopedic Surgery”, B. Ravi

“Mechanism for Producing Woven (Interlaced) and Noobed (Non-interlaced) Three Dimensional Fabrics” being discussed with IIT Bombay patent attorney, C. Amarnath, Himanshu Dave

Extension Activities

Manik D. N.

Conducted a CEP course on Machinery Noise, June 2010, Bangalore Conducted a CEP course on Vibration Monitoring Machines, September 2010, IIT Bombay

Sharma A.

Conducted a CEP course on Computer Aided Engineering (CAE), 2-4 September, 2010.

Date A.W.

Conducted a seminar in the Dept of Applied Mechanics – IIT Delhi (Dec 1, 2010 – Convener: Prof S Veravalli) and NAL Bangalore (16th Feb 2011 – Convener: Dr Mudkavi) - Title: ‘Use of Stokes’s Continuum Condition in Discretized CFD’ Organised a 2-day event to celebrate 25th Anniversary of CTARA, IIT Bombay, 29-30 April, 2010

Guha A.

Conducted a 3-day CEP course titled “Computer Aided Engineering” along with Prof. Atul Sharma and Prof. P. Seshu

Bhandarkar U. V.

Conducted a five-day ISTE Workshop for Coordinators on “Thermodynamics” under the MHRD National Mission on Education through ICT (Convenor; Prof. U.N. Gaitonde)

Babu A. S.

Conducted a CEP course on “Effective Maintenance Management Systems”, Godej Industries, April 23-25, 2010 (An independent module of SOM’s certificate programme)

Conducted a CEP course on “Managing Rejections in Manufacturing Enterprises”, July 29-31, 2010

Conducted a CEP course on “Managing Inventory, Time, Quality and Productivity in Manufacturing Enterprises”, October 21-23, 2010

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

National

Date A.W.

Delivered keynote lecture – Indian Society of Mechanical Engineers, IIT Delhi, 2nd December, 2010- Title: “ Mechanical Engineering and Sustainability”

Gandhi P. S.

Presented invited paper on “Novel Large-range, High-resolution 3D Printing of Microcomponents using dSPACE” at *dSPACE Users Conference*, 24th Sept. 2010, Bangalore.

Presented invited paper on “Microstereolithography: Fabrication of 3D Polymer Microdevices” at *National Seminar & Exhibition on Polymeric Materials in Defence: POMADE 2011*, Feb. 2011, NMRL, Ambernath

Iyer K. N.

Participated in the *Mini-Symposium on Prospects of Nuclear Power in India*, IIT Gandhi Nagar, March 12, 2011

Participated in the *4th National Conference on Nuclear Reactor Technology (NRT-4)*, BARC Mumbai, March 4, 2011

Participated in the *8th Asia-Pacific Conference on Combustion (ASPACC-2010)*, December 10-13, Hyderabad, India

Atrey M. D.

Presented paper “Development of a Stirling type In-line single stage Dual Pulse Tube Cryocooler (Dual PTC) Driven by a Single Compressor”, at *National Institute of Technology, Rourkela*, held on October 28-30, 2010

Presented paper “Experimental Investigations on Stirling type Two stage Pulse tube Cryocooler with U type Configuration”, at *National Institute of Technology, Rourkela*, held on Oct. 28-30, 2010

Presented paper “Thermodynamic Studies on Mixed Refrigerant J-T Cryocooler Heat Exchanger”, at *National Institute of Technology, Rourkela*, held on Oct. 28-30, 2010

Presented paper “Measurements on a Standing Wave Thermoacoustic Refrigerator”, at *National Institute of Technology, Rourkela*, held on Oct. 28-30, 2010 [**Won Best Paper Award**]

Presented paper “Phase Angle and Flow Pattern studies for Inertance Tube Pulse Tube Refrigerator”, at *National Institute of Technology, Rourkela*, held on Oct. 28-30, 2010

Presented paper “Analysis of Temperature Distribution in a Sorption Compressor during Desorption”, at *National Institute of Technology, Rourkela*, held on Oct. 28-30, 2010

Sharma A.

Presented paper “Forced Convective Flow Across a Rotating Cylinder in a Channe”, at 20th National and 9th *ISHMT-ASME Heat and Mass Transfer Conference*, Mumbai, 2010.

Presented paper “Lattice Boltzmann Method Based Simulations for Flow Around Row of Transversely Oscillating Cylinders”, at 20th National and 9th *ISHMT-ASME Heat and Mass Transfer Conference*, Mumbai, 2010

Subash Babu A.

Delivered a key note address on Perspectives and Practices of Supply Chain Management, “*Workshop on Supply Chain Management*”, TCS”, Mumbai, July 26, 2010

Presented paper “Investigation of Supply Chain Flexibility using a Forced Field Analysis: a Case Study”, *14th Annual SOM conference*, NITIE, January 2011, Mumbai

Sreedhara S.

Participated in International Conference on *Eighth Asia-Pacific Conference on Combustion* held on Dec 10-13, 2010, at Hyderabad, India.

Ravi B.

Presented a paper “A Holistic Approach to Zero Defect Castings,” at the *59th Indian Foundry Congress*, held during February 11-13, 2011 at Chandigarh

Presented a paper “Design for Manufacturability – Forward or Reverse?” at the *3rd International and 24th All India Manufacturing Technology Design and Research Conference*, held during December 13-15, 2010 at Visakhapatnam

Rane M. V.

Participated to Inaugurate Two-day Seminar on “*Energy Conservation*”, organized by Indian Chemical Council, Mumbai, held on June 4-5, 2010, at Terrace Hall, West End Hotel, Mumbai

Participated in the Inaugural Address at a One-day Seminar on “*Energy Conservation*”, organized by Indian Chemical Council, Vadodara, held on July 30, 2010, at Hotel Surya Palace, Sayaji Ganj, Vadodara, Gujarat

Bapat S.L.

Presented paper “Analysis of Temperature Distribution in a Sorption Compressor during Desorption” at N.I.T. Rourkela at *23rd National Symposium on Cryogenics* held on Oct. 28-30, 2010.

Presented paper “Investigations on Alpha Stirling Cryocooler Driven by a Novel Compact Mechanism” at N.I.T. Rourkela at *23rd National Symposium on Cryogenics* held on Oct. 28-30, 2010.

Presented paper “Motoring Test of a Stirling Cycle Engine System while Acting as a Cooler” at N.I.T. Rourkela at *23rd National Symposium on Cryogenics* held on Oct. 28-30, 2010.

Kiran, D. V., Basu, B., Shah, A. K., Mishra, S. and De, A.

“Numerical modeling of two wire tandem submerged arc welding process and its experimental validation”, *National Welding Conference (NWS 2010)*, Vishakhapatnam, India.

International**Gandhi P. S.**

Presented paper “Tensile Stress Induced Depolarization in [001]-poled Transverse Mode $\text{Pb}(\text{Zn}_{1/3}\text{Nb}_{2/3})\text{O}_3$ -(6-7)% PbTiO_3 Single Crystals,” at the *19th International Symposium on Applications of Ferroelectrics, 10th European Conference on Applications of Polar Dielectrics*, Aug. 2010, Edinburgh, UK.

Agarwal A.

Attended an *IUTAM Symposium on Bluff Body Wakes and Vortex-Induced Vibrations (BBVIV-6)*, Capri

Island, Italy, 22-25 June 2010 and presented the following two papers:

“Flow regimes and wake interaction for flow across a row of transversely oscillating square cylinders”

“Aerodynamic forces on square cylinders placed in V-formation”

Babu A. S.

Presented a paper “Towards knowledge management integrated quality accreditation system for Indian Engineering Education using system dynamics”, at *International Engineering and Technology Education Conference (IETEC 2011)*, Kuala Lumpur, Malaysia, 16-19 January 2011 (Won Outstanding Paper Award)

Singh R. K.

Participated in *37th IEEE Photovoltaic Specialists Conference*, June 19-24, 2011, Washington State Convention Center, Seattle, Washington

Participated in *ASME 2011 international manufacturing science & engineering conference*, June 13-17, 2011, Corvallis, Oregon, USA

Participated in *7th International Workshop on Micro-factories (IWMF 2010)*, October 24-27, 2010, Daejeon, Korea, pp. 75-81.

Participated in *5th ICOMM conference*, **March 7-10, 2011**, Tokyo Denkei University, Tokyo, Japan

Participated in *5th International Conference on MicroManufacturing*, April 5-8, 2010, Madison, Wisconsin, USA

Participated in *35th IEEE Photovoltaic Specialists Conference*, **June 20-25, 2010**, Honolulu, Hawaii, USA

Participated in *International Forum on Micro Manufacturing*, Gifu, October 20-23, 2010, Japan

Pawaskar D. N.

Presented a paper “Shape optimization of electrostatically actuated microbeams with extended static and dynamic operating ranges” at the *ASME 2010 International Mechanical Engineering Congress & Exposition IMECE2010* held during November 12-18, 2010 at Vancouver, BC, Canada

Ravi B.

Presented a paper “Quantifying the Shape Complexity of Cast Parts,” at the *International CAD Conference*, held during June 21-23, 2010 at Dubai

Bhandarkar U. V.

Presented a paper “Numerical Investigation of Shock Tube Flow under Rarefied Conditions”, at the *27th International Symposium on Rarefied Gas Dynamics*, during July 10-15 2010, California, USA

Presented a paper “Numerical Simulation of Multi-pulse Laser Ablation with Plasma Shielding”, at the *6th International Conference on Micro Manufacturing (ICOMM/2011)*, during March 7-10 2011, Tokyo, Japan

Prabhu S.V.

Presented a paper “Measurement of local heat transfer coefficient in subcooled boiling in horizontal channels under LPLF conditions using thermal infrared imaging” at *4th International and 37th National FMFP Conference*, during Dec 2010, Chennai

Presented a paper “Experimental investigations on critical heat flux and pressure drop in a horizontal channel for low pressure low flow (LPLF) condition” at *4th International and 37th National FMFP Conference*, during Dec 2010, Chennai

Presented a paper “Analytical investigation on the melting of low prandtl number phase change materials in a square enclosure under constant wall temperature” at *4th International and 37th National FMFP Conference*, during Dec 2010, Chennai

Presented a paper “Local Heat Transfer Distribution From A Row Of Impinging Jets To A Cylindrical Concave Surface” at *4th International and 37th National FMFP Conference*, during Dec 2010, Chennai

Presented a paper “Local Heat Transfer Distribution Between Smooth Flat Surface And Impinging Air Jet From A Circular Nozzle At Low Reynolds Numbers” at *4th International and 37th National FMFP Conference*, during Dec 2010, Chennai

Bapat S.L.

Presented paper “Investigations on Performance of Stirling Engine Regenerator Matrix” in *ASME/JSME 8th Thermal Engineering Joint Conference* held on March 13-17, 2011 at Honolulu, Hawaii.

Accepted paper for oral presentation “Design Issues of 1.5 kWe Solar Dish Stirling Engine” in *European Energy Conference* held on 20-22 April 2010, at Barcelona, Spain.

Deepak Watvisave, Bhalchandra Puranik and Upendra Bhandarkar

“Numerical investigation of shock tube flow under rarefied conditions”, *27th International Symposium on Rarefied Gas Dynamics*, Pacific Grove, CA, USA, July 2010.

Lakdawala, A., Gada, V. H. and Sharma, A.

“Study of Dynamics Breakup of Capillary Jet Using Level–Set Method”, Paper ID 549, *4th International and 37th National FMFP Conference*, IIT Madras, 2010.

Iyer K.

“Review of Heat Transfer Behavior in Supercritical Water Cooled Reactor”, *Joint IAEA Technical Meeting on Heat transfer, Thermal-Hydraulics and System Design for Supercritical Pressure Water Cooled Reactors and 1st International Meeting of Specialists on Heat Transfer and Fluid Dynamics at Supercritical Pressure*, July 5-8, 2010, Pisa, Italy.

Iyer K.N.

“Evaluation of Heat Transfer Coefficient of Supercritical Water Flowing Vertically Upward Inside a Tube Using CFD Code FLUENT”, *Joint IAEA Technical Meeting on Heat transfer, Thermal-Hydraulics and System Design for Supercritical Pressure Water Cooled Reactors and 1st International Meeting of Specialists on Heat Transfer and Fluid Dynamics at Supercritical Pressure*, July 5-8, 2010, Pisa, Italy.

Invited Lectures**National****Iyer K.N.**

“Hydrogen Management in Nuclear Reactor Containment”, NIT Agartala, February 28, 2011

“Nuclear Reactor Thermal Hydraulic Studies Carried Out at IIT Bombay”, *4th National Conference on Nuclear Reactor Technology (NRT-4)*, BARC Mumbai, March 4, 2011

“Role of Academic Institutes in the Growth of Nuclear Program in India”, *Mini-Symposium on Prospects of Nuclear Power in India*, IIT Gandhi Nagar, March 12, 2011

“Supercavitation Research at IIT Bombay” Naval Science and Technological Laboratories, Vishakapatnam, April 16, 2011

Atrey M. D.

“Design and Development of Stirling Type Multistage Pulse Tube Refrigerator of Different Configurations”, at *23rd National Symposium on Cryogenics*, NIT Rourkela, October 28-30, 2010

“Cryocooler Fundamentals and Development at IIT Bombay”, at NIT Calicut, August 19th, 2010

Sharma A.

“Fundamentals and Applications of Computational Fluid Dynamics”, Institute of Technology, Nirma University, Ahmedabad, May 18, 2011

“Short Term Training Course on CFD: Fundamentals And Practical Approaches”, Singhad Institute of Science and Technology, Narhe, Pune, January 14, 2011

“STTP on an introduction to CFD”, Bapurao Deshmukh Collage of Engineering, Wardha, October 7, 2010.”Workshop on CFD: Fundamentals and Software Training”, Sardar Patel Collage of Engg., Mumbai, July 6, 2010

“MHRD SPONSORED FDP on Recent Advances in Numerical Methods In Engineering”, NIT Calicut, May 25 & 26, 2010

“ISTE Sponsored STTP on Application of CFD in Mech. Engg.”, Parul Institute of Engg. & Technology, Vadodara, May 10, 2010

Date A. W.

Keynote lecture – Indian Society of Mechanical Engineers, IIT Delhi, 2nd December, 2010 - Title: “Mechanical Engineering and Sustainability”

Babu A. S.

“Business Process Management”, Godrej Saralee, Pondicherry, July 6, 2010

“Reliability Management “, Godrej Saralee, Pondicherry, July 6, 2010

“Reliability Management”, Nokia, Chennai, July 8, 2010

Singh R. K.

Gave an invited lecture in National Forging Seminar on 15th November 2010 at Bangalore

Ravi B.

“Role of Information Technology in Manufacturing” *2nd National Workshop on Recent Trends in Manufacturing – Foundry Technology*, Walchandnagar College of Engineering, Sangli, February 4-5, 2011.

“Science & Technology Perspectives for Changing India: Manufacturing”, *Brainstorming Session on India Vision 2035*, TIFAC, New Delhi, January 25, 2011

“Computer-Aided Methoding and Simulation of Castings”, *Workshop on Zero Defect Castings by Process Simulation and Optimization*, Institute of Indian Foundrymen, Kolkata, December 10, 2010

“Casting Design and Simulation,” Casting Simulation Clinic, Belgaum Foundry Cluster, Belgaum, September 25, 2010

“Steel Casting Methoding: Science, Engineering, and Technology,” *Workshop on Steel & Alloy Steel Castings*, Institute of Indian Foundrymen, Mumbai, May 28, 2010

“CAD and Simulation of Castings,” *Workshop on Zero Defect Castings*, National Centre for Technical Services, Institute of Indian Foundrymen, May 8, 2010

“Design to Cost, Design for Quality, Endurance Ltd., Pune, April 10, 2010

“Rapid Casting Development,” Indus Institute of Technology & Engineering, Rancharda, Ahmedabad, April 4, 2010

Rane M.V.

“Energy Conservation Using Super Heat Recovery & Heat Pumps” Launch of e-Book on Green Technologies and Energy Efficiency, The Green Tree Foundation, Mumbai, April 19, 2011

“Energy Efficient Refrigeration and Air-Conditioning Systems,” Inauguration of Ozone Day Celebration, Institute of Chemical Technology, Mumbai, September 16, 2010

“Energy Conservation in Refrigeration & Air Conditioning System” ISHRAE’s Dehradun Sub Chapter, Dehradun, August 14, 2010

“Energy Conservation Technologies for SMEs,” SME Chamber of India, Mumbai, May 4, 2010

Sreedhara S.

“Numerical Simulations of IC Engine Processes and Technologies to Reduce Emissions,” NIT Agarthala, Nashik, January 28, 2011

Prabhu S.V.

“Governing Equations essential for CFD,” Fluid Control Research Institute, 28th July 2010.

“Radiative Properties of Open Pool Fires” February 2011, Jain University, Bangalore

International

Babu A. S.

“Multicriteria Decision Making – Concepts and Applications”, King Saud University, Riyadh, Saudi Arabia, May 2, 2010

“A Case Study on Robust Design Methodology”, King Saud University, Riyadh, Saudi Arabia, May 2, 2010

“A Case Study on Assembly Line Design”, King Saud University, Riyadh, Saudi Arabia, May 3, 2010

Honorary Work

Gandhi P.S.

Reviewed papers for International Journal of Micromechanics and Microengineering, ASME Journal of Mechanical Design, Journal of Vibration and Control, International Journal of Physical Sciences, and International conference on Decision and Control

Sridharan A.

Panel member for selection of candidates for Kishore Vaigyanik Protsahan Yojana (KVPY).

Iyer K. N.

National Organising Committee of the Mini-Symposium on Prospects of Nuclear Power in India, IIT Gandhi Nagar, March 12, 2011

Sharma A.

Reviewed papers for Chemical Engineering Research and Design, Computer Physics Communication, Heat Transfer Engineering, Industrial and Engineering Chemistry Research, International Journal of Heat Mass Transfer, International Journal of Thermal Science, International Journal for Numerical Method in Fluids, Numerical Heat Transfer-A, USA

Date A. W.

Reviewed papers for International Journal of Thermal Science, ASME Journal of Heat Transfer, International Journal of Heat and Fluid Flow, Indian Journal of Physics, Brazilian Journal of Chemical Engineering

Reviewed two Research Proposals for DST

Reviewed a book proposal on Turbulent Combustion for Cambridge Univ Press, New York

Atrey M.D.

Reviewed three paper for Cryogenics Journal

Subash Babu A.

Member of the National Committee of the National Project Implementation Unit, MHRD

Served as an expert member of Faculty Selection Committee, Department of Mechanical Engineering, IIT Roorkee, October 2010

Served as an expert member of Faculty Selection Committee, Department of Mechanical Engineering, IIT Delhi March 2010 10

Member of Advisory Committee, Department of Production and Industrial Engineering, VJTI, Mumbai

De A.

Served as Guest Editor for a Special Issue on “Residual Stresses in Welding” in *Science and Technology of Welding and Joining* (which is one of the best International journals in the broad area of joining of materials) published by Maney Publications for Institute of Materials, UK

Served as the Member of Technical Committee in the Indian Institute of Welding

Served as a Member of Welding General Selection Committee (MTD11) in the Bureau of Indian Standards

Pawaskar D.

Reviewed papers for the ASME 2010 International Mechanical Engineering Congress & Exposition, July 2010, International Journal of Structural Changes in Solids October 2010.

Sreedhara S.

Reviewed a paper for Journal of Thermal Science, March 2011

Ravi B.

Reviewed papers for Biofabrication, Computer-Aided Design, and Rapid Prototyping journals, 2010-11

Reviewed PhD thesis from Indian Institute of Science, Bangalore; Govt. College of Engineering, Pune; N.I.T. Calicut; and VN.I.T. Nagpur

Rane M. V.

Reviewed papers for publication in Journal of Food Engineering, March 2011

Guha A.

Reviewed papers for Textile Research Journal

Pande S. S.

Member, Programme Advisory Committee, Sc and Engg Res Council, Dept of Sc and Technology, Govt of India

Member, Development Council for Machine Tools, Dept of Industries, Govt of India

Member, Board of Examinations, Indian Inst of Ind. Engg, India

Member, National Adv. Committee, All India Mfg Tech. Des. Res Conf, India

Member, Advisory Committee, Intl. Conference on Computational Methods in Mfg, IIT Guwahati

Bhandarkar U. V.

Reviewed proposals for DST.

Instructions:

- The surname of the recipient followed by first names or initials
- Title of the honorary work
- Only very prestigious Honorary Work should be given here. The list should not include supervisory and evaluation jobs at entrance examinations, evaluation of Ph.D. thesis, etc.
- Examples given are self-explanatory for purposes of format, sequence, etc.

Prabhu S.V.

Reviewed papers for Experimental Thermal and Fluid Sciences, International Journal of Thermal Sciences, International Journal of Heat and Mass Transfer, Heat and Mass transfer

Expert for conducting interviews at Atomic Energy Regulatory Board, Mumbai

Bapat S.L.

Appointed Part-Time Independent Director on Board of Directors of The Mazagon Docks Ltd. for three years.

Appointed as a Member, Specialist Group for Reviewing Plan Projects from DAE under the theme Human Resource Development (HRD).

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, Sterling engine

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

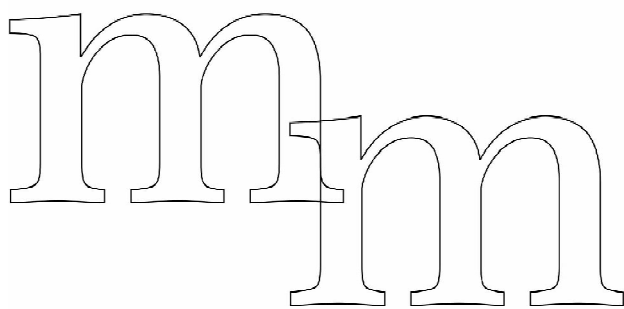
Mechanical Metallurgy, Fatigue and Failure Analysis, Design Engineering, Automobile Engineering

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. **K. N. Iyer**
Nuclear Reactor Safety, Thermal-Hydraulics, Applied Numerical Methods
17. **S. D. Jog**
Political economy, General Management, Finance, Engineering Basic Practice and Communications
18. **S. S. Joshi**
Machining of Composite Materials, Computer-aided Modelling Machining and Nanomachining, Surface integrity and mechanical characterization
19. **K. P. Karunakaran**
CNC, Computer Graphics, Genetic Algorithms, Manufacturing Automation, Rapid Prototyping and Tooling
20. **S. Kulkarni**
Computational Mechanics
21. **D. N. Manik**
Vibration, Noise Control and Mechatronics
22. **S. K. Maiti**
Stress Analysis, Fracture Mechanics, FEM, BEM, Smart Structures, NDT
23. **K. G. Narayankhedkar**
Refrigeration, Air Conditioning, Cryogenics, Food Preservation
24. **S. S. Pande**
Intelligent CAD/CAM, Computer Graphics, CNC, Computer Aided Process Planning, Tool Design
25. **D. N. Pawaskar**
Solid Mechanics, MEMS, Fatigue, Fracture in Solids, Optimization & Design
26. **S. V. Prabhu**
Fire Dynamics, Two phase flow and heat transfer, Flowmetering, Gas turbine blade cooling, Jet Impingement cooling, Vertical Axis Wind/water Turbines, Heat exchangers, Melting of lead, spray cooling of nuclear reactor containment
27. **B. P. Puranik**
Experimental Fluid Mechanics, Gas Dynamics, Thermal Hydraulics
28. **M. V. Rane**
Waste Heat recovery Systems, Absorption Refrigeration System, Heat Pumps, Compact Milk Pasteurizers, Dryers, Energy Conservation, Alternate Energy Resources
29. **B. Ravi**
Intelligent CAD/CAM/CAE/PDM Technologies for Metal Casting including Design for Manufacture, Concurrent Engineering, Process Simulation, Rapid Prototyping and Tooling, Web based Engineering and Continuing Education
30. **P. Seshu**
Stress and Vibration Analysis, FEM, Computer-Aided Simulation, Smart Structures, Active Vibration Control
31. **A. Sharma**
Computational Fluid Flow & Heat Transfer
32. **A. K. Sridharan**
Two Phase Heat Transfer & Fluid Mechanics
33. **H. R. Srirangarajan**
Non Linear Vibration, Machine Dynamics, Strength of Materials
34. **S. Suryanarayanan**
Automatic Control, Mechatronics, Wind Energy, Intelligent Transportation Systems, Active Flow Control
35. **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

- 36. V. G. Ukadgonker**
Solid Mechanics, Elasticity, Fracture Mechanics,
Computer Aided Solutions, Pressure Vessel
Design
- 37. R. P. Vedula**
Convective Heat Transfer for External and Internal
Flows
- 38. S. Sreedhara**
Direct Numerical Simulations of Reactive flows;
Modelling Turbulent Combustion, Flamelet, CMC
IC engines, spray, combustion and emission;
Combustion/emission in Gas Turbine
- 39. A. Chowdhury**
Ignition and combustion of energetic materials
and alternate fuels.



Metallurgical Engineering & Materials Science

Introduction

Materials Engineering is gaining more and more importance in today's technology. Be it communication through mobile phones, or high speed conveyance like bullet trains or supersonic jets, materials engineering has its own place of significance. Green technologies depend severely on materials and materials processing. Keeping in view these developments, the department has focused its efforts in establishing new capabilities and tools in areas of thin films, advance composites with nano materials, electronic and magnetic materials, new alloys, etc.

On the teaching front, the department has initiated three new UG laboratory courses for the first time in this country. These are:

- Thin film lab where the students get a hands-on training on the techniques of thin film preparation using different vacuum techniques.
- Computational Materials Science Lab where the students undertake modeling and simulation experiments pertaining to materials. This is once again the first attempt of its kind in the country.
- Design of equipment lab where the students learned and designed different equipment from first principles.

Sponsored Research Project

Project Title	Sponsoring Agency	Status (New/Ongoing/Complete)
Support for Operation and Maintenance and Upgradation of the National Facility of Texture and OIM	BRNS	New
Development of Multifunctional Magnetic Nanoparticles for Cancer	Dept. of Information Tech.	New
Development of doped ceria based composite electrolyte for intermediate temperature solid oxide fuel cell.	DRDO	New

Apart from various big and small equipment, the major processing facility that has been added is the Rolling Mill which will be utilized for new alloy development. The department has a total of 28 faculty members with sufficient support staff to perform teaching and research activities.

Academic Programme

Degrees Awarded

B.Tech.	: 46
Dual Degree	: 31
M.Tech.	: 35
Ph.D.	: 10

The department runs both undergraduate (B.Tech.) and postgraduate (M.Tech. and Ph.D.) programmes, including a Dual Degree programme which gives B.Tech. and M.Tech. degrees after five years. Currently the department has a total of 191 postgraduate students (M.Tech. & Ph.D.) and 17 research staff working on various projects.

R & D Activities

Sponsored Research Projects

New	: 14
Ongoing	: 33
Completed	: 03

Project Title	Sponsoring Agency	Status (New/ Ongoing/Complete)
Phase field modelling of microstructural evolution in magnetic thin films.	DRDO	New
Novel Organic modifier induced non-covalent modification of carbon nanotubes: assessing the state of dispersion in aqueous and organic solvents and in various polymer matrices	DRDO	New
High density tape cast ferrite thick films for microwave applications	DRDO	New
Multiwall carbon nanotubes reinforced composite fiber: control and assessment of multiwall carbon nanotubes dispersion in semi-crystalline polymer matrix	DRDO	New
Effect of chemical, microstructural modifications of the nano titania photoanode on the performance of dye sensitized solar cells	DST	New
Microwave Losses in ferrite thin films for meta-materials	DST	
On the microstructure origin of the fatigue behavior	John Deere India Pvt. Ltd., Pune	
To develop HWCVD based Thin film silicon Micro-morph Solar Cells.	Applied Materials Inc.	Ongoing
Plastic deformation in Zr binary alloys :		
Multiscale modeling and experimental validation”	BRNS	Ongoing
Nano Structured Multifunctional Magnetic Nanoparticulates	DST	Ongoing
Development of technology to fabricate a-Si:H based thin film multi-junction solar cells on steel substrates	Tata Steel Ltd., Jamshedpur	Ongoing
Development of barium titanate based ferroelectric material for micro-electronic applications : phase -ii	DRDO	Ongoing
Confined Crystallization of Polyamide 6 in Multiphase Polymer System involving Carbon Nanotubes.	DST	Ongoing
SERC FAST Track Scheme - Self assembled monolayers of end functionalized first and second generation dendrimers and macrocycles towards ion recognition.	DST	Ongoing
Indo-Japan Cooperative Programme (DST-JST)2007- Joint Project entitled “ Multi disciplinary research on micro batteries for Information Technologies”	DST	Ongoing
Development of High Efficiency HIT (heterojunction with intrinsic thin layer) Solar Cells.	MNRE	Ongoing
Smart Materials: Development of high temperature shape memory alloys for environmentally-friendly aero-engines.	UK India Education and Research Initiative	Ongoing

Consultancy Projects

The department undertook 10 jobs generating Rs. 12,98,683/-. The total number of faculty involved was seven.

Patent Filed

Bahadur, D.

“Polymer-mediated Synthesis of ZnO nanostructures” (US patent- Filed 2010).

Layer by layer self-assembled magnetic PLGA-CHITOSAN nanoparticles for dual drug delivery and hyperthermia applications, Indian patent filed, 2011.

Visitors to Department

Prof. Roger D. Doherty, Drexel University, USA. He delivered a talk on Grain coarsening-insights from curvature modelling”.

Dr. Frederico Rosel, Univ. of Quebec, Canada. He delivered a talk on Surface modification of biomaterials to control cell growth”.

Prof. Chris Hutchinson, Monash University. He delivered a talk on The effect of precipitate state on the cyclic deformation of Al-alloys

Departmental Seminars

Prof. Ashok Ganguly, IIT Delhi, “Controlling the size and shape of nanostructures using microemulsions”.

Prof. Roger D. Doherty, Drexel Univ., “Grain coarsening-insights from curvature modelling”.

Mudrika Khandelwal, Cambridge Univ., “Liquid crystalline processing of carbon nanotube and cellulose”.

Prof. Alok Dhawan, IITR, Lucknow, “Toxicity studies of zinc oxide”.

Dr. Kisor Kumar Sahu, Swiss Federal Institute of Technology, Switzerland, “Experimental evidence for chemical short- range ordering in supercooled $\text{Cu}_{(100-x)}\text{Zr}_x$ liquids and effect of Ti micro-additions on the structure of $\text{Al}_{88-x}\text{Y}_7\text{Fe}_5\text{Ti}_x$ glasses”.

Mrs. Uma Parmeswaran, SciTech Patent Art Services, “The risk of undertaking research or planning technology development without patent information

Prof. Srinath Viswanathan, Univ. of Alabama, “Re-engineering engineering materials”

Dr. Charudatta Phatak, “Behaviour of magnetic nanostructures studied using aberration corrected Lorentz microscopy”.

Ranji Vaidyanathan, Oklahoma State Univ., “Interdisciplinary new product development approaches at Oklahoma State University”.

Dr. Frederico Rosel, Univ. of Quebec, Canada, “Surface modification of biomaterials to control cell growth”.

Prof. G. Srinivasan, Oakland Univ., “Multiferroci composites for miniature antennas and magnetic field sensors”.

Dr. Ahutosh Jain, USA, “Delamination mechanics at organosilane tailored Cu-silica interface”.

Dr. S. B. Patil, London Centre for Nanotechnology, UK, “Thin silicon MEMS processing and applications”.

Dr. U. Balachandran, Argonne National Laboratory, Argonne, “Fabrication of PLZT Dielectric films for power electronics in Hybrid vehicles”.

Dr. S. K. Mishra, Concordia Univ., Canada, “EPR/ FMR, FTIR, X-ray and Raman investigations of Fe-doped SiCN ceramics”.

Dr. K. Krishnakumar, McMaster Univ., Canada, “Mechanics of multi-phase interactions in steel ladles”.

Prof. C. Jacob, IIT Kharagpur, “CNTs and oxide nanomaterials – a vapour phase approach”.

Dr. Vikaram Jayaram, IISc, Bangalore, “Flaw nucleation, propagation and tolerance in multilayered nitride hard coatings”.

Invited Lectures

Raja, V.S.

4th YM Metha Memorial Lecture, Organized by Vadodara and Mumbai IIM Chapter, Vadodara, February 21, 2011

Raja, V.S.; Bobby Kannan, M.

Enhancing the Localized Corrosion Resistance of High Strength 7010 Al-alloy, Workshop on Light Weight Metal Corrosion and Modeling for Corrosion Prevention, Life Prediction and Assessment (CLMP 2010), 18-20 April 2010, Rome, Italy

Raja, V.S.

Environmentally Assisted Cracking and Hot Salt Stress Corrosion Cracking, April 01, 2011, GTRE, Bengaluru.

Electrochemical Impedance Spectroscopy for the Development of Coating for Corrosion Protection, Advanced Coating Characterization Techniques, January 5&6 2011 Tata Steel Jamshedpur

Fundamentals Aspects of Surface Engineering for Corrosion Prevention in Automobiles, National seminar on “Corrosion and corrosion prevention for automobile components”, College of Engineering Pune, October 23, 2010

Corrosion Failure Analysis, ‘Symposium on Risk based Inspection & Monitoring’ Vadodara, August 26, 2010

SCC/HE phenomena, “Workshop on Environmentally Assisted Cracking”, September 20-21, 2010, IIT Bombay

Bahadur, D.

“Surface Engineered ZnO and Fe₃O₄ Nanoparticles for Detection and Separation of Toxic Metal Ions and Organic Dyes” at a Discussion Meeting on Emerging Technologies for Clean Water held in Kalpakkam on 21st and 22nd May-2010.

“Developing Magnetic Nanostructures for Therapeutic and Diagnostic application” for a conference on Advances in Magnetism Phenomena and Materials (AMPM 2010) held in Manali from 2-5 June, 2010.

“Self assembled, anisotropic and porous nanostructures and some unconventional applications of ZnO” at the 1st Joint Meeting of the Associated International Laboratory (AIL/LIA) held in Bangalore during July 2-5, 2010.

“Hybrids and thermo sensitive magnetic nanostructures for therapeutic applications” at Bhopal from 14th Feb to 16th Feb. 2011.

“Warm treat to cancer with drug through nano particulates and Hybrids” at the University of Mumbai, Department of Biophysics, Celebrating National Science Day, Workshop on Advances in Radiation Biophysics on 28th Feb. 2011.

“Thermo and pH sensitive Nanoparticulates for cancer therapy” at the National Conference on Nanomaterials & Application: Present Position and Road Ahead at Varanasi from 16th to 18th March-2011.

“Controlled and targeted Drug Delivery through Nanoparticulates” at the International Symposium on Materials Education ISME -2011 at Pune from 26th to 28th March-2011.

“Stimuli-response hybrids and nanoparticles for programmed drug delivery” at the National Symposium on Materials for Advanced Technology NSMAT-2011 at Banasthali University from 27th to 29th March-2011.

“Warm treat to cancer with drug” at the National Symposium on Nanotechnology Present Perspective and future direction at Patna from 9th and 10th April - 2011.

“A warm treatment for cancer with drugs” at the ICPCNANONET Nanomaterials for Biological Applications at Bangalore on 14th April-2011.

“Hyperthermia and triggered drug release for cancer through magnetic hybrids and nano particulates” at BARC Mumbai during Seminar on Nanotechnology and its applications, May 2011.

“Magnetic nanoparticles for cancer therapy” during SSI Symposium on Social Responsibilities of Learned Professional Societies, Mumbai, May19-20, 2011.

Prita Pant

Talk on “Dislocation Dynamics Simulations” in a Workshop on Materials modeling and simulation at the University of Hyderabad, in December 2010.

Talk on “Dislocation Dynamics” at the NRC-M Summer School in Mechanical Characterization held at IISc., Bangalore in June-July 2010.

Honorary Work

Dusane, R.O.

Reviewer: Jour. Non –Crystalline Solids, Thin Solid Films, Applied Surface Science
Editorial Board: The Open Surface Science Journal, Bentham Science Publications

Executive Director, Mishra Dhatu Nigam Ltd., Hyderabad
Member, faculty selection committee- Goa, Poona and Kolhapur Universities

Om Prakash

Continued to act as a Referee for “Indian Journal of Engineering and Materials Science”.
Acted as an External Expert to evaluate a Project submitted to DST for funding.

Prabhu N.

Member of the Senate, IIT Gandhinagar, for 2010-11.

Raja V.S.

Convener Workshop on Environmentally Assisted Cracking September 20-21, 2010, IIT Bombay
KeyReader (Member, Review Board), Metallurgical and Materials Transactions-A, 2010
Member Editorial Board, Corrosion Engineering, Science and Technology, Maney Publishing, UK, 2010

Bahadur, D.

Theme issue of ADDR invited theme editors for a special issue of Advanced drug delivery reviews (ADDR, Impact Factor~ 12) entitled “Hybrid nanostructures for diagnostics and therapeutics”.

Member of Project Advisory Commission of DST on Materials, Mining and Mineral Engineering.
Member of DAE XI Plan Committee on Specialist Group on Materials Science & Technology.

Awards and Honors

Dusane, R.O.

Recognition for Significant Contributions for PV Technology from Applied Materials USA

Bahadur, D.

Awarded the MRSI-ICSC award for his outstanding contribution to the field of Materials Science during MRSI-AGM held at Bhopal, Feb. 2011.

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

National

Mukherjee, A.; Mishra, S.; Awasthi, A.; Krishnamurthy, N.

“Preparation of pure yttrium by calciothermic reduction of YF₃”, in *64th Annual Technical Meeting of the Indian Institute of Metals* in Kolkata, India, November, 2010.

Biradar, N. S.; Mishra, S.; Raman, R.

“Characterization of partially melted zone (PMZ) in GTA welds of AA2014 T6 aluminum alloys”, in the *National Symposium for Materials Research Scholars – MR10* in the Department of Metallurgical Engineering and Materials Science, Indian Institute of Technology Bombay, Mumbai, India, May, 2010.

Sathyanarayana, M.; Mishra, S.; Raman, R.

“Effect of successive welding passes on microstructure and properties in multi-pass welding of high strength structural steels”, in the *National Symposium for Materials Research Scholars – MR10* in the Department of Metallurgical Engineering and Materials Science, Indian Institute of Technology Bombay, Mumbai, India, May, 2010.

International

Goyal Raghavendra.; Tiwari A.N.

“Preparation and wear properties of aluminium matrix composites with iron boride and nano silicon nitride dispersions”, *International Conf. & Exhibition on Powder Metallurgy for Automotive and Engg. Industries (PM-11)*, Pune 3-5 Feb. 2011.

Singh Tikam., Tiwari A.N.

“Boriding of Fe and Fe-2% Cu, 2% Ni alloy produced by powder metallurgy route”, *International Conf. & Exhibition on Powder Metallurgy for Automotive and Engg. Industries (PM-11)*, Pune 3-5 Feb. 2011.

Arya, S.B.; Raja, V.S.; Tiwari, A.N.

“Electrochemical impedance study of high nitrogen, high manganese containing nickel free stainless steels in physiological solutions”, *63rd ATM, Indian Institute of Metals*, Nov. 14-17, 2010, Bengaluru.

Bali, S. C.; Raja, V. S.; Kain, V.; Shoji, T.

“Study on low temperature sensitization in simulated weldments of austenitic stainless Steels and its IGSCC Behavior in Simulated BWR Environment”, *63rd ATM, Indian Institute of Metals*, Nov. 14-17, 2010, Bengaluru.

Mitra, S.; Ajit Kulkarni.; Om Prakash.

“Dielectric Behaviour and Phase Transitions in Lead Free Lithium Sodium Niobate Ceramics”, *National Seminar on Ferroelectric and Dielectrics (NSFD XVI)*, 2-4, Dec. 2010, G.G. Vishwavidyalaya, Bilaspur.

Shirish Kale., Bakare, A. K.; Raja, V. S.

“Interface electrochemical corrosion behaviour of aluminum-zinc alloy adhesively bonded with carbon fibre reinforced plastic (CFRP)”, *63rd ATM, Indian Institute of Metals*, Nov. 14-17, 2010, Bengaluru.

Varma, A.K.; Raja, V.S.; Mukhopadhyay, A.K.

“Localized corrosion behavior of 7449 Al alloy in 3.5wt.% NaCl, 63rd ATM”, *Indian Institute of Metals*, Nov. 14-17, 2010, Bengaluru.

Ballal N.B.; Krishna Rao, P. (ME &MS)

“Development of ultra-high strength Cr, Mo, V steels through electro-slag refining and microstructural design” in *Materials Processing and Properties- Seetharaman Seminar*, Sigtuna, Sweden, June, 2010.

Kiran, D. V.; Mishra, S.; Basu, B.; Shah, A. K.; De, A. (ME &MS)

“Numerical modeling of two wire tandem submerged arc welding process and its experimental validation”, in *National Welding Seminar 2010*, Indian Institute of Welding, Vizag, India, 21-23 December, 2010.

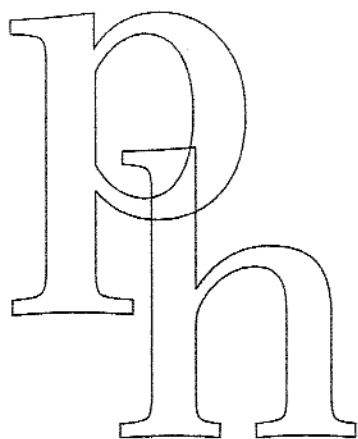
Biradar, N. S.; Mishra, S.; Raman, R.

“Effect of mechanical arc oscillation on partially melted zone (PMZ) microstructure and properties of 2014 T6 TIG welds”, in: S. Kumai, O. Umezawa, Y. Takayama, T. Tsuchida, T. Sato (Eds.), *12th International Conference on Aluminium Alloys (ICAA12)* (5 to 9 September, 2010), Yokohama, Japan, 2010, pp. 922-927.

Faculty members and their Specialisations

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. **Gururajan .P.**
Phase transformations, modeling of micro structural evolution, phase field modeling materials mechanics, materials thermodynamics.
8. **B. P. Kashyap**
Deformation behaviour and microstructural evolution in materials during creep and superplasticity.
9. **N. K. Khosla**
Instrumentation and control, Mineral processing, Extractive metallurgy, Materials preparation and characterization.
10. **A. R. Kulkarni**
Ionically conducting materials, Dielectrics & multilayers, Glass and Glass ceramics, Impedance spectroscopy, Electrical composites.
11. **A. S. Khanna**
High temperature corrosion, High temperature coatings, Paint coatings, Rebar & concrete coatings, Oil & gas corrosion.
12. **Sudhanshu Mallick**
High temperature piezoelectric ceramics, dielectrics, powder metallurgy
13. **K. Narasimhan**
Metal forming, Mechanical behaviour, Simulation and validation.
14. **Prita Pant**
Mechanical behaviour of thin films, Dislocation dynamics simulations. Modelling and experiments to study novel shape memory materials.
15. **A. S. Panwar**
Computational behaviour of thin films, dislocation dynamics simulations, modeling and experiments to study novel shape memory materials
16. **N. Prabhu**
Physical metallurgy, Phase transformation, Electron microscopy, Structure-property relationships.
17. **G. V. Prabhugaonkar**
Design and selection of materials, Fracture mechanics, Non-destructive testing and evaluation, Corrosion prevention, nano-composites.
18. **Om Prakash**
Electronic ceramics and laves alloys design, Processing and characterization.
19. **R. C. Prasad**
Fatigue, Fracture, Failure analysis of materials, Environment assisted corrosion, NDE, fracture mechanics & integrity assessment.
20. **T. R. S. Prasanna**
Synthesis and Processing of Oxide and Sodium Ion Conductors, Materials for energy generation and storage, Superconductors.
21. **I. Samajdar**
Thermomechanical Processing, Texture Analysis, Microscopy.
22. **R. S. Srinivasa**
Semiconductor heterostructures and devices, Sensors, Surface engineering, Chemical vapour deposition.
23. **R. Raman**
Welding, Plasma Spray Coating, Corrosion, Metal Finishing, Fractal approach to Metallurgical & Corrosion processes.
24. **Raja V. S.**
Aqueous corrosion, Failure analysis, Protective coatings, Metallurgy of corrosion.

- 25. A. N. Tiwari**
Composite materials, Mechanical alloying,
Wear, Heat treatment.
- 26. S. Vitta**
Solidification, Artificial structures,
Superconductors, Structure Property
Correlation
- 27. N. N. Viswanathan**
Modelling and simulation, Transport
phenomena, Process metallurgy and iron
and steelmaking.
- 28. N. Venkataramani**
Magnetic materials, Thin films structure
property correlations in nanocrystalline
systems, Scanning probe microscopy.



Physics

Introduction

The department of Physics offers a four-year B.Tech. programme in Engineering Physics and a two-year post-B.Sc. programme leading to Master's degree in Physics. Keeping in line with the national science initiative on nanomaterials and nanotechnology, the department started a five-year dual degree programme leading to B.Tech. and M.Tech. degrees in Engineering Physics with specialization in nanotechnology and nanomaterials. To strengthen our scientific manpower, the department had also started a post-B.Sc. dual degree programme leading to a Master of Science degree in Physics as well as a Ph.D. degree. This programme certainly will catch young and motivated college students. The department along with the Department of Metallurgical Engineering and Materials Science has proposed a dual degree programme of M.Sc. in Physics and M.Tech. in Materials Science. It is a first interdisciplinary programme in which two departments of the institute are jointly running the programme. The department for the first time conducted a one-day research symposium which was organized and managed by the research scholars of the department. Eminent physicists from TIFR, Mumbai, gave insights on exciting developments in the field of statistical and high energy physics.

At present the department has 31 permanent faculty members, three emeritus scientists, one distinguished guest professor, and one contract professor.

The department entered into MoUs and collaborations with WASA, STAR, & ALICE. Prof. Basanta Nandi and Prof. Raghava Varma are members of these collaborations which perform experiments at Juelich, Germany (WASA); Brookhaven National Laboratory, Upton New York (STAR); and the Large Hadron Collider at CERN Geneva (ALICE). While the WASA and the STAR experiments have been running for some time, the ALICE collaboration has started producing results at accelerator energies never encountered before. All these collaborations are multi-institutional with members from all over the globe.

Major activities proposed

The department is proposing a 50 MeV normal conducting Electron Linear Accelerator and later with a laser using the phenomenon of inverse Compton Scattering having a light source with a flux of about 10^7 photons per sec having energy between 25-40 KeV. This accelerator would be a national research facility. The department proposes to introduce a dual degree course with B.Tech. in Engineering Physics and M.Tech. in Accelerator Physics.

The commissioning of the liquid helium plant has further stimulated the low temperature activities of the department. The institute, realizing the activeness of the faculty members working in this area, has given grants to buy a SQUID. The department has formulated a FIST proposal worth Rs.10 crores to start research in ultrafast spectroscopy. We have also proposed a high resolution X-ray system to further characterize the samples that the faculty members are making. To enhance our capabilities to produce samples, which cannot be produced anywhere in the country, we have proposed a high temperature high pressure furnace.

Over the last decade, it has become increasingly important for the department to have a device fabrication facility alongside more traditional material preparation and characterization. Indeed, this is now true for any place in the world with a strong programme in experimental physics. A university R&D level cleanroom is an essential facility not only for semiconductor physicists who work with quantum dots, point contacts, nanowires, quantum Hall physics etc., but also for people working with particle detectors, plasmonic devices, microfluidics, soft matter and lab-on-a-chip type of medical diagnostic tools etc. Apart from research activity, we also keenly feel the need to impart some hands-on training to our M.Tech. students on basic optical lithography. Our ability to attract young experimentalists (as potential faculty members) also depends crucially on the infrastructure for doing experiments that we can provide at the departmental level.

Infrastructural development

The lecture hall complex in the institute has allowed the department to move out all the classes from the department. This will allow the department to branch out into newer areas of research. It is in this sense that the department has submitted a FIST proposal to the Department of Science & Technology for Rs. 10 crores. The department is committed to establish a Class-10000 clean room facility so that one can have lithographic facilities and semiconductor fabrication. In addition to the clean room, it will now be possible to give laboratory space to the faculty members who have joined recently.

Academic Programme

The department for all the programmes offers a wide range of courses (from Bio Physics to Theoretical Physics) thereby helping the students to find their aptitude. This is a boon especially for a young student who after qualifying in JEE is unsure as to where to go. All the programmes run by the department are highly successful and attract the best students from all over the country. In addition, the department has a very vibrant research programme comparable to the best in the world. Annually, the department offers admissions to about 30 students in B.Tech. (Engineering Physics) programme, 10 in dual degree B.Tech.-M.Tech., and 35 students for Master's degree. In the dual degree M.Sc. - Ph.D., programme admission was offered to seven students and stipend paid from first semester onwards. There are about 85 Ph.D. students and five post-doctoral fellows pursuing research in various areas in the department.

Students admitted in 2010

B. Tech.	: 31
B. Tech. + M. Tech. (Dual Degree)	: 11
M. Sc.	: 34
Ph. D.	: 12

Degrees awarded in 2010-11

B. Tech.	: 15
B. Tech. + M. Tech. (Dual Degree)	: 5
M. Sc.	: 26
Ph. D.	: 9

Scholarships

The department offers a stipend of Rs. 6000/- to M.Sc.- Ph.D. dual degree students right from the beginning. The research scholars are paid a stipend of Rs. 14000/- for the first two years which is then increased to Rs. 18000/- if they show sufficient progress in their research work.

Student exchange programme

The institute has signed memorandums of understanding with NUS Singapore, ETH Zurich and Monash Academy, Australia. The students from these institutions often come to the department. In their feedback they have often praised the rigour and the depth of our courses. It also helps them to interact with the students who are the best in the country.

R&D Activities

The main areas of R&D activity:

- Experimental Condensed Matter Physics and Material Science
- Photonics
- Experimental Nuclear Physics
- Theoretical Condensed Matter Physics
- Statistical Physics and Non Linear Dynamics
- Theoretical High Energy Physics

Sponsored Research Projects

Ongoing Projects	: 54
Completed Projects	: 7

Projects initiated in 2010-11

Sr. No.	Name of the Project	Sponsoring Agency	Status
1.	Workshop on Physics of Quark-Gluon Plasma at RHIC	Board of Research in Nuclear Sciences	Ongoing
2.	High Density Tape Cast Ferrite Thick Films For Microwave Applications	Defence Research and Development Organisation	Ongoing
3.	DST/ Review Committee Meeting For SERC School In Theoretical High Energy Physics	Department of Science and Technology	Ongoing
4.	DST/ Planning Committee meeting on SERC School on Nano-Optics	Department of Science and Technology	Ongoing
5.	Enhancement of Regional World wide Computing Grid (WLCG)	Department of Science and Technology	Ongoing
6.	Microwave Losses In Ferrite Thin Films For Meta-Materials	Department of Science and Technology	Ongoing
7.	Raman Spectroscopy Studies Of TiO ₂ Thin Films And Nano Tubes/Rods Prepared By Laser Ablation	Department of Science and Technology	Ongoing
8.	Goa Common Entrance Test : GCET-2011	Government of Goa	Ongoing
9.	Electronics Design Using DSP, FPGA, CPLD And Micro Controllers Through Simulation And Direct Access of the Hardware	Ministry of Human Resource Development	Ongoing
10.	Prototype development for Optical Fiber Based Pathogen Detection	Naval Materials Research Laboratory	Ongoing
11.	Proposal for 10Mbps dedicated leased line to IIT Bombay for ALICE WORK	Tata Institute of Fundamental Research	Ongoing
12.	Magnetism In Low-Dimension And/Or Frustrated Magnetic Systems	University Grant Commission	Ongoing

Projects initiated before 2010-11

13.	Structurally Engineered Magnetic Nanoparticles: Gram Scale Synthesis Characterization and Surface Functionalization Leading to Colloidal suspensions	Council of Scientific and Industrial Research	Ongoing
14.	Functional polymeric semiconductor and metallic nanostructures for nano-photonics	Department of Science and Technology	Ongoing
15.	Linear and Nonlinear Optical Properties of Semiconductor Clusters- Women Scientist Scheme (WOS)	Department of Science and Technology	Ongoing
16.	Role of surface and organic matrix on the vibrational and electronic properties of nano-crystals synthesized by Langmuir Blodgett technique.	Department of Science and Technology	Ongoing

Sr. No.	Name of the Project	Sponsoring Agency	Status
17.	New symmetries beyond the electroweak scale	Department of Science and Technology	Ongoing
18.	A Lab-on-chip of Cardiac Diagnostics Agency	Aeronautical Development	Ongoing
19.	Some studies in spin dependent e-p and p-p scattering processes at high energies	Board of Research in Nuclear Sciences	Ongoing
20.	Fabrication of Magnetoresistive Sensors using Granular Thin films and Multilayers	Council of Scientific and Industrial Research	Ongoing
21.	Tunable and multi wavelength fibre laser for fibre optic applications	Department of Information Technology	Ongoing
22.	Theoretical studies of electronic structure and optical properties of polymers	Department of Science and Technology	Ongoing
23.	Transition form factor of the ρ meson	Department of Science and Technology	Ongoing
24.	Study of Astrophysical point sources of gamma rays	Department of Science and Technology	Ongoing
25.	NMR study of spin-liquid states in novel magnetic systems	Department of Science and Technology	Ongoing
26.	Effect of annealing parameters on microstructure and magnetic properties of ferrite thin films	Department of Science and Technology	Ongoing
27.	Project on the Fabrication and submicron tailoring of materials for photonics application with ultrafast lasers	Department of Science and Technology	Ongoing
28.	A large Ion Collider Experiment (ALICE) Operation and Utilisation	Department of Science and Technology	Ongoing
29.	Recrystallization modeling in Steel: A Phase Field Approach	Tata Steel Ltd., Jamshedpur, India	Ongoing
30.	Nanostructuring of nanofluidic/microfluidic devices for enhanced blood filtering and detection of blood analytes associated with biosensors	International Collaboration Projects	Ongoing
31.	Establishment of low temperature/high magnetic field facilities-phase-II: Torque magnetometer and scanning hall probe microscope/magnetometer	Department of Science and Technology	Ongoing

Projects completed during 2010-11

Sr. No.	Name of the Project	Sponsoring Agency	Status
1.	Goa Common Entrance Test-2009 (GCET-2009)	Government of Goa	completed
2.	SERC School on Experimental high energy physics at IIT-Bombay Technology	Department of Science and	completed
3.	Study of laser action in photonic crystals Sciences	Board of Research in Nuclear	completed
4.	Development Of Novel Magnetic Nanocomposite Films For A Magneto-optical Sensor.(IITB STC)	Indian Space Research Organisation	completed
5.	Dynamics of FtSz polymers during bacterial cell division	Department of Science and Technology	completed
6.	Quantum Chromo Dynamics : Structure Of The Hadron	Department of Science and Technology	completed
7.	Investigation Of The Role Of Defects In Giving Rise To Ferromagnetism In Gan And Zno Based Dilute Magnetic Semiconductors	Department of Science and Technology	completed
8.	Development of Ceramics and Nano Structured Magnetics Refrigerates	Defence Research & Development Organisation	completed

Patents

Aslam, M.

Multi-Layer Nanocomposite,
Indian Patent: Application No. 811/MUM/2011,
Date of filing: March 21, 2011

Aslam M. Bahadur D., Misra D.S., Panigrahy, B.
Shape Selective Processing Of Zno Nanostructures,
U.S. Pat. Application No. 12/794,272. Date of filing
:June 04, 2010,

Dhar, S.

Process for Synthesis of Tb Doped Zno
Nanoparticles for Total Control over the UV to Green
Luminescence (GL) Intensity Ratio And The
Tunability Of UV Luminescence (UVL)
Application No: 2103/MUM/2010 Date of filing : July
23, 2010

Misra, D.S. and Hazra, Kiran Shankar

Devices Having Aligned Carbon Nanotubes
application filed for US patent; Appl. No* 12/842,020

Extension Activities

The SERC School on Nano-optics (held at NIT, Hamirpur, Himachal Pradesh, Sept 13- Oct 01, 2010) was organized by Prof. B.P. Singh. The aim of this school was to provide an overview of different topics in nano-optics to Ph.D. students from all over India, in their early years of research. Lecture courses were given by 20 people on topics like nanostructured optical materials, photonic bandgap materials, metamaterials. Both experimental and theoretical aspects of these active research areas were covered. About 45 research students were selected for participation.

Visitors to the Department

Dr. Srikumar Banerjee visited the department and gave the DAE CV Raman lecture which was jointly organized by the Indian Physics Association and the Department of Physics.

Dr. T. Ramaswami, Secretary to DST visited the Department of Physics in May 2010 to deliver the keynote address on Review Committee meeting for SERC School in "Theoretical High Energy Physics"

Prof. Deepak Dhar and Prof. Sandip Trivedi from the Tata Institute of Fundamental Research Mumbai, visited the department and delivered a talk in a one-day meeting organized for the first time by the research scholars of the department.

Conferences/Symposia/Workshops/ Seminars (Participation and Presentations)

National

Makwani Diksha and Vijaya, R.

"Investigation of Structural, Electronic and Optical Properties of GaN+1, GaNAl and GaNAs (n=1-8) Clusters by Density Functional Theory." In *International Conference on Advances in Condensed and Nano Materials (ICACNM)*, Chandigarh, Feb. 23-26, 2011, 2011.

Ghosh Aditi and Vijaya R.

"Dynamical studies of an Erbium-doped fiber ring laser under loss modulation." In *National conference on nonlinear systems and dynamics (NCNSD)*, Tiruchirapalli, Jan. 27-30, 2011.

"Nonlinear dynamics of fiber ring laser under cavity loss modulation". In *19th IEEE Workshop on Nonlinear Dynamics of Electronic systems (NDES)*, Kolkata, Mar. 9-11, 2011.

Shinde Ravindra

"Ab initio real space approaches of electronic structure calculations of solids". In *ICTS Condensed Matter School and Conference 2010*, Dec 12-23, Mysore, INDIA, 2010.

Raut Sushant K., Singh Ravi Shanker, and Sankar S. Uma

"Magical' properties of a 2540 km superbeam experiment". In *Nu Horizons III* (HRI, Allahabad: Feb 2010) (oral), 2010.

Patnaik Padmaja, Mukhopadhyay Gautam, and Singh Prabhakar P.

"Magnetism in transition metal doped Cubic SiC". In *55th DAE Solid State Physics Symposium*, Dec 26-30, 2010, Manipal, Karnataka, India.

Makwani Diksha, Vijaya R., Mallik Arun and Bhatnagar Anuj

"Fabrication and optical characterization of SU-8 waveguides and distributed Bragg structures." In *PHOTONICS 2010*, Guwahati, Dec. 11-15, 2010, 2010.

Makwani Diksha and Vijaya R.

"Fabrication of SU-8 ridge waveguides by optical lithography and their characterization." In *International Conference on Nanoscience and Technology (ICONSAT)*, Mumbai, Feb 17-20, 2010, 2010.

"Density functional study of frequency-dependent polarizability of gold clusters." In *PHOTONICS 2010*, Guwahati, Dec. 11-15, 2010, 2010.

Makwani Diksha, Reddy M. Srinivas, Jemy James, and Vijaya R.

"Fabrication, characterization and band structure of 2-dimensional photonic crystal." In *PHOTONICS 2010*, Guwahati, Dec. 11-15, 2010, 2010.

Makwani Diksha, Kedia Sunita, Jemy James, and Vijaya R.

Waveguide patterning on self-assembled photonic crystals. In *PHOTONICS 2010*, Guwahati, Dec. 11-15, 2010, 2010.

Kedia Sunita, Vijaya R., Ray A.K. and Sinha Sucharita

"Emission studies in novel photonic crystal microcavities." In *PHOTONICS 2010*, Guwahati, Dec. 11-15, 2010, 2010.

Kedia Sunita, Vijaya R., Ray, A.K. and Sinha Sucharita

"Dye-doped photonic crystal microcavities and study of spontaneous and stimulated emission characteristics." In *National Laser Symposium*, Indore, Dec. 1-4, 2010, 2010.

Kedia Sunita, Vijaya, R., Ray, A.K., Sinha Sucharita, and Dasgupta K.

"Spectral narrowing of emission from ZnO inverse photonic crystals." In *National Laser Symposium (NLS-2009)*, Mumbai, Jan 13-16, 2010, 2010.

Joglekar Aniket, Prakash Suprabh, Raut Sushant K., and Sankar S. Uma

"Physics potential of a 2540 km superbeam experiment." In *NuFact 10* (TIFR, Bombay: Oct 2010), 2010.

"Physics potential of a 2540 km superbeam experiment." In *DAE-BRNS High Energy Physics Symposium* (LNMIIT, Jaipur: Dec 2010), 2010.

Surya K. Ghosh, Kulveer Singh, and Sain Anirban.

"Effect of intrinsic curvature on semi-flexible polymers." In *ICTS Workshop on Non-equilibrium Statistical Physics and ICTS Conference on Fluctuations in Living and Nonliving Systems far from Equilibrium*. IIT Kanpur, India (January 2010), 2010.

Ghosh Aditi and Vijaya R.

"Experimental study of the dynamics of fiber ring laser under cavity-loss modulation." In *PHOTONICS 2010*, Guwahati, Dec. 11-15, 2010, 2010.

"Experimental study of linear and nonlinear-resonance features of fiber ring laser under cavity loss modulation." In *National Laser Symposium*, Indore, Dec. 1-4, 2010, 2010.

Ghosh Aditi, Venkitesh Deepa, and Vijaya R.

"Investigation of stability of continuous wave broadband output from a fiber laser." In *PHOTONICS 2010*, Guwahati, Dec. 11-15, 2010, 2010.

"Continuous wave broadband generation using specialty fibers in fiber laser cavity." In *PHOTONICS 2010*, Guwahati, Dec. 11-15, 2010.

Dhar, S.

"The role of defects in governing the magnetic properties of Gd doped GaN." In *ICTS Condensed Matter Programme 2010 (ICMP10)*, Mysore, India, December 12-23, 2010.

"High defect concentration in GaN:Gd layers grown by reactive molecular beam epitaxy" (Invited talk). In *Current Trends in Condensed Matter Physics 2010 (CTCMP 2010)*, National Institute of Science Education and Research (NISER), Bhubaneswar, Orissa, India Dec. 15 - 19, 2010.

"Defect induced magnetism in Gd doped GaN (Invited talk)." In *International Conference of Nano Science & Technology (ICONSAT-2010)*, Venue: IIT Bombay, Powai, Mumbai, India, Feb. 2010.

Dey Tusharkanti, Khuntia, P., Mahajan, A.V., Kumar, N., and Sundaresan A.

" ^{27}Al and ^{119}Sn NMR Study of Magnetism in Nanoparticles of Al_2O_3 and SnO_2 ." In *International Conference on Magnetic Materials (ICMM 2010)*, 24-29 November, Saha Institute of Nuclear Physics, Kolkata, INDIA., 2010.

Dey Supravat, Das Dibyendu, and Rajesh R.

"A lattice model of a freely cooling granular gas in one dimension." In *School on Glass Formers and Glasses*, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India, January-2010., 2010.

Biswas Santidan, Samajdar Indradev, Haldar Arunansu, and Sain Anirban

"Phase field modelling of grain growth using quaternions." In *ICTS Program on Non-equilibrium Statistical Physics ICTS-NESP 2010* (IIT Kanpur, 30 January -08 February 2010), 2010.

International

Sutar D.S., Major, S. S., and Srinivasa, R. S.

"Molecular level structural order in amino-silane self assembled monolayer on Si 100 with native oxide." In *IUMRS-International Conference on Electronic Materials (IUMRS-ICEM 2010)*, Aug 2010, Seoul Korea, 2010.

Singh Pawan, Sandhya, C., Auluck Kshitij, Bisht Gaurav, Sivatheja M., Hofmann Ralf, Mukhopadhyay Gautam, and Mahapatra Souvik

"Applicability of dual layer metal nanocrystal flash memory for NAND 2 or 3-bit/cell operation: Understanding the Anomalous Breakdown and Optimization of P/E Conditions." In *IEEE Xplore, IRPS10-981* (2010)., 2010.

Raut Sushant K., Singh Ravi Shanker, and Sankar S. Uma

"'Magical' properties of a 2540 km superbeam experiment." In *Neutrino 2010* (Athens, Greece: June 2010), 2010.

Mukherjee Asmita

"Timelike deeply virtual Compton scattering." In *Lightcone2010*, Valencia, Spain, June14-18, 2010 (Invited talk), 2010.

Kulshrestha Neha, Hazra Kiran Shankar, Roy Somyendu, Bajpai Reeti, and Misra, D.S.

"Synthesis of Various Interesting Morphologies of Carbon Nanotubes." In *3rd International Symposium on Materials Chemistry, (ISMC-2010)*, December 7 11, 2010, BARC, Mumbai.

Kulshrestha Neha, Hazra, K.S., Roy, S., Bajpai, R., Mohapatra, D.R., and Misra, D.S.

"Structural Changes in Nickel Nanorods Encapsulated in Carbon Nanotubes by 200 KV Electron Irradiation in TEM." In *International Conference on Physics of Emerging Functional Materials*, AIP Conf. proceedings, Vol.1313, pp 259-261, September 22-24, 2010.

Kedia Sunita, Vijaya, R., Ray, A.K. and Sinha Sucharita

"Photonic crystal dye laser using self-assembly." In *Photonics Global Conference*, Singapore, Dec. 14-16, 2010, 2010.

"Laser emission from functionalized opal photonic crystal." In *Ninth International Conference on Photonic and Electromagnetic Crystal Structures (PECS2010)*, Granada, Spain, Sept 26-30, 2010.

Kedia Sunita and Vijaya, R.

"Templated growth of Zinc oxide photonic crystal heterostructure." In *Ninth International Conference on Photonic and Electromagnetic Crystal Structures (PECS 2010)*, Granada, Spain, Sept 26-30, 2010.

Dey Tusharkanti, Khuntia, P., Mahajan, A.V., Kumar, N. and Sundaresan A.

" ^{27}Al and ^{119}Sn NMR Study of Magnetism in Nanoparticles of Al_2O_3 and SnO_2 ." In *International Conference on Magnetic Materials (ICMM 2010)*, 24-29 November, Saha Institute of Nuclear Physics, Kolkata, India., 2010.

Biswas Santidan, Samajdar Indradev, Halder Arunansu, and Sain Anirban

"Phase field modelling of grain growth using quaternions." In *4th International Conference on Recrystallization and Grain Growth* held at University of Sheffield, Sheffield, United Kingdom (July 4 - 9, 2010), 2010.

Significant Awards/ Distinctions

Ghosh, Dipan K.

Editor-in-Chief, Physics News.

Member, Academic Council, Homi Bhabha National Institute (Deemed University)

Member, Academic Council, DAE-UM Centre for Excellence in Basic Sciences

Member, National steering Committee for International Science Olympiads

Member, Board of Governors, SVNIT, Surat

Das, Dibyendu.

Received an Indo-U.S. Science and Technology Forum (IUSSTF) visiting professorship (administered by the American Physical Society, APS) for the exchange of physicists and physics graduate students between India and the United States.

Ramadevi, P.

Received a visiting professorship for six months (March 1-August 31, 2011) at the Center for Quantum Spacetime, Sogang University, Seoul, South Korea.

Sain, Anirban

Received a visiting fellowship at Max-Planck Institute -PKS, Dresden, Germany, for one year. (July 2010- June 2011)

Honorary Work

Mukherjee, Asmita

Refereed papers for Physical Review D, Physical Review C and Physics Letters B

Sain, Anirban

Refereed papers for Physical Review Letters, Physical Review E and Journal of Chemical Physics

Mahajan, Avinash

Refereed papers for Physical Review Letters

Ghosh, Dipan K.

Refereed papers for European Physical Journal and Journal of Applied Physics

Faculty Members and their specializations

1. **Dipan K. Ghosh**

Theoretical condensed matter physics, Exactly solvable models in Magnetism

2. **Gautam Mukhopadhyay**

Theoretical condensed matter physics, Magnetism & magnetic materials, Nano scale physics, Statistical physics, Non-equilibrium physics

3. **Shiva Prasad**

Magnetism and magnetic materials, Nano scale physics, Thin films and multilayers

4. **S. S. Major**

Nanomaterials (semiconductors/carbon based materials), Nano scale physics, Thin films and multilayers

5. **Bhanu P. Singh**

Nano scale physics-Experimental Laser physics and spectroscopy, Non-linear optics

6. **Urjit A. Yajnik**

Theoretical high energy physics, Non-equilibrium physics, Applications of quantum physics

7. **D. S. Misra**

Nanomaterials (semiconductors/carbon based materials), Nano scale physics, Thin films and multilayers

8. **Raghava Varma**

Experimental nuclear physics, Relativistic heavy-ion physics

9. **S. Umasankar**

Theoretical high energy physics

10. **Tapanendu Kundu**

Experimental, Laser physics and spectroscopy, Non-linear optics

11. **Prabhakar .P. Singh**

Theoretical condensed matter physics

12. **R. Vijaya**

Experimental laser physics and spectroscopy, Non-linear optics

13. **C. V. Tomy**

Magnetism and magnetic materials, Superconductivity and low temperature physics

14. **Alok Shukla**

Theoretical condensed matter physics

15. **Avinash V. Mahajan**
Magnetism and magnetic materials,
Superconductivity and low temperature
physics
16. **K. G. Suresh**
Magnetism and magnetic materials
17. **M. Senthil Kumar**
Magnetism and magnetic materials, Nano scale
physics, Thin films and multilayers
18. **Pragya Das**
Experimental nuclear physics
19. **N. Nambudiripad**
Magnetism and magnetic materials,
Superconductivity and low temperature physics
20. **P. Ramadevi**
Theoretical high energy physics
21. **Punit Parmananda**
Non-linear dynamics, Non-equilibrium physics
22. **Dibyendu Das**
Statistical physics, Non-equilibrium physics
23. **Basanta Kumar Nandi**
Experimental nuclear physics, Relativistic
heavy-ion physics
24. **Asmita Mukherjee**
Theoretical high energy physics
25. **Anirban Sain**
Statistical physics, Non-equilibrium physics
26. **Subhabrata Dhar**
Nanomaterials (semiconductors/carbon based
materials), Magnetism and magnetic materials,
Thin films & multilayer growth processes,
Experimental Laser physics and spectroscopy
27. **Aslam Mohamad**
Nanomaterials (semiconductors/carbon based
materials), Magnetism and magnetic materials,
Nano scale physics
28. **Tathagat A. Tulsi**
Quantum computing
29. **Pradip Sarin**
Experimental nuclear physics
30. **Kantimay Das Gupta**
Low temperature transport in semiconductor
heterostructures and bi-layers, Probing
electronic interaction by Coulomb drag method,
Vortex phases in superconducting thin films.
31. **Parinda Vasa**
Optical and Near-field spectroscopy,
Optical properties of semiconductors
nanoparticles
32. **Sudhangshu S. Jha**
Theoretical condensed matter physics
33. **Kailash C. Rustagi**
Nanomaterials (semiconductors/carbon based
materials), Nonlinear optics, Theoretical
condensed matter physics
34. **S. H. Patil**
Theoretical physics, elementary particles,
quantum mechanics and applications to atoms,
molecules, and nuclei
35. **Yogesh K. Gambhir**
Conventional Nuclear Physics.
High Spin States and Super-deformations.
Exotic Nuclei and Neutron Halos.
Relativistic Mean Field for Finite Nuclei
(Structure and Reactions.)
Equation of State, Nuclear Matter Under
Extreme Conditions and Very Dilute Neutron
Matter in Practically Proton Free Environment
36. **S. N. Bhatia**
Magnetic phase transitions in Oxides and other
low dimensional systems.
Thermal fluctuations in High T_c
Superconductors.
Thermoelectric Devices for Energy conversions.



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 Programme for Technical Professional in the Fall Semester with the Hughes Net Global Education. The school currently has 16 full-time faculties and six adjunct faculty members.

Academic Programme

The school runs a full-time Master of Management programme to develop professionals to manage the business activities in a dynamic environment in which technology is a key determinant of organisational success. The school also offers both full-time as well as external PhD programmes to develop future cutting-edge researchers. In 2010-11, the school awarded both M.Mgt. and Ph.D. degrees as shown in the following table.

Degrees Awarded	
M.Mgt.	: 84
Ph.D.	: 02

The total number of scholarships awarded in 2010-2011 for M.Mgt. programme is 83 (41 for the first year and 42 for the second year). The total number of scholarships awarded in 2010-2011 for the Ph.D. programme is 173 (102 Ph.D. Teaching Assistantship, 34 Shailesh J Mehta Endowment Scholarship, 20 AICTE National Doctoral Fellowship, 7 QIP Research Scholarship, and 10 UGC Junior Research Fellowship).

Campus placement for the batch 2009-2011 was conducted in the Spring 2011 semester and all the students have now been placed. The table below summarises this year's placement statistics for the M.Mgt. programme.

No. of recruiters	: 47
No. of students participated	: 94
Average annual compensation	: 13.0 L
Highest annual compensation	: 19.5 L
Total number of offers	: 100
Average number of offers per student	: 1.27
Lowest annual compensation	: 7.0 L

A hundred percent placement was recorded in this year. Seventeen students were offered pre-placement offers during their summer internship – an increase of 54 per cent over the last year. Diverse profiles like General Management, Leadership and Technology Management are increasing.

R&D Activities

Sponsored Research Projects

Sponsored Research Projects	: 21
Ongoing	: 21

Sr. No.	Project Title	Sponsoring Agency	Status (New, Ongoing, Completed)
1.	An agent-based approach to network competition and sustainable growth in Indian Air Transport	IRCC	Ongoing
2.	Sustainable Management of Water Resources in City of Mumbai	IIT Bombay	Ongoing
3.	Assessment of climate-related natural hazards	MOEF	Ongoing
4.	Simultaneous Optimization of mean and variance for Multiple response problems	DST	Ongoing
5.	Desirability Indices for Process Optimization	IRCC, IITB	Ongoing
6.	Logistics and Supply Chain Management for Innovations	IRCC	Ongoing
7.	Understanding and Addressing Cataract-related Eye Care Issues in Rural Tamil Nadu.	Project Fund Awarded by Emerald/AIMA Indian Management	Ongoing
8.	Exploratory Studies on Magnetic Pulse Welding of Tubes	ARDB	Ongoing
9.	eContent Generation and Sharing Laboratory	MHRD	Ongoing
10.	Capacity Creation in IP Education and Research	MHRD	Ongoing
11.	Proposal to set up a eContent Generation and Sharing Laboratory	MHRD	Ongoing
12.	Financial Inclusion - Status and its Impact on Human Development: A Special Focus on North East India	IRCC, IITB	Ongoing
13.	Fuzzy decision-making approach to production-inventory problems in the Context of supply chain management	IRCC	Ongoing
14.	Spiritual Climate of Business Organizations and its Impact on Learning in Teams, Engagement and Innovative Work Behavior	IIT B, (IRCC, New Faculty Seed Grant Project)	Ongoing
15.	Technology-gap in Indian Industries – Analysis in the post-1991 era	IRCC	Ongoing
16.	Capacity Creation in IP Education and Research (Operationalization of IP Chair)	MHRD	Ongoing
17.	Support for undertaking activities of Phase-III on Technology Management under MOU between technology management division, DSIR, and IIT Bombay	DSIR	Ongoing
18.	Development Of Decision Support System For Project Scheduling Using Meta-Heuristics	MHRD	Ongoing
19.	IPR CELL	IRCC	Ongoing
20.	SISL for Activities in the Area of Supply Chain Management	SISL	Ongoing
21.	NEN	Wadhwani Foundation	Ongoing

Consultancy projects

Patil Rahul

"Improving Logistics Efficiency of Western Railway Linen Supply Chain", with Prof. Jain Karuna and Prof. Mukherjee Indrajit.

Jha Shishir

"Licensing of Open Source and Creative Commons Content"

Kathuria Vinish

"Analyse the ASI organized sector data for the State Business Relations", sponsored by IPPG- University of Manchester, UK

Kathuria Vinish

"Economic Reforms and Evolution of Productivity in Indian Manufacturing Firms", sponsored by ESRC- University of Manchester, UK

Extension activities

Mishra T.

Hughes General Management for Technical professional – Programme Director
EduLive – CPBM – Teaching faculty
CPMHRM – Teaching faculty

Usha A

Eleven lectures on various topics related to Analytics were delivered for a Certificate Programme "Advanced Certificate Programme in Business Analytics", a distance learning programme conducted through Hughes platform. The lectures were delivered between June 2010 and January 2011.

Sonar R M

Three lectures on "Quantitative Techniques in Management", delivered for a Certificate programme "General Management Programme for Technical Professionals", a distance learning programme conducted through Hughes platform. The lectures were delivered between October 2010 and November 2010.

Momaya K

Conference Co-Chair for the 10th Global Conference on Flexible Systems Management GLOGIFT 2010

Jha Shishir K

Distance Education Courses: 6 hours of teaching on International Business, Hughes General Management Program, February, 2011 [convener: Prof. Trupti Mishra & Prof. Sonar, SJMSOM] and 4 hours of teaching, International Business, EduLive, March, 2011 [convener: Prof. Bapat, SJMSOM]

Sonar R M

Other activities: Playing role of mentoring to IT professionals in iKen Solutions, a company founded at SINE. Extensive industry interaction through iKen Solutions Pvt Ltd.

Dutta P

MDP Courses: Conducted MDP on Decision Models in Management under the context of "Certificate Programme on Business Management", EduLive-SJMSOM, IIT Bombay, July-August, 2010. Convener: Prof. Karuna Jain

Conducted MDP on Decision Models in Management under the context of "Certificate Programme on Business Management", EduLive-SJMSOM, IIT Bombay, February-March, 2011. Convener: Prof. Karuna Jain

Pandey Ashish

Leadership Development Programme for Citec Engineering, Coordinator and Lead faculty for Three Modules of Two days Team Building Programme for 2 days for Nokia Siemens Network Ltd. as a convener and faculty

One of the co-ordinators of Faculty Academics and Research Meeting (FARM) held in Sept. 2010 on UG level teaching. Co-ordinated the retreat of faculty members of School of Management, Co-ordinator of MMgt Course Restructuring Committee Member of the institute level committee to review the course on communication and training for Teaching Assistantship

Jain K

Conferences: 1st IPR Researchers' Confluence, February 11-12, 2011

Workshops: IP Clinic, January 29, 2011, Patent Drafting, January 22-23, 2011, Patent Searching, January 15-16, 2011, Fundamental of IPR, August – October, 2010

EduLive, Project Management, October 10, 2010 – PM – HRM, Management of Technology, September 6-17, 2010, EduLive

Management Development Programmes

Management Development Programmes were organized through Continuing Education and Quality Improvement Programme, IIT Bombay. They are :

Sr. No.	Title of the programme	Coordinator	No. of Days/Weeks	Starting date of the programme
1	Certificate Program in Business Management (CPBM)	Prof. Varadraj Bapat	40 days	September 18, 2010
2	7th Batch of Executive Programme in Management (Specialisation in Marketing & HRM)	Prof. S. Bhargava, Prof Dinesh Sharma, Prof Ashish Pandey	40 days	July 18, 2010
3	Certificate programme in management [for Godrej Group of Companies (Batch - III, Term - IV)]	Prof. S.N Rao	14 days	April 19, 2010
4	Executive soft skill training programme	Prof. Varadraj Bapat	6 days	June 28, 2010
5	R & D Management	Prof. Karuna Jain	3 days	September 16, 2010
6	Executive soft skill training programme	Prof. Varadraj Bapat	6 days	November 22, 2010
7	Certificate Program in Management for the Executives of Godrej Group of Companies	Prof. S Narayan Rao	14 days	April 19, 2010
8	"Advanced Certificate Program in Business Analytics", a distance learning programme conducted through Hughes platform.	Prof. Usha A	35	June 2010 – April 2011
9	General Management Programme for Technical Professionals	Prof. Sonar R M Prof. Karuna Jain Prof. Trupti Mishra	Sunday - 40 weeks	October 25, 2009
10	General Management Programme for Technical Professionals - Batch II	Prof. Sonar R M Prof. Karuna Jain Prof. Trupti Mishra	Sunday - 40 weeks	October 31, 2010

Academia/ Industry visits to the campus

Dr. P. K. Rastogi, Global Marketing Head, Arcelor Mittal, United States

Visited on March 9th 2011 and Conducted Leadership Lecture series

Dr. Mithali De and Dr. Gene Deszca- Professors- Wilfred Laurier University- Canada

On March 15th 2011 visited to build a relationship with Shailesh J Mehta School of Management, IIT Bombay.

Dr. Lalu Mansinha, Director, OMG Programme, Ontario Universities International, Canada

Visited on February 23rd 2011 for Student Exchange programme

Prof. Luvai Motiwalla, Professor and Chair, Operations & Information Systems (OIS) Department, University of Massachusetts, Lowell- United States

Visited on March 16th 2011 for summer programme of UMASS Lowell as well as to build relationship with SJMSOM.

Prof. Amrik Sohal, Deputy Head, Department of Management, IITB-Monash Research Academy, Monash University Australia

Visited on March 16th 2011 for joint projects under the research academy and relationship building between Monash Business School and SJMSOM

Prof. Sandeep Krishnamurthy, Director, Business Program, University of Washington, Bothell, United States

Visited on March 30th 2011 to build relationship with SJMSOM.

A group of nine people (including seven students) from the International Future Executive Programme of JTO School of Management, Finland, visited our campus on 28th October 2010 for general student and faculty interaction.

Continuum

The rolling seminar series is a premier event at the SJMSOM. 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.

Consulting Continuum, held on July 25, 2010, and on March 3, 2011, explored myriad aspects across sectors by initiating discussions on issues at the forefront of the consulting profession.

Systems Continuum, held on July 24, 2010, and on September 25, 2010, explored different aspects of Information Technology and Information Systems in business by initiating discussions on cutting-edge topics.

Finance Continuum, held on September 26, 2010, discussed Indian financial system and its gearing up for a radical change.

HR Continuum, held on March 12, 2011, discussed the different aspects of effective management of Human Resources (HR) organizations, both large and small.

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

National

Mishra T.

Presented paper "Climate Change and Vulnerability: A State Level Analysis" in *2nd International Conference*

on Environmental Management (ICEM 2010), in organised by the Centre for Environment, Institute of Science and Technology, JNTUH, during 25th-28th October 2010, at Hyderabad.

Dutta, P.

Participated in the Workshop on CARISMA-IIM Calcutta -*Optimization Methods & Risk Analysis: Applications in Finance*, held during April 6-9, 2011, at the Indian Institute of Management Calcutta.

Pandey Ashish

Presented paper "Application of Appreciative Inquiry in Four Distinct Groups: Learnings and Reflections" in National Seminar on OD, organised by Psychology Dept. of M.S. University, Baroda, during 19-20th February 2011.

Katuria Vinish

"The Effects of Economic Reforms on Manufacturing Dualism: Evidence from India" (with SN Rajesh Raj and K. Sen) in *Economic Reforms and Evolution of Productivity in Indian Manufacturing Workshop* organised jointly by the Indian Institute of Technology Bombay, CMDR Dharwad, and the University of Manchester, UK, during March 17-18, 2011, at IIT Bombay.

"Human Capital and Manufacturing Productivity Growth in India" (with SN Rajesh Raj and K. Sen) in *International Conference on Science, Technology and Economy: Human Capital and Development* organised jointly by the Forum for Global Knowledge Sharing and Indian Institute of Technology Bombay during November 11-12, 2010, at IIT Bombay.

Hailemariam, Mengist and Jain, Karuna

Participated in *National Level Program on Knowledge Sharing Practices: A Management Perspective*, held during February 21-23, 2011, at the Department of Management studies, Indian Institute of Technology Roorkee.

International

Rao Narayan, S.

"Announcement Effect of Open Market Share Buybacks in India-Part-I", in *International Conference on Financial Innovations and Change for Survival and Growth*, organized by Management Development Institute, Gurgaon and School of Business, University of Connecticut (USA), on January 07-08, 2011, at Gurgaon.

Announcement Effect of Open Market Share Buybacks in India-Part-II, in *International Finance Conference*, organized by the Indian Institute of Management Calcutta, held on January 10-12, 2011, Kolkata.

Huber H.

Participated in *International Transport Forum*, Leipzig (Germany), May 26-28.

"Strategic Flexible Planning and Real Options for Airport Development in India", *World Conference of Transportation Research Society, WCTRS Lisbon*, July 2010

Mukherjee I

Participated in Conference/Workshop on *International MultiConference of Engineerings and Computer Scientists*, held during March 2010 at Hongkong.

Presented paper "Mahalanobis Distance-based Diversification and Nelder-Mead Simplex Intensification Search Scheme for continuous Ant Colony Optimization", organized by WASET 2010, during September 2010 at Amsterdam.

Chouksey Gaurav, Patil Rahul

Presented paper "Improving Oil Transportation Efficiency in India", in *ISDSI 2010 Conference*, organized by MDI Gurgaon, during 12-28-2010, at MDI Gurgaon

Kalro Arti D., Sivakumaran Bharadhwaj and Marathe Rahul R.

"Direct or Indirect Comparative Ads: The Role of Information Processing Modes", *The Great Lakes-NASMEI International Marketing Conference*, Chennai, organized by Great Lakes Institute of Management, during December 23rd - 24th, 2010, at Chennai.

Usha A. Kumar and Yuvnish Dhamija

Presented a paper "Comparative Analysis of SOM Neural Network with K-means Clustering Algorithm", *IEEE International Conference on Management of Innovation and Technology*, held during June 2-5, 2010, at Furama Riverfront Hotel, Singapore.

Jha Shishir K

Presented paper "Leveraging Technology for Lowering Access Barriers: The Case of Moser Baer in the Indian Film Industry" in Phuket Thailand, organized by PICMET, during July 18-22, 2010.

Presented paper "Technology and New Digital Sensibilities: Impact of Digital Text 2.0", in Phuket Thailand, organized by PICMET, during July 18-22, 2010.

Paper presented by Ashish, H., "A literature review of the perceptions of faculty about technology enabled distance education", in Ryerson University, Toronto, Canada organized by the *International Journal of Arts & Sciences (IJAS) Conference for Academic Disciplines*, held during May 24-27, 2010 [joint author].

Presented paper "Expanding Open Source Into Other Domains: Analysis Of Open Source Biomedical Research", in Amherst, Massachusetts, organized by Politics of Open Source, during May 6-7, 2010.

Bapat V.

"Efficient Microfinance Institutions: A Sustainable Tool for Inclusive Growth and Development," *International Conference on Sustainability: Management and Beyond*, RG Indian institute of Management, Shillong (December 2010).

Sonar R. M., Rao V. K. and Ramamritham K.

"Agrocom: Agriculture knowledge poverty alleviation through innovative mobile sms intervention", *The 8th Globelics international conference*, November 01-03, 2010, University of Malaya, Kuala Lumpur, Malaysia.

"Examining the viability of mixed framework for evaluating mobile services impact in rural India", *The 4th IEEE/ACM ICTD2010 conference*, December 13-16, 2010, University of London, London.

Sonar R. M., Rao V. K.

"RML: Market intelligence with mobile sms intervention", *1st ACM International conference on services in emerging markets*, September 23-24, 2010, ISB, Hyderabad. India (Emerald's Best Case award).

Suresh, M., Jain, K. and Dutta, P.

Paper presented: "A Decision support system for resource constrained multi project scheduling problem using genetic algorithm: A Genetic Algorithm Approach to RCPSP with Vacation and Cost Minimization", in *Production and Operations Management Society Conference-2010*, held during May 7-10, 2010 and during December 28-30, 2009, at Vancouver, British Columbia, Canada.

Pandey Ashish

Presented paper "Spiritual Climate and its Impact on Learning in Teams" at the International Conference on Science and Spirituality: The Growing Interface, organized by Sri Sathya Sai International Centre for Human Values, during 31st July - 1 August 2010, at Sri Sathya Sai International Centre for Human Values, New Delhi.

Kathuria Vinish

"Institution of State Business Relations and Manufacturing Productivity Growth in India" (with Rajesh Raj and Kunal Sen) in *8th Annual International Industrial Organization Conference*, held at the University of British Columbia in Vancouver, Canada during May 14-16, 2010.

"Climate Variability and its impact on Regional Economies - A study of India" in *4th World Congress of Environmental and Resource Economists (WCERE)*, held at the Université du Québec à Montréal, Canada, during June 28-July 2, 2010.

"Digital-divide across Countries: Is the convergence robust?" (with Keun Yeob Oh) in *"ICT & Economic Growth Conference"*, held at LMU Munich, Germany, during November 5-6, 2010.

"Do stock markets value carbon credits? Evidence from India" (with Zubin Mehta) in *conference on Environment and Development in South Asia*, organized by SANDEE during December 6-7, 2010.

Jain, Karuna and Joshi, Kanchan

Presented abstract "Resource Constrained Project Scheduling with Learning Effect", in *4th International Conference on Decision Sciences in Managing Global Services*, organized by ISDSI during December 28-30, 2010, at MDI Gurgaon.

Invited Lectures

National

Mukherjee I

"Quality Improvement by using Designed Experimentation", *Short Term Course on 'Advances in Rubber Technology from Micro to Nano (ART-2010)*, January, Rubber Technology Centre, IIT Kharagpur

Sonar R M

The NCTDS 2011, *National Conference on Technology Driven Society* (February 11-12, 2011)

Pandey, A.

"Educational Leadership" Indo-German Tool Room, Indore November, 2010 month

Kathuria Vinish

"Issues of FDI", keynote address for a *National Seminar on Issues of FDI in India* at Bharathidasan University, Tiruchirappalli on January 27, 2011.

Jain, Karuna

"Management of R&D Projects", RRL Bhopal, January 25, 2011

"Research in Management - Issues and Trends", SHODH, IBS, Mumbai, December 3, 2010

Significant Awards/ Distinctions

Mukherjee I

Reviewed at least 10 paper for International Journal of Advanced Manufacturing in 2010

Patil Rahul

The award titled "Best Teacher in Operations Management" conferred by institution Dewang Mehta Business School Awards in November 2010.

Jain Karuna

Best Professor in Operations Management in Asia, CMO Asia, July 2010

Honorary Work

Patil Rahul

Vice President – Programs and Meetings, India Subcontinent Decision Sciences Institute

Program Chair – *International Conference on Global Interdependence and Decision Sciences –ASCI*, Hyderabad, 2010

Usha. A.

Reviewed paper for Applied Mathematical Modeling, February 2011. Reviewed paper for *International Journal of Business Performance and Supply Chain Modelling*, November 2010.

Momaya K.

Editor, *International Journal of Global Business and Competitiveness*, an e-Journal.

Sonar R.M.

Called as an expert to evaluate curriculum of various IT/CS/Mgt courses of Symbiosis International University (SIU)

On Editors' Panel of the National journal of system and information technology (NJSIT), National journal of research in management (NJRIM), Symbiosis Center for Information Technology (SCIT)

Dutta P.

Reviewed paper for International Journal "International Journal of System Science", September, 2010.

Kathuria Vinish

Reviewed for journals on "Agriculture Economics", "Oxford Development Studies", "Review of World Economics", "Journal of Asia Pacific Economy", "Global Business Review".

Jain Karuna

Regionally elected Vice President for the DSI Indian Subcontinent Region, 2011 - 2013

Reviewed paper "Resource-Based Optimal Float Model for Improving Project Cost Management under Work Disruptions" for "European Journal of Operational Research", 2011

Reviewed paper "On the Dynamic use of Project Performance and Schedule Risk Information during Project Tracking" for Omega, *The International Journal of Management Science*, 2010.

Member, Academic Advisory Committee, PMI India Chapter

Member, Academic Advisory Committee, NEN

Member, Selection Committee, CSIR

Member, Curriculum Development for Postgraduate Education in Technology Management, DSIR Member, Academic Advisory Committee, National Institute of Financial Management

External Expert, Issues Related to Technology Transfer/Patents for the Technologies and Products Developed, SAMEER

Faculty Members and their Specializations

1. Adil G. K.

Operations Management and Decisions Sciences

2. Ashish Pandey

Organization Development

3. Bapat Varadraj

Financial Accounting and Reporting, Cost and Managerial Accounting

4. Dutta Pankaj

Operations Research, Retail Inventory & Supply Chain Modeling, Business Dynamics Modeling & Simulation, Project Management, Fuzzy Optimization

5. Huber H

Network competition and policy, Regional Air Traffic, Aviation Business Strategies

6. Jain Karuna

Operation Management, Technology Management, IP Management

7. Jha, Shishir, K.

International Business, Knowledge and Information Commons.

8. Kathuria, V.

Industrial organization, Environmental management

9. Kusre A

Innovation and Entrepreneurship, Management of Technology

10. Mishra T.

Economics

11. Momaya Kirankumar S

Competitiveness

12. Mukherjee I

Operations Management, Quality Engineering and Management

13. Narayan Rao S.

Corporate Finance and Capital Markets

14. Patil Rahul

Supply Chain Management, Operations Management

15. Sonar R.M.

Hybrid intelligent systems, knowledge-based systems, business intelligence, analytics

16. Usha Ananthakumar

Statistical Pattern Recognition, Applied Statistics, Applied Multivariate Analysis, Time Series Modeling

Adjunct Faculty

17. Atul Kanyalkar

Purchasing and Supply Management

18. Kamal Sharma

Managerial Effectiveness Skills, Technology Forecasting and Assessment

19. Kamlesh Pande

Innovation Management, Knowledge Management

20. Kelkar S.A.

Industrial and Operations Engineering, Software Engineering And Quality Assurance (Testing and Matrices)

21. Raj Hirwani

Patent Analysis, Intellectual Property Rights

22. Sanjeev Chachondia

Marketing, Technology Management and Strategy

Karmakar, S.

“Systems Techniques and Uncertainty Modeling for Water Resources and Environmental Management,” Nicholas School of the Environment, Duke University, North Carolina, USA, June 22, 2010.

“Optimizing the Monitoring Program in the Neuse Estuary: A Design based on Entropy within a Hierarchical Spatio-Temporal Bayesian Framework,” Nicholas School of the Environment, Duke University, North Carolina, USA, August 30, 2010.

“Flood Risk-Vulnerability Analysis,” Centre for Hazards Research, Department of Civil and Environment Engineering, National University of Singapore, SINGAPORE, January 6, 2011.

Significant Awards/ Distinctions**Patil, R.S.**

Member, Program Advisory Committee in Atmospheric Sciences under SERC, DST, GOI, 2004 till 2011.

Expert Reviewer, Global Energy Assessment (GEA), Knowledge Module 4, Health Impacts of Energy System; Int. Institute for Applied Systems Analysis, Austria, 2010.

Visitors Nominee, Garhwal University, Srinagar, Uttarkand, 2009-2010

Member, Editorial Board, Asian Journal of Chemical and Environmental Research, May 2007-2010.

Member, Editorial Board, Jnl. of Scientific and Industrial Research, Published by NISCAIR, New Delhi, Jan. 2008 – Dec., 2010.

Dikshit, A.K.

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)

Chairperson of the technical session on Energy and Climate Change in the “2 day All India Expo and National Level Conference on Environment & Pollution” (POLLUTETECHINDIA 2010) organised by Bangalore Media Centre in association with Karnataka state Pollution Control Board at J.N. Tata Auditorium, Indian Institute of Science Annex, Bangalore on October 29-30, 2010. Also participated as a member of the Panel Discussion.

Member, Advisory Committee for Bio-Medical Rules, Govt. of Maharashtra since 2009.

Member, Academic Advisory Committee, Nirma University, Ahmedabad since 2010.

Member, Sub-Committee for ‘Development of National Sustainable Habitat Parameters in the field of Storm Water Management’ constituted by the Carbon Credit Cell of the Ministry of Urban Development, Govt. of India since 2010.

Honorary Professor in the School of Civil Engineering, Faculty of Engineering, University of KwaZulu-Natal, Durban, South Africa.

Nominated External Member to the Senate of the NIT Jamshedpur (Jharkhand).

Nominated Member on the Academic Board of the Government College of Engineering, Amravati (Maharashtra).

Karmakar, S.

“BOYSCAST Fellowship 2009 - 2010 from DST, Govt. of India” to conduct research on Ecological Engineering at Nicholas School of Environmental, Duke University, North Carolina, USA during June - October 2010.

Member, Editorial Advisory Board, Journal of Disaster Advances, India.

Mukherji, S.

Associate Editor, Applied Nanoscience, Published by Springer-Verlag, Germany.

Sumathi, S.

Editorial board member of the following journals: Journal of Disaster Advances, Journal of Pediatric Biochemistry, Advanced Material Letters, The Open Waste Management Journal; The Open Colloid Science Journal.

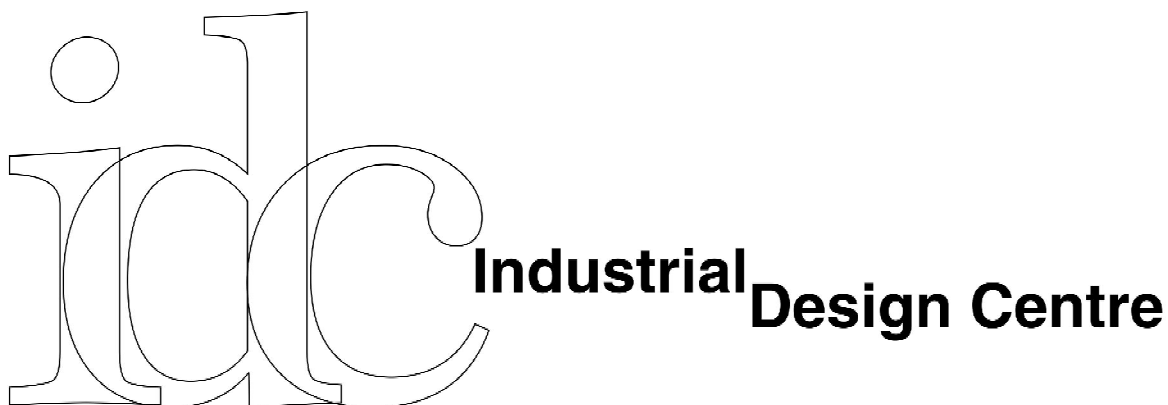
Associate editor for Journals published under Asian Network for Scientific Communication (since February 2007)

Honorary Work**Patil, R.S.**

Reviewed papers for Atmospheric Science, Aerosol Science and Technology, Atmospheric Pollution Research.

Asolekar S.R.

Member of the Technical Expert Panel (TEP) for the World Bank aided “Capacity Building for Industrial Pollution Management Project (CBIPMP)”



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, Animation and Mobility & Vehicle Design. 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 this programme they are expected to make a meaningful contribution to the industry and set new directions. The centre has a faculty strength of 26

Achievements

Selection of Indian Rupee Symbol, by Shri Uday Kumar, Ph.D. Scholar, IDC

3rd SIAM Auto design Competition, Pune, February 2011 – Ms. Harsha Kogad received the special jury award.

“Design the next Chevrolet”, Chevrolet Auto Design 2011 Competition – 1st Prize by Shri John Paul Xavier

IITB Young Alumni Award 2011: Uday Kumar on Indian Rupee symbol

IITB Young alumni Award 2011: Pranav Mistry on Sixth Sense, a wearable device that enables interactions between real world and world of data.

Design Degree Show Annual Exhibition of IDC

IDC organized the following events at IDC, IIT Bombay, during June 22 -24, 2010, and further at Nehru Centre, Mumbai, during June 26 -27, 2010.

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. The event was well covered by major newspapers, magazines and TV channels.

CEP courses

Ergonomics and Kinesiology for SSN, SNDT Students from August to December, 14 lecture days.

Organised CEP course for Crompton Greaves Ltd. on “User Studies and Product Innovation”, at Kanjur premises, Mumbai, Oct 20 Oct 28th.

Short term CEP course on “Exploring Creative Exhibition Design” for Insta Exhibitions (P) Limited, Mumbai

CDP: Intellectual observers - A book

Organised “User Centric way of Designing Products” Crompton Greaves, Mumbai

“Expo PD- Form giving from Functional Surfaces” (*Workshop* Organised by Prof. Ravi Poovaiah)

MoUs and Collaborations

Agreement signed between Holcim Foundation for Sustainable Construction and Indian Institute of Technology Bombay for the Jury and support for the 3rd International Holcim Awards.

MoU signed between Holcim Foundation for Sustainable Construction and Indian Institute of Technology Bombay. This MOU is a broad understanding between the two for working in the area of affordable habitats with a focus on sustainability, complementing the partnership of IIT Bombay with Holcim Foundation for Sustainable Construction.

Ray, G. G.

Collaboration with IT University Copenhagen:
Visited IT University from September 1 to 5, 2010, Under the project Sponsored by the University of Copenhagen.

Academic Programme

M.Des. in Product Design, Visual Communication, Interaction Design, Animation and Mobility & Vehicle Design

Degree Awarded:

M.Des. : 45

R&D Activities

Sponsored Research Projects

Sponsored Research Projects	: 25
New	: 5
Ongoing	: 18
Completed	: 2

Sr. No.	Name of the Project	Sponsored by	Status
1	“Conversion of text based information on Occupational Health to Visual Narratives”	Department of Science & Technology(DST)	Ongoing
2	“Devanagari Text Input on Touch Phones”	Nokia India Pvt. Ltd., Bangalore	New
3	“Multi-modal support for VUIs for low techsavvy users”	International Business Machines Corporation	New
4	“Development of Robust Document Image Analysis & Recognition System for Printed Indian Scripts (OCR Consortium Project Phase - 2)”	Department of Information Technology (DIT)	New
5	“Conservation and Repurposing of Traditional Time based Media”	IRCC	Ongoing
6	“Animated films, ‘Bemata”	IRCC	Ongoing
7	“Animated films, “Baat Wahi Hai”	IRCC	Completed
8	“Refrigerator Study”	Samsung Electronics Co. Ltd, Korea.	Completed
9	“Truck Interior Design for India”	Volvo Technology Corporation	Ongoing
10	“Concept Design of One Ton Goods Carrier for Indian City Conditions”	Volvo Technology Corporation	Ongoing
11	“Experimental Explorations in Transport Vehicle Design through investigations in Bionics “	SEED Grant, IRCC- IIT Bombay	Ongoing
12	“Development of Educational films using the interplay between new media, technology and pedagogy in science education at the high school level in the Indian context”	IRCC, IIT Bombay	Ongoing
13	“Empowerment of student and teachers through synchronous and asynchronous instruction”,	Ministry of Human Resource Development	Ongoing
14	“Documentation and Archiving of Visual Storytelling, Puppet & Toy making traditions of India”	IRCC, IIT Bombay	New
15	“Design and Development of New-Age Products in Craft Sector”	IRCC, IIT Bombay	New
16	“Development of new round post box”	India Post, Govt. of India.	Ongoing

Sr. No.	Name of the Project	Sponsored by	Status
17	“Design of Stamp Cancellation Work Station”	India Post, Govt. of India.	Ongoing
18	“Design of Postal Trolley for bag handling at Railway Stations”	India Post, Govt. of India.	Ongoing
19	“Design of Hand Stamp for post office use”	India Post, Govt. of India.	Ongoing
20	“Design of Gumming Device for post office use”	India Post, Govt. of India.	Ongoing
21	“Design of Gumming Device for post office use”	India Post, Govt. of India.	Ongoing
22	“Design of Philatelic Display Frame”	India Post”, Govt. of India.	Ongoing
23	“Personal transportation for individuals”	IRCC, IIT Bombay	Ongoing
24	“Experiential Learning of Mathematics for Hearing Impaired Children (HIC)”	Rotary Club of Bombay West	Ongoing

Consultancy Projects

The department undertook 11 jobs.

Extension Activities

Invited Workshops

Rane Mandar

DYP-DC , Pune, Form explorations – Basic Design
Sakal Newspaper Group – Pune Invited talk
SID Pune, Publication Design
Typography Day 2011- NID, Ahemdabad- Rationalizing typography

Visitors to the Department

C. Subramaniam, Director, Eklavya, Bhopal
Sadanand Menon, Asian College of Journalism, Chennai
Prayag Shukla, Art critic, New Delhi
Anant Mahapatra, Theatre director, Bhubaneswar
Kama Wangdi and Chencho Dorji, Thangka artists, Bhutan.
Yusof Gajah, Artist, Malaysia
Yogesh Rawal, Artist, Mumbai.

Mr Dhimant Vyas, Renowned Animator. He was invited to conduct a two-day workshop on “Clay Animation” for the M.Des. students of IDC, IIT Bombay. September, 2010, Mumbai, India

Mr Prakash Moorthy, Renowned Animator. He was invited to conduct a 5-day workshop on “Scripting,

Storyboarding and Animation Pre production” for the final year M.Des. Animation Design students. September, 2010

Ms Shelley Page, Head, Dreamworks, India. She was invited to IDC as part of the **Animafest** (Animation festival jointly conducted by IDC, IIT Bombay and the French Embassy, Mumbai), January, 2010. She participated in a panel discussion “Animation in India” IDC, Mumbai, India

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

National

Sabnani Nina

Presented a paper “Kaavad : A site for Multiple Identities” at a conference organized by the 34th *Indian Folklore Congress* at the Nagaland University, Kohima, on December 9, 2010.

Conducted a book making workshop for children during the “Young at Art” programme organized by the Nirmal Bhartia School at Delhi held on November 19, 2010.

Athavankar, U.A.

Participation in 5 day workshop on new rehab strategies with IT University, in IDC, IIT Bombay, during December 12 – 18, 2010.

Invited presentation 'Games as a motivation in rehabilitation', Conference on *Neuro-rehab*, at Children Guidance Centre, Pune held on January 2, 2011

Munshi, K. M.

Participated in TIFAC- ONGC Seminar – "Use of Composite Materials in Oil & Marine Applications" Mumbai held on November 25, 2008

Participated in Conference on *Auto Design*, organized by SIAM (Society of Indian Automobile Manufacturers), Mumbai held on 19 January 19, 2009

Chakravarthy, B. K.

Chakravarthy, B. K., invited for a workshop "Innovation By Design" – NPDC '09 Conference, at IIT Madras, Chennai, December 17, 2009.

Chakravarthy, B. K., organized and coordinated and made presentation on "Collaborative Innovation" in the seminar *Sustainable Construction, Technologies, And Design For Indian Habitats*, held on 21st February 2011 at Victor Menezes Convention Centre (VMCC), IIT Bombay, Powai, Organised by Indian Institute of Technology Bombay in association with Holcim Foundation for Sustainable Construction, Zurich; ACC Limited & Ambuja Cement Limited.

Chakravarthy, B. K., organized and coordinated the *INDEX* award design exhibition on January 21, 2011.

Chakravarthy, B. K., invited & made presentation on topic "Product Innovation" for a workshop *Exposure to Product Design and Innovation* held during September 23 – 24, 2010 held at IDC, IIT Bombay.

Ranade Shilpa

Conducted an animation course at IIITDM Jabalpur Lectures on Animation appreciation at MET, DACCA course

Joshi Anirudha

"Why Designers Do a PhD?; *India HCI 2010 / IDID 2010*; Mumbai; 2010"

Nikhil Welankar, Anirudha Joshi, Kirti Kanitkar

"Principles for Simplifying Translation of Marathi Terms in Mobile Phones; *India HCI 2010 / IDID 2010*; Mumbai; 2010

International

Sharma Nishant

Presented a paper "Concrete, Abstract or Hybrid Participatory Toolkit," *International Conference Participatory Innovation Conference PINC 2011*, held during January 13– 15, 2011, at University of Southern Denmark, Sønderborg, Denmark.

Presented a paper "Early Interventions of Sustainable Thoughts: Design Curriculum," *Fifth International Conference on Design Principles and Practices*, held during February 02– 04, 2011, at Sapienza University of Rome, Rome, Italy.

Athavankar U. A.

Invited participation in Innovative Idea workshop on Vaccine Delivery Innovation Initiative (By invitation) of Bill and Melinda Gates Foundation, New Delhi, March 31 and April 1, 2010

Participation in 4 day workshop on *New Strategies For Rehab* in IT University, Copenhagen during October 11 – 15, 2010.

Special invitee in *Syposium Rebalance*. Talk on 'Rebalance and Public Open spaces in Mumbai', organised by Japan Industrial Design Promotion Organization (JIDPO), Tokyo, Japan, January 29, 2011

Rane Mandar

Presented a paper "Art of Managing Uncertainty in temporal messages: Design Curriculum," Fifth International Conference on *Design Principles and Practices*, held during February 02– 04, 2011, at Sapienza University of Rome, Rome, Italy

Chakravarthy B K., Kusale Sarang, Sharma Susmita Y.

"Stage-gate Process for Innovation: A Pedagogical case study" during GLOGIFT 2010 - *Tenth Global Conference on Flexible Systems Management*, Annual Conference of Global Institute of Flexible Systems Management held on 26th to 27th July, 2010 in the Graduate School of System Design and Management, Collaboration Complex, Hiyoshi Campus, Keio University, Japan.

Chakravarthy, B. K., Purba Joshi

"Role of CAD in Product Innovation: A case study of the design of a Gasoline Dispenser" during GLOGIFT2010 - *Tenth Global Conference on Flexible Systems Management*, Annual Conference of Global Institute of Flexible Systems Management held on 26th to 27th July, 2010 in the Graduate School of System Design and Management, Collaboration Complex, Hiyoshi Campus, Keio University, Japan.

Chakravarthy, B. K., Susmita Sharma Y.

"Perception of Form: A Peep on the Eye", during ICoRD '11 *international conference on Research into Design* held at Indian Institute of Science, Bangalore on 10th – 12th January 2011.

Seminars

Ray, G. G.

Key note address “ICORD, Organised by CPDM. ”, IISc Bangalore. January 11, 2011

Chairperson, Session, “*Human Factors in Design*” ICORD, Organised by CPDM., IISc Bangalore. January 11, 2011

Workshops

Mohanty Raja

Organized a workshop at IDC, IIT Bombay for artists, writers and designers from India and the SAARC countries for ‘Creating Content for Children’, November 2010.

Co-organized a workshop at Bhubaneswar, on ‘Literature, art and theatre for children’, December 2010.

Organized a workshop at IDC, IIT Bombay on ‘Children’s Magazines’, February 2011.

Organized a workshop at IDC, IIT Bombay for school teachers on ‘Approaches to Art Education in Schools’, March 2011.

Rao Sumant

Conducted 3 day Special Effects Workshop during TechFest with 40 participants

Rane Mandar

Expo PD- Ordering order(Organised by Prof Ravi Poovaiah)

Ranade Shilpa

Damru : ‘Developing Learning materials for children’, supported by Navajbai Tata trust, part of the organizers of this workshop.

Invited Lectures

National

Joshi Anirudha

“Interaction Design for Development in Emerging Economies”, invited by Computer Society of India / Usability Matters.Org for UX Fun, Chennai, November 2010

Sandesh R

“Design Anthropology” invited by NIFT – Navi Mumbai to conduct a two day session on for its bridge programme in November, 2010

Course on “Form Studies for Post Graduate Students of Lifestyle Accessory Programme” invited by National Institute of Design, Pladi Ahmedabad, December 2010

Tetali Phani

“Animation trends in India”. Invited as the Keynote Speaker during the graduation ceremony of the final year students of Raffles Millenium International, New Delhi, May, 2010

Conducted a series of invited lectures at IIITDM, Jabalpur on Animation Design. March, April, 2011

Invited to deliver a lecture and conduct the viva voce examinations of Post Graduate Students of Jawaharlal Nehru Architecture and Fine Arts University (JNAFAU), Hyderabad. May, 2011

Athavankar U.A.

“The Story of a Full Circle”, Invited lecture and presentation ‘in ADEX 2010, at IIT Kanpur, April 8, 2010

“Identifying new areas of consumer growth”, invited lecture at Conference on Leadership through Industrial Design, Arranged by Confederation of Indian Industries (CII) at Mumbai, July 15-16, 2010.

Invited lectures on ‘Communication theory’, NID, Bangalore, held during December 6 -11, 2010.

Invited talk ‘Dilemma at the bottom of the Pyramid’ in Seminar ‘sustainability through Design A New Paradigm for Growth’ organised by Index Exhibition and IDC, at IIT Bombay, Mumbai Feb 2, 2011

“Sustainability, doctors, Lifestyles and Design” invited talk for Seminar on *Sustainable Construction, Technologies and Design for Indian Habitat*’, organised by IIT Bombay and Holcim Foundation for Sustainable Construction and ACC Limited, at IIT Bombay, Mumbai , 2011.

‘How Architects and Designers Visualize’, Invited lecture and presentation organised by Forum for Exchange and Excellence in Design, Pune, February 24th, 2011

Sharma Nishant

“State, Trends and Future of Automotive Design,” Tata Motors Ltd, Lucknow, January 22, 2011.

“Automotive Design Process” Father Agnel College of Engineering, Mumbai, March 19, 2011.

Munshi, K. M.

“Non-conventional applications of Composites” Invited lecture at ICERP 2011 (International Exhibition & Conference on Reinforced Plastics) organized by FRP Institute at Mumbai. 2- 4 March 2011

“Design Issues and Inspiration – Idea to Execution. Invited Engineers” Day lecture at Executive Engineers’ Club Nasik, September 15, 2010

Subnani Nina

Invited to deliver a public lecture “Makers of Tales: Kaavad tradition of Rajasthan” by Indira Gandhi National Centre of the Arts (IGNCA) on October 27, 2010

Invited to be on a panel discussion, “Children’s Book Illustration” at the Goethe Institute/Max Mueller Bhavan, Bangalore on September 3, 2010

Invited to deliver a public lecture on animation for the National Seminar on “New Trends in Television Programming and Broadcasting” at the Film and Television Institute, Pune on July 20, 2010.

Mohanty Raja

Delivered a talk at Bakul Foundation, Bhubaneswar on “Approaches to illustrating for children”, June 2010.

Ray GG

“Ergonomics in Product Design”, to the Final year Diploma students of AIIPMR, Hazi Ali, June 12, 2010.

“Ergonomics approach in Product Design”, whole day workshop to CII Participants, CII Office, Godrej campus, Mumbai, July 14, 2010.

Sandesh, R.

Invited to attend as a speaker in a seminar organized by Anna University and Dutch Embassy in Chennai in November 2010

Ranade Shilpa

‘Porting Literature to Film’ I presented a paper on porting literature to animation, at Nadiad, based on the animation films .

International**Athavankar U.A.**

Presentation and talk, ‘Dilemmas at the Bottom of the Pyramid’, invited by Japan Industrial Design Promotion Organization (JIDPO), Tokyo, Japan, January 26, 2011

Munshi K. M.

Invited to participate in the deliberations of the meeting of *Hyundai Design Council* at Hyundai R&D Centre in Korea held in December 2010

Joshi Anirudha

“Technology for Development: Explorations and Experiences from India” Invited by ACM SIGCHI for China Symposium on *Human Computer Interaction*, Beijing, March 2011

Munshi, K. M.

“Electric Vehicle Design Initiatives in India & Some Case Studies” Invited lecture and session co-chair at EVER11 MONACO, International Conference on Electric Vehicles & Renewable Energy at Monte-Carlo, Monaco, 30 March – 4 April 2011

“Composites in Mobility products - Growing Potential for Design” Invited lecture at JEC Asia 2010 Innovative International Composites Summit, Singapore. 12-14 Oct. 2010

Sreekumar, G. V.

Keynote speaker, Typography day March 2011 at National Institute of design, Ahmedabad

Significant Awards/ Distinctions**Sabnani Nina**

ISFFI (International Short Film Festival India) 2010: Best Creative film for Tanko Bole Chhe

Black Maria Film + Video Festival Award, Jury Stellar Selections for Animation.

BOLLYWOOD AND BEYOND, Stuttgart, Germany 2010: Best Short Animation for Tanko Bole Chhe

IDPA (Indian Documentary Producers’ Association) 2010: Excellence Award for Tanko Bole Chhe

CINEQUEST, USA 2011: Best Short documentary > for Tanko Bole Chhe

Tetali Phani

Artwork titled “India” exhibited in the “Izmir 2010 International Cartoon Exhibition” held during October 15- 29, 2010 at Izmir, Turkey

Honorary Work**Joshi Anirudha**

Full papers co-chair - India HCI 2011, Associate Chair

Full Papers - INTERACT 2011, Associate Chair Short Papers – INTERACT 2011, Reviewer for USAB 2010, SIMPE 2010, IITM 2010

Sharma Nishant

Participated as an Indian expert in Hyundai Design Council 2010 – I to review Hyundai’s future launches for India, held on July 19, 2010, at Hyundai Motors, Namyang, Seoul, Korea.

Participated as an Indian Invitee in Autodesk University, held from Nov 29 – Dec 01 2010, at Mandalay Bay, Las Vegas, USA.

Participated as an Indian expert in Hyundai Design Council 2010 – II to review Hyundai’s future launches for India, held on December 13, 2010, at Hyundai Motors, Namyang, Seoul, Korea.

Munshi K M

Jury for India Star Packaging Awards, IIP Mumbai. – Chairman Ph.D viva

Design & Innovation Strategy– Lecture to the participants of EXPO-ID, at IIT Bombay. 25 September 2010

Creating examples in Mobility Design as apart of on going research program and development of Mobility Design Studio

Sabnani Nina

Member of Advisory Board/ Committee

WAVE (Women aloud Video blogging for Empowerment), India

CFSI (Childrens Film Society India)

CMCS, TISS (Centre for Media and Culture Studies)

Sreekumar G V

Core team member, Typography day March 2011 at National Institute of design, Ahmedabad.

Jury Member: dept of Applied Art, faculty of fine arts, M.S.

University of baroda.

Jury Member: Symbiosis Institute of design, Pune.

Expert Committee Meeting :

Meeting at National Institute of Rural Development , Hyderabad, as an expert on Agricultural ergonomics, ICAR, June 28, 29, 30, 2010.

Expert Committee Meet on Women and Occupational Health, DST, 29, 30 July, 2010.

Faculty Members and their Specializations

1. U.A. Athavankar

Basic Design,
Product Design,
Product Semantics,
Cognition and Imagery,
Environment Design,
Furniture Design,
Exhibition Design

2. V.P. Bapat

Basic Design,
Product Design

3. B.K. Chakravarthy

Product Styling and Perception,
Creativity, New Product Innovation
Design Strategy,
Humanizing Technology,
Collaborative Innovation Methodology

4. A. Joshi

Interaction design, Design for development,
Design for low literate users, User studies / active
people watching / contextual inquiry, Usability
evaluation, Field studies, Integration of human-
computer interaction with software engineering,

Text input in Indian languages / Devanagari,
Interaction design for health care, Learning design

5. P. Joshi

Product Design,
Computer aided Design,
Form Design

6. R. Mohanty

Basic Design,
Visual Arts and Aesthetics,
Visual Communications,
Art and Design Pedagogy,
Narratives and Storytelling

7. K. Munshi

Design & Design management,
Mobility and Vehicle Design,
Design Integration

8. R. Poovaiah

Designing for children,
Collaborative Environments,
Digital Resources for Learning,
Information Visualisation And Design,
New media Design and Interaction Design,
Visual Language and Communication Design
Wayfinding, Identity and Information Systems

9. K. Ramchandran

Product design
Mobility Design

10. R. Sandesh

Product Design: Context based Industrial/Product
Design
Basic Form and Form Abstraction and Expression.
Craft Practices and Traditional Vocation based
Livelihood Opportunities.
Design Based Study of Traditional Craft
Communities and Craft Practices.

11. S. Ranade

Animation,
Illustration,
Graphic Design

12. A. G. Rao

Product Design,
Basic Design,
Bamboo Craft, Creativity

13. S. Rao

Animation,
Special Effects ,
Film making, Education

- 14. G. G Ray**
User Centered Design,
Control Panel Ergonomics,
Workstation Design
Manual Material Handling,
Design for the Elderly,
Design for People with Special Needs.
Mobility / Vehicle Ergonomics,
Furniture ergonomics
- 15. Mandar Rane**
Graphic Design,
Book and Publication design,
Corporate identity Systems,
Interface design and Interactive applications
- 16. N. Sadhu**
Workstation Identity Ergonomics,
Automobile and Product Ergonomics,
Workstation Ergonomics, and
Product Ergonomics
- 17. G. V. Sreekumar**
Typography,
Font design,
Publication design,
Information Graphics,
- 18. Nina Sabnani**
Animation film-making,
Documentary cinema,
Illustration, Storytelling,
Visual Ethnography
- 19. K. Trivedi**
Graphic Design,
Indian Design Traditions,
Exhibition Design.
- 20. P. Tetali**
Animation, gaming,
Storytelling with Sequential Art,
Illustration , Cartooning
- 21. S. Balan**
Film making,
Digital photography,
Democratization of Digital Media
- 22. Nishant Sharma**
Vehicle Design & Styling,
Product Form & Aesthetics,
Computer aided Industrial Design (CAID),
Class A surfacing, Computational Aesthetics
Participatory Design/Innovation, Human Powered
mobility
- 23. Narayan Parasuram**
Sound Design
Music Appreciation
Designing Content for Children
- 24. Ravi Hazra**
Architecture
Sustainability
Urban Design and Street Furniture/Signage
Design
Interior and Furniture Design
- 25. Khambete Pramod**
Interaction Design
Design Management
- 26. Mooshir Vahanvati**
Physical Computing and
New Media installations.

Refereed the paper entitled “A comparison of TerraSAR-X Quadpol backscattering to RapidEye multi-spectral vegetation indices over rice fields in the Mekong Delta, Vietnam”, International J. of Remote Sensing

Shyamalee Mukherjee

Reviewed a paper for the IEEE International Geoscience and Remote Sensing Symposium 2011 Student Paper Contest.

Reviewed 10 papers for the IEEE International Geoscience and Remote Sensing Symposium 2011.

Member of the ISPRS Intercommission Working Group III / VII on Pattern Recognition for Remote Sensing and the ISPRS Working Group III / 4 on Complex Scene Analysis and 3D Reconstruction.

Mohan, B.K.

Reviewer of PhD thesis from JNTU, Hyderabad

Reviewer of PhD thesis from Narsee Monjee Institute of Management Studies, Mumbai

Reviewer of manuscripts submitted to IJRS, IGARSS 2011, IEEE GE-RS Letters

Faculty Members and Their Specialization

1. (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.

2. Alok Porwal

GIS, and multispectral/hyperspectral remote sensing applied to mineral systems studies and resources exploration; Soft-computing techniques (fuzzy systems and neural networks) for geological remote sensing and GIS-based mineral potential modeling; Remote sensing of hydrothermal systems on the Mars in analogy with similar systems on the Earth (developing research)

3. J. Adinarayana

Agro-Informatics and Rural Development

4. S. S. Gedam

Stereo Image Processing and Digital Photogrammetry, Remote Sensing and GIS Applications(Surface Hydrology, Urban Infrastructureetc.,) Global Positioning Systems and applications.

5. A. B. Inamdar

Coastal and Marine Environmental applications of RS & GIS

6. M.V. Khire

Terrain evaluation , Landuse Planning, Wasteland Development , Monitoring Desertification and Run-off Estimation

7. B. Krishna.Mohan

Image Processing, High resolution image analysis, GIS, Multimedia educational content development for image processing, Digital Image Processing and Analysis, Geographic Information Systems, Educational Content Development

8. M. V. R. Murti

Remote Sensing of Atmosphere and Trace gases; Spectroscopic Analysis of Planetary Materials XRF, XRD, AAS and ICP.

9. R. Nagarajan

Remote sensing and GIS applications to Natural Hazards-Landslides and Drought

10. Y. S. Rao

DEM Generation using Radar Interferometry(InSAR) Technology applications.

11. Shyamala Mukherjee

Computer Vision and Graphics and Computational Methods

12. G. Venkataraman

Spatial Modelling for Mineral Exploration, Microwave Remote sensing to the study of Glacier Characteristics.

Member, Programme Committee, 13th Biennial Conference of the International Association for Study of Commons, Hyderabad, India (2010-11).

Member, Sub Group on Water Regulation of Planning Commission, GOI, for the formulation of XII Five Year Plan, GOI (2011)

Member, Governing Board, SaciWaTERs, Hyderabad, India (2009-Present)

Member, Governing Board, Centre for Environment and Development (2010-Present)

Faculty Members and their specialization

1. A.W. Date

Heat Transfer, Thermodynamics and
Energy Conversion, Energy Systems,
Appropriate Technology

2. Narendra G. Shah

Agro-Food Industrial development, Biomass
processing for food and energy

3. Anand B. Rao

Climate change and CDM, Energy and
environment, Sanitation

4. Natarajan C. Narayanan

Water Policy, Governance and Conflicts.
Interdisciplinary research in environment
and development (political ecology)

5. Subodh M. Wagle

Public Policy and Governance, Independent
Regulatory Agencies, Infrastructure Reforms,
Water Sector Regulatory, Urban Governance
Reform

6. Prasad Modak

Environmental Policy, Environmental Impact
Assessment, Environmental Management,
Environmental Modeling

7. Bakul Rao

Environmental impact framework for rural areas,
State of environment studies, Field
assessments & remediation, Matrix
characterization, Climate change

8. Satish Agnihotri

Policy and Governance, Evidence based policy
advocacy, Food and Nutrition, Woman and
Child Health

9. Milind Sohoni

Drinking water-rural and urban, groundwater
and watershed modelling. Pedagogy of
Engineering



Centre for Formal Design & Verification Software

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.

Over the past 12 years, CFDVS has established itself as a national R&D centre in the area of formal verification of high-integrity software and hardware. The centre has contributed to several R&D programmes in formal verification, and has taken up sponsored industrial projects from various government organizations like VSSC, ADA, DRDL and DRDO, and also from high-profile private organizations like Intel, Microsoft Research, Texas Instruments, General Motors, etc.

The use of mathematically rigorous techniques for verification and validation of safety-critical software and hardware is growing worldwide, and CFDVS is well-poised to continue contributing towards indigenous development of tools and technologies in this domain in the coming years. Having successfully demonstrated that high-quality formal verification technology can be developed and implemented indigenously during the first 11 years of its existence, CFDVS is now embarking on a more ambitious research and development plan for the next five years. This includes, among other objectives, addressing scalability issues in formal verification, and development of hardware and software analysis tools that can be applied to real-life systems with complex control, data processing and communication components.

Student strength (at M.Tech. and Ph.D. levels) in CFDVS has grown to very healthy numbers over the years. Over the last 12 years, 12 Ph.D. students have worked/are still working on their doctoral dissertation at CFDVS. Of these, five Ph.D. students have already graduated, one student has submitted his dissertation, and one student is currently in the process of writing his dissertation. In addition, more than 74 M.Tech. students and more than 54 B.Tech. students from IIT Bombay have done their M.Tech. and B.Tech. projects, respectively, from CFDVS. Research and development work done at CFDVS has resulted in more than 75 publications in international peer-reviewed conferences and journals. During the past eleven years, strong linkages have also been developed between CFDVS and DAE scientists.

Principal Investigators of CFDVS have given invited talks and tutorials at various places in India and abroad. These include several invited talks given at BARC, ADA, VSSC, several IITs, Institute of Mathematical Sciences at Chennai, NICTA, University of New Southwales at Sydney.

The research and development project being carried out at CFDVS can be broadly classified into the following categories:

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 :

Research Projects (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

Consultancy / Sponsored Projects

Sr. No.	Name of the project	Sponsoring agency	Status
1	Visual Specification and Modeling of Distributed Systems	General Motors, Bangalore	Ongoing
2	Formal Verification of Akash onboard process	DRDL, Hyderabad	Ongoing
3	Development of tool for formal verification of VHDL based data and control Dominated designs used in safety critical systems	BRNS, Mumbai	Ongoing
4	Analysis of SCADE lusture models : Runtime monitoring and testing	BRNS, Mumbai	Ongoing
5	Feasibility Study of Formal verification of onboard Software	Vikram Sarabhai Space Centre, Trivandrum	Completed
6	Improving GCC ports of ABACUS and ANUPAMA	ANURAG, DRDO, Hyderabad	Completed

Project Under Discussion

Formal Verification of Hardware Modules in ANAIO FPGA: Sponsored by Bhabha Atomic Research Centre, Mumbai.

3. Prof. Sridhar Iyer, CSE Dept.
Area of Interest: Distributed Systems; Mobile computing; concurrency Analysis

Centre Staff :

Participating Faculty:

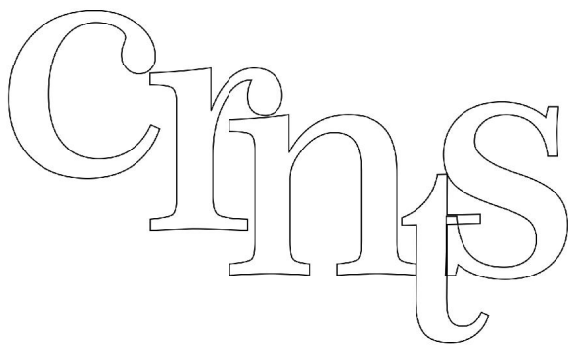
1. Prof. G. Sivakumar, CSE Dept. (The Head)
Area of Interest: Logic and Automated Reasoning, Networks and Distributed Systems.
2. Prof. Supratik Chakraborty, CSE Dept.
Area of Interest: Formal methods in analysis/validation/verification of digital systems, Asynchronous and concurrent systems, Timing Analysis.

4. Prof. S. Biswas, CSE Dept
Area of Interest: Parallel and distributed Processing, Neural Nets, Architecture
5. Prof. A. Sanyal, CSE Dept.
Area of Interest: Functional Programming, Compilers and programming languages
6. Prof. U. Khedker, CSE Dept.
Area of Interest: Programming Languages Compilers, data flow analysis

7. Prof. Kavi Arya, CSE Dept.
Area of Interest : Functional Programming
Applications (Domain Specific Languages),
Embedded Systems/Parallel Programming
Language, Distance Learning
8. Prof. Krishna S., CSE Dept.
Area of Interest: DNA Computing, Membrane
Computing, Grammar Systems, combinatorics on
words, Formal Methods, Duration calculus and
Logics of Time.
9. Prof. R. K. Shyamasundar (Adjunct Faculty)
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.
10. Prof. P.K. Pandya (Adjunct Faculty)
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.

Research Engineers/Scientists:

11. Ms. Seetha Jayasankar
12. Mr. Abhisekh Sankaran
13. Mr. Hrishikesh Karmarkar



Centre for Research in Nanotechnology and Science

Introduction

Centre for Research in Nanotechnology and Science (CRNTS) has been the nodal point wherein the efforts of about 40 faculty across 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, CRNTS promotes interaction among the faculty of different departments and promotes interdisciplinary research in Nano sciences and technology.

During the year 2008-09, a new PhD programme in Nanotechnology had been initiated. Following this, PhD students are being recruited during every admission session. The ratio of the number of successful applicants to the number of total applicants is close to 1:200.

The facilities being set up in CRNTS presently include the cell and tissue culture facility and the chemistry laboratory for synthesis of nanoparticles and nano-coatings.

Sophisticated Analytical Instrument Facility

From its inception in 1976, Sophisticated Analytical Instrument Facility (formerly known as **Regional Sophisticated Instrumentation Centre**), has grown over the past three decades and has successfully made efforts to acquire, maintain and provide advanced analytical research facilities to a broad spectrum of users from universities, R&D laboratories, industries and educational institutions. Due to generous grants from the Department of Science and Technology, new sophisticated analytical instruments have been added to our centre at regular intervals to keep up with the ever developing research & advanced technology. One additional state-of-the-art facility, viz., ESR (Electron Spin Resonance) spectrometer has arrived.

SAIF at IIT Bombay continued its endeavor of providing excellent instrumental facilities thereby attracting large numbers of scientific and research

personnel from universities, R&D establishments and industry. Large numbers of students and faculty members at IIT Bombay extensively use SAIF facilities for their research work.

The centre has provided facilities for the analysis of 13098 samples during the year 2010-11. The value of service provided is Rs. 87,14,486/- with concession and Rs. 2,60,19,499/- without concession. The contribution of SAIF to the various categories of users from IIT Bombay is given in Table-1 along with the value of services provided.

Table 2 provides information on samples analysed during the year 2010-11 and the earnings accrued to SAIF from external users.

Academic institutions, R&D laboratories and industry have continued to utilize the various analytical facilities at SAIF, IIT Bombay.

The Department of Science & Technology, New Delhi, continued to support SAIF facilities by providing financial support of Rs. 15,17,000/- for procurement of state-of-the-art facilities.

As before, interaction with industries and various academic institutions has been a part of the SAIF activities, which include R & D. SAIF continues to interact with industries, academic and R&D institutions as part of its activities. The following are the significant contributions during the year 2010-11.

R & D Activities

Ongoing sponsored projects:

1. Development & characterization of nanophosphors for strategic applications sponsored by DRDO by Dr. Mayuri Gandhi
2. Analysis & Process Modification of CETP at Ankleshwar sponsored by ETL, Ankleshwar, UPL group by Dr. C.S. Harendranath

3. Physics based approach for modeling of Electromagnetic wave absorbers By Dr. R.P.R.C. Aiyar (DRDO CARS Project)

Scientists/Engineers and their Specializations

1. **Dr. C. S. Harendranath**
Fracture and Failure Analysis, Bio-materials.
2. **Mr. L. S. Mombasawala**
Electronics; Instrumentation and measurement.

3. **Dr. (Mrs.) S. Vijayalakshmi**
Gas Chromatography, Gas Chromatography-Mass Spectrometry, Preparation of microporous and macroporous adsorbents.
4. **Dr. (Mrs.) M. N. Gandhi**
Liquid Chromatography Mass Spectrometry, Fourier Transform Infrared Spectrometer Imaging, CHNS Analyser, Analytical Chemistry, Solvent Extraction, crown ether and Environmental Monitoring, Nanophosphors.
5. **Dr. R. P. R. C. Aiyar**
Magnetism and Magnetic materials, Nano magnetic materials, computational electro-magnetics.

Sophisticated Analytical Instrument Facility I. I. T. Bombay

**Table 1 : Contribution of SAIF to Academics at IIT Bombay
(01-Apr-2010 To 31-Mar-2011)**

Sr No.	Course	No. of Users	No. of Samples	Charges (Rs.)	As per Industry Charges (Rs.)
1	M.Sc.	22	174	61270	245080
2	B.Tech.	4	28	8724	34900
3	Dual Degree Programme	29	386	213289	853156
4	M.Tech.	49	611	276964	1107856
5	Ph.D.	221	3424	1791167	7164668
6	Post Doctoral Fellow	44	258	143360	573440
7	Other (Faculty/Project Staff)	55	369	208825	835300
	Total	424	5250	2703600	10814400

Sample Analysed Information (External+Internal)

Period : (01-Apr-2010 To 31-Mar-2011)

Sr No.	Instrument	No. of Users	No. of Internal Samples	No. of External Samples	No. of Samples	Internal Charges (Rs.)	External Charges (Rs.)	Charges (Rs.)
1	CHN	145	349	799	1148	202500	1222528	1425028
2	DSC	11	19	63	82	6750	22040	28790
3	ESR	132	455	1472	1927	86125	304644	390769
4	FEG-SEM	142	764	104	868	597875	126373	724248
5	FTIR	163	714	759	1473	97725	187211	284936
6	FTIR-IMG	35	275	13	288	97000	7602	104602
7	GC-HRMS	2	12	0	12	8000	0	8000
8	GCMS	90	81	537	618	42500	493418	535918
9	IAS	2	5	3	8	625	1655	2280
10	LCMS	159	326	816	1142	186500	895515	1082015
11	NMR	265	1416	1984	3400	802640	1250072	2052712
12	SIMS	22	58	28	86	58000	75204	133204
13	TEM	248	491	967	1458	389300	1063484	1452784
14	TG/DTA	48	101	117	218	66450	79226	145676
15	XRF	50	184	186	370	61610	281914	343524
	Total	1514	5250	7848	13098	2703600	6010886	8714486

Total Number of Samples Alalyzed, Number of Users & Charges

Earnings are from External Samples Rs. 6010886

75% discount for University/Educational Institute

40% discount for research Institute

Figure 1 : Samples analysed in different categories in 2010-2011

Period : (01-Apr-2010 To 31-Mar-2011)

Internal IITB 5250	University 6048	National Lab 700	Large Scale Industry 1100	Total 13098
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**Figure 2 : Amount charged with concession to various users
during 2010 -11 (Rupees)**

Internal IITB 2703600	University 2876781	National Lab 845806	Large Scale Industry 2288299	Total 8714486
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**Figure 2 : Amount charged without concession to various users
during 2010 -11 (Rupees)**

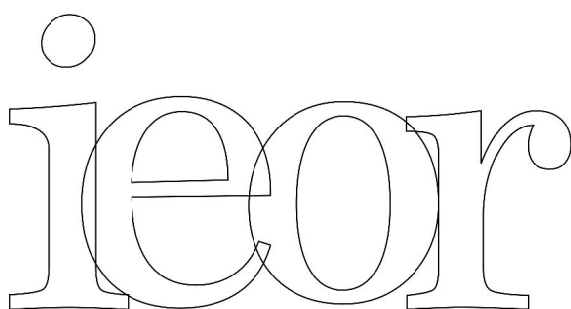
Internal IITB 10814400	University 11507124	National Lab 1409676	Large Scale Industry 2288299	Total 26019499
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**Table 2: Samples Analysed
(01-Apr-2010 To 31-Mar-2011)**

Annual Internal External Report				
Type	Users	Samples	Charges	Actual Charges
Internal	424	5250	2703600	10814400
External	1090	7848	6010886	15205099
Total	1514	13098	8714486	26019499

**Department Wise Total Internal Charges
Period : 01-Apr-2010 To 31-Mar-2011**

Sr No.	Department	No. of Users	No. of Samples	Internal Charges (Rs.)	As per Industry Charges (Rs.)
1	C.E.S.E.	10	175	114790	459160
2	Chemical Engineering	36	382	224144	896576
3	Chemistry	119	2075	1092451	4369804
4	Civil Engineering	10	310	117832	471328
5	Corrosion Science & Engineering	3	49	27350	109400
6	C.R.N.T.S.	12	182	116342	465368
7	C.T.A.R.A.	2	18	15375	61500
8	Earth Sciences	20	367	136537	546148
9	Electrical Engineering	5	106	51688	206752
10	Energy Science & Engineering	16	225	119832	479328
11	Mechanical Engineering	7	26	21899	87596
12	Met. Engg. & Mat. Science Dept.	49	762	366760	1467040
13	Physics	25	222	152272	609088
14	School of Bio-Science & Bio Engineering	36	351	146328	585312
	Total	350	5250	2703600	10814400



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 in IEO and an M.Sc.-Ph.D. dual degree in Operations Research. IEO has five faculty members and, together with other institute faculty members who are associated with the programme in teaching and research, IEO has a depth and breadth in capability that makes the programme unique in the country.

Apart from its continued research focus in several areas, IEO has expanded its course offerings to include new courses at both the postgraduate and undergraduate levels. Two Ph.D. level courses IE 802 Topics in IEO and IE 804 Convex Analysis were offered during July-November and January-April. Both were well received.

An integrated MSc-Ph.D. programme in Operations Research has been started in the academic year 2009-10. Students enter this programme by qualifying through the JAM exam. The programme is aimed at students with a background in Mathematics and Statistics at the Bachelor's level. The first batch in this programme admitted seven students in July 2009 and 10 were admitted in July 2010. At present there are a total of 16 students in this programme.

Academic Programmes

IEOR offers M.Tech., Ph.D. degrees and an M.Sc.-Ph.D. dual degree. The current strength of Ph.D. students is 15 and is on the rise in the last two years. There are now 16 students in the M.Sc.-Ph.D. programme. The M.Tech. programme is among the popular ones across almost all streams in engineering with a strength of 27 students.

Degrees Awarded in 2010

M.Tech.	: 13
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Two new Ph.D. level courses IE 802 Topics in IEO and IE 804 Convex Analysis were introduced during July-November and January-April semesters, respectively. Both were well received. One new laboratory course IE 684 IEO Lab was offered to the students of the second year M.Sc.-Ph.D. students and others.

IEOR faculty participates in the teaching and research activities of CTARA. IEO continues to contribute to undergraduate/postgraduate teaching, with substantial elective registration of students from various departments in its elective courses, and with contribution by faculty and students to the teaching of the institute level core course on IC 102 Data Analysis and Interpretation.

IEOR is participating in the IITB-Monash Academy Ph.D. programme, with four doctoral students 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
“Evaluation of options for sizing of commercial aircraft”	National Aerospace Laboratories, Bangalore	Completed Project
“Design and Development of Distributed Hybrid Simulation Environment for Supply Chain Analysis”	DST	Ongoing Project
“Markov Decision Processes and Stochastic Games”	IRCC, IIT Bombay	Ongoing Project

Consultancy Projects

Apart from ongoing projects, the IEOR department undertook one new project which led to a revenue of Rs 5,51,000. Two projects initiated earlier were completed during the year.

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

National

Chandrama Naha with **Jayendran Venkateswaran** *14th Annual International Conference of the Society of Operations Management*, NITIE Mumbai, held on December 17-19 2010 at NITIE, Mumbai. **Chandrama Naha**² presented the paper on Agent Based Simulation Games for Analysis of Supply Chain Processes, co-authored with **Jayendran Venkateswaran**.

Ranjan Das, Narayan Rangaraj

A paper co-authored by **Ranjan Das**, **Narayan Rangaraj** and Subhodeep Moitra (Carnegie Mellon University) was presented at the *14th AICSOM 2010 Conference*.

More, D.¹, and **A. Subash Babu**, presented a paper on Investigation of supply chain flexibility using a forced field analysis- a case study, *XIV Annual International Conference of the Society of Operations Management*, NITIE, Mumbai, India. , 2010.

Jayendran Venkateswaran attended the *43rd Annual Convention of ORSI in conjunction with an International Conference on Operational Research for Urban and Rural Development (ORURD)* held from 15th to 17th of December 2010 at TCE, Madurai. He presented the paper on Investigations on the use of chance constraints in Aggregate Production Planning and also chaired a session.

K.S. Mallikarjuna Rao attended the *ICM Satellite Conference on Probability and Stochastic Processes*, held at the Indian Statistical Institute, Bangalore, from August 13-17, 2010. He gave a talk on Nash Equilibrium in Stochastic Games and its Approximation, based on joint work with PhD student **Vikas Vikram Singh**¹ and **N. Hemachandra**.

K.S. Mallikarjuna Rao gave a talk on Game Theory and Applications in Supply Chains, The 5th Data Analytics and Operations Research Workshop, at IBM Research and IIT Delhi, October 29-30, 2010.

Narayan Rangaraj gave an invited talk titled “**Industrial Engineering and Operations Research applied to Infrastructure and Service Sectors**” at the College of Engineering, Trivandrum on 26 November, 2010, at the *International Conference on Technological Trends*, organized by College of Engineering Thiruvananthapuram, Kerala.

Visitors

Mohan Krishnamoorthy, CEO, IITB-Monash Research Academy, “Scheduling aircraft landings optimally”, on March 18, 2011

Rahul Pandey, IGSA Labs, “Modeling supply chain decisions and developing solutions”, on March 1, 2011.

Sameer Kamal, School of Technology and Computer Science, TIFR, Mumbai, “Stochastic approximation - convergence and stability.”, on February 9, 2011.

Ruta Mehta, CSE, IIT Bombay, “Rank-1 Two-player Games: A Homeomorphism and a Polynomial Time Algorithm.” on February 4, 2011

Debjit Roy, University of Wisconsin, “Design insights for warehouse systems using autonomous vehicle technology” on January 28, 2011

Saikat Saha, Linkoping University, Sweden, “Approximate Bayesian inference & model learning using particle filtering” on January 24, 2011

Yashodhan Kanoria, Stanford University, “Fast Convergence of Natural Dynamics in Bargaining Networks” on January 7, 2011

Johann-Friedrich Luy, Daimler Benz, “Automotive Data Analysis” on November 30, 2010

Sandeep Juneja, TIFR, Bombay, “The Concert Queuing Game: To Wait or To be Late” on November 4, 2010.

Murali. K. Srinivasan, Mathematics, IITB, “Binary code upper bounds based on semi-definite programming and explicit block diagonalization”, on October 22, 2010.

Siddhartha Sengupta, TCS, “When do IT Investments Pay? Proposal for a way ahead in strategic ICT projects” on September 22, 2010

Reinhold Klass, Mercedes-Benz Research and Development India, “Digital Engineering Visualization in Automotive Product Creation Processes” on August 27, 2010

Mokshay Madiman, Yale University, “Fundamental Limits of Distributed Estimation and Multiuser Information-Theoretic Games” on August 27, 2010.

Alladi Subramanyam, Mathematics, IITB, “Bivariate exponential distribution: Properties, Estimation and Applications.” on August 20, 2010

Kate Smith-Miles, School of Mathematical Sciences, Monash University, Australia, “How can data mining help to understand what makes an optimization problem hard, which algorithm will perform best, and why?” on August 17, 2010.

Vivek Borkar, TIFR, “Learning Algorithms for Risk-Sensitive Control” on June 28, 2010.

Santanu Dey, Georgia Institute of Technology, “The Chvatal-Gomory closure of an Ellipsoid is a Polyhedron”. on April 6, 2010.

Invited Lectures

K.S. Mallikarjuna Rao delivered series of three lectures on Game Theory, School of Technology and Computer Science, at Tata Institute of Fundamental Research, Mumbai, in September, 2010.

Honorary Work

IEOR faculty members have been reviewers for European Journal of Operational Research, Opsearch, Management Science, Discrete Optimization, Indian Journal of Pure and Applied Mathematics, Transportation Science, IEEE Transactions of Automation Science and Engineering.

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**
Methodologies like Markov decision models, Queueing models, Game theory, etc. Applications of such methodologies to Communication networks, Supply chains, Financial engineering, Logistics and Power systems.
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)
9. P. Chaporkar (EE)

Associated Faculty: Research

10. S. A. Soman (EE)
11. A. Subramanyam (MA)
12. K. Suresh Kumar (MA)
13. M. A. Sohoni (CSE)
14. G. K. Adil (SJMSOM)
15. A. G. Ranade (CSE)
16. Mani Bhushan (Chem. Engg.)
17. V. M. Tom (Civil Engg.)
18. 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 atleast 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.

Academic Programme

The group offers M.Tech. and Ph.D. programmes. During the academic year 2010-2011 the number of students joined the M.Tech. programme was 23 and

the Ph.D. programme was 11. This year 24 M.Tech. and 4 Ph.D. degrees were awarded.

Student Intake

M.Tech.	: 23
Ph. D.	: 11

Degrees Awarded

M.Tech.	: 24
Ph. D.	: 4

R & D Activities

Sponsored Research Projects:

Ongoing	: 6
Completed	: 2
Consultancy Project	
Completed	: 1

Project Title	Sponsoring Agency	Status
"Real-time embedded control of magnetic levitation system"	MHRD	Completed
Simulation of Control of Magnetic Levitation System	MHRD	Ongoing
"Control law development for singularity avoidance in CMGs on satellites"	Indian Space Research Organization	Ongoing
"Path planning and control of nonholonomic systems"	Department of Science and Technology	Ongoing
"Modelling and control of mechanical systems with flexible elements and fluids"	Indo-French Centre for the Promotion of Advanced Research	Completed
"Decentralized Control of Multi-satellite Formation Flying"	ISRO	Ongoing

Project Title	Sponsoring Agency	Status
Software Development for intelligent control of Mobile Robots based on Higher Order Sliding Modes.	Indo-Mexican	Ongoing
Small Satellite Formation Flying Innovative and Low Cost Control Technologies.	Royal Society of London UK	Ongoing
Consultancy Project Evaluating the performance/ suitability of L&T/GE Energy make OC 4000 Digital Control System for 660MW super critical Thermal Power Generating Unit	MAHAGENCO, Maharashtra(2010-2010)	Completed

Extension Activities

A laboratory on embedded control systems is under development. The experiments in this laboratory intend to provide hands-on experience to PG students on design and implementation of control systems on different embedded platforms. They are designed to cover the dependencies between control system and implementation, design trade-offs and issues related with computer-based control. The laboratory also focuses on the research issues of implementing different advanced control strategies by selecting right embedded platform.

Visitors to the Department

Dr. Amit Bhaya, Professor of Electrical Engineering, Federal University of Rio de Janeiro, Brazil, visited Syscon during August 2010. He offered a 4-lecture course on "Numerical Algorithms and Control".

Prof. Bernard Maschke, University Professor in Automatic Control, University of Lyon, visited Syscon during April 2010. He delivered a series of lectures on "A Hamiltonian Approach to Controlled Distributed Parameter Systems."

Conferences/Symposia/Workshops/ Seminars (Participated)

Bandyopadhyay B. was a Member, International Programme Committee in *11th International Workshop on "Variable Structure Systems"*, June 2010.

Nataraj P. S. V. organized "*A Training Course on Magnetic Resonance Imaging*", at IIT Bombay, during May 19-23, 2010.

Nataraj P. S. V. organized a CEP course on "*Automation and Control*", Gujarat Technical University, Ahmedabad, June 2010.

Nataraj P. S. V. organized a CEP course on "*Digital Control*", Gujarat Technical University, Ahmedabad, December, 2010.

Banavar R. N participated in "*49th IEEE Conferences on Decision and Control*" held in Atlanta, Georgia USA.

Invited Lectures

Bandyopadhyay B. was invited to give a talk on "*Sliding Mode applications in aerospace applications*" at the *4th Ethiopian National Scientific Conference on Electrical Engineering(CEE2010)* at Ethiopia in August, 2010.

Bandyopadhyay B. has delivered Three talks on "Discrete-time sliding mode, performance improvement with nonlinear sliding surfaces, multirate output feedback", at *UNAM*, Mexico in May 2010 and one talk on "Modelling and control of Pressurised Heavy Water Reactor(PHWR)" at *Cinvestav*, Mexico in June, 2010

Bandyopadhyay B. has delivered a plenary talk on "Robust High Performance Sliding Mode Control with Integral Action" at an *IEEE International Conference* at Allahabad in Dec, 2010.

Leena Vachhani was invited to give a talk on "CORDIC: Emerging trends" at *International Conference on Current Trends in Technology*, NuiCon'2010, Nirma University, Ahmedabad in Dec, 2010.

Faculty Members and their Specialization

Core Faculty

1. **Banavar R. N.**
Convener, Systems and Control Engg.
Optimal control, Geometric mechanics and nonlinear control Lagrangian and Hamiltonian mechanics.

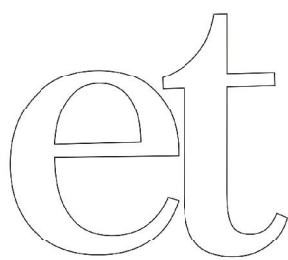
Application areas - Mechanical (robotics), aerospace (launch vehicles, spacecrafts) and electrical power system networks.
2. **Bandyopadhyay B.**
Large Scale Systems, System Reduction, Nuclear Reactor Control, Sliding Mode Control (Continuous & Discrete), Power Systems - Stability & Control, Modeling, Control & Implementation of Smart Structures, Space Launch Vehicles - Stability & Control, Gas Turbines - Stability & Control, Flexible manipulators, Stability & Control Multirate Output Feedback based Control (POF / FOS).
3. **Nataraj P. S. V.**
Robust Stability and Control especially using quantitative feedback theory (QFT) techniques, Nonlinear System Analysis and Control, and Reliable Computing using interval analysis techniques.
4. **Sinha Arpita**
Cooperative control of Multi-agent systems, Resource Allocation, Team theory and its application, Game theory.
5. **Vachhani Leena**
Reconfigurable hardware, Embedded control systems, Robotic path planning algorithms, Hardware/software co-design.

Associated Faculty

6. **Gudi Ravindra D.**
Dept. of Chemical Engg.
Linear and Nonlinear Identification.
Nonlinear and Multimodel Control, Statistical Methods Large scale systems — optimization & control Green Engineering.
7. **Moudgalya Kannan**
Dept. of Chemical Engg.
Process Control, Simulation, Software Engg
8. **Patwardhan Sachin C.**
Dept. of Chemical Engg.
Control relevant dynamic modeling of linear and nonlinear systems Nonlinear model predictive control On-line fault diagnosis and fault tolerant control Nonlinear state estimation and particle

filtering Online parameter estimation and adaptive predictive control

9. **Bhartiya Sharad**
Dept. of Chemical Engg.
Modeling, Identification and control of hybrid systems Analysis of biological regulatory networks
10. **Bhushan Mani**
Dept. of Chemical Engg.
Fault detection and diagnosis, Sensor network design, Constrained state estimation, Optimal alarm management, Statistical data analysis applications to pollution source identification and fermentation operations.
11. **Noronha Santosh**
Dept. of Chemical Engg.
Modeling and analysis of metabolic and genetic regulatory networks, Fault detection and diagnosis, Adaptive Control of Bioreactors
12. **Agarwal Vivek**
Dept. of Electrical Engg.
Power Conversion, Power quality issues, Non-conventional energy, Intelligent control of power electronic systems, Design of electronic systems, Electromagnetic Interference and compatibility (EMI/EMC)
13. **Belur Madhu N.**
Dept. of Electrical Engg.
Systems & Control theory, Behavioral theory of Systems and Control, Optimal control, Numerical aspects, Hybrid systems
14. **Pillai H. K.**
Dept. of Electrical Engg.
Control theory; Behavioural theory of Systems; Multidimensional systems; optimal control; Coding theory; Optimization techniques.
15. **Chakraborty Debraj**
Dept. of Electrical Engg
Optimal Control, Differential Games, Nonlinear Feedback Theory, Control of Biological Systems and Diseases.
16. **Duttagupta Siddhartha P.**
Dept. of Electrical Engg
Microelectronics
17. **Gandhi P. S.**
Dept. Mechanical Engg.
Nonlinear Dynamical Systems and Control, Mechatronics, Micro Electromechanical Systems (MEMS), Robotic systems, kinematics and dynamics, Appropriate technology for India.
18. **Suryanarayanan S.**
Dept. Mechanical Engg.



Educational Technology

Introduction

The Interdisciplinary Programme (IDP) in Educational Technology was started in the institute from the autumn semester of the academic year 2010-11. Faculty members from almost all the departments of the institute are participating in the IDP. Different aspects of research in educational technology are being addressed by various research groups. Some of the areas are instructional design in different streams of science and engineering, video coding for the purpose of distance education – technology of coding and transmission, learner-centric tutoring systems, pedagogy and evaluation for online learning, concept inventory development, use of technology in classroom pedagogy, specific use of WEB 2.0 technologies, transformative pedagogical engagement for the student and the teacher, implementation and assessment of ICT tools to enhance learning in new or constrained situations, open source software, open source hardware, synchronous and asynchronous education, educational methodologies, mining for textbook generation, design and deployment of virtual laboratories and remote triggered experiments, employing multivariate statistical/pattern recognition methods for use in evaluating research methodologies, technology-enhanced learning in different areas of science and engineering, exploring the role of simulations, models and animations in teaching large classes, designing collaborative environments for learning and social interactions, scaffolding for online teaching of programming to Hindi-medium students, methodology for creating 3D educational visualizations and exploring their effectiveness as compared to 2D animations, economic impacts of technology-enabled education and socioeconomic empowerment through technology education.

Academic Programme

The IDP in educational technology offers a Ph.D. programme in educational technology and, in the first year, nine students (six in the autumn semester and three in the spring semester) have joined the Ph.D. programme. Two new courses have been offered to

these students, namely, “Introduction to Educational Technology” and “Research Methods in Educational Technology”. The students are also encouraged to take additional courses in their core disciplines. The first batch of students includes several teachers from colleges in and around Mumbai.

Research Projects

Murthy Sahana

Project OSCAR++, Open Source Courseware Animations Repository, sponsored by the Ministry of Human Resource Development under the National Mission on Education through Information and Communication Technologies.

Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning, sponsored by the Ministry of Human Resource Development under the National Mission on Education through Information and Communication Technologies.

Iyer Sridhar

OSCAR (10MHRD011) (Co-PI – Sahana Murthy).

This is part of the National Mission on Education through ICT. The project aims to develop a large number of web-based learning objects (animations and simulations) for various subjects in engineering.

Invited Lectures

Kannan Moudgalya

“Virtual labs: Single Board Heater System”, *National Conference on Computational Intelligence and Signal Processing*, Assam Don Bosco University, 3 March 2011

“National Mission on Education through ICT, FOSS in Education”, NIT Calcut, 12 September 2010

Spoken Tutorials for IT literacy and employment, “Open Paradigms in Education”, India International Centre, New Delhi, 31 Jan.- 2 Feb. 2011

Bahadarpurkar Aniket M., Mangal Amit Kumar, Mukherjee Iman, Malewar Anant, **Gadre Vikram M.**, “Taking an Integrated View of Current Trends in Video Coding, in the Context of a Next Generation Distance Education Network”.

Invited Paper and Talk, IET (The Institution of Engineering and Technology, UK) International Conference on Next Generation Networks, 24-25 September 2010, The Residence Hotel and Convention Centre, Powai, Mumbai, India, Proceedings, pp. 11-17.

Conferences (Participated/ Papers Presented)

Viswanathan Usha and Murthy Sahana

International Conference on Information and Communication Technologies and Development (ICTD 2010), London, UK, December 2010.

epiSTEME 4 — International Conference to Review Research on Science, Technology and Mathematics Education, Homi Bhabha Centre for Science Education, Mumbai, January 2011.

Honorary work

Kannan Moudgalya

Member, Standing Committee, National Mission on Education through ICT
Member, Academic Council, IGNOU

Murthy Sahana

Program Co-chair for the 2nd International Conference on Technology for Education (T4E 2010), Mumbai, July 1-3 2010.

Faculty members and their Specialisations

- 1) **P. J. Bhat**
Educational Technology in Biosciences
- 2) **M. C. Deo**
Instructional Design for Civil Engineering
- 3) **T. I. Eldho**
Role of Geospatial Technologies in Enhancing Technical Learning, New Instructional Design Paradigms for fluid mechanics learning.
- 4) **V. M. Gadre**
Video Coding for the purpose of Distance Education - technology of coding and transmission.

- 5) **U. N. Gaitonde**
Instructional design in Mechanical Engineering and Thermodynamics
- 6) **Meenakshi Gupta**
Educational Psychology
- 7) **Sridhar Iyer**
Learner-centric tutoring systems.
Pedagogy for online learning.
Concept inventory development.
- 8) **Shishir K. Jha**
Use of technology in classroom pedagogy.
Specific use of WEB 2.0 technologies.
Transformative pedagogical engagement for the student and the teacher.
- 9) **Anirudha Joshi**
Visual Design, Usability Studies, Human-Computer Interface Design, Contextual Design, Interface Evaluation, Interface Design for Indian languages, New Media Design
- 10) **A. V. Mahajan**
Technology Enhanced learning, Physics Education
- 11) **Kannan Moudgalya**
IT literacy, bridging digital divide, virtual labs, open source software, open source hardware, synchronous and asynchronous education, educational methodologies, mining for textbook generation.
- 12) **Sahana Murthy**
Pedagogy and evaluation of e-learning content
Implementation and assessment of ICT tools to enhance learning in new or constrained situations
Use of technological tools in physics education
- 13) **K. Narayanan**
Economics of education,
Economic impacts of technology-enabled education Socioeconomic empowerment through technology education
- 14) **Santosh Noronha**
Design and deployment of remote triggered experiments, and employing multivariate statistical/pattern recognition methods for use in evaluating research methodologies
- 15) **Prita Pant**
Technology-Enhanced learning in metallurgical engineering and materials science – explore the role of models and animations in teaching large classes (up to 100 students)

- 16) M. B. Patil**
Design and deployment of virtual laboratories and remote triggered experiments
- 17) D. B. Phatak**
Educational Technology for Countrywide Education particularly in Computer Science and Engineering
- 18) Ravi Poovaiah**
Designing collaborative environments for learning and social interactions, Designing for children - with a focus on 'play and learn', Information design, Structuring and visualisation, Interface design and Designing interactions, Temporal and spatial aspects of visual language
- 19) C. S. Solanki**
Educational technology for photovoltaics
- 20) K. Sudhakar**
Educational methodology
- 21) B. L. Tembe**
"New instructional design paradigms for thermodynamics and statistical mechanics"
Application of methods of educational technology in chemical education
- 22) S. Umashankar**
Technology - enhanced learning, Physics education
- 23) J. K. Verma**
Technologies for mathematics education for large classes

publications

Books

Desai Y.M & T.I. Eldho

Text Book: *Finite Element Method with Applications in Engineering* – Y.M. Desai, T.I. Eldho, A.H. Shah, published by Pearson Education, New 978-81-317-2464-4, 470 Pages. Delhi, 2011, ISBN

Edited Books/ Monograph:

Climate Change and Water Management – Editors: Subimal Ghosh & T.I. Eldho, IIT Bombay.

Ghorpade S.R. and Limaye B.V.

A Course in Calculus and Real Analysis, corrected Indian reprint, Springer International, New Delhi, 2010, vii + 432 pages (with S.R. Ghorpade)

A Course in Multivariable Calculus and Analysis, Indian Reprint, Springer International, New Delhi, 2010, xii + 475 pages (with S.R. Ghorpade)

Parthasarathy D.

Parthasarathy, D, T.F.Thekkekkara and Veena Poonacha, Eds., *Women's Self Help Groups: Restructuring Socio-Economic Development*, Dominant Publishers, Delhi, March 2011.

Robinson, R.

Ed. *Margins of Faith: Dalit and tribal Christianity in India*. New Delhi: Sage Publications. (Co-editor: Marianus Joseph Kujur).

Rana Inder K.

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Ranade Shilpa

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Central library

Introduction

Central Library plays a vital role in furthering the academic and research mission of IIT Bombay and facilitates creation and dissemination of knowledge. The range of services offered by the library are comparable to the best libraries in the world. Besides holding an excellent print collection of over 427,000 volumes of books, journals, theses, reports, standards, pamphlets, it provides access to over 12000 electronic books, journals and databases in sciences, engineering, technology, humanities, social sciences and management. The library continued to offer its services to professionals, educational institutes, industry and corporate houses in addition to 10,000 members from IIT Bombay and earned over Rs 37 lakhs for various services rendered. The library made a significant progress during the year. It revised its rules to accommodate users bringing their personal books in the library. The existing limit to borrow books was enhanced for faculty and students. On-line renewal

of books was introduced for the first time. A workstation has been set up for users to check out books for themselves. Compact shelves have been installed in the basement to accommodate some of the old and unused books creating space for new books. An Architect has been appointed to undertake renovation and extension of the library building.

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, social sciences and management is considered one of the best in the country. The total collection of library as on March 2011 stands as follows :

<i>Collection</i>	<i>Added during 2010-11</i>	<i>Total as on 31 March 2011</i>
Books, theses, CDs, Videos	2936	2,29,077
TLL & BC (Book bank) collection	32	11390
Bound volumes of journals	2573	1,14,893
Reports, pamphlets, standards	184	67308
Photocopies, films	—	4410
Total	5725	4,27,078
Subscription to journals	—	1330

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. A book exhibition was also organized during August 2010 to facilitate students, faculty and staff to browse and select latest publications in their subjects.

3. Digital Library

Central Library has its own homepage (<http://www.library.iitb.ac.in>), 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 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 renewal and reservation, circulation, fine collection, and indicates status of a particular book. OPAC is searchable by author, title, accession number, subject and several other fields.

3.2 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 :

3.2.1 Full-text Resources

ABI Inform -
ACM Digital Library -
ACS Journals -

ACS Legacy Archives (23 journals 1879-1995)
AIAA Journals -
AIP Journals -
AMS Journals -
Annual Reviews
ASCE Journals -
ASCE Proceedings -
ASME Journals (+ AMR) -
ASTM Journals -
ASTM Standards -
BioOne 1 (82 high impact bioscience journals and 1 book)
Blackwell Journals -

Cambridge University Press Journals -
Capitaline -
CMIE Databases
CRIS-INFAC CRISIL Ind. Information -
Duke Mathematical Journal (Volume 1 – 100)
EBSCO Databases -
Emerald Full text -
Euromonitor GMID -
ICE (24 journals)
IEEE/IEE Electronic Library Online -
INFORMS (12 journals package)
INSIGHT -
JSTOR Journals Archive -
IOP Electronic Journals -
Journal of Geophysical Research (7 journals)

Space Physics
Solid Earth
Oceans
Atmospheres
Planets
Earth Surface
Biogeosciences

<http://proquest.umi.com/pqweb?RQT=302&cf=1>
<http://portal.acm.org/portal.cfm>
<http://www.library.iitb.ac.in/dres/ACS.html>
pubs.acs.org/journals
<http://pubs.acs.org/archives/promo/index.html>
<http://www.library.iitb.ac.in/dres/AIAA.html>
<http://www.library.iitb.ac.in/dres/AIP.html>
<http://www.ams.org/journals/>
<http://www.annualreviews.org/>
<http://www.pubs.asce.org/journals/jrns.html>
<http://www.ascelibrary.org/ascecp>
<http://www.asme.org/publications/journals>
<http://journalsip.astm.org>
<http://enterprise.astm.org>

<http://www.bioone.org>
<http://www.blackwell-synergy.com/action/showjournals>
<http://journals.cambridge.org>
<http://www.capitaline.com/user/framepage.asp?id=1>
On Intranet
<http://www.crisil.com>
projecteuclid.org
<http://search.ebscohost.com/>
<http://www.emeraldinsight.com/>
<http://www.euromonitor.com/gmid>
<http://www.icevirtuallibrary.com/content/journals>
<http://ieeexplore.ieee.org>
<http://journals.informs.org>
<http://www.insight.asiancerc.com/>
<http://www.jstor.org>
<http://www.iop.org/EJ/subs/-view=journal>

<http://www.agu.org/journals/ja>
<http://www.agu.org/journals/jb>
<http://www.agu.org/journals/jc>
<http://www.agu.org/journals/jd>
<http://www.agu.org/journals/je>
<http://www.agu.org/journals/jf>
<http://www.agu.org/journals/jg>

Material Science and Engineering Collection (Trans Tech) - Nature Online (27 journals) - Optics Infobase, Optical Society of America (14 journals) Oxford Subject Collections (2 subjects) Humanities & Social Sciences Mathematics & Physical Sciences Proceedings of the Royal Society (A) Project MUSE - Psycarticles - RSC Journals + Archives - Sage Subject Collections (3 subjects) Psychology Sociology Urban studies & Planning Science Direct - Science of Synthesis Science Online (AAAS, USA) - SIAM Journals Online - SIAM's Online Journal Archive (LOCUS) - Springer verlag Link (including Lecture Notes in Computer Science Lecture Notes in Control and Information Science Lecture Notes in Physics) Taylor & Francis Journals - Wiley Journals -	http://www.library.iitb.ac.in/dres/ejn.html www.scientific.net http://www.nature.com/nature/index.html http://www.opticsinfobase.org http://www.oxfordjournals.org/ http://rspa.royalsocietypublishing.org http://muse.jhu.edu http://csaweb106v.csa.com/ids70/quick_search.php?SID=2qh6a3sa5h775hqbsid1a0eip6 http://www.rsc.org/publishing/journals http://online.sagepub.com/ http://www.sciencedirect.com/ http://www.science-of-synthesis.com/prod/user/index.html http://www.sciencemag.org http://epubs.siam.org/ http://locus.siam.org/ http://www.springlink.com/ http://www.library.iitb.ac.in/index.php?option=com_content&task=view&id=139&Itemid=1 http://www.library.iitb.ac.in/index.php?option=com_content&task=view&id=140&Itemid=1
3.2.2 Databases	
Indian Standards Indian Patents Inorganic Crystal Structure Database INSPEC - J-Gate - JCCC - MathSciNet Scifinder Scholar SCOPUS - Web of Science and Journals Citation Report	- http://bis.library.iitb.ac.in - On library intranet - http://icsdweb.fiz-karlsruhe.de/index.php http://www.engineeringvillage2.org http://j-gate.informindia.co.in http://jccc-indest.informindia.co.in/ - http://www.ams.org/mathscinet - http://web.scifinder/scholar/index.html http://www.scopus.com - http://isiknowledge.com/
3.2.3 Multimedia (intranet, CD-net)	
Chemical Abstracts – 12 th & 13 th Collective Index Chemical Abstracts on CD (2003-) Indian Patents Indian Standards Power Diffraction Files	
3.2.4 Addition of New E-Resources: Central Library added the following e-resources during the year:	
EDITLib PVTECh Collection Multi Science Journals Package	

3.3 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, 703 M. Tech. dissertations and 187 Ph. D. theses were submitted on line.

3.4 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 1650 items and is being updated to cover more publications which are permissible within the copyright regulations. The archive is expected to evolve in to 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 loaned 97,271 books and other documents to its members during the year. In addition to members, 1239 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). 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 the reference service virtually.

4.2 Sharing of Resource and Photocopying service

The library maintains excellent relations with 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 25 and borrowed 6 books to / from other libraries. It provided 851 pages of photocopies to individuals and organizations on payment or on exchange. The library also received 33 pages of photocopies from other institution. 46 organizations maintain Deposit Account with the library to obtain photocopies quickly. The library also supplied 2657 pages of photocopies to the institute faculty free of charge, and 44,514 pages to other users / visitors on payment.

4.3 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 textbooks for undergraduate courses and loans up to seven books each to these students for full semester. During the year, 727 students availed of this facility and borrowed 3089 books from this collection.

4.4 Information Alert Services

The library continues to alert the users about the latest information of their interest by:

- 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

User education is an important regular activity of the library to inform, alert, educate and train users about various resources and services of the library. In addition to orientation programmes organized for new students, the library conducted short duration training programmes on "How to Use" SciFinder Scholar, Web of Science, and CMIE 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 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 activities and services of the library.

6. Staff

The library has a team of talented and dedicated officers and staff who perform their duties exceptionally well, and are always appreciated by our users for their intelligence, enthusiasm and honesty with which they serve them. In addition to their regular jobs, most of them are involved in various academic activities like presenting papers in seminars and conferences, delivering lectures in various training programmes, serving on various expert committees, guiding research etc. Some of the major contributions/achievements are listed below :

1. Mr D Jotwani, Institute Librarian was invited to deliver a lecture on “Change Management in LIS” during 8th Annual Meet and INDEST-AICTE Workshop held at IIT Madras, February 2010. He also delivered a lecture on “Web 2.0 technologies and LIS” in Seminar on E-Resource Management and North Zone User Convention of INDEST-AICTE Consortium, IIT Roorkee, 18-19 November, 2010. He delivered a talk on “Envisioning Library of the Future” in Symposium on Envisioning Library and Information Services, Anna University, Chennai, 17th March 2011. He also served as Chairman / member of the following :
 - Member, National Advisory Committee, INDEST-AICTE Consortium, New Delhi.
 - Chairman, Project Review and Steering Group, Digital Library Project, Ministry of Information and Communication Technology, New Delhi.
 - Member, Aerospace Resource Panel, DRDO, New Delhi.
 - Member Editorial Board, ISST Journal of Advances in Librarianship.
2. Dr. H. S. Waydande, Deputy Librarian has been nominated as member of the Senate of University of Pune. Ms S D Kulkarni, Assistant Librarian (SS) delivered lectures on Information Literacy Initiatives, Standards and Formats and MARC21.

7. Staff Publications

1. Phadke, D. N. 2011. Exploring partnerships for generation of resources in academic libraries: A prospective review In-Library Movement, Management, Marketing and Melange: Certain Perspectives, edited and compiled by Sushma Poudwal, pp 130-151, Mumbai: Top publications.
2. Phadke, D. N. 2010. Data mining aani data warehousing tantracha granthlayat upyog (Use of Datamining and data warehousing techniques in Library), Dnyangangotri 2010, issue 2, Sept – Oct. pp 3-17.

3. Naika, Manju and Waydande, H.S. 2011. Current Trends in Electronic Resource Collection Development. In National Conference on Collection Development of Resources in Electronic Environment, (NICCDREE 2011) Conf Procds, Shubhay Prakashan, Mumbai, 2011, p 99-101.
4. Waydande, H.S., Waghchoure, S.S., Nikam, Pradip and Gokhale, S.B. 2011. Collection Development in E-Libraries, In National Conference on Collection Development of Resources in Electronic Environment, (NCCDREE 2011) Conf Procds, Shubhay Prakashan, Mumbai, 2011, p 113-118.
5. Waydande, H.S and Sutar D B . 2011. Strategies and Challenges for Electronic Collection Development in National Conference on Collection Development of Resources in Electronic Environment, (NCCDREE 2011) Conf Procds, Shubhay Prakashan, Mumbai, 2011, p 237-240.
6. Waydande, H.S. and Waghchoure S S. 2011. Designing Digital Library for College Education and Research Centers. In Emerging Technologies and Changing Dimensions of Libraries and Information Service (International Conf Procds: ETT LIS 2010) Ed by S Katiria and others. KBD Publication, 2010. p 517-520.
7. Waydande, H.S and others. 2010. Role of Public Libraries in the Development of Society. International Library Movement, Vol 32(2), 2010, P 61-66.
8. Naika, Manju and Jotwani, D. 2010. Bibliometric study of web 2.0 literature. Sixth International Conference on Webometrics, Informetrics and Scientometrics (WIS), 19-22 October, 2010, Mysore.

7. Building

In order for the library to remain relevant and to attract large number of users, it has been planned to renovate the existing building, reorganize the resources and workflows and to create a variety of spaces and ambiance which our users will find extremely attractive and conducive for their work. The renovated library building will reflect current trends in ICT and the changing needs of library staff, students and faculty in their use of the library resources and services.



Centre for Distance Engineering Education Programme

Introduction

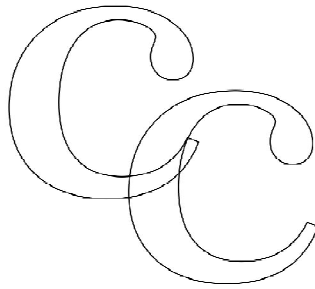
In the year under consideration, CDEEP explored new technologies for transmission of IIT Bombay courses. IIT Bombay courses are available LIVE through Video Conferencing on National Knowledge Network (NKN) with support from National Informatics Centre (NIC). There were a total of 15 courses created and transmitted in CDEEP covering seven disciplines. The course recordings were available to people on campus through intranet. This facilitated them to review the classroom learning and also give feedback to CDEEP for possible improvements. The satellite transmission to 64 centers was stopped as the satellite “EDUSAT” of ISRO is not available. The infrastructure of three CDEEP studios was upgraded to HD quality equipment and state of the art audio systems. CDEEP represented IIT Bombay successfully in a coordination meeting held in February 2011 at NIC Head Quarters, New Delhi, where the reach of NKN was planned to be expanded to 21 new national level institutions across the country by creating Virtual Classrooms. CDEEP is supporting national level projects in Photo Voltaics (PV) by creating recording of courses conducted in CDEEP studios.

Project Activities

During the year 2010-11 the following activities were carried out in CDEEP in the NPTEL Project: NPTEL Phase II is planning to record 57 Video Courses out of which 4 courses are completed and sent for review. Two from Aerospace Engineering, One from Electrical Engineering and One from Electronics. Twenty two courses are being recorded at present and others are to start in the next semester. A workshop on NPTEL Awareness for Colleges in Mumbai was conducted on 19.03.2011. A new HD video conferencing system has been installed. A two-day training on CS5 adobe collection was conducted for staff to use the latest technologies in editing. CDEEP also supports the activities of the project “Talk to a teacher”, i.e., “Empowerment of student and teachers through synchronous and asynchronous instruction”.

Recordings

The various events recorded by CDEEP are: the 48th Convocation, 13 institute colloquia, 3 institute lectures, research scholars confluence, a short film for the chemistry department activities, registration and orientation programme for new entrants – 2010-11, showing documentary film on IIT Bombay, parliamentary committee meeting, FARM programme, IEEE distinguished lecture by Prof. Xing – Australia, Golden Jubilee award distribution programme, Technigraphics lecture by Dr. Chetan Khosla, talk by winner of Rakesh Mathur Awards for Excellence in research-2010, 52nd Foundation day of the Institute, Prof. S. C. Bhattacharya award for excellence in pure sciences, and the distinguished lecture in chemical engineering (in memory of Prof. Khilar) by Prof. Gandhi.



Computer Centre

Computer Centre continues to provide computational, network infrastructural facilities and services to the IIT Bombay user community.

Network and Connectivity

Computer Centre manages the IIT Bombay Campus Network. It is responsible for the availability of intra-campus connectivity of all the departments, all the 14 hostels, and of all the residential complexes, and also the internet connectivity of IIT Bombay to the outside world. During the year, the following activities have been undertaken to install, expand and upgrade the network, computational infrastructure at IIT Bombay:

- The network of all the student hostels including 1 to 13 are upgraded with 200 managed gigabit state of art network switches and 13 layer 3 network switches with more secure features and 10G gigabit uplink feature. This feature can be utilized when the campus backbone network is upgraded to 10G. The network points in each rooms have been doubled. Around 4000 additional network points have been installed in the hostels.
- The new wing for the student hostel 12 and the newly constructed student hostel 14 were provided with gigabit network in each room so as to meet the requirement on account of increased number of student intake in the institute.
- The required appropriate network switches meant for the completion of the residential area network on campus were procured and installed and the goal of achieving the complete availability of Internet facility to newly added 62 buildings with 827 flats. With this each resident on campus has on the IITB Local Area Network and access to internet.
- Five new network kiosks are built to host the networking equipment, which can be used as distribution point to all over the residential building in the IITB campus.
- During the year, the total Internet bandwidth for IIT Bombay campus users have been increased from 218 Mbps to 565 Mbps. Computer Centre is

satisfied and happy with the quality of service provided by the empaneled Internet Service Providers.

- Wireless intrusion detection system procured from Airtight Networks has been deployed at various locations to improve the security of the wireless segment of IITB campus network.

High Performance Computing Clusters

The old computing clusters GALAXY and CORONA continue to function as before. Given the space constraint, these clusters continue to be housed in the premises of the Aerospace Engineering Department and Chemistry Department respectively. After a lot of effort towards solving the infrastructural issues, the third cluster **Spacetime Supercomputing** facility consisting of 380 nodes with as many as 3040 processing cores, built using the most recent Intel quad core processors is operational at the ground floor of the Computer Science and Engineering Department building. The aggregate theoretical speed is expected to be around 20 Tera-Flops. A course on High Performance Computing is being run on the Spacetime HPCC Facility. However, there are still some issues regarding noise generated by the chiller plant of this HPCC Facility. Efforts are on to reduce the noise levels. In addition to this, the purchase order for the procurement and installation of a Diesel Generator Set for the Spacetime HPCC Facility has been released. This DG-Set it is expected to provide a better and smoother operation of the HPCC Facility in terms of reducing the possibility of hardware failures and data being lost due to unexpected power failures.

National Knowledge Network

IIT Bombay continued to be a member of the **National Knowledge Network (NKN)** during the year. This multi-gigabit network initiative started by National Informatics Centre (NIC) is currently this network infrastructure is being used by CDEEP to conduct Distance Education Programs. Two staff from the computer centre (Mr. Pradip V Tirmare and Mr. Sunil Vichare) represented IIT Bombay in the the National Level meet of the partners of the NKN initiative

organised by CDAC and held at Bangalore which enabled IIT Bombay to improve and enhance the technologies for fruitful use of the infrastructure under NKN.

Grid Computing Facility GARUDA

The grid computing facility GARUDA is also supported by the Computer Centre allowing the users of the institute to access the available resources on the National Grid.

Hardware/Software Infrastructure

All service offerings at the Computer Centre are based on OPEN SOURCE software systems. Computer Centre has registered as official mirror for various flavors of Linux Operating Systems on its anonymous FTP server which is available to the user community at large.

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. Campus-wide license of AVG anti-virus software has been in operation.

Software packages meant for scientific and technical computation such as ANSYS, MATLAB, MATHEMATICA, MAPLE, Dytran / NasTran / Partan, Tecplot and Libraries from Numerical Algorithm Groups (NAG), etc are available through appropriate licenses schemes are procured, upgraded and administered by Computer Centre.

Running ISDN and IP based video conferencing facility has now been a part of the regular activities of the Computer Centre.

Around 23 new faculty joined the institute during the year and after they joined they have been provided with a desktop computer and a printer with a total price not exceeding Rs.75000/- (Rupees Seventy Five Thousand) in order to enable them perform their day to day activities smoothly.

The Computer Centre encourages and has implemented the use of Open Source Software for Office Automation in about 750 PCs deployed in the various Administrative sections of the Institute. This has eliminated to a great extent the menace of the spread of computer virus and thus has optimised the IT support overheads required for Network Management and PC maintenance. The Open Source Operating Systems have also capabilities of word processing applications (namely OpenOffice.org, LibreOffice) which can handle various Indian Languages especially Hindi to produce multilingual (bilingual) documents.

Documents prepared in OpenOffice.org / LibreOffice (available for Windows as well as Mac OS) can be saved in files compatible (edit/save) with MSOffice.

Computer Centre has carried out a 3 hour induction training session on the usefulness of the applications under the Open Source Operating Systems in Office Automation for the newly recruited 40 nos of Junior Superintendents for the Institute.

The Computer Centre plays a secondary role by providing technical support to run the IP based Security Surveillance Systems for the Security Section. The verifocal fixed direction IP (10/100 BaseT ethernet interface) cameras for indoor use only (25 nos) have been installed at the entry points of various departments, sections of the main building and Convocation Hall to monitor and record the human as well as object movements. Similarly verifocal fixed direction IP based Day and Night cameras (10 nos) with IP66 certified for outdoor use only are installed at the Main Gate, Y-Point Gate, Lakeside Gate to monitor and record the inward and outward traffic movements of the campus. PTZ IP

Surveillance cameras (5 nos) having automatic Pan, Tilt, Zoom for 24/7 operation, PTZ control over network, minimum 270 degree Pan with auto flip and 180 degree tilt, Day and Night functionality with 0.5 lux in color, minimum 18x optical zoom, 12x digital zoom are installed at the Guest House, Hostel 12 & 13, QIP Building and Ananta to keep an eye over the fencing of the campus. Few other features supported on the surveillance cameras are: Minimum Resolution 640x480 at 30 frames per second with Video Compression JPEG / MPEG4 to work with up to 1.0 lux in color, supporting Motion Detection, progressive scan, password lockout of unauthorized personnel to prevent viewing images or altering the camera configuration, etc.

These cameras are integrated with the VIDEO MANAGEMENT SOFTWARE running on 3 PCs that enables viewing and recording from up to 24 Cameras over the network. The software also allows to control the PTZ and Dome Cameras for event driven Recording, scheduled recording and playback management. The system is attached to 8TB of Storage unit to store about 15-20 days of recorded data.

A 42" LCD TV at the security control room enables to watch the images captured and accordingly enable to manage the security system.

The computer network set up by the Computer Centre enables the Electric Maintenance Division to monitor the Power Distribution Systems, check the status and operation of various Lifts functioning in the buildings, functioning of UPS Systems, etc in the Institute. The Telephone Exchange runs few IP telephones (Voice over IP) using the computer network of the Institute.

IIT Hospital displays the schedules of the availability of Doctors on the web site of the Hospital.

Computer Centre staff as members in various selection, purchase and write-off committees also help other departments and sections.

Computer Centre successfully managed to carry out a pilot project to dispose of written-off computer hardware and peripherals in an environment friendly manner through E-Waste Management of Electronic Waste. The methods adopted in this pilot project would ultimately become the policy for E-Waste management of electronic waste.

The Computer Centre runs a Help Desk for all users as a part of its day to day activities.

Projects for the Near Future

The core network of IITB is quite old. The switches are nearly five years old. The underground fibre-optic cable network is operational for more than 13 years. The cable network, as it exists now, is rather adhoc and has been patched many times because of damages (mostly during construction/repair of roads and new buildings). There is a strong case for creating a properly planned fibre-optic cabling infrastructure using single mode fibre with adequate redundancies so as to improve the reliability of network access. The replacements for core network switches is under active consideration. The goal is to have a future-ready network that can be easily migrated to a 10 gigabit infrastructure. The networking of the upcoming institute classroom complex is being undertaken .

Constraints

For the last four 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 places (room SIC-101 in KRESIT building and room 243 in Electrical Engineering Department) where the servers are located. In addition to the severe space constraints, there are other infrastructural hurdles related to Electrical Power Supply and Airconditioning systems. As a consequence, Computer Centre has had to slow down in terms its growth plans and even had to close down some of the existing facilities (e.g. USER HALL of Computer Centre). A new server room at the Electrical Engineering Annexe building is now available with better Air Conditioning for a part of the servers of the institute running critical applications like e-mail. The increase in the student intake, rise in the number of faculty and the increased IT infrastructure of the institute with demand for efficient and quick response to the campus community, the current strength of manpower at the computer centre must be increased.

academic report

ACADEMIC REPORT

Admissions offered at IIT Bombay for the following Programmes in 2010-11 are given below.

Ph.D. (Autumn+Spring)	-	405
M.Tech.	-	701
M.Mgt.	-	120
M.Des.	-	58
M.Phil.	-	11
M.Sc.-Ph.D. (Dual Degree)	-	50
M.Sc.	-	203
Dual Degree	-	263
5-Yr. Int. M.Sc.	-	31
B.Tech.	-	588
Preparatory Course	-	4

Total		2434
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At the 48th Annual Convocation held on 6th and 7th August 2010, 1691 degrees were awarded: B.Tech. - 312, Dual Degree (B.Tech. & M.Tech.) - 196, M.Tech. - 510, 2-year M.Sc. - 139, 5-year Int. M.Sc. - 15, M.Des. - 45, M.Phil. - 14, M.Mgt. - 83, M.S. (by research) - 01, PGDIIT - 01 and Ph.D. - 179.

MEDALS

The President of India Medal was awarded to L.S.V. Tapovan, and the Institute Gold Medal was awarded to Gauri D. Joshi. The Silver Medalists under Dual Degree Programme were: Arnav Bilash Dey, Aerospace Engg.; Akash Gupta, Chemical Engg.; Deepak Kumar Prajapati, Civil Engg.; Parakram Majumdar, Computer Science & Engg.; Gauri D. Joshi, Electrical Engg.; Deepak Thakur Menghani, Mechanical Engg.; Bardhan Neelkanth Manoj, Metallurgical Engg. and Materials Science; and Anshuman Kuman, Engineering Physics. The Silver Medalists under Bachelor of Technology Programme were: Chaudhari Pratik Anil, Aerospace Engg.; Prabhu Venkatraman Radhakrishna, Chemical Engg.; Abhinav Anup, Civil Engg.; Rushil Goel, Computer Science & Engg.; Tikekar Mehul Deepak, Electrical Engg.; Anubhav Agarwal, Met. Engg. & Materials Science; and Sardesai Shardul Milind, Engineering Physics. The Silver Medalists under Master of Science Programme were: Chemistry – Souvagya Biswas (2-yr. M.Sc), Ved Prakash Singh (5-yr. Int. M.Sc.); Earth Sciences – Daya Shankar (Applied Geology), Md Ankur Ahmed (Applied Geophysics); School of Bioscience & Bioengg. – Sonal Sethia (Biotechnology); Mathematics – Arun Sivaramakrishnan (Mathematics), Rohit Singhal (Applied Statistics & Informatics); and Physics – Aparajita Singha.

STATEMENT SHOWING THE TYPES OF SCHOLARSHIPS, STIPEND AND FINANCIAL ASSISTANCE AWARDED TO THE B. TECH., DUAL DEGREE, M. SC. (INTEGRATED), STUDENTS FOR THE YEAR 2010-11

Sr. No.	Types of Scholarships	Amount	No. of students
1.	Institute Merit-cum-Means scholarship with benefit of free tuition	Rs. 1000/-	588
2.	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	263

3.	Free tuition Facility	Only tuition fee waiver	09
4.	National Talent Search Scholarship (NTS)	Rs. 500/- p.m.	219 (approximately)
5.	Scholarship from Steel Authority of India Ltd.	Rs. 500/- p.m.	01

IIT Bombay Heritage Fund Scholarship

Name of Scholarship	Rate
David J Dunn Scholarship	Rs.1000/-p.m.
Vidyadhar and Radhika Kulkarni Scholarship	Rs.1000/-p.m.
Dr Vijaya Apte Memorial Scholarship	Rs.1000/-p.m.
Jagjivan Ujamashi Talsania Scholarship	Rs.1000/-p.m.
Vasant Himatlal Talsania Scholarship	Rs.1000/-p.m.
Mr Badriddin Sonawalla Scholarship	Rs.1000/-p.m.
Prabhakar D Mahajan Scholarship	Rs.1000/-p.m.
Lionel J D'luna Scholarship	Rs.1000/-p.m.
T R S Anand & Bhanumati Anand Scholarship	Rs.1000/-p.m.
Indira Manidhane Scholarship	Rs.1000/-p.m.
Prabhakar D Mahajan Scholarship	Rs.1000/-p.m.
Kanitkar Scholarship	Rs.1000/-p.m.
Mr & Mrs Ranganathan Scholarship	Rs.1000/-p.m.
Shri C K Apte Scholarship	Rs.1000/-p.m.
Jayant Sathe Scholarship	Rs.1000/-p.m.
Balkrishna K Mundhe Scholarship	Rs.1000/-p.m.
Anonymous Scholarship	Rs.1000/-p.m.
Anonymous Scholarship	Rs.1000/-p.m.
Sandra Lee Purkayastha Scholarship	Rs.1000/-p.m.
IIT Bombay Heritage Fund Scholarship	Rs.1000/-p.m.
IIT Bombay Heritage Fund Scholarship	Rs.1000/-p.m.
Abraham Thomas Scholarship	Rs.1000/-p.m.
IIT Alumni @ Microsoft Scholarship	Rs.1000/-p.m.
IIT Alumni @ Microsoft Scholarship	Rs.1000/-p.m.
P K Sheshambal Scholarship	Rs.1000/-p.m.
Dina Nath & Gayatri Nath Scholarship	Rs.1000/-p.m.
IIT Alumni @ Microsoft Scholarship	Rs.1000/-p.m.
Suresh & Varsha Nihalani Scholarship	Rs.1000/-p.m.
Anonymous Scholarship	Rs.1000/-p.m.
IIT Bombay Heritage Fund Scholarship	Rs.1000/-p.m.
Virendra Kumar Scholarship	Rs.1000/-p.m.
Abhay Himatlal Talsania Scholarship	Rs.1000/-p.m.
Mrs. Meenakshi Vishwanathan Scholarship	Rs.1000/-p.m.
IIT Alumni @ Microsoft Scholarship	Rs.1000/-p.m.
Samir Shah and Prakash Peres Memorial Scholarship	Rs.1000/-p.m.
Burjor S Dadyburjor Scholarship	Rs.1000/-p.m.
Vidyadhar and Radhika Kulkarni Scholarship	Rs.1000/-p.m.
Mr Roop Kumar & Mrs Suraj Devi Agarwal Scholarship	Rs.1000/-p.m.
Anisbert & Kumarie Sequeria Scholarship	Rs.1000/-p.m.
N S Rajaram Scholarship	Rs.1000/-p.m.
Nagesh C Chaudhari Scholarship	Rs.1000/-p.m.
Mr S J & Mrs S S Kulkarni Scholarship	Rs.1000/-p.m.
Gajendra Chandra Malkar Scholarship	Rs.1000/-p.m.
Late Shri Gopaldas Duttani Scholarship	Rs.1000/-p.m.
IIT Alumni @ Microsoft Scholarship	Rs.1000/-p.m.
Mr. Shantilal H Goradia Scholarship	Rs.1000/-p.m.
IIT Bombay Heritage Fund Scholarship	Rs.1000/-p.m.
IIT Bombay Heritage Fund Scholarship	Rs.1000/-p.m.
Prof M V Hariharan Scholarship	Rs.1000/-p.m.
Mrs Minaz Sonawalla Scholarship	Rs.1000/-p.m.

Usha Purkayastha Scholarship	Rs.1000/-p.m.
Narendra Joshi Merit Scholarship	Rs.1000/-p.m.
Rajesh Radhakrishnan Scholarship	Rs.1000/-p.m.
IIT Alumni @ Microsoft Scholarship	Rs.1000/-p.m.
IIT Alumni @ Microsoft Scholarship	Rs.1000/-p.m.
IIT Alumni @Microsoft Scholarship	Rs.1000/-p.m.
Madho and Radha Agarwal Scholarship	Rs.1000/-p.m.
Himangshushekhar Purkayastha Scholarship	Rs.1000/-p.m.
George Tharkan Scholarship	Rs.1000/-p.m.
Prof Mohan M Kulkarni Scholarship	Rs.1500/-p.m.
Prof K Shankar Scholarship	Rs.1000/-p.m.
Soonu Dadyburjor Scholarship	Rs.1000/-p.m.
Lata Vijaykar Scholarship	Rs.1000/-p.m.
Mr Kasamali Virani Scholarship	Rs.1000/-p.m.
Abbas Bhatia/John A Martin Scholarship	Rs.1000/-p.m.
Bijoya Chaudhari Scholarship	Rs.1000/-p.m.
Dr. Kishor M Kulkarni Scholarship	Rs.1500/-p.m.
Mrs Ila Chandrakant Scholarship	Rs.1000/-p.m.
Bibha Nandi Scholarship	Rs.1000/-p.m.
Dwarka Nath Shuklo Baidya Scholarship	Rs.1000/-p.m.
Anonymous Scholarship	Rs.1000/-p.m.
IIT Bombay Heritage Fund Scholarship	Rs.1000/-p.m.
R. N. Limaye Scholarship	Rs. 1000/- p.m.
Ruyintan & Monica Mehta Family Foundation Scholarship	Rs. 1000/- p.m.
M Radhakrishna Kamath Scholarship	Rs. 1000/- p.m.
Manohar & Sunita Kamat Scholarship	Rs. 1500/- p.m.
Mr. S.S. Shiralkar Scholarship	Rs. 1000/- p.m.
Indira Manudhane Scholarship	Rs. 1000/- p.m.
Dr. G.V. Bakore Memorial Scholarship	Rs. 1000/- p.m.
Shri Raman K. Rao Scholarship	Rs. 1000/- p.m.
Miss A. J. Majmundar	Rs. 1000/- p.m.
Chamanlal and Labhkunwar Kothary Scholarship	Rs. 1000/- p.m.
Justin Bhansali Memorial Scholarship	Rs. 1000/- p.m.
Lakshmi and Kadayam Srinivasan Scholarship	Rs. 1000/- p.m.
Kumar and Susan Shah Scholarship	Rs. 1000/- p.m.
Vijaya Patil Scholarship	Rs. 1000/- p.m.
Subodh Ghonge Scholarship	Rs. 1000/- p.m.
C. Vimala & M.R.K. Menon Scholarship	Rs. 1000/- p.m.
Manohar & Sunita Kamat Scholarship	Rs. 1500/- p.m.
Mr G. M. Nabar Scholarship	Rs. 1000/- p.m.
Mrs. Jyotsna D Pendse Merit Scholarship	Rs. 1000/- p.m.
H. J. Talsania Scholarship	Rs. 1000/- p.m.
California Scholarship	Rs. 1000/- p.m.
California Scholarship	Rs. 1000/- p.m.
The Iyer Scholarship	Rs. 1000/- p.m.
IIT Alumni@Microsoft Scholarship	Rs. 1000/- p.m.
Electrical Engg. Deptt. Scholarship	Rs. 1000/- p.m.
Prabhakar D. Mahajan Scholarship	Rs. 1000/- p.m.
Subha & Anand Talwalkar Scholarship	Rs. 2000/-p.m.
Dilip R Limaye Scholarship	Rs. 2000/-p.m.
Abraham Thomas Scholarship	Rs. 1000/- p.m.
Prof. G. N. Revenkar Scholarship	Rs. 1000/- p.m.
Dr. Chandrakant Thanawala Scholarship	Rs. 1000/- p.m.
Ashish Prasad Nandi Majumdar Scholarship	Rs. 1000/- p.m.
Radha Rani Agarwal Merit Scholarship	Rs. 1000/- p.m.
Dr P Remadevi Menon Memorial Scholarship	Rs. 1000/- p.m.
Kanitkar scholarship	Rs. 1000/- p.m.
Mrs. Amrutha Iyengar Scholarship	Rs. 1000/- p.m.
Electrical Engg. Deptt. Scholarship	Rs. 1000/- p.m.
Lalita Ramanathan Scholarship	Rs. 1000/- p.m.
Aditya Joshi Scholarship	Rs. 1000/- p.m.
S. Ramaritam Scholarship	Rs. 1000/- p.m.
IIT Alumni@Microsoft Scholarship	Rs. 1000/- p.m.
IIT Alumni@Microsoft Scholarship	Rs. 1000/- p.m.
IIT Bombay Heritage Fund Scholarship	Rs. 1000/- p.m.

List of Scholarships/Fellowships

Government Fellowships/Scholarships

Sr. No.	Name of Fellowship/Scholarship	No. of Students	Monthly Fellowship (in Rs)
1.	DAE (Board of Research in Nuclear Science – BRNS) : M.Tech.	8	Rs. 20,000/-
2.	NBHM (National Board of Higher Mathematics): Ph.D. M.Tech.	7 7	Rs. 18,000/- Rs. 6,000/-
3.	AERB (Atomic Energy Regulatory Board): M.Tech.	5	Rs. 15,000/-
4.	AICTE National Doctoral Fellowship (All India Council for Technical Education): Ph.D.	5	Rs. 18,000/-
5.	Ministry of Urban Development & Poverty Alleviation (CPHEEO): M.Tech.	3	Rs. 4,000/-
6.	DBT-JRF (Department of Biotechnology, Jr. Research Fellowship): Ph.D.	5	Rs. 16,000/-
7.	ICMR (Indian Council of Medical Research): Ph.D.	5	Rs. 16,000/-
8.	ICSSR (Indian Council of social Science Research): Ph.D.	1	Rs. 38,621/-
9.	MERC (Maharashtra Electricity Regulatory Commission): M.Tech.	7	Rs. 8,000/-
10.	ARCI: Ph.D.	1	Rs. 14,000/-
11.	ICPR	1	Rs. 5,000/-

Private Fellowships/Scholarships

Sr. No.	Name of Fellowship/Scholarship	No. of Students	Monthly Fellowship (in Rs)
1	TCS (Tata Consultancy Services)		
	M.Tech.	2	9,000/-
	Ph.D.	3	19,000/-
2	Forbes Marshall: M.Tech.	1	14,000/-
3	Infosys Fellowship: Ph.D.	4	15,000/-
4	GE Foundation Scholarship: M.Tech.	3	8,000/-
5	Crompton Greaves: Ph.D	12	24,000/-
6	Microsoft Research India: Ph.D.	6	16,000/-
7	Dr. Gargi Vishnoi Memorial Scholarship: M.Tech.	2	2,000/-
8	Schulmberger Fellowship: M.Tech.	6	8,000/-
9	Bell Lab India- Ph.D.	1	15,000/-
10	British Gas (BG) Fellowship: M.Tech.	5	8,000/-
11	Eco-Axis Fellowship: M.Tech.	2	5,000/-
12	IITB Monash: Ph.D.	62	23,333/-
13	ATE Fellowship	1	5,000/-
14	CTI (Compatible Technology International) M.Tech.	2	8,000/-
15	FES (Foundation for Ecological Security): Ph.D.	1	14,000/-
16	IBM: Ph.D.	1	15,000/-

**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 JRF/SRF	Year/ per month	Amount	No. of students	
				Institute Scholarship	Other Scholarship(RA)
1.	Institute Teaching Asistantshop * (Ph.D) (*Revised w.e.f. 01.04.07)	I & II Year JRF	Rs. 16,000/-	88	06
		III, IV & V Year SRF	Rs. 18,000/-	56	10
		I & II JRF	Rs. 18,000/-	189	02
		III & IV SRF	Rs. 20,000/-	107	01
2.	Postgraduate Assistantship to:- M.Tech. Students (2 yr. programme)	I year	Rs. 8,000/-	424	80
		II year	Rs. 8,000/-	493	84
	M.Des. Students (2 yr. programme)	I year	Rs. 8,000/-	44	---
		II year	Rs. 8,000/-	57	---
	M.Phil. Students (2 yr. programme)	I year	Rs. 8,000/-	07	---
		II year	Rs. 8,000/-	11	---
3.	CSIR Fellowship to:- Ph.D. Students	JRF	Rs. 16,000/-	97	---
		SRF	Rs. 18,000/-	99	---
	M.Tech. Students	JRF	Rs. 16,000/-	4	---
	M.Sc. + Ph.D. Dual Degree	JRF		1	---
	M.Tech. + Ph.D. Dual Degree	JRF		3	---
	Shyama Prasad Mukherjee Fellowship	JRF	Rs. 20,000/-	1	---
4.	QIP Scholarship to:- M.Tech. Students	I year	Rs. 4,000/-	11	---
		II year		8	---
	Ph.D. Students		Rs. 9,000/-	47	---
5.	UGC Scholarship to: Ph.D. Students	JRF-HSS	Rs. 16,000/-	49	---
		SRF-HSS	Rs. 18,000/-	32	---
	M.Phil. students	JRF-Engg. & Tech.	Rs. 16,000/-	1	---
6.	Rajiv Gandhi National Fellowship	SRF	Rs. 14,000/-	2	---

Sr.	Roll No.	Name	Thesis Title	Supervisor / Co-Supervisor / External Supervisor
RECIPIENTS OF THE DEGREE OF DOCTOR OF PHILOSOPHY				
Department of Aerospace Engineering				
1.	00401701	K. V. Muralidharan	Design of Centrifugal Compressor Using CFD Analysis	Prof. Mandal J.C. Dr.S. K. Kumar
2.	02401702	C. Geethai Krishnan	Multi-Disciplinary Design Optimization (MDO) Approach for Launch Vehicle Conceptual Design with Concurrent Optimization of Vehicle and Trajectory Subsystems	Prof. Mujumdar P. M. Prof. Sudhakar K. Dr. V Adimurthy
3.	02407705	Gopal Jee	Constrained Output and State Feedback Pole Placement in MIMO Systems	Prof. Joshi Ashok Dr. B. B. Das
4.	04401002	Piyush Madhukar Tagade	Bayesian Framework for Calibration of Gas Turbine Simulator under Uncertainty	Prof. Sudhakar K.
5.	05401802	Nitin Parashram Gulhane	Numerical and Theoretical Studies on Laminar Micro-Convection of Gas and Liquid	Prof. S. P. Mahulikar
Department of Chemical Engineering				
1.	03402702	V. S. Balaji Iyer	Dynamics of Flexible Ring Polymers in an Obstacle Environment	Prof. Juvekar V.A. Dr. Ashish K. Lele
2.	04402002	Methekar Ravi Namdeo	Advanced Control of PEM Fuel Cells using Data Driven Models	Prof. Sachin Patwardhan Prof. Gudi R.
3.	04402004	Prakash R.Kotecha	Constraint Programming: Novel Strategies and Applications to Process Systems Engineering	Prof. Manibhushan Prof. Gudi R.
4.	03402705	Kishalay Mitra	Mid Term Supply Chain Planning under Uncertainty	Prof. Gudi R. Prof. Sachin Patwardhan Dr. Gautam Sardar
5.	01402602	Anand Veerabadra Prasad Gurumoorthy	Electric Field Effects at Interfaces	Prof. Juvekar V.A.
6.	05402704	Vivek N. Ganvir	Simulation of Viscoelastic Flow and Extrudate Swell in Polymer Melt Extrusion Using Arbitrary Lagrangian Eulerian (ALE) based Finite Element Method	Prof. Rochish Thaokar B. P. Gautham
7.	04402001	Subhashis Sarkar	Study of Rheology and Segregation in Granular Surface Flows	Prof. Khakhar D.V.
8.	01402702	Jayakumar J. S.	CFD Analysis of Single-Phase and Two-Phase Flow Inside Helically Coiled Tubes	Prof. Sanjay Mahajani Dr. P. K. Vijayan

Sr.	Roll No.	Name	Thesis Title	Supervisor / Co-Supervisor / External Supervisor
9.	03402004	Raj Kumar Arya	Drying of Thin Film Polymeric Coatings: Theories, Experiments and Optimization	Prof. Vinjamur Madhu
10.	04402007	Dhumal Sunil Shivajirao	Experimental and Theoretical Studies in Interfacial Polycondensation	Prof. Suresh A.K.
11.	03402302	Chavan Abhijit Ramchandra	Optimal Operation of Fermentation Processes: Application to Flavors and Lactate Production	Prof. Venkatesh K.V. Prof. Bhartiya S.
12.	04402602	(Ms) V. Rajitha	Chemotaxis of Escherichia Coli to Controlled Gradients of Attractants: Experiments and Mathematical Modeling	Prof. Tirumkudulu Mahesh Prof. Venkatesh K.V.
13.	05418601	Nemade Pravin Dinkar	Carbon, Nitrogen, Iron and Arsenic Removal from Water in Constructed Soil Filter	Prof. Shankar H.S. Prof. Vinjamur Madhu
14.	03402605	Gaurav Manik	Coarse-grained (CG) Molecular Dynamics Simulation and Primitive Path (PP) Analysis of Performance Polymers	Prof. Nanavati Hemant U. Natarajan
15.	04402701	(Ms) Madhavi Vishal Sardeshpande	Solid Suspension in Stirred Tank Reactor	Prof. Juvekar V.A. Dr. Vivek Vinayak Ranade
16.	05402801	(Ms) Kalpana Sushil Kumar Deshmukh	Studies in Reactive Chromatography	Prof. Sanjay Mahajani
17.	05402702	Krishna Kumar Singh	Studies on Hydrodynamics of Pump-Mix Mixer Settlers	Prof. Sanjay Mahajani S. K. Ghosh
18.	05402002	Badwe Abhijit Satish	Model Maintenance for Linear Model Predictive Control	Prof. Sachin Patwardhan Prof. Gudi R.
19.	05302016	Seethamraju Srinivas	Fischer-Tropsch Synthesis in Reactive Distillation - Modeling and Simulation	Prof. Sanjay Mahajani Prof. Malik R.K.
20.	04402003	Vivek Chandra Gyani	Reactive Chromatography	Prof. Sanjay Mahajani

Department of Chemistry

1.	03403315	Manoja Kumar Samantaray	Studies of Ag, Au, Ni and Pd Complexes of N/o-Functionalized N-Heterocyclic Carbenes	Prof. Ghosh Prasenjit
2.	04403303	(Ms) Sriparna Ray	Designing Late Transition Metal Complexes of N-Heterocyclic Carbenes for Utility in Biomedical and Catalytic Applications.	
3.	04403309	Mayank Pratap Singh	Metal Phosphoramidate and Phosphonate Based Clusters and Frameworks.	Prof. M. Ravikanth

Sr.	Roll No.	Name	Thesis Title	Supervisor / Co-Supervisor / External Supervisor
4.	03403607	Oommen P. Oommen	Reactions of Troponoids and Iminium Salts and Development of Polycarbocyclic Cage Derived Chiral Ligands for Asymmetric Reactions.	Prof. I.N.N. Namboothiri
5.	03403308	Prasanta Das	Design and Synthesis of Novel Oxa-Bridged, Aza-Bridged Polycyclitols and Pyrrolizidine Alkaloids as Potential Glycosidases Inhibitors.	Prof. Kaliappan K P
6.	04403006	(Ms) Smita Rai	Synthesis of Functionalized Porphyrin Building Blocks for the Construction of Novel Unsymmetrical Covalently Linked Porphyrin Dyads and Pentads.	Prof. M. Ravikanth
7.	04403305	Anirban Panda	Application of Second Quantization Based Techniques to Photosynthesis and Molecular Magnetism.	Prof. S. N. Datta
8.	03403005	(Ms) Deepa Janardanan	Computational Investigation on Mechanism and Stereoselectivity of Sulfur Ylide Promoted Reactions.	Prof. R. B. Sunoj
9.	03403202	Abera Asefa Abebe	Studies of Excited State and Fluorescence Probe Properties of 3-Styrylindoles.	Prof. Anil K. Singh
10.	04403311	Roymon Joseph	Lower Rim 1,3-Di-Derivatives of Calix[4] arene as Receptors: Synthesis, Characterization and Ion Recognition Studies.	Prof. C. P. Rao
11.	04403317	(Ms) Garima Singh Baghel	Conjugates of Hemi-Calixarene like Molecules: Synthesis, Structure, Ion and Molecular Recognition and Bio-Interaction Studies.	Prof. C. P. Rao
12.	06403601	Raman Kumar Singh	Computational Investigation of Electron Detachment and Attachment using the Electron Propagator Theory (EPT) and Time Dependent Wave Packet (TDWP) Techniques.	Prof. A. Datta
13.	03403307	Dipankar Roy	Computational Studies on Chemical Catalysis in C-C Bond Formation Reactions.	Prof. R. B. Sunoj
14.	05403001	Tarak Nath Burai	Ultrafast Photoprocesses in Neat Solutions and Microheterogeneous Media.	Prof. A. Datta
15.	04403602	Bharat Chandra Sahu	Studies on Synthesis of Atisanes, Platencin and Heteropolyquinanes.	Prof. V. K. Singh
16.	04403306	Patel Kirtikumar Bhimji	Studies of Polypeptide Structure and Interactions in Relevance to Folding and Catalysis of Enzymes.	Prof. Susheel Durani

Sr.	Roll No.	Name	Thesis Title	Supervisor / Co-Supervisor / External Supervisor
17.	04403314	Manas Kumar Panda	Studies on Transition Metal Catalyzed Oxidation Reactions.	Prof. Ghosh Prasenjit
18.	04403302	Sagar Sharma	Studies on Metallophilic Interactions and New Glutathione Peroxidase-like Mimetics.	Prof. H. B. Singh
19.	04403603	Balaji Ramanujam	Ion & Molecular Recognition by the Conjugates of Calix[4] arene and Carbohydrates and, Binding of Glycoconjugates by Lectins and Glycosidases: A Computational Study.	Prof. C. P. Rao
20.	04403007	(Ms) Kriti Srivastava	Studies on Intramolecularly Coordinated Organochalcogens Derived from Azobenzene and Related Substrates.	Prof. H. B. Singh
21.	04403301	Alex John	Biomimetic and Catalytic Studies of some Copper(II) and Palladium(II) Complexes.	Prof. Ghosh Prasenjit
22.	04403312	Tapash Chakraborty	Ligation Behaviour of some Acyclic and Cyclic Organochalcogen Donors toward Palladium and other Late Transition Metals	Prof. H. B. Singh
Department of Civil Engineering				
1.	06404002	Anjan Patel	Application of Piezoceramic Elements for Soil Mass Characterization	Prof. Singh D.N.
2.	04404003	(Ms) Debarati Datta	Reliability Based Design of Steel Moment Frames using Park-Ang Damage Index	Prof. Ghosh Siddhartha
3.	06404701	Purnanand Pundalik Savoikar	Seismic Behaviour of Municipal Solid Waste Landfills.	Prof. Choudhury Deepankar Prof. Mandal J.N.
4.	03404805	Dilip Dhondu Sarode	Microbiologically Induced Calcite Precipitation in Cement Mortar and Concrete in Tropical Conditions	Prof. Sinha Ravi Prof. Mukherjee Abhijit Bishwajit Bhattacharjee
5.	05404004	Purnachandra Saha	Seismic Control of Benchmark Cable-Stayed Bridge	Prof. Jangid R.S.
6.	04404702	Rajesh Kumar Singh	Nonlinear Analysis of Reinforced Concrete Structures with Fracture and Damage Mechanics Constitutive Model	Prof. Kant Tarun
7.	05404007	Vaibhav Garg	Evaluation of Reservoir Sedimentation Using Data Driven Techniques	Prof. Jothiprakash V.

Sr.	Roll No.	Name	Thesis Title	Supervisor / Co-Supervisor / External Supervisor
8.	06404004	Chiragbhai Chandubhai Patel	Vibration Control of Adjacent Structures Connected with Dampers	Prof. Jangid R.S.
9.	05404005	Avik Samanta	Earthquake Vibration Control of Structures Using Sloshing Liquid Dampers	Prof. Banerji P.
10.	06404003	Rajesh S.	Centrifuge Model Studies on the Performance of Geogrid Reinforced Soil Barriers of Landfill Covers	Prof. Viswanadham B.V.S.
11.	07404301	Bashir Ahmed Mir	Study of the Influence of Smear Zone Around Sand Compaction Pile on Properties of Composite Ground	Prof. A. Juneja
12.	06404803	(Ms) Madhekar Suhasini Nandkishore	Seismic Control of Benchmark Highway Bridge	Prof. Jangid R.S.
13.	05404001	(Ms) Sharmina Bera	Statistical Methods of Estimating Origin-Destination Trip Matrix from Link Counts: An Insight into the Algorithms	Prof. K.V.Krishna Rao
14.	07404401	Aay Sharma	Seismic Control Strategies of Base-isolated Benchmark Building	Prof. Jangid R.S.
15.	06404801	(Ms) Kote Alka Sunil	Single and Multi-reservoir Inflow Prediction Using Artificial Intelligence Techniques	Prof. Jothiprakash V.
16.	05404302	Padmakumar R.	Modelling Urban Signalised Intersections under Heterogeneous Traffic Conditions	Prof. Tom V Mathew
17.	05404801	Kashid Satishkumar Shahajirao	Basin Scale Streamflow Forecasting using Hydro-meteorological and Hydro-climatological Inputs	Prof. R. Maity Prof. Deo M.C.

Department of Computer Science & Engineering

1.	02429002	Sameer Dilip Sahasrabuddhe	A Competitive Pathway from High-Level Programs to Hardware Specifications.	Prof. K. Arya Prof. Desai Madhav
2.	03405004	Kenkre Sreyash Divakar	Some Problems in Coloring, Labeling and Partitioning of Graphs.	Prof. Vishwanathan Sundar
3.	02405802	(Ms) Subhasri Duttagupta	Tracking Dynamic Boundary Fronts using Range Sensors.	Prof. Ramamritham Krithi
4.	02405801	(Ms) Padmaja Narendra Joshi	Coupling and Cohesion Analysis of Object Oriented Programs for Refactoring.	Prof. Joshi Rushikesh K.

Sr.	Roll No.	Name	Thesis Title	Supervisor / Co-Supervisor / External Supervisor
5.	05405001	Bhargav Subhash Gulavani	On Improving the Precision of Static Program Analysis.	Prof. Supratik Chakraborty
6.	03405005	Biswarup Choudhury	Efficient Image-based Dynamic Scene Synthesis.	Prof. Sharat Chandran
Department of Earth Sciences				
1.	03406304	Syed Hilal Farooq	Role of Dissolved Organic Carbon in Mobilization of Arsenic from Sediments to Groundwater, District Murshidabad, West Bengal (India).	Prof. Chandrasekharam D.
2.	04406601	(Ms) K.N. Kusuma	Imaging Spectroscopy of Lateritic Regolith of the Savitri River Basin, Maharashtra, India with Special Reference to Laterite Landform Evolution.	Prof. Pandalai H.S. Prof. D. Ramakrishnan
Department of Electrical Engineering				
1.	04407802	Himanshukumar Bipinbhai Soni	Capacity Enhancement and Interference Mitigation in Multiuser Ultra Wideband (UWB) Systems	Prof. Desai U.B.
2.	03407004	Debabrata Maji	Reliability and Performance Study of Germanium Based MOSFETs with HfO ₂ Gate Dielectric	Prof. Rao Ramagopal
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34.	05307603	(Ms) Madhumita Prashant Date	Real-Time Simulator On An RTOS Platform.	Prof. M. Chandorkar
35.	08307403	Prem Bahadur	Chipless Rfid Systems	Prof. J.Mukherjee
36.	08307008	P. Venkatasrikanthreddy	DOA Estimation for Underwater Target Tracking	Prof. V Raj Babu

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37.	08307029	Pradeep Gaddipati	Data-Adaptive Source Separation for Audio Spatialization.	Prof. Preeti Rao Prof. V Raj Babu
38.	07307918	Pangam Aashish Sanjay	Synchrophasors in Wide Area Measurement.	Prof. M. Chandorkar
39.	08307034	Venu Babu Boppudi	Electronic Toll Collection and Data Scheduling in Vehicular Networks.	Prof. Merchant S N
40.	08307035	Nirmal Kumbhare	Infiniband Interconnect Performance Analysis on RTOS.	Prof. M. Chandorkar
41.	08307407	(Ms) Kathika Roy	Controller Area Network Protocol in Rail Vehicles.	Prof. M. Chandorkar
42.	08307004	Shriram R.	Design and Fabrication of Inline Capacitive Series RF MEMS Switch.	Prof. S. Duttagupta
43.	08307202	Mizan Abraha Gebremicheal	CC2430 Based Wireless ECG System.	Prof. Desai U.B.
44.	08307408	Manish Prakash Srivastava	Vehicle Tracking in Wireless Sensor Network Using Magnetic Sensors.	Prof. Desai U.B.
45.	07307501	Kamble Vidyadhar Vishnu	A Microcontroller-Based Integral Cycle Power Controller	Prof. Pandey P.C.
46.	08307028	Vinu Bhaskar	PC Controlled Scalar Network Analyzer	Prof. Kumar Girish
47.	08307049	Trimurthulu Eluri	Maximum Power Tracking from Solar Module by Dc to Dc Converter & Automatic Reconfiguration of Solar Panels	Prof. S. Duttagupta
48.	08307201	Siraj Fulum Mossa	A Microcontroller Based Audiometer	Prof. Pandey P.C.
49.	08307036	(Ms) Dipti Sengupta	Advanced Audio Displays for Spatial Audio Teleconferencing	Prof. V Raj Babu Prof. Preeti Rao
50.	07307601	C. Chandramouli	Assistive System for the Visually Handicapped Using Optical Character Recognition	Prof. Agarwal Vivek
Department of Electrical Engineering			Specialization: Microelectronics	
51.	07307916	Jainendra Singh	Technology Aware Circuit Co-Design Using FinFET, For FPGA	Prof. Sharma Dinesh
52.	08307031	Santhosh Kumar G.	Design of Low Power Transceiver for Biomedical Application	Prof. M. Shojaei Baghini
53.	08307033	Masimukkula Veerraju	Clock Distribution Using Current Mode Signalling	Prof. Sharma Dinesh
54.	07307030	Balwinder Kumar	Look-Up Table Approach for MOSFET and FinFET Circuit Simulation	Prof. Narayanan H.

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55.	07307915	Jayachandar Polisetty	Characterization and Design in CMOS Technologies	Prof. M. Shojaei Baghini
56.	08307018	Rajesh Kumar Dohare	Bombay Relaxation MOS Integrated Circuit Simulator	Prof. Narayanan H.
57.	07307602	(Ms) Vanita Agarwal	Unit Process Development for the Fabrication of Small Channel Length Transistors	Prof. Anil K.G. Prof. Pinto R
58.	07307603	Prantik Mahajan	Study of Ohmic and Schottky Contacts to Gallium Nitride.	Prof. Dipankar Saha Prof. S. Dhar
59.	07307917	Sreenivas Subramanian	Fabrication and Simulation of Gallium Nitride Based High Electron Mobility Transistors.	Prof. Dipankar Saha Prof. S. Chakrabarti
60.	07330804	Patel Kevin Balvantkumar	Mapping Algorithms to Hardware Pipelines.	Prof. Desai Madhav
61.	08307019	Tamal Mondal	GaAs Based High Electron Mobility Transistor	Prof. S. Chakrabarti
62.	08307413	Sourabh Moitra	Techniques for Simplifying Symbolic Expressions in Symbolic Simulation Based Formal Verification Tools.	Prof. Supratik Chakraborty Prof. Patkar Sachin
63.	08307013	Sandeep Kasliwal	Simulation, Modeling & Characterization of Nitride Based NAND Charge Trap Flash Memory Devices: SONOS/SANOS	Prof. Vasi J.
64.	08307015	Bijesh R.	Study of Flicker Noise and RTN for Characterization of Gate Dielectrics in MOS Systems.	Prof. Anil K.G.
65.	08307012	Narayanasetti Praneeth	Development of Ultra Fast Direct Threshold Voltage(UF-DVT) Technique for Study of NBTI Stress.	Prof. Souvik Mahapatra
66.	08307016	Mehul Thakkar	Study of NBTI in HfO ₂ Gate Insulator Using Ultra Fast-Direct-Vt Technique.	Prof. Souvik Mahapatra
67.	08307017	Krishanu Sadhu	Application of TCAD to Study of Silicon Solar Cells.	Prof. Vasi J. Prof. Brij Mohan Arora
68.	07307R03	Kunal Promode Shikha Ghosh	Process Optimization on Raith-150 TWO Electron Beam Lithography Tool for Sub-100nm CMOS Device Fabrication.	Prof. Pinto R Prof. Anil K.G.
69.	08307014	Vikas Soni	Sandwich Tunnel Barrier Field Effect Transistor: Device for Ultra Low Voltage Low Power Applications	Prof. Rao Ramagopal

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70.	08307020	P. Manikandan	Design of CMOS Class E Power Amplifier for WLAN and Bluetooth Applications	Prof. Chandorkar A.N.
71.	08307023	Rasmi Ranjan Sahoo	RF Tuner Design for Cable Modem Application.	Prof. Chandorkar A.N.
72.	08307030	Gooty Sukumar Reddy	Tunnel FET: Device for Low Power Applications	Prof. Rao Ramagopal
Department of Electrical Engineering			Specialization: Power Electronics & Power Systems	
73.	08307047	Maram Venakteswara Reddy	Optimal Placement of SVC for Static and Dynamic Voltage Stability Improvement	Prof. Khaparde S.A.
74.	08307011	Lokesh Chadokar	Air Core Model for Determining Frequency Response of Transformer Winding	Prof. Kulkarni S V
75.	08307038	Shelke Suhas Bhanudas	Optimal Placement of PMU and Power Swing Blocking Using PMU Data	Prof. Soman S.A.
76.	08307048	Dekka Apparao	Cascaded Two Level Inverter Based STATCOM	Prof. Fernandes B.G.
77.	08307022	Madiri Sobhanadri	Design of High- Frequency and High-Performance Voltage Regulator Module	Prof. Chatterjee Kishore
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79.	08323015	Saikrishna Kanukollu	Direct Torque Control of Switched Reluctance Motor	Prof. Fernandes B.G.
80.	08307021	Deepakkumar Parmar	PEM Fuel Cell Fed Grid Connected System for Microgrid Applications	Prof. Agarwal Vivek
81.	08307039	Chaudhari Bhavikkumar Ganpatbhai	Armature and Field Voltage Controlled DC Motor Based Dynamic Emulator of Wind Turbine and Grid Interfacing	Prof. Agarwal Vivek
82.	08307045	Petkar Sagar Gajanan	Adaptive Control of An Induction Motor Drive	Prof. Agarwal Vivek
83.	08307009	Abhishek Sharma	One Cycle Control Based Three-Level AC-DC Converters.	Prof. Chatterjee Kishore
Department of Mechanical Engineering				
1.	08310407	D. K.Karthik	Experimental Investigation of Heat Transfer in Stationary and Rotating Rectangular Channels.	Prof. Vedula R.P.

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2.	08310408	Anurag Sood	Study of Supercavitating Flows.	Prof. Iyer Kannan N.
3.	08310410	Sanjay Raghuwanshi	Feasiability Study of Repowering a Naval Surface Warship with Fuel Cell based Propulsion and Power generation.	Prof. P.C.Ghosh
4.	08310409	Tushar Gopalrao Joshi	Mathematical Modelling/ Simulation of Power Management System onboard a Ship.	Prof. Banerjee Rangan
5.	08310413	Naresh Kumar Sharma	Study of Control Strategies for Electronic Governor of Diesel Engines.	Prof. Shashikanth S.
Department of Mechanical Engineering			Specialization: Design Engineering	
6.	07310015	Kagne Prakash Gangadhar	Piezoelectric Sensor Responses for Beams Without and With Crack.	Prof. Maiti S.K.
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8.	08310031	Rajesh Kumar	Stress Analysis of Doors and Windows of Boeing - 787 under Uniform Shear at Infinity	Prof. Ukadgaonker Vijay
9.	07310905	Vinaya Kumar B.A.	Comparison of Analytical (MATLAB) and FEA results of Two Unequal Cracks starting from Two Unequal Circular Rivet Holes.	Prof. Ukadgaonker Vijay
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12.	08310008	Kadam Ratish Suhas	Active Isolation of Engine Vibrations Using Feedback Control	Prof. Manik Dhanesh
13.	08310035	Sanjai Saini	Isolation of Engine Vibrations in Autumobiles using low cost ACM system.	Prof. Manik Dhanesh
14.	08310402	Rajib Das	Vibration Induced Sound Transmission Analysis Generated From Submarine Hull Due To Propeller Forces.	Prof. Manik Dhanesh
15.	08310014	Nabal Singh	Passive Vibration Control Using Tuned Mass Damper	Prof. Srirangarajan H.R.
16.	08310022	Abdul Basheer P. C.	Simulation and Analysis of Chaotic Vibration of a Nonlinear Vehicle Model.	Prof. Srirangarajan H.R.

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17.	08310039	P. B. Binnu	Automobile Engine Fault Diagnosis Using Neural Network.	Prof. Srirangarajan H.R.
18.	08310202	Abrha Gebergergs Tesfay	Characterization of Adhesion in Microcomponents Fabricated by Microstereolithography	Prof. Gandhi Prasanna S. Prof. Prita Pant
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23.	08310206	Tamrat Abishu Gelu	Behavior of materials under high strain rate shear loading	Prof. Naik N.K. Prof. S. S. Joshi
24.	08310405	Ajit Ashok Babar	Design of Light Weight Mortar Barrel.	Prof. Shimpi R.P. Prof. Manik Dhanesh
25.	07301006	(Ms) Dhanashri Manish Joglekar	Detection of Multiple Cracks in Shafts and Beams.	Prof. Maiti S.K. Prof. Mira Mitra
26.	08310005	Toraskar Sandesh Ramchandra	Oil Spill Detction.	Prof. Inamdar A.B. Prof. Amarnath C.
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32.	08310003	Amit Ekka	Powered Telescopic Joint	Prof. Amarnath C.
33.	08310032	Dev Sarang Ramchandra	Design of 3D Biased Weaving Machine	Prof. Guha Anirban

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34.	08310026	Murali Thippavathini	Finite Element Modelling and Simulation of Electrostatic Microactuators Having Linear Width Variation.	Prof. D.N. Pawaskar
35.	08310404	Rajendra Kumar Bhatta	Numerical Modeling and Simulation of Thermo-Mechanics of Pressure Tubes in PHWR.	Prof. D.N. Pawaskar
36.	08310010	Ramakrishnareddy Bijjam	Modelling of Coupled Vibrations of Circular Solid and Hollow Shafts with Crack in Arbitrary Orientation	Prof. Maiti S.K. Prof. Sauvik Banerjee
37.	08310018	Debi Prasad Behera	Mathematical Model For Determining shape of Aerostat	Prof. Guha Anirban
38.	08310021	Dudekula Ahamad Hussain	Design and Fabrication of In-Flight Sand Hopper.	Prof. Guha Anirban Prof. Viswanadham B.V.S.
39.	08310025	Sudarshan B.V.	Development of a Multiple Ball Dropping Mechanism in High Gravity Environment.	Prof. Guha Anirban Prof. Viswanadham B.V.S.
Department of Mechanical Engineering			Specialization : Manufacturing Engineering	
40.	08310403	Saroj Kanta Mohanty	Fracture Toughness Behaviour of Dissimilar Material Welding.	Prof. De Amitava
41.	08310049	Ahirrao Sachin Bhimrao	Fiber Laser Assisted hardening for steels.	Prof. R.K.Singh
42.	08310038	Bagale Tammaraya Baburao	Finite Element Modeling of Pulsed Laser Ablation.	Prof. S. S. Joshi Prof. Upendra Bhandarkar
43.	08310050	Kurundkar Onkar Achyutrao	Analytical Modeling of Residual Stress in Inconel 718 due to ball End Milling.	Prof. S. S. Joshi
44.	08310052	(Ms) Srivalli N.	Efficient Algorithms for CNC Tool Path Generation and Optimization for Sculptured Surface Machining.	Prof. Pande S.S.
45.	08310301	Sata Amit Vinodbhai	Shrinkage Porosity Prediction using Casting Simulation.	Prof. Ravi B.
46.	08310051	B. L. N. Lohit Kumar	Simulation of Hot Tears in Casting.	Prof. Ravi B.
47.	08310053	Shah Mihir Mukesh	Adaptive Machining	Prof. Karunakaran K.P.
48.	08311014	Anil Kumar G.	Finite Element Analysis of Rod Cutters for Biomedical Application.	Prof. R.K.Singh
49.	08310048	Sudhir Sarjerao More	Design and Development of Hydrodynamic Nanopolishing set up and process for super polishing of hard materials.	Prof. R.K.Singh Prof. S. S. Joshi

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50.	08310054	Doiphode Vijay Govardhanrao	Modeling of Laser Assisted Machining	Prof. R.K.Singh
51.	08310406	Navneet Verma	Experimental Studies on Size effects in Deep Drawing.	Prof. Date P.P.
52.	08310055	Sovani Yogesh Mahesh	Three-dimensional Heat Transfer and Thermal-mechanical Analyses of Laser Engineered Net Shaping Process for Free Form Fabrications	Prof. De Amitava
Department of Mechanical Engineering			Specialization : Thermal & Fluids Engineering	
53.	07310904	Vivek M.	Measurement of Interfacial Area Concentration Using Conductance Probes in Bubbly Flows.	Prof. Iyer Kannan N.
54.	08310007	Prashant Kumar Rai	Heat Transfer Measurements for Impinging Jets on Concave Surfaces.	Prof. Vedula R.P.
55.	07310R10	Khardekar Amod Vinay	Investigation on Parallel Channel Natural Circulation Facility.	Prof. Iyer Kannan N.
56.	08310401	Manoj Madhukar Korde	Main steam line break & feed water line break analyses of Indian pressurised water reactor.	Prof. Iyer Kannan N.
57.	07310R05	Chougale Amar Shankarrao	Investigations on the Performance of Multi-Hole Self Averaging Pitot Probe.	Prof. Prabhu S.V. Prof. Powle Usha
58.	08310043	Randeep Singh	Investigations on Two Phase Pressure Drop in Straight Channels and Bends.	Prof. Prabhu S V
59.	08310028	Amit Yashwant Nilam Vartak	Investigation of Combined Natural Convection and Radiation in Concentric Annular Spaces in a Single Heater Rod Setup	Prof. Arunkumar Sridharan
60.	08310034	Patankar Kaustubh Manohar	Analysis of heat transfer properties of Kerosene - Al ₂ O ₃ nanofluid	Prof. Upendra Bhandarkar Prof. Bhalchandra Puranik
61.	08310033	Patel Alkeshkumar Kantilal	Experimental and Numerical Investigations in Multiple Jet Impingement on a Flat Surface	Prof. Prabhu S V Prof. Amit Agrawal
62.	08310037	Gavasane Abhimanyu Rameshwar	Study of flow in Microchannels using Direct Simulation Monte Carlo Method.	Prof. Upendra Bhandarkar Prof. Amit Agrawal
63.	08310040	Shah Nawaz Aalam	Cooling of Electronic Devices by Novel approach of Synthetic Jet.	Prof. Amit Agrawal Prof. Bhalchandra Puranik
64.	08310044	Ahfaz Ahmed	Investigation of off Design Performance of Steam Turbine.	Prof. Gaitonde U.N. Prof. Upendra Bhandarkar

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65.	08310045	Thorat Gadgil Suyash Shashikant	Off-design Simulation of Gas Turbine Plants	Prof. Gaitonde U.N. Prof. Upendra Bhandarkar
66.	08310201	Meseret Tesfay	Design of Sensible Thermal energy Storage for Solar Thermal power plant	Prof. Bhalchandra Puranik
67.	07310R08	Rahul	Performance Study of Linear Algebraic Equation Solvers for Single and Two-Phase Simulation on Single and Multi-Processors.	Prof. Sharma Atul
68.	07310R09	Lanjekar Rajan Deorao	Diesel Engine Performance and Emission Characterization Fueled with Jatropa based Straight Vegetable Oil	Prof. Upendra Bhandarkar Prof. Virendra Sethi
69.	08310027	Chavan Sagar Shivajirao	Level Set Method based Numerical Study for Two-Phase Stratified Flow in a Plane Channel with and without Phase change.	Prof. Sharma Atul
70.	08310036	Desai Saumil Bhaskarbhai	Investigations on open Pool Fire.	Prof. Prabhu S V
71.	08310042	Ajay Kumar Choudhary	PIV Based Measurements of Flow Around a Pair of Circular Cylinders.	Prof. Amit Agrawal Prof. Sharma Atul
72.	08310046	P. Kambi Reddy	Pulsating Heat Pipe in Solar Application.	Prof. Rane Milind
Department of Metallurgical Engineering & Materials Science			Specialization : Materials Science	
1.	08311021	(Ms) Ashwini Kishorbhai Nalge	Deformation Behavior Of TWIP (Twinning Induced Plasticity) Steel	Prof. Samajdar I. Prof. Prita Pant
2.	08311401	B. Balaji	Environmental degradation of aluminium matrix composites.	Prof. Prasad R.C.
3.	08311001	Sankha Mukherjee	Local Strain Measurements in Polycrystalline Materials	Prof. Prita Pant Prof. Samajdar I.
4.	08311018	(Ms) Priyangi Prakash Karajagikar	Orientation Dependent Recovery	Prof. Samajdar I.
5.	08311402	Niraj Kumar	Environmental degradation of polymer matrix composites.	Prof. Prasad R.C.
6.	08311003	Priyesh Dhandharia	To study HWCVD a-SiC:H thin film for MEMS application.	Prof. Dusane Rajiv O.
7.	08311013	Watve Jaydeep Gajanan	Stress Management in HWCVD a-SiN:H Thin Films.	Prof. Dusane Rajiv O.
8.	08311002	Avradeep Pal	Substrates For Metamaterials.	Prof. N. Venkataramani Prof. R.P.R.C.Aiyar

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9.	08311017	Rakesh Kumar Sharma	Fabrication and Properties of Anisotropic Nanostructures of ZnO	Prof. Bahadur D. Prof. Mohamad Aslam
10.	08311004	Vishal Khetan	ZnO thin films for a-Si:H based thin films on flexible substrates.	Prof. Dusane Rajiv O.
11.	08311006	Sanjay Kumar Gupta	Synthesis and characterization of different shapes of silver nanoparticles for biological applications.	Prof. Bahadur D.
12.	08311007	Rahul Krishna	Synthesis and functionalization of magnetic nanoparticles and their potential application in biosensors	Prof. Bahadur D.
13.	07311021	Raj Kumar	Synthesis and characterization of some layered cuprates with likely high T _c	Prof. Prakash Om Prof. Bahadur D.
Department of Metallurgical Engineering & Materials Science			Specialization : Process Engineering	
14.	08311022	Pabitra Palai	Development of ultrafine grained AZ80 Mg alloy by severe plastic deformation and evaluation of its mechanical properties.	Prof. Kashyap B.P. Prof. Prabhu N.
15.	08311012	Arunava Sengupta	Strengthening mechanisms in ultra high strength steel.	Prof. Ballal N.B. Prof. Samajdar I.
16.	08311008	Arijit Lodh	Nanoindentation of single phase zirconium.	Prof. Prita Pant Prof. Samajdar I.
17.	08311023	M Sathyanarayana	Effect of Successive welding passes on microstructure and properties in multipass welding of high strength structural steels.	Prof. S.Mishra Prof. Raman R.
18.	08311009	Abhishek Agrawal	Modeling of Liquid flow in the Bottom Portion of Blast Furnace.	Prof. N.N.Viswanathan Prof. Ballal N.B.
19.	08311010	Pande Nishant Prasad	Modeling of solid and gas flow in blast furnace.	Prof. N.N.Viswanathan Prof. Ballal N.B.
20.	08311011	T Kamesh Sandeep Kumar	Iron Ore Sintering under Pulsation	Prof. Ballal N.B. Prof. N.N. Viswanathan
Department of Metallurgical Engineering & Materials Science			Specialization : Steel Technology	
21.	08311404	Mallikarjuna G.B.	Operator guidance models for BOF steel making.	Prof. Ballal N.B. Prof. N.N. Viswanathan
22.	08311405	Vinoo D.S.	3-Dimensional heat transfer analysis in walking beam reheating furnace.	Prof. N.N. Viswanathan Prof. Ballal N.B.

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23.	08311406	Sandeep Anand L.	Modeling of work roll temperature and thermal crown in hot strip mill.	Prof. N.N. Viswanathan Prof. Narsimhan K.
24.	08311408	Manish Ratnakar Dani	Formability of Interstitial free high strength steel	Prof. Narsimhan K. Prof. Samajdar I.
25.	08311407	B Vyshnu Kumar	Heat Transfer modeling and Estimation of Hearth Wear.	Prof. Ballal N.B. Prof. N.N. Viswanathan

Interdisciplinary Group: Corrosion Science & Engineering

1.	08316003	Vinay Khandelwal	Synthesis of polyaniline based conductive coatings for corrosion studies.	Prof. Khanna A. S.
2.	08316010	Keshave Swarnkar	Synthesis of ZnO Nanoparticles and its Effect on Performance of Hyperbranched Polyurethane Coatings	Prof. Khanna A. S.
3.	08311403	Anish Madhavan	Design and development of a test facility for study of material fire properties.	Prof. Khanna A. S.
4.	08316009	Manish Kumar Bhadu	Enhancement of Hydrophobicity and mechanical properties of water borne sol-gel coating.	Prof. Khanna A. S.
5.	08316011	(Ms) Swati	Development of Underwater Coatings for Corrosion Protection of Steel	Prof. Khanna A. S.
6.	08316012	(Ms) Rachna Jain	Waterborne inorganic-organic hybrid coatings on magnesium by sol-gel route.	Prof. Khanna A. S.
7.	08316001	Anand Kumar D Varma	Localized corrosion behaviour of 7449 Al alloy.	Prof. Raja V. S.
8.	08316002	Dhananjay Dewangan	Electrochemical Corrosion Behavior Study of AM30 and AM50 Magnesium Alloys	Prof. Raja V. S.
9.	08316006	(Ms) Divya Soni	Corrosion behaviour of 7075 Al alloy when adhesively bonded with CFRP	Prof. Raja V. S.
10.	08316008	Sambherao Anoop Bhaskar	Study of Activating Fluxes for TIG Welding Performance of Austenitic Stainless Steel (316L)	Prof. Raman R. Prof. S.Mishra

Department of Energy Science and Engineering

1.	08317009	K. Nagesha	Fluid flow Measurements and Computations in Swirling flows specific to Tangentially fired Boilers (TFBs)	Prof. Vedula R.P. Prof. Prabhu S V
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2.	07317010	Anand Upadhyay	Optimization of Solar Industrial Process Heat Systems.	Prof. Kedare S B Prof. Bandyopadhyay Santanu
3.	08317006	Ch.Uma Maheswararao	Characterization of Solar Cells for Low Level Concentration.	Prof. C.S. Solanki
4.	08317018	Chandra Kumar Singh	Design and Field Implementation of the Renewable Energy Systems.	Prof. C.S. Solanki
5.	08317010	Devendra Pareek	Production of Fuel from Plastic Waste.	Prof. Pratibha Sharma Prof. Ganesh Anuradda
6.	08317007	Amar Nath	Contact Pressure Distribution in Polymer Electrolyte Fuel Cell.	Prof. P.C.Ghosh
7.	08317301	Joel George	Energy and Water Minimisation in Heat Integrated Process Water Networks.	Prof. Bandyopadhyay Santanu
8.	08317017	Arun Menon Chandran	Modelling of Solar Radiation.	Prof. Kedare S B Prof. Bandyopadhyay Santanu
9.	08317012	Prabhat Lakhera	Sustainability Analysis for Alternative Transportation Fuels.	Prof. Banerjee Rangan
10.	08317013	Shejwalkar Ashwinikumar Vishnu	Renewable Energy Based Industrial Polygeneration Systems.	Prof. Banerjee Rangan
11.	08317303	(Ms) Moningi Srivalli	Real Time Control of DC Motor and Alternator in a Virtual Laboratory.	Prof. Kulkarni A.M.
12.	08317020	Prejith E.K.	Application of One cycle control in Shunt Active Power Filter.	Prof. Chatterjee Kishore
13.	08317008	Sandeep Verma	Daylight Simulation of Building.	Prof. Nayak J.K.
14.	08317016	Suryasivaprakash Alapati	Coupling Network Simulators with Finite Element Solvers.	Prof. Kulkarni S V
15.	08317302	Robins Anto	Performance of Water-in-glass evacuated tube collector.	Prof. Nayak J.K. Prof. Gaitonde U.N.
16.	08317001	Suman Mondal	Tidal In-Stream Power Generation	Prof. Khaparde S.A.
17.	08317011	Mukherjee Agneev Ajoy Nupur	Simulation of Steam Reforming of Methane, Methanol and Ethanol.	Prof. P.C.Ghosh
18.	08317019	N. V. Rajesh Kumar M.	Electrical Simulation of Defects in Thin-Film Crystalline Silicon Solar Cells.	Prof. Rajesh Gupta
19.	08317005	Pradeepkumar Jaganath Laxmi Podal	Study of SILAR deposited ZnO for Inverted Organic Solar Cells	Prof. M.Neergat

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40.	05D10036	Nitin Bighane	Analysis of Performane of a Parallel Plate Heat Sink in a Flow Through a Duct with Bypass	Prof. Bhalchandra Puranik
41.	05D10039	Nishant Kumar	Study of Blood Flow in Microchannels	Prof. Amit Agrawal
42.	05D10041	(Ms) Sonali Tripathy	Optical and Capacitive Biosensors	Prof. Mukherji Soumyo Prof. Amit Agrawal

Sr.	Roll No.	Name	Dissertation Title	Supervisor / Co-Supervisor / External Supervisor
43.	05D10045	Nishith Dulet	A Numerical Investigation of The Rayleigh - Taylor Instability	Prof. Bhalchandra Puranik
44.	05D10009	Ajay Jain	Use of Delta Wing Vortex Generators for Heat Transfer Augmentation in Pipe Flows	Prof. Vedula R.P.
45.	05D10037	Sajal Dhiman	Modification In Water Chilling System Using Novel Drive Evacuation System	Prof. Bapat S.L.

**Department of Metallurgical Engineering
& Materials Science**

Specialization : Ceramics & Composites

1.	04D11022	Kushagra Mittal	Modeling Semisolid Alloy Serial Deposition Process for Rapid Prototype of Metallic Components Studying the Effect of Process Parameters on Temperature Distribution	Prof. S.Mishra
2.	04D11012	Yashpal Suwansia	Gold Plating on Magnesium Alloy	Prof. Malhotra S.N.
3.	05D11001	(Ms) Kshama Jain	GDC-Salt Composite Electrolytes, Synthesis and Characterization	Prof. Gopalan Prakash
4.	05D11006	Ashwin Soni	Synthesis and Characterization of Doped SmAlO ₃ Solid Electrolytes	Prof. Gopalan Prakash
5.	05D11016	Rao Siddharth Ashith	Synthesis and Characterization of Composite Oxide-ion Electrolytes	Prof. Prasanna T.R.S. Prof. Gopalan Prakash
6.	05D11005	Ankit Padliya	Morphology and Crystallization Studies in Multicomponent Polymer Composites Involving Hybrid Filler	Prof. Arup R. Bhattacharyya
7.	05D11020	Gaurav Agarwal	Morphology and Crystallization Studies of Polyamide6/Acrylonitrile Butadiene Styrene Blends with Multi-wall Carbon Nanotubes	Prof. Arup R. Bhattacharyya
8.	05D11024	Kunal Singh	Synthesis and Characterization of Lithium Iron Phosphate Based Cathode Material for Lithium Ion Battery	Prof. Kulkarni Ajit R.
9.	05D11026	Tilak Pattnaik	Composites of Liquid Crystalline Polymer and Carbon Nanotubes: Understanding the State of Dispersion of Carbon Nanotubes	Prof. Arup R. Bhattacharyya
10.	05D11030	Shashi Kant	Fabrication and Characterization of Li-ion Conducting Electrolyte for Batteries	Prof. Kulkarni Ajit R.

Sr.	Roll No.	Name	Dissertation Title	Supervisor / Co-Supervisor / External Supervisor
11.	05D11008	Snehil Gautam	Effect of Soil Resistivity and Soil Temperature on Corrosion of Galvanically Coupled Metals	Prof. Malhotra S.N.
12.	05D11022	Potty Shrinivas Rajarao	Stress Corrosion Cracking of Plastics	Prof. Malhotra S.N.
13.	05D11032	Vedang Singh Chauhan	Study of Drag Reduction in Water Pipelines Using Water Soluble High Molecular Weight Polymers	Prof. Khanna A. S.
14.	05D11017	Maheshwari Harsh Bipin	Tape Casting of Fine Grain Garnets	Prof. N. Venkataramani Prof. R.P.R.C.Aiyar
15.	05D11011	Raghvendra Goyal	Studies on Aluminum Matrix Composites with Iron Boride and Nano Silicon Nitride Dispersions	Prof. Tiwari A.N.
16.	05D11018	Bardhan Neelkanth Manoj	Dendrimer Modified Magnetic Nanoparticles and their Potential Application in Drug Delivery	Prof. Bahadur D.
17.	05D11021	Shouvik Banerjee	Synthesis and Characterization of Silicon Nanowires	Prof. Dusane Rajiv O.
18.	05D11002	Vishal Garg	Effect of Particle Size on the Dielectric Properties of PVDF-SBN Composite	Prof. Srinivasa Raman Prof. Kulkarni Ajit R.
Department of Metallurgical Engineering & Materials Science			Specialization : Metallurgical Process Engg.	
19.	05D11031	Sai Kumar Vedula	Effect of Process Parameters on Slip Cast Alumina Ceramics	Prof. Parag Bhargava
20.	05D11019	Nipun Katyal	SDC-Salt Composite Electrolytes: Synthesis and Characterization	Prof. Gopalan Prakash
21.	05D11010	Prashant Soni	Effects of Friction Stir Processing and Heat Treatment on Texture Evolution, Tensile Properties and Hardness variation in Aluminum 7039 Alloy	Prof. Kashyap B.P. Prof. Prabhu N.
22.	05D11004	Rohit Kumar Tongia	Study of Thermal Stresses in NiTi Thin Films on Substrates	Prof. Prita Pant
23.	05D11025	Ranjeet Kumar	Corrosion of AISI 304 Austenitic Stainless Steel Weldments	Prof. Malhotra S.N.
24.	05D11027	Dhruv Pant	Role of MSZ Dispersion on Hot Corrosion of NiCrAlY Plasma sprayed Coatings in Na ₂ SO ₄ - 50 wt.% V ₂ O ₅ Melt	Prof. Raja V. S.

Sr.	Roll No.	Name	Dissertation Title	Supervisor / Co-Supervisor / External Supervisor
25.	05D11012	Anshul Godha	Effect of Additives on Iron Powder Compaction and Green Compact Characteristics	Prof. Parag Bhargava
26.	05D11013	Pragyensh Kumar	Effect of Nano Titania Paste Preparation Techniques on Current Density in Dye Sensitized Solar Cell	Prof. Parag Bhargava
27.	05D11014	Kaustubh Kaluskar	Densification Studies of Tape Cast Electroceramics	Prof. N. Venkataramani Prof. Kulkarni Ajit R.
28.	05D11015	Harsh Kumar Narula	Modeling Processes during Hot Rolling	Prof. N.N.Viswanathan Prof. Ballal N.B.
29.	05D11009	Lakshmi Kant	Synthesis and Characterization of some Compositions in Sn-Ba-Ca-Cu-O System with Weak Possibility of High Tc	Prof. Prakash Om Prof. Bahadur D.
30.	05D11003	Varun Dave	Effect of Mechanical Oscillation on Fusion Zone Microstructure and Hardness of TIG Welded Al 2014 and Al 6061 Alloys	Prof. Raman R. Prof. S.Mishra
31.	05D11028	Vivekanand Narayan	Grain Growth in Heat-Affected Zone of Tandem Submerged Arc Welded High Strength Low Alloy Structural Steels	Prof. S.Mishra
Department of Physics (Engineering Physics)			Specialization : Nanoscience	
1.	05026013	Vaibhav Devanathan V	Use of NMR to Study the Magnetic Behaviour of Nanoparticles	Prof. Mahajan Avinash
2.	05D26004	Anshuman Kumar	Zinc Oxide Nanostructures and their Application to Organic Electronics	Prof. Mohamad Aslam Prof. Rao Ramagopal
3.	05D26007	Tanuj Gigras	Devices Based on Carbon Nanotubes	Prof. Misra D.S.
4.	05D26003	Rohit Garg	A Study of Performance Characteristics of APS Particle Sensors	Prof. Varma Raghava
5.	05D26001	Piyush Dak	Simulation and Modeling of SONOS/SANOS Charge Trap Flash Memories Devices	Prof. Mukhopadhyay G. Prof. Souvik Mahapatra

Sr.	Roll No.	Name	Dissertation Title	Supervisor / Co-Supervisor / External Supervisor
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**RECIPIENT OF THE DEGREE OF POST GRADUATE DIPLOMA OF IIT
(EXIT DEGREE)**

Department of Computer Science and Engineering

1.	04305905	Samveen S. Gulati	No project	Prof. Sudarshan S.
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RECIPIENT OF THE DEGREE OF MASTER OF SCIENCE (EXIT DEGREE)

Department of Electrical Engineering

1.	02407802	Santosh Vitthalrao Jadhav	Filtered Multitone and Turbo Equalization	Prof. Gadre V.M.
----	----------	------------------------------	--	------------------

RECIPIENT OF THE DEGREE OF MASTER OF PHILOSOPHY (EXIT DEGREE)

Department of Chemistry

1.	06403004	Ameeq Ul Mushtaq	Evolutionary Design of Mixed L,D Peptides as Inhibitors of Protein-Ligand Interaction.	Prof. Susheel Durani
----	----------	------------------	--	----------------------

Department of Physics

1.	08412602	(Ms) Kavitha Kakumanu	Studies on Certain full Heusler Alloys for Spintronics Applications.	Prof. Suresh K.G.
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Roorkee	8.	Shri Ashok Bhatnagar Chairman, BOG, IIT Roorkee Former Chairman, Railway Board & Principal Secretary to the Govt. of India, 117, SFS Apartments, Hauz Khas, Aurobindo Marg, New Delhi-110 016	Member

Director of each Institute (Ex-officio)			
Kharagpur	9.	Prof. Damodar Acharya, Director, Indian Institute of Technology, Kharagpur - 721 302.	Member
Bombay	10.	Prof. D.V. Khakhar, Director, Indian Institute of Technology Bombay Mumbai - 400 076.	Member
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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
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To represent any other Ministry	22.	Secretary, Ministry of Information Technology, Electronic Niketan, 6, C. G. O. Complex, New Delhi.	Member
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	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 Ramanna Fellow, National Aero Space Laboratories, P.O. No. 1779, Bangalore - 560 017.	Member

Three Members of Parliament (Two from Lok Sabha) (One from Rajya Sabha)	28.	Shri Tarun Das, Chief Mentor, Confederation of Indian Industry, Plot No.249-F, Sector 18, Udyog Vihar, Phase IV, Gurgaon 122 015, Haryana.	Member
	29.	(To be appointed) Member of Parliament (Lok Sabha),	Member
	30.	(To be appointed) Member of Parliament (Lok Sabha),	Member
	31.	Smt. Vasanthi Stanley Member of Parliament (Rajya Sabha), 113, South Avenue, New Delhi	Member
	32.	Shri Ashok Thakur, Additional Secretary (HE), Ministry of Human Resources Development, Department of Higher Education, Shastri Bhavan, New Delhi 110 115.	Secretary

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Director, Integrated Finance Division, Ministry of Human Resource Development, Deptt. Of Higher Education, Technical Section-1, Government of India, Shastri Bhavan, New Delhi – 110 115	Member
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Aerospace Engineering

Prof. Dulal Panda
Biosciences & Bioengineering

Prof. Anurag Mehra (up to 21.1.2011)
Prof. Sachin Patwardhan (from 21.1. 2011)
Chemical Engineering

Prof. Nand Kishore
Chemistry

Prof. Y.M. Desai
Civil Engineering

Prof. Amitabha Sanyal
Computer Science & Engg.

Prof. T. K. Biswal (up to 7.3.2011)
Prof. Kanchan Pande (from 8.3.2011)
Earth Sciences

Prof. D.K. Sharma
Electrical Engg.

Prof. (Ms.) Meenakshi Gupta (up to 17.11.2010)
Prof. K. Narayanan (from 18.11.2010)
Humanities & Social Sciences

Prof. M.K. Srinivasan
Mathematics

Prof. S.L. Bapat
Mechanical Engg.

Prof. R.O. Dusane
Met. Engg. & Mat. Science

Prof. Raghava Varma
Physics

Prof. (Ms.) Anuradda Ganesh
Energy Science and Engineering

Heads of Centres

Prof. G.G. Ray
Industrial Design Centre

Prof. Raman S. Srinivasa (up to 09.05.2010)
Prof. Soumyo Mukherjee (from 10.05.2010)
Centre for Research in Nanotechnology and Science & SAIF are merged

Prof. H.S. Pandalai (up to 20.08.2010)
Prof. (Ms.) P. Venkatachalam (from 20.08.2010)
Centre of Studies in Resources Engineering

Prof. Virendra Sethi
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. U.N. Gaitonde (Actg. Head) up to 7.2.2011
Prof. Milind Sohoni (from 8.2.2011)
Centre for Technology Alternatives in Rural Areas

Prof. B.L. Tembe
Centre for Distance Engineering Education Programme

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Prof. (Ms.) Karuna Jain
Shailesh J. Mehta School of Management

Convenors of Interdisciplinary Programmes

Prof. Narayan Rangaraj (up to 24.1.2011)
Prof. N. Hemchandra (from 21.1.2011)
Industrial Engineering & Operations Research

Prof. Ravi Banavar
Systems & Control Engineering

Faculty

Academic Staff (Alphabetically) (1.4.2010 to 31.3.2011)

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	Associate Professor	Ph.D (State University of New York, Buffalo)	Chemical Engg.	No	
2	Adil Gajendra Kumar	Professor	Ph.D. (University of Manitoba)	SJMSOM	Member	
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	Agrawal Amit	Associate Professor	PH.D (University of Delaware)	Mechanical Engg.	No	
7	Aluru Srinivas	Professor	Ph.D. (University of Iowa)	CS & E	Member	
8	Amarnath C.	Professor	Ph.D. (University of Allahabad)	Mechanical Engg.	Member	Prof-in-Charge, (SINE)
9	Anandavardhanan U.K.	Associate Professor	Ph.D. (University of Hyderabad)	Mathematics	No	
10	Ananthakumar Usha	Associate Professor	Ph.D. (IIT Bombay)	SJMSOM	No	
11	Anshuman N. Shukla	Assistant Professor (Contractual Basis)	Ph.D. (IIT Kanpur)	Electrical Engg.	No	
12	Apte Prakash R.	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
13	Apte Varsha	Associate Professor	Ph.D.(Duke University USA)	CS & E	No	
14	Arindrajit A. Chowdhury	Assistant Professor (Contractual Basis)	Pennsylvania State University	Mechanical Engg.	No	
15	Arjun Arunachalam	Assistant Professor	Ph.D. (University of Wisconsin, Madison)	Electrical Engg.	No	
16	Arti D. Kalro	Assistant Professor (Contractual Basis)	Ph.D (IIT Madras)	SJMSOM	No	
17	Arya Hemendra	Associate Professor	Ph.D.(IIT Bombay)	Aerospace Engg.	No	
18	Arya Kavi J	Associate Professor	Ph.D (University of Oxford, UK)	CS & E	No	
19	Aslam Mohammed	Assistant Professor	Ph.D (University of Pune)	Physics	No	
20	Asolekar S. R.	Professor	Ph.D. (University of Iowa)	CESE	Member	
21	Athavale Ameer	Professor	Ph.D. ((University of Indiana)	Mathematics	Member	
22	Atrey Milind D.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
23	Awate P.G.	Professor	Ph.D. (University of Corneli)	Mechanical Engg.	Member	

Faculty

24	Baghini Maryam S.	Associate Professor (Contract)	Ph.D (Sharif University of Technology)	Electrical Engg.	No	
25	Bahadur D.	Professor	Ph.D. (IIT Kanpur)	Met.Engg. & Mat.Sc.	Member	
26	Bairy Ramesh T.S.	Assistant Professor	Ph.D (University of Hyderabad)	H&SS	No	
27	Bajoria K.M.	Professor	Ph.D. (University of Cambridge)	Civil Engg.	No	
28	Balaji P.V.	Professor	Ph.D. (IISc. Bangalore)	Bio-Sciences & Bio-Engineering	Member	
29	Balakrishna M.S.	Professor	Ph.D. (IISc. Bangalore)	Chemistry	Member	
30	Ballal N.B.	Professor	Ph.D. (IIT Kanpur)	Met.Engg. & Mat.Sc.	Member	
31	Banavar R.N.	Professor	Ph.D. (University of Texas)	Systems & Control	Member	HOD, Systems & Control Engg. Group.
32	Bandyopadhyay B.	Professor	Ph.D. (IIT Delhi)	Systems & Control	Member	
33	Bandyopadhyay Rajdip	Associate Professor	Ph.D. (IISc, Bangalore)	Chemical Engg	No	
34	Bandyopadhyay Santanu	Professor	Ph.D. (IIT Bombay)	Energy Science & Engg.	Member	
35	Banerjee Rangan	Professor	Ph.D. (IIT Bombay)	Energy Science & Engg.	Member	
36	Banerjee Rinti	Professor	Ph.D.(IIT Bombay)	Bio-Sciences & Bio-Engineering	Member	
37	Banerjee Santanu S.	Professor	Ph.D. (University of Jadavpur)	Earth Science	Member	
38	Banerjee Sauvik	Assistant Professor	Ph.D (University of California)	Civil Engg.	No	
39	Banerji Pradipta	Professor	Ph.D. (University of California)	Civil Engg.	Member	
40	Bapat S.L.	Professor	Ph.D. (IIT Delhi)	Mechanical Engg.	Member	HOD, Mech. Engg. Deptt
41	Bapat Varadraj B.	Assistant Professor	Ph.D (IIT Bombay)	SJMSOM	No	
42	Bapat Vijay P.	Professor	B.E. (Sangli) DIIT(IIT Bombay)	I.D.C	Member	
43	Baskar S	Assistant Professor	IISc., Bangalore	Mathematics	No	
44	Bellare Jayesh	Professor	Ph.D. (University of Minnesota)	Chemical Engg	Member	
45	Bellur Umesh R.	Professor	Ph.D (Syracuse)	CS & E	No	
46	Belur Madhu N.	Associate Professor	Ph.D(univ. of Groningen)	Electrical Engg.	No	
47	Bhallamudi Ravi	Professor	Ph.D. (IISc Bangalore)	Mechanical Engg.	Member	
48	Bhandarkar Upendra	Assistant Professor	Ph.D. (University of Minnesota)	Mechanical Engg.	No	
49	Bharatiya Sharad	Associate Professor	Ph.D. (Oklahoma State University)	Chemical Engg	No	
50	Bhargava Parag	Professor	Ph.D.(Univ. of Birmingham & Uni. of Alabama in Guntsville)	Met.Engg. & Mat.Sc.	Member	
51	Bhargava S.	Professor	Ph.D. (University of Gujarat)	SJMSOM	Member	
52	Bhat P. Jayadeva	Professor	Ph.D. (IISc. Bangalore)	Bio-Sciences & Bio-Engineering	Member	
53	Bhat Parameshwar R.	Professor	Ph.D. (IIT Kanpur)	H&SS	Member	
54	Bhattacharyya Arup R.	Associate Professor	Ph.D. (IIT Delhi)	Met.Engg. & Mat.Sc.	No	
55	Bhattacharyya Pushpak	Professor	Ph.D.(IIT Bombay)	CS & E	Member	
56	Bhattacharyya Surajit	Assistant Professor	Ph.D (IIT Kanpur)	H&SS	No	
57	Bhattacharyya Tanmay	Assistant Professor	P.G.D. (IIT Bombay)	H&SS	No	
58	Bhujade M.R.	Professor	Ph.D.(IIT Bombay)	CS & E	Member	
59	Bhushan Mani	Associate Professor	Ph.D.(IIT Bombay)	Chemical Engg.	No	
60	Biswal T.K.	Professor	Ph.D.(University Rajasthan)	Earth Science	Member	
61	Biswas Supratim	Professor	Ph.D.(IIT Kharagpur)	CS & E	Member	

Faculty

62	Chakrabarti Soumen	Associate Professor	Ph.D. (University of California)	CS & E	No	
63	Chakrabarti Subhananda	Associate Professor	Ph.D (University of Calcutta)	Electrical Engg.	No	
64	Chakraborty Debraj	Assistant Professor	Ph.D (University of Florida)	Electrical Engg.	No	
65	Chakraborty Supratik	Associate Professor	Ph.D. (The Leland Stanford Jr. University)	CS & E	No	
66	Chakravarthy B. K.	Professor	M.Des. (IIT Bombay)	I.D.C	Member	
67	Chandiramani N.K.	Professor	Ph.D.(Virginia Tech.)	Civil Engg.	Member	
68	Chandorkar A.N.	Professor	Ph.D. (Rajasthan Univ.)	Electrical Engg.	Member	
69	Chandorkar Mukul C.	Professor	Ph.D. (Univ.of Wisconsin Madison)	Electrical Engg.	Member	
70	Chandran Sharat	Professor	Ph.D. (Univ.of Maryland)	CS & E	Member	
71	Chandrasekharam D.	Professor	Ph.D. (IIT Bombay)	Earth Science	Member	
72	Chaporkar Prasanna S.	Associate Professor	Ph.D (University of Pennsylvania, Philadelphia)	Electrical Engg.	No	
73	Chatterjee Avijit	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member	
74	Chatterjee Kishore	Professor	Ph.D. (IIT Kanpur)	Electrical Engg.	Member	
75	Chaudhari Sanjeev	Professor	Ph.D (IIT Kanpur)	CESE	Member	
76	Chaudhari Subhasis	Professor	Ph.D. (University of California)	Electrical Engg.	Member	
77	Chaudhuri Parag Kumar	Assistant Professor	Ph.D. (IIT Delhi)	CS & E	No	
78	Chebrolu Kameswari	Assistant Professor	Ph. D (UCSD, California)	CS & E	No	
79	Choudhary Deepankar	Associate Professor	Ph.D. (IISc Bangalore)	Civil Engg	No	
80	Chowdhury Arindam	Assistant Professor	Ph.D (University of Carnegie Mellon)	Chemistry	No	
81	Contractor A.Q.	Professor	Ph.D. (IIT Bombay)	Chemistry	Member	
82	Damani Om P.	Associate Professor	Ph.D (University of Texas at Austin)	CS & E	No	
83	Das Ashish	Professor	Ph.D (I. A.S.R.I)	Mathematics	Member	
84	Das Dibyendu	Associate Professor	Ph.D. (University of Bombay)	Physics	No	
85	Das Pragya	Associate Professor	Ph.D. (TIFR)	Physics	No	
86	Dasaka Satyanarayana M.	Assistant Professor	Ph.D. (IISc. Bangalore)	Civil Engg.	No	
87	Date Prashant P.	Professor	Ph.D. (IIT Madras)	Mechanical Engg.	Member	
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	Co-opted Member	
91	Debabrata Maiti	Assistant Professor (Contractual Basis)	Ph. D. (The Johns Hopkins University)	Chemistry	No	
92	Debraj Chakrabarti	Assistant Professor	Ph.D (University of Wisconsin- Madison)	Mathematics	No	
93	Deo Makrand C.	Professor	Ph.D. (IIT Bombay)	Civil Engg.	Member	
94	Desai Madhav P.	Professor	Ph.D. (University of Illinois)	Electrical Engg.	Member	
95	Desai Uday B.	Professor	Ph.D. (The John Hopkins Univ.)	Electrical Engg.	Member	
96	Desai Yogesh M.	Professor	Ph.D. (University of Manitoba)	Civil Engg	Member	HOD- Civil Engg. Deptt.
97	Dey Bikash Kumar	Associate 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	

Faculty

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- MEMS
105	Dutta Anindya	Associate Professor	Ph.D. (University of Jadavpur)	Chemistry	Co-opted Member	
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	Fernandes Baylon G.	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
112	Fernandes Rodney A.	Associate Professor	Ph.D. (University of Pune)	Chemistry	No	
113	Gadre Vikram M.	Professor	Ph.D. (IIT Delhi)	Electrical Engg.	Member	
114	Gaitonde U.N.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
115	Gandhi Prassana S.	Associate Professor	Ph.D.(University of Rice)	Mechanical Engg.	No	
116	Ganesh Anuradha	Professor	Ph.D. (IIT Delhi)	Energy Science & Engg.	Member	HOD-ES&E
117	Ganguly Swaroop	Assistant Professor	Ph.D. (University of Texas)	Electrical Engg.	No	
118	Garg Anurag	Assistant Professor	Ph.D. (IIT, Roorkee)	CESE	No	
119	Garge Shripad M.	Assistant Professor	Ph.D (University of Allahabad)	Mathematics	No	
120	Gedam Shirishkumar S.	Associate Professor	Ph. D. (IIT Bombay)	CSRE	No	
121	George Siby K.	Assistant Professor	PH.D. (NEHU Univ., Shillong)	H&SS	No	
122	Ghorpade S.R.	Professor	Ph.D. (Purdue Univ.)	Mathematics	Member	
123	Ghosh Santanu K.	Assistant Professor	Ph.D (Jadavpur University)	Bio-Science & Bio-Engineering	No	
124	Ghosh Atanu	Professor	M.Tech. (IIT Delhi) P.G. Diploma in Mgmt. (IIM Ahmedabad)	SJMSOM	Member	
125	Ghosh K. Dipan	Professor	Ph.D. (Bombay)	Physics	Member	
126	Ghosh Prakashchandra	Assistant Professor	Ph.D. Technical Univ. of Aachen	Energy Science & Engg.	No	
127	Ghosh Prasenjit	Associate Professor	Ph.D.(University of Columbia)	Chemistry	No	
128	Ghosh Siddhartha	Associate Professor	Ph.D. (Univ. of Michigan)	Civil Engg.	No	
129	Ghosh Subimal	Assistant Professor	Ph.D. (IISc. Bangalore)	Civil Engg.	No	
130	Golay Pravesh J	Assistant Professor	Ph.D (Pune University)	H&SS	No	
131	Gopal R. Patil	Assistant Professor	Ph. D. (Remsselaer Polytechnic Institute, Troy)	Civil Engg.	No	
132	Gopalan Prakash	Professor	Ph.D. (Purdue Univ.)	Met.Engg. & Mat.Sc.	Member	
133	Gopalan Rajaraman	Assistant Professor	Ph.D (University of Manchester, UK)	Chemistry	No	
134	Goyal Alok B	Professor	Ph.D. (California)	Civil Engg	Member	
135	Gudi R.D.	Professor	Ph.D. (University of Alberta)	Chemical Engg	Member	
136	Guha Anirban	Assistant Professor	Ph.D. (IIT Delhi)	Mechanical Engg.	No	
137	Gumaste Ashwin Anil	Assistant Professor	Ph.D (University of Texas)	CS & E	No	
138	Gundimeda Haripriya S.	Associate Professor	Ph.D. (Indira Gandhi Institute of Development)	H&SS	No	
139	Gupta Kapil	Professor	Ph.D. (Univ.of Sheffield)	Civil Engg.	Member	
140	Gupta Meenakshi S.	Professor	Ph.D. (IIT Kanpur)	H&SS	Member	
141	Gupta Rajesh	Assistant Professor	Ph.D (IIT Delhi)	Energy Science & Engg.	No	

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142	Gupta Shalabh	Assistant Professor	Ph.D. (University of California)	Electrical Engg.	No	
143	Hablani Hari B.	Professor (Contract)	Ph.D (IISc., Bangalore)	Aerospace Engg.	No	
144	Hemachandra N.	Professor	Ph.D. (IISc. Bangalore)	I.E. & O.R.	Member	HOD-IE&OR
145	Huber Hans	Associate Professor (Contract)	Ph. D (Geneva)	SJMSOM		
146	Inamdar Mandar M.	Assistant Professor	Ph.D (California Institute of Tech.)	Civil Engg.	No	
147	Innamdar Arun B.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No	
148	Issac K.K.	Professor	Ph.D. (IIT Madras)	Mechanical Engg.	Member	
149	Iyer Sridhar R.	Associate Professor	Ph.D(IIT Bombay)	CS & E	No	
150	Iyer Kannan N.	Professor	Ph.D. (University of Purdue)	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	Jagarlapudi Saketha Nath R.	Assistant Professor	Ph. D. (IISc. Bangalore)	CS & E	No	
154	Jain Karuna	Professor	Ph.D. (IIT Kharagpur)	SJMSOM	Member	HOD- SJMSOM
155	Jangid R.S.	Professor	Ph.D. (IIT Delhi)	Civil Engg.	Member	
156	Jha Shishir Kumar	Associate Professor	Ph.D. (Syracuse Univ.)	SJMSOM	No	
157	Jog S.D.	Assistant Professor	Ph.D (IIT Bombay)	Mechanical Engg.	No	
158	Joshi Kapil D.	Professor	Ph.D. (Indiana)	Mathematics	Member	
159	Joshi Anirudha N.	Associate Professor	M.Tech. (IIT Bombay)	I.D.C	No	
160	Joshi Ashok	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member	Prof. In Charge, CEP/QIP
161	Joshi Purba	Assistant Professor (Contractual Basis)	M.Des (IIT Bombay)	I.D.C	No	
162	Joshi R.K.	Professor	Ph.D. (IIT Madras)	CS & E	Member	
163	Joshi R.R	Professor	Ph.D. (UTC France)	Mathematics	Member	
164	Joshi Suhas	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
165	Jothiprakash V.	Associate Professor	Ph.D. (IIT-Madras)	Civil Engg.	No	
166	Juneja Ashish	Associate Professor	Ph.D.(National University of Singapore)	Civil Engg.	No	
167	Juvekar V.A.	Professor	Ph.D. (IIT Bombay)	Chemical Engg.	Member	
168	Kaliappan Krishna P.	Professor	Ph.D. (IISc. Bangalore)	Chemistry	Member	
169	Kant Tarun	Professor	Ph.D. (IIT Bombay)	Civil Engg.	Member	
170	Karandikar Abhay	Professor	Ph.D. (IIT Kanpur)	Electrical Engg.	Member	Head-Computer Centre
171	Kashyap B.P.	Professor	Ph.D. (IIT Kanpur)	Met.Engg. & Mat.Sc.	Member	
172	Kathuria Vinish Kumar	Associate Professor	Ph. D(Indira Gandhi Inst. Of Development Research)	SJMSOM	No	
173	Keshari Manoj K.	Assistant Professor	Ph.D.(TIFR)	Mathematics	No	
174	Khakhar D.V.	Director	Ph.D. (University of Massachusetts Amherst)	Chemical Engg	Member	
175	Khan Azizuddin	Assistant Professor	Ph.D (IIT Kanpur)	H&SS	No	
176	Khanna Anand S.	Professor	Ph.D. (Madras Univ.)	Met.Engg. & Mat.Sc.	Member	
177	Khaparde S.A.	Professor	Ph.D. (IIT Kharagpur)	Electrical Engg.	Member	
178	Khedkar Uday P.	Professor	Ph.D. (IIT Bombay)	CS & E	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	Incharge – ASC

Faculty

181	Kiran R. Kondabagil	Assistant Professor	Ph.D.-Biochemistry (University of Mysore)	Bio-Science & Bio-Engineering	No	
182	Kirankumar S. Momaya	Professor	Ph.D. (University of Toronto)	SJMSOM	Member	
183	Kotha Sambasivarao	Professor	Ph.D. (University of Hyderabad)	Chemistry	Member	
184	Kottantharayil Anil	Associate Professor	Ph.D (Universitat der Bhundeswehr, Munich Germany)	Electrical Engg.	No	
185	Krishna N. Jonnalagadda	Assistant Professor	Ph. D. (University of Illinois)	Mechanical Engg.	No	
186	Krishna V. Kaipa	Assistant Professor (Contractual Basis)	Ph.D. (University of Maryland)	Mathematics	No	
187	Sinha Krishnendu	Associate Professor	Ph.D. (University of Minnesota)	Aerospace Engg.	No	
188	Kulkarni A. R.	Professor	Ph.D. (IIT Kharagpur)	Met.Engg. & Mat.Sc.	Member	
189	Kulkarni A.M.	Professor	Ph.D. (IISc. Bangalore)	Electrical Engg.	No	
190	Kulkarni Malhar A.	Associate Professor	Ph.D. (University of Pune)	H&SS	Co-opted Member	
191	Kulkarni Mrinmoyi	Assistant Professor	Ph.D.(State Univ.of New York)	H&SS	No	
192	Kulkarni Purushottam S.	Assistant Professor	Ph.D (University of Massachusetts)	CS & E	No	
193	Kulkarni Rekha P.	Professor	Ph.D. (IIT Bombay)	Mathematics	Member	
194	Kulkarni Srikrishna V.	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
195	Kulkarni Suvarn S.	Assistant Professor	Ph.D (University of Pune)	Chemistry	No	
196	Kumar Anil	Professor	Ph.D. (IISc. Bangalore)	Chemistry	Member	
197	Kumar Animesh N	Assistant Professor	Ph. D. (University of California)	Electrical Engg.	No	
198	Kumar Girish	Professor	Ph.D. (IIT Kanpur)	Electrical Engg.	Member	
199	Kundu Tapanendu	Professor	Ph.D. (Jadavpur Univ.)	Physics	Member	
200	Kusre Anand T	Professor (Contract)	M.Tech. (IIT Bombay) / Diploma in Business Finance	SJMSOM	No	
201	Lahiri G.K.	Professor	Ph.D. (University of Jadavpur)	Chemistry	Member	
202	Leena Vachhani	Assistant Professor	Ph.D (IIT Madras)	Systems & Control	No	
203	Mahajan Avinash V.	Professor	Ph.D. (Iowa)	Physics	Member	
204	Mahajan Swapneel	Associate Professor	Ph.D (Cornell Univ.)	Mathematics	No	
205	Mahajani Sanjay	Professor	Ph.D. (University of Bombay)	Chemical Engg.	Member	
206	Mahapatra Souvik	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
207	Mahulikar S.P.	Professor	Ph.D.(Nanyang Tech. Univ., Singapore)	Aerospace Engg.	Member	
208	Maiti S.K.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
209	Maji Samir K.	Assistant Professor	Ph.D (Jadavpur University)	Bio-Science & Bio-Engineering	No	
210	Major Syed S.	Professor	Ph.D. (IIT Delhi)	Physics	Member	
211	Malay Mukul	Associate Professor	Ph.D. (University of Rochester)	Earth Science	No	
212	Malik Ranjan K.	Professor	Ph.D. (Wisconsin Madison Univ.)	Chemical Engg.	Member	
213	Malshe Milind S.	Professor	Ph.D. (Bombay Univ.)	H&SS	Member	
214	Manaswita Bose	Assistant Professor	Ph.D. (IIT Science Bangalore)	Energy Science & Engg.	No	
215	Manchanda Rohit	Professor	Ph.D. (Oxford Univ.)	Bio-Science & Bio-Engineering	Member	
216	Mandal J.C.	Professor	Ph.D. (IISc. Bangalore)	Aerospace Engg.	Member	
217	Mandal J.N.	Professor	Ph.D. (IISc. Bangalore)	Civil Engg	Member	
218	Manik D.N.	Professor	Ph.D. (Auburn Univ.)	Mechanical Engg.	Member	
219	Manjunath D.	Professor	Ph.D. (Rensselaer Polytechnic, NY)	Electrical Engg.	Member	

Faculty

220	Mathew George	Associate Professor	Ph.D. (M.S. Univ.)	Earth Science	No	
221	Mathew Tom V.	Associate Professor	Ph.D (IIT Madras)	Civil Engg	No	
222	Mathur Pradeep	Professor	Ph.D. (University of Keel)	Chemistry	Member	
223	Mehra Anurag	Professor	Ph.D. (University of Bombay)	Chemical Engg	Member	Prof-in-Charge, Administrative Planning & Services
224	Mehra Sarika	Assistant Professor	Ph.D.(University of Minessota)	Chemical Engg	No	
225	Menezes Viren	Associate Professor	Ph.D. (IISc. Bangalore)	Aerospace Engg.	No	
226	Menezes Bernard L	Professor	Ph.D (University of Texas)	CS & E	Member	
227	Merchant S.N.	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
228	Mishra M.K.	Professor	Ph.D. (University of Florida)	Chemistry	Member	
229	Mishra Saurabh	Assistant Professor	Ph.D. (Pennsylvania State Univ.	Met.Engg. & Mat.Sc.	No	
230	Mishra Trupti	Assistant Professor	Ph.D (IIT Kharagpur)	SJMSOM	No	
231	Misra D.S.	Professor	Ph.D. (IIT Kanpur)	Physics	Member	
232	Mitra Mira	Assistant Professor	Ph.D (IISc. Bangalore)	Aerospace Engg.	No	
233	Mohan B.K.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	Co-opted Member	
234	Mohan Gollapally	Professor	Ph.D. (ISM Dhanbad)	Earth Science	Member	
235	Mohanty Raja	Associate Professor	M.Des (IIT Bombay)	I.D.C	Co-opted Member	
236	Moharir Arun S.	Professor	Ph.D. (IIT Kanpur)	Chemical Engg	Member	
237	Moudgalya Kannan	Professor	Ph.D. (Rice Univ. Houston)	Chemical Engg	Member	
238	Mujumdar P.M.	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member	HOD- CASDE
239	Mukherjee Asmita	Associate Professor	Ph.D. (TIFR)	Physics	No	
240	Mukherjee Indrajit	Assistant Professor	Ph.D (IIT Kharagpur)	SJMSOM	No	
241	Mukherjee Jayanta	Associate Professor	Ph.D (The Ohio State Univ.Columbus, USA)	Electrical Engg.	No	
242	Mukherjee Soumyajit	Assistant Professor	Ph.D (IIT Roorke)	Earth Science	No	
243	Mukherjee Soumyo	Professor	Ph.D.(Univ. Of Colarado)	Bio-Science & Bio-Engineering	Member	HOD-CRNTS & SAIF
244	Mukherjee Suparna	Professor	Ph.D. (University of Michigan)	CESE	Member	
245	Mukhopadhyay G.	Professor	Ph.D. (Bombay)	Physics	Member	
246	Mukhopadhyay Siuli	Assistant Professor	Ph.D (Univ. of Calcutta)	Mathematics	No	
247	Munshi Kishori lal	Professor	P.G.D. (IIT Bombay)	I.D.C	Member	
248	Murthy Sahana	Assistant Professor	Ph.D (Rutgers University)	C- DEEP	No	
249	Murti M.V.R.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No	
250	Murugavel Ramaswamy	Professor	Ph.D. (IISc. Bangalore)	Chemistry	Member	
251	Nagaraja G.	Professor	Ph.D. (IISc. Bangalore)	CS & E	Member	
252	Nagarajan R.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No	
253	Namboothiri I.N.N.	Professor	Ph.D. (IISc Bangalore)	Chemistry	Member	
254	Nambudiripad N.	Associate Professor	Ph.D. (Oxford Univ.)	Physics	No	
255	Nanavati Hemant J.	Associate Professor	Ph.D. (Georgia Instt.of TechNology)	Chemical Engg.	No	
256	Nand Kishore	Professor	Ph.D. (IIT Delhi)	Chemistry	Member	HOD- Chemistry
257	Nandi Basanta Kumar	Associate Professor	Ph.D. (Utkal University)	Physics	No	

Faculty

258	Narashimhan K	Professor	Ph.D. (Purdue Univ.)	Met.Engg. & Mat.Sc.	Member	
259	Narayanan Harihar	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
260	Narayanan Krishna S.	Associate Professor	Ph.D. (IIT Madras)	CS & E	No	
261	Narayanan Krishnan	Professor	Ph.D. (Univ. of Delhi)	H&SS	Member	HOD- Humanities & Social Sci. Deptt.
262	Narayanan N C.	Associate Professor	M.Phil (JNU, New Delhi)	CTARA	No	
263	Narayanan Vishnu	Assistant Professor	Ph.D (University of California)	I.E. & O.R.	No	
264	Narayankhedkar K.G.	Professor, Convener – School of Cryogenic Engg.	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
265	Nataraj Neela	Associate Professor	Ph.D. (IIT Delhi)	Mathematics	No	
266	Nataraj P.S.V.	Professor	Ph.D. (IIT Madras)	Systems & Control	Member	
267	Nath Rajakishore	Assistant Professor	Ph.D (Central Univ. Hyderabad)	H&SS	No	
268	Nayak Jayant K.	Professor	Ph.D. (IIT Delhi)	Energy Science & Engg.	Member	
269	Neergat Manoj	Assistant Professor	Ph.D (Indian Institute of Science, Bangalore)	Energy Science & Engg.	No	
270	Sharma Nishant	Assistant Professor	M.Des – IIT Delhi	I.D.C	No	
271	Noronha Santosh B.	Assistant Professor	Ph.D. (Univ.of Maryland, Baltimore County)	Chemical Engg.	No	
272	Nutan Limaye	Assistant Professor (Contractual Basis)	Ph. D. (Homi Bhabha National Institute, Chennai)	CS & E	No	
273	P. Vedagiri	Assistant Professor (Contract)	Ph.D. (IIT Madras)	Civil Engg	No	
274	Padhi Puja	Assistant Professor	Ph.D (Univ. of Hyderabad)	H&SS	No	
275	Panda Dulal	Professor	Ph.D. (Jadavpur Univ.)	Bio-Science & Bio-Engineering	Member	
276	Panda Ranjan K.	Associate Professor	Ph.D. (University of Hyderabad)	H&SS	No	
277	Panda Ratikanta	Assistant Professor	Ph.D (University of Hyderabad)	H&SS	No	
278	Pandalai Hari S.	Professor	Ph.D. (ISM)	Earth Science	Member	
279	Pande Sanjay S.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
280	Pandey Ashish	Assistant Professor	MBA(University Institute of Management)	SJMSOM	No	
281	Pandey Kanchan	Professor	Ph.D. (Gujarat Univ)	Earth Science	Member	HOD-Earth Science
282	Pandey Prem C.	Professor	Ph.D. (University of Toronto)	Electrical Engg.	Member	
283	Pani A.K.	Professor	Ph.D. (IIT Kanpur)	Mathematics	Member	
284	Pant Prita	Assistant Professor	Ph.D. (Cornell Univ)	Met.Engg. & Mat.Sc.	No	
285	Pant R.S.	Associate Professor	Ph.D. (U.K.)	Aerospace Engg.	No	
286	Panwar Ajay S	Assistant Professor	Ph.D. (University of Minnesota)	Met.Engg. & Mat.Sc.	No	
287	Parinda Vasa	Assistant Professor	Ph.D. (Physics) – Tata Institute of Fundamental Research	Physics	No	
288	Parmananda Punit	Associate Professor	Ph.D (Ohio University)	Physics	No	
289	Parthasarathy D.	Professor	Ph.D. (Univ.of Hyderabad)	H&SS	Member	
290	Patankar Swati	Associate Professor	Ph.D. (Tufts Univ. Boston)	Bio-Science & Bio-Engineering	No	
291	Patel Suresh C	Professor	Ph.D. (Univ of Wyoming)	Earth Science	Member	
292	Patil Mahesh B	Professor	Ph.D. (Univ.of IlliNois)	Electrical Engg.	Member	
293	Patil Rahul J	Assistant Professor	Ph.D (University of Colorado)	SJMSOM	No	

Faculty

294	Patkar Sachin B	Professor	Ph.D (IIT Bombay)	Electrical Engg.	No	
295	Pattanaik Sarmistha	Assistant Professor	Ph.D (Jawaharlal Nehru University)	H&SS	No	
296	Patwardhan Anand P	Professor	Ph.D. (Carnegie Mellon Univ.)	SJMSOM	Member	
297	Patwardhan S.C.	Professor	Ph.D. (IIT Bombay)	Chemical Engg.	Member	HOD -Chem.Engg.
298	Patwari Naresh Ganpathi	Associate Professor	Ph.D. (IIT Bombay)	Chemistry	No	
299	Paulomi Chakraborty	Assistant Professor (Contractual Basis)	Ph. D (University of Alberta)	H&SS	No	
300	Pawaskar N. Dnyanesh	Assistant Professor	Ph.D. (University of Brunensis)	Mechanical Engg.	No	
301	Phale Prashant S.	Professor	Ph.D. (IISc. Bangalore)	Bio-Science & Bio-Engineering	Member	
302	Phani Tetali	Associate Professor (Contract)	M.Des.(IIT Bombay)	I.D.C	No	
303	Phatak D.B.	Professor & Subrao M. Nilekani Chair Professor	Ph.D. (IIT Bombay)	CS & E	Member	
304	Pillai Harish K	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
305	Pillai Sibi Raj B.	Assistant Professor	Ph.D. (Egole Polytechnic Federale De Lausanne)	Electrical Engg.	No	
306	Poopathi K.P.K.	Professor	Ph.D. (IIT Kanpur)	Mechanical Engg.	Member	
307	Poovaiah B.A. Ravi	Professor	DIIT (IIT Bombay)	I.D.C	Member	
308	Prabhu Nityanand	Professor	Ph.D. (University of Canegie)	Met.Engg. & Mat.Sc.	Member	
309	Prabhu S.V.	Associate Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Co-opted Member	
310	Pradeep A.M.	Associate Professor	Ph.D. (IIT Kanpur)	Aerospace Engg.	No	
311	Pradeep Kumar P.I	Assistant Professor	Ph.D (Uppasala University, Sweden)	Chemistry	No	
312	Prakash Om	Professor	Ph.D. (IIT Bombay)	Met.Engg. & Mat.Sc.	Member	
313	Prasad R.C.	Professor	Ph.D. (IISc. Bangalore)	Met.Engg. & Mat.Sc.	Member	
314	Prasad Shiva	Professor	Ph.D.(Delhi)	Physics	Member	
315	Prasanna T.R.S.	Assistant Professor	Ph.D.(MIT, Cambridge)	Met.Engg. & Mat.Sc.	No	
316	Gururajan M.P.	Assistant Professor	Ph.D. (IIT Science Bangalore)	Met.Engg. & Mat.Sc.	No	
317	Dey Santanu	Assistant Professor	Ph. D. (Indian Statistical Institute)	Mathematics	No	
318	Punekar N.S.	Professor	Ph.D. (IISc. Bangalore)	Bio-Science & Bio-Engineering	Member	HoD- Biosci & Bioengg
319	Puranik Bhalchandra	Assistant Professor	Ph.D. (University of Wisconsin Madison)	Mechanical Engg.	No	
320	Puthenpurakal Tony J.	Associate Professor	Ph.D. (University of Purdue)	Mathematics	No	
321	Radhakrishna M.	Associate Professor	Ph.D (Indian School of Mines, Dhanbad)	Earth Science	No	
322	Raghunathan Ravi	Assistant Professor	Ph.D. (University of Yale)	Mathematics	No	
323	Raja S. V.	Professor	Ph.D. (IISc. Bangalore)	Met.Engg. & Mat.Sc.	Member	
324	Ramachandran K.	Professor	D.I.I.T (Industrial Design)	I.D.C	Member	
325	Ramachandran Prabhu	Assistant Professor	Ph.D. (IIT-Madras)	Aerospace Engg.	No	
326	Ramadevi Pichai	Associate Professor	Ph.D. (University of Madras)	Physics	No	
327	Ramakrishnan D	Associate Professor	Ph.D (M.S. University, Baroda)	Earth Science	No	
328	Ramakrishnan Ganesh	Assistant Professor	Ph.D (IIT Bombay)	CS & E	No	
329	Ramamritham K. S.	Professor	Ph.D. (University of Utah)	CS & E	Member	
330	Raman Bhaskaran	Associate Professor	Ph.D(University Of California at Berkeley)	CS & E	No	
331	Raman Preeti	Assistant Professor	Ph.D (TIFR)	Mathematics	No	

Faculty

332	Raman R.	Professor	Ph.D. (IIT Bombay)	Met.Engg. & Mat.Sc.	Member	
333	Ramanathan A.	Professor	Ph.D. (IIT Bombay)	H&SS	Member	
334	Ramasubramanian K.	Associate Professor	Ph.D. (University of Madras)	H&SS	No	
335	Rana Indra K.	Professor	Ph.D. (University of Calcutta)	Mathematics	Member	
336	Ranade Abhiram G.	Professor	Ph.D. (University of Yale)	CS & E	Member	
337	Ranade Shilpa	Associate Professor	M.Des (IIT Bombay)	I.D.C	No	
338	Rane Milind V.	Professor	Ph.D. (University of Maryland)	Mechanical Engg.	Member	
339	Rane Mandar	Assistant Professor	M.DES (IIT Bombay)	I.D.C	No	
340	Rangaraj Narayan	Professor	Ph.D. (John Hopkins Univ.)	I.E. & O.R.	Member	
341	Ranjan Akhil	Professor	Ph.D. (University of Bombay)	Mathematics	Member	
342	Ranjith Padinhateeri	Assistant Professor	Ph. D. (IIT Madras)	Bio-Science & Bio-Engineering	No	
343	Rao Govardhana V.	Professor	Ph.D. (IIT Madras)	Chemical Engg.	Member	
344	Rao Mallikarjuna K.S.	Assistant Professor	Ph.D. IISC Bangalore	I.E. & O.R.	No	
345	Rao Anand B	Assistant Professor	Ph.D (C.M. university, Pittsburgh)	CTARA	No	
346	Rao C. Pulla	Professor	Ph.D. (IISc. Bangalore)	Chemistry	Member	
347	Rao Emmela P.	Associate Professor	Ph.D. (IIT Bombay)	Civil Engg.	No	
348	Rao K. Krishnamurthy	Professor	Ph.D. (University of Bombay)	Bio-Science & Bio-Engineering	Member	
349	Rao K.V.K	Professor	Ph.D. (IIT Madras)	Civil Engg	Member	
350	Rao Nageshwara S. V. D.	Associate Professor	Fellow of IIM Ahmedabad	SJMSOM	No	
351	Rao Preeti S.	Professor	Ph.D. (University of Florida)	Electrical Engg.	Member	
352	Rao Ramgopal V.	Professor	Ph.D. (University of Germany)	Electrical Engg.	Member	
353	Rao Sapar Narayan	Associate Professor	Ph.D. (IIT Madras), Dip.in Business Finance	SJMSOM	No	
354	Rao Sumant M.	Associate Professor (Contract)	M.DES (Uisual Communication)	I.D.C	No	
355	Rao Y.S.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No	
356	Rastogi A Kumar	Professor	Ph.D. (University of Birmingham)	Civil Engg.	Member	
357	Ravikanth M.	Professor	Ph.D. (IIT Kanpur)	Chemistry	Member	
358	Ray Gaur G.	Professor	Ph.D. (University of Calcutta)	I.D.C	Member	HOD-IDC
359	Reddy Manne Janga	Assistant Professor	Ph.D. (IISc. Bangalore)	Civil Engg.	No	
360	Robinson Rowena	Professor	Ph.D. (University of Cambridge)	H&SS	Member	
361	Roy Bhaskar	Professor	Ph.D. (IIT Kharagpur)	Aerospace Engg.	Member	
362	Roy Sandip	Associate Professor	M.S. (SUNY, Buffalo)	Chemical Engg.	No	
363	Ruchi Anand	Assistant Professor	Ph.D (University of Cornell)	Chemistry	No	
364	Sabnani Nina	Associate Professor	M.A (Syracuse Univ, Newyork,USA)	I.D.C	No	
365	Sabnis Sanjeev V.	Associate Professor	Ph.D (University of Madras)	Mathematics	No	
366	Sadhu Nachiketa	Assistant Professor	M.Sc. (University of Calcutta)	I.D.C	No	
367	Sagar Mitra	Assistant Professor	Ph. D. (IISc. Bangalore)	Energy Science & Engg.	No	
368	Saha Dipankar	Assistant Professor	Ph.D. (University of Maxican)	Electrical Engg.	No	
369	Sahoo Anirudha	Associate Professor	Ph.D (Texas A&M Univ.)	CS & E	No	
370	Sain Anirban	Associate Professor	Ph.D. (IISc. Bangalore)	Physics	No	
371	Kulkarni Salil S.	Assistant Professor	Ph.D (University of Cornell)	Mechanical Engg.	No	
372	Samajdar Indradev	Professor	Ph.D. (University of Drexel)	Met.Engg. & Mat.Sc.	Member	

Faculty

373	Sandesh M. Ramu	Assistant Professor	M.DES, IIT Bombay	I.D.C	No	
374	Sanyal Amitabha	Professor	Ph.D. (IIT Kanpur)	CS & E	Member	HOD-CSE & Kresit
375	Saraph Girish P.	Associate Professor	Ph.D. (University of Maryland)	Electrical Engg.	No	
376	Saraswati Pratul K.	Professor	Ph.D. (IIT Bombay)	Earth Science	Member	
377	Sarawagi Sunita	Associate Professor	Ph.D (University of California)	CS & E	Co-opted Member	
378	Sarda N.L.	Professor	Ph.D. (IIT Bombay)	CS & E	Member	
379	Sarin Pradeep	Assistant Professor	Ph.D (Massachusetts Instt. Of Tech.)	Physics	No	
380	Sarma Vijayanthi Mala	Associate Professor	Ph.D. (Massachusetts Instt.of Tech.)	H&SS	No	
381	Sasidhar Y.U	Professor	Ph.D. (IIT Madras)	Chemistry	Member	
382	Lodha Saurabh V.	Assistant Professor	Ph.D. (Purdue University)	Electrical Engg.	No	
383	Sebastian C.D.	Associate Professor	Ph.D (Banaras Hindu Univ.)	H&SS	No	
384	Senthil Kumar M.	Professor	Ph.D. (IIT Madras)	Physics	No	
385	Seshu Pasumarthy S	Professor	Ph.D. (IIT Madras)	Mechanical Engg.	Member	
386	Sethi Virendra	Professor	Ph.D. (University of Wisconsin, Madison)	CESE	Member	HOD- (CESE)
387	Shah Narendra G	Associate Professor	Ph.D. (ATU France)	CTARA	No	
388	Sarkar Shaibal K.	Assistant Professor	Ph.D. (Weizmann Institute of Science)	Energy Science & Engg.	No	
389	Sen Shamik R.	Assistant Professor	PH.D. (University of Philadilphia)	Bio-Science & Bio-Engineering	No	
390	Shankar Hariharan S.	Professor	Ph.D. (University of Monash)	Chemical Engg.	Member	
391	Sharma Dinesh	Assistant Professor	MBA (University of Jammu)	SJMSOM	No	
392	Sharma Atul	Associate Professor	Ph.D. (IIT Kanpur)	Mechanical Engg.	No	
393	Sharma Dinesh K.	Professor	Ph.D. (Bombay Univ.)	Electrical Engg.	Member	HOD-Elect.Engg.
394	Sharma Pratibha	Assistant Professor	PH.D (University of Rajastan)	Energy Science & Engg.	No	
395	Sharma S.D.	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member	HOD-Aerospace Engg.
396	Sharma Vishnu D.	Professor	Ph.D (BHU)	Mathematics	Member	
397	Shastri Anant R.	Professor	Ph.D. (University of Bombay)	Mathematics	Member	
398	Shastri Sudha	Associate Professor	Ph.D. (IIT Delhi)	H&SS	No	
399	Sheth Hetu C.	Associate Professor	Ph.D. (IIT Bombay)	Earth Science	No	
400	Shevare G.R.	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member	
401	Shevgaonkar R.K.	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
402	Shimpi R.P.	Professor	Ph.D.(IIT Bombay)	Aerospace Engg.	Member	
403	Shukla Alok	Professor	Ph.D.(Utah State University)	Physics	Member	
404	Singh Ramesh Kumar	Assistant Professor	Ph.D (Georgia Institute of Technology)	Mechanical Engg.	No	
405	Singh A.K.	Professor	Ph.D.(IIT Kanpur)	Chemistry	Member	
406	Singh B.P.	Professor	Ph.D.(IIT Kanpur)	Physics	Member	
407	Singh D.N.	Professor	Ph.D.(IIT Kanpur)	Civil Engg	Member	
408	Singh H.B.	Professor	Ph.D.(University of Aston)	Chemistry	Member	
409	Singh Prabhakar P.	Professor	Ph.D. (University of North Carolina) USA	Physics	Member	
410	Singh Triok Nath	Professor	Ph.D. (BHU)	Earth Science	Member	
411	Singh Vishwakarma H.	Professor	Ph.D. (University of Gorakhpur)	Chemistry	Member	
412	Sinha Arpita	Assistant Professor	Ph.D (IISc. Bangalore)	Systems & Control	No	

Faculty

413	Sinha Pooja Purang	Assistant Professor	Ph.D. (IIT Delhi)	H&SS	No	
414	Sinha Ravi	Professor	Ph.D. (North Western Univ.)	Civil Engg.	Member	Prof-in-charge (Placement Office)
415	Sirola Vikram Singh	Assistant Professor	Ph.D. (JNU)	H&SS	No	
416	Sista Sivaji G.	Assistant Professor	Ph.D (Indian Institute of science)	Mathematics	No	
417	Sivakumar G.	Professor	Ph.D.(University of IlliNois)	CS & E	Member	HOD- (CFDVS)
418	Sivasubramanian S.	Assistant Professor	Ph. D(TIFR)	Mathematics	No	
419	Sohoni Milind Ashok	Professor	Ph.D.(IIT Bombay)	CS & E	Member	HOD-CTARA
420	Solanki Chetan Singh	Associate Professor	Ph.D. (Katholieke Universiteit Leuven)	Energy Science & Engg.	No	
421	Soman S.A.	Professor	Ph.D. (IISc.Bangalore)	Electrical Engg.	Member	
422	Sonar Rajendra M.	Associate Professor	Ph.D. - University of Pune	SJMSOM	No	
423	Sreekumar G.V.	Associate Professor	M.Des (IIT Bombay)	I.D.C	No	
424	Sreekumar Sharmila	Associate Professor	Ph.D. - (Central Univ.of Hyderabad)	H&SS	No	
425	Sridharan Arun Kumar	Assistant Professor	Ph.D (The Pennsylvania state Univ)	Mechanical Engg.	No	
426	Srinivasa Raman S.	Professor	Ph.D.(University of Toledo)	Met.Engg. & Mat.Sc.	Member	
427	Srinivasan G.K.	Associate Professor	Ph.D. (University of Minnesota)	Mathematics	No	
428	Srinivasan Murali K.	Professor	Ph.D.(University of IlliNois)	Mathematics	Member	HOD-Maths
429	Srirangarajan H.R.	Professor	Ph.D. (IISc. Bangalore)	Mechanical Engg.	Member	
430	Srivastava Rohit	Associate Professor	Ph.D. (Louisiana Tech.Univ.,Ruston,USA)	Bio-Science & Bio-Engineering	No	
431	Srivastava Sanjeeva	Assistant Professor	Ph.D (University of Alberta)	Bio-Science & Bio-Engineering	No	
432	Srividya A.	Professor	Ph.D. (IIT Bombay)	Civil Engg	Member	
433	Subhankar Karmakar	Assistant Professor	Ph.D (IISc. Bangalore)	CESE	No	
434	Subhash A. Babu	Professor	Ph.D. (IIT Delhi)	Mechanical Engg.	Member	
435	Subrahmanyam G.	Professor	Ph.D. (Ind.Agri.Res.Inst. Delhi)	Bio-Science & Bio-Engineering	Member	
436	Subramanyam A.	Professor	Ph.D.(University of Poona)	Mathematics	Member	
437	Subuddhi M. K.	Associate Professor	M.A.(Calcutta) M.A.(J.N.U.)	H&SS	No	
438	Sudarshan Kumar	Associate Professor	Ph.D. (IISc Bangalore)	Aerospace Engg.	No	
439	Sudarshan S.	Professor	Ph.D. (University of Wisconsin)	CS & E	Member	
440	Sudesh Balan	Assistant Professor	M.F.A.(Southern Zllinios University)	I.D.C	No	
441	Sudhakar K.	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member	
442	Sudhanshu Mallick	Assistant Professor (Contract)	Ph.D. (Purude University)	Met.Engg. & Mat.Sc.	No	
443	Suneet Singh	Assistant Professor	Ph.D. (University of IlliNois)	Energy Science & Engg.	No	
444	Sunoj Raghavan	Associate Professor	Ph.D. (IISc Bangalore)	Chemistry	No	
445	Sunthar P.	Associate Professor	Ph.D. (IISc Bangalore)	Chemical Engg.	No	
446	Suresh A. K.	Professor	Ph.D.(University of Monash)	Chemical Engg.	Member	
447	Suresh G. K	Professor	Ph.D. (IIT Madras)	Physics	No	
448	Suresh Kumar K.	Associate Professor	Ph.D. (IISc Bangalore)	Mathematics	No	
449	Suresh Sumathi	Professor	Ph.D. (IISc Bangalore)	CESE	Member	
450	Suryanarayana D. Doolla	Assistant Professor	Ph.D. (IIT Delhi)	Energy Science & Engg.	No	
451	Suryanarayanan Shashikanth	Assistant Professor	Ph.D. (University of California)	Mechanical Engg.	No	
452	Talwar Neelima	Professor	Ph.D. (University of Baroda)	H&SS	Member	

Faculty

453	Tathagat A. Tulsi	Assistant Professor (Contractual Basis)	Ph.D (IISc Bangalore)	Physics	No	
454	Tembe Bhalachandra L.	Professor	Ph.D. (SUNY,USA)	Chemistry	Member	HOD – C-DEEP
455	Thaokar Rochish	Associate Professor	PhD. (IISc. Bangalore)	Chemical Engg.	No	
456	Tirumkudulu Mahesh S.	Associate Professor	Ph.D. (City Univ.of New York, USA)	Chemical Engg.	No	
457	Tiwari A.N.	Professor	Ph.D (IIT Kanpur)	Met.Engg. & Mat.Sc.	Member	
458	Tomy C.V.	Professor	Ph.D. (TIFR.,Mumbai)	Physics	Member	
459	Trivedi K.Kirti	Professor	P.G.D. (IIT Bombay)	I.D.C	Member	
460	Trivedi Pushpa L.	Professor	Ph.D. (IIT Bombay)	H&SS	Member	
461	Tulapurkar Ashwin	Associate Professor	Ph.D. (Tata Institute of Fundamental Research)	Electrical Engg.	No	
462	Udayan Ganguly	Assistant Professor	Ph.D. (Cornell University) 2006	Electrical Engg.	No	
463	Ukadgaonkar V.G.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
464	Umasankar S.	Professor	Ph.D. (IIT Kanpur)	Physics	Member	
465	Varma Raghava	Professor	Ph.D. (IIT Kanpur)	Physics	Member	HOD-Physics
466	Vasi Juzer M.	Professor	Ph.D. (University John Hopkins)	Electrical Engg.	Member	
467	Vedula Rajendra P.	Professor	Ph.D. (University of Arizona)	Mechanical Engg.	Member	
468	Vellaisamy P.	Professor	Ph.D. (IIT Kanpur)	Mathematics	Member	
469	Velmurugan Rajbabu	Assistant Professor	Ph.D(Gerorgia Institute of Tech.) USA	Electrical Engg.	No	
470	Venkatachalam Parvatham	Professor	Ph.D. (University of Cambridge)	CSRE	Member	HOD-CSRE
471	Venkataraman Chandra	Professor	Ph.D. (University of California)	Chemical Engg.	Member	
472	Venkataraman G.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No	
473	Venkataramani N.	Professor	Ph.D. (IIT Bombay)	Met.Engg. & Mat.Sc.	Member	
474	Venkatesh K.V.	Professor	Ph.D. (University of Purdue)	Chemical Engg.	Member	
475	Venkateswaran Jayendran	Assistant Professor	Ph.D. (University of Arizona)	I.E. & O.R.	No	
476	Verma A.K.	Professor	Ph.D. (IIT Kharagpur)	Electrical Engg.	Member	
477	Verma J.K.	Professor	Ph.D. (University of Purdue)	Mathematics	Member	
478	Vijaya R.	Professor	Ph.D. (IIT Madras)	Physics	Member	
479	Vijayakumaran Saravanan	Assistant Professor	Ph.D. (University of Florida)	Electrical Engg.	No	
480	Vinjamur Madhu	Associate Professor	Ph.D. (University of Drexel)	Chemical Engg.	No	
481	Viswanadham B.V.S.	Professor	Dr.Ing. (University of Ruhr)	Civil Engg.	Member	
482	Viswanathan Ganesh A	Assistant Professor	Ph.D (University of Houston)	Chemical Engg.	No	
483	Viswanathan N.N.	Associate Professor	Ph.D. (IISc. Bangalore)	Met.Engg. & Mat.Sc.	Co-opted Member	
484	Viswanathan S.	Professor	Ph.D. (University of Chicago)	CS & E	Member	
485	Vitta Satish	Professor	Ph.D. (University of Cambridge)	Met.Engg. & Mat.Sc.	Member	
486	Wangikar Pramod P.	Professor	Ph.D.(University Of Iowa)	Chemical Engg.	Member	
487	Yajnik U.A.	Professor	Ph.D. (University of Texas)	Physics	Member	

Group A Officers

Sr. No.	Name	Designation	Qualification	Department
Group A Officers				
1	Adagale D.B.	Assistant Registrar	B.A., L.L.B., M. A. (History)	Audit Section
2	Ainapure S.V.	Medical Officer (SG)	M.D. (Bombay)	IIT Hospital
3	Appaji B.B.	Senior Sports Officer	Ph.D. (Gwalior)	Student's Gymkhana
4	Bajre Kamal Kumar	Deputy Registrar	MPM (Pune University)	Administration
5	Bhagwat A. S	Principal	Diploma in Higher Education, M. Sc	Campus School & Jr. College
6	Bhaldar I.H.	Asst.Workshop Supdt. (SG)	B.E. (Kolhapur University)	Mechanical Engg.
7	Bhendigiri Omprakash B.	Assistant Librarian	M.Lib.Sc.(Karnatak University)	Central Library
8	Bhorkade G.K.	Dy. Registrar	M.Sc.(Mangalore Univ.), Dip in Comp.Sc., Amravati Univ., Maha.State Certi in IT MKCL	Materials Management Division
9	Chaurasia Dharmendra S	Senior Programmer	B.E. Electronics (Mumbai University)	ASC
10	Chilap Gopal R.	Manager	Diploma in Printing Technology & Graphics Arts	Printing Press
11	Dabholkar Nayan S.	Manager, Guest House	B.A., Dip.in Hotel Management & Catering and Dip.in Business Management., M.A. Madurai Kamraj Univ.	Guest House
12	Dhankar Rajesh	Security Officer	B.A. (Rajasthan Univ.), Dip.in Computer Science & Application (NIT & M), Ministry of Defence	Security Section
13	Edwin M.	Sports Officer	Ph.D. (Gwalior)	Physical Education
14	Jadhav M.N.	Assistant Librarian	M.Sc. (Marathwada University), M.Lib. (Marathwada University)	Central Library
15	Jena A.K.	Chief Technology Officer	M.E. (IISc. Bangalore)	Computer Centre
16	Jha S.N.	Senior Sports Officer	Ph.D. (Gwalior)	Student's Gymkhana
17	Joglekar C.P.	Co-ordinator, PTD	B.A.(Pune Univ.), MPM- Pune University	P T & D Cell
18	Joshi Jaya	Public Relations Officer	PGDBM (IIPM,Delhi)	Publications & Public Relations Section
19	Jotwani Daulat	Librarian	B.Sc.,M.Lib.Sc, M.A. Cert.French(Univ. Of Rajasthan.)	Central Library
20	Kale Sheetal N.	Medical Officer	M.B.B.S. (Nagpur University)	IIT Hospital
21	Khobragade Y.S.	Medical Officer (SG)	M. D. (Delhi), [PG Diploma in Maternal & Child Health]	IIT Hospital
22	Korade Umesh R.	Assistant Registrar	B.Sc. (Shivaji Univ.), M.B.A. (Shivaji University)	Academic Section
23	Kowe Vijay G.	Assistant Registrar	MBA (Nagpur University)	Administration
24	Kulkarni S.D.	Deputy Librarian	M.Lib.Sc.	Central Library
25	Maharana Jyoti Prasad	Systems Manager	Ph.D (IIT Bombay)	Computer Centre
26	Mamdapur V.B.	Supdt. Engineer	B.E. (Pune) and M.Tech. (IIT Bombay)	Estate Office
27	Marathe Madhukar S.	Asssistant Registrar	MA (Pune University)	Administration
28	Mehta Sunil Kumar	Assistant Training & Placement Officer	B.E.(Mech. Engg)- Gulbarga University	Placement Office
29	Meshram Arvind	Medical Officer	M.B.B.S. (Delhi), M.Phil (BITS Pilani)	IIT Hospital
30	Nagwekar Ashish M.	Computer Engineer	B.E (Mumbai University)	Computer Centre
31	Pathak S.K.	Lab. Superintendent	M.Tech. (IIT Bombay), Ph.D (IIT Bombay)	Mechanical Engg.
32	Patil Arvind S.	Technical Officer	M.Tech. (IIT Kharagpur)	C- DEEP
33	Patil S.G.	Medical Officer	MBBS (Mumbai)	IIT Hospital
34	Patki Savita V.	Assistant Registrar	B. A (Bombay University), Diploma in Business Management- (The Institute of Finance Analyst of India, University of Tripura)	Accounts Section

Group A Officers

35	Phadke D.N.	Deputy Librarian	M.Lib.Sc. (Mumbai), Diploma in Computer Management (Mumbai)	Central Library
36	Punalkar B.S.	Registrar	M.A. (Shivaji University)	Registrar Office
37	Rajan Prema A.	Assistant Registrar	M.Com (Calicut University)	Accounts Section
38	Ramachandran P.S.	Senior Programmer	Ph.D. (IIT Bombay)	Computer Science & Engineering
39	Ramesh P.G.	Dy. Registrar	M.Phil in Public Administration(Madurai Kamaraj University)	Accounts Section
40	Rao M.N.R.	Manager (Telecommunication)	Dip. In Electrical Engg.	Telecommunication Deptt.
41	Reddy P.M.	Sports Officer	Ph.D. (Gwalior)	Student's Gymkhana
42	Ringnekar Nila D.	Medical Officer	MBBS (North Maharashtra Univ.,Jalgaon)	IIT Hospital
43	Romani Indrajit A.	Assistant Registrar	M.Com (Mumbai University)	Accounts Section
44	Sahoo Biswakesan	Executive Engineer(Elect)	M.E. (Sambalpur University)	Estate Office
45	Sawalkar D. K.	Assistant Registrar	MBA (Marathwada University)	Estate Office
46	Saxena Indu	Deputy Registrar	Ph.D. (Jamnalal Bajaj Instt.)	Administration
47	Sengupta K.	Sports Officer (SG)	Ph.D. (Gwalior)	Student's Gymkhana
48	Shah Nisha	Chief Medical Officer	MBBS (Nagpur), MD (Pde)(Nagpur)	IIT Hospital
49	Shangarpawar A.V.	Medical Officer(SG)	M.D., D.G.O. (Nagpur)	IIT Hospital
50	Shetye Asmita S.	Project Manager	B.E Electronics (Mumbai University)	ASC
51	Siriah Pankaj	Computer Engineer(SG)	M.Tech. (IIT Bombay)	Computer Sc. & Engineering
52	Solanki Manohar R.	Senior Programmer	M.Sc.(Mumbai University)	ASC
53	Sonawane Yogesh R.	Assistant Workshop Superintendent	MA (Pune University); M Des (IIT Kanpur)	Mechanical Engineering
54	Tagare Amita	Counsellor	M.A. (Pune University)	Dean's Office
55	Tirmare P.V.	Computer Engineer	B.E. Computer Engg.(shivaji University) M. Tech (Dr. Babasaheb Ambedkar Technological Univ.)	Computer Centre
56	Unnithan K.R.P	Executive Engineer	B.E. Civil Engineering (Mumbai University)	Estate Office
57	Varma Narsingh	Executive Engineer	M. Tech. (Civil Engg.)- IIT Bombay	Estate Office
58	Verma Hari Shankar	Assistant Registrar	MA (Kanpur University), LLB (Professional)	Academic Section
59	Vichare Sunil Y.	Computer Engineer	B.E (Pune University)	Computer Centre
60	Vinjamur Sugandhi	Senior Programmer	MCA (Osmania University)	ASC
61	Waydande H.S.	Deputy Librarian	Ph.D (Puna University)	Central Library
62	Yadav S.S.	Senior Sports Officer	Ph.D. (Gwalior)	Student's Gymkhana

Scientific and Design Staff

SCIENTIFIC & DESIGN STAFF				
Sr. No.	NAME	DESIGNATION	QUALIFICATION	DEPARTMENT
1	Aiyar R.P.R.C.	Prin.Res.Scientist	Ph.D. (IIT Bombay)	CRNTS
2	Bhowmick Uday	Research Scientist	Ph.D. (IIT Bombay)	Chemistry
3	Gandhi Mayuri	Research Scientist	Ph.D. (IIT Bombay)	CRNTS
4	Harendranath C.S.	Prin.Res.Scientist	Ph.D. (IIT Bombay)	CRNTS
5	Kalwankar Arun	Producer-cum-Designer	Dip. In Fine Arts (Drawing & Painting)	C-DEEP
6	Mombasawala L. S.	Sr.Research Engineer	M.Tech. (IIT Bombay)	CRNTS
7	Mukherji Shyamalee	Sr.Research Engineer	Ph.D. (IIT Bombay)	CSRE
8	Vijayalakshmi S.	Research Scientist	Ph.D. (IIT Bombay)	CRNTS

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
BALANCE SHEET AS AT 31.03.2011
CONSOLIDATED ACCOUNT

(Amount in Rs.)

Sr No.	Liabilities		Current Year 2010-11	Previous Year 2009-10
1)	<u>Capital Fund</u>			
a)	Grant Utilised for Capital Expenditure		5,127,817,789	4,089,943,731
b)	Project & Consultancy	A	1,163,062,345	2,599,866,836
			6,290,880,134	6,689,810,567
b)	<u>Income and Expenditure</u>			
	Opening Balance as on 01-04-2010		197,697,400	197,697,400
	Add : Excess of Income over Expenditure	B	750,314	0
			198,447,714	197,697,400
	Total of A+B		6,489,327,848	6,887,507,967
2)	IRCC Fund		1,026,976,867	799,059,139
3)	Institute Development Fund (Donation)		248,076,933	0
4)	Interest on STD (Donation)			277,680,191
5)	General Provident Fund		852,864,850	812,701,977
6)	Contributory Provident Fund		163,852,631	123,901,826
7)	Endowment Fund (Donation)		627,870,537	600,502,774
8)	Interest on Endowment Fund		217,742,666	108,463,854
9)	Non Endowment Fund (Donation)		463,304,474	349,977,700
10)	<u>Project & Consultancy Fund</u>			
	Other Fund		259,143,121	212,334,645
	Other adjustable Accounts		1,146,101	573,522
	Adjustable Accounts – Unutilised Amount (P&C)		1,556,886,114	1,120,226,937
11)	Donation Account			
12)	Unutilised grants from other organisations		183,239,072	133,697,542
13)	<u>Other adjustable Accounts</u>			
	i) Staff/Student Funds		50,081,641	42,295,046
	ii) Other Adjustable Account		453,173,724	17,112,931
14)	<u>Post Retirement Medical Fund</u>			
	PRMS Fund		23,583,460	21,219,759
	PRMS General Fund		30,317,380	28,034,480
	PRMS Corpus Fund (IRCC)		70,000,000	70,000,000
			123,900,840	119,254,239
15)	Refundable Deposits		156,000,912	171,307,839
16)	Endowment of Scholarships		646,787	644,787
17)	Sundry Creditors		186,231,361	472,547,403
18)	Prepaid Income		1,031,849	0
	Grand Total :		13,061,498,329	12,249,790,321

(Amount in Rs.)				
Sr No.	Assets		Current Year 2010-11	Previous Year 2009-10
	<u>Fixed Assets</u>			
1)	Land		2,663,875	2,663,875
2)	<u>Buildings</u>			
a)	Works completed		783,681,314	756,853,657
b)	Works in progress		2,342,349,685	1,312,518,890
3)	Equipment and Tools/Academic Deptt. & Centers		903,478,262	1,023,130,379
4)	Equipment and Tools/ Other Sections		1,222,874,401	2,650,187,430
5)	Augmentations of Labs/ Workshops		8,177,681	10,215,690
6)	Equipment & Fur./Girish Gaitonde Donation		2,977,722	2,977,722
7)	Motor Vehicles		892,066	1,115,084
8)	Library Books received as Donations		554,943	554,943
9)	Furniture and Fixtures		62,917,799	50,153,968
10)	Library Books and Journals		954,615,452	872,875,798
11)	Kanwal Rekhi School of Information Technology		512,979	641,223
12)	ACRE Project Assets		2,172,707	2,662,991
13)	Equipment & Tools/Special grant from MHRD		980,450	1,225,563
14)	Library Books & Journals/Special grant from MHRD		2,026,954	2,026,954
15)	Advances Account		545,404,669	553,396,602
16)	Recoverable Deposits		36,352,821	25,103,994
17)	Fixed Deposits		4,880,239,801	3,893,109,690
18)	Expenditure Recoverable		72,167,004	24,865,734
19)	Closing stock - Consumables and other stock		9,395,289	8,728,825
20)	Guest House bills receivable		974,549	990,487
21)	Sundry Debtors		8,747,184	17,286,588
22)	Computer System - DST (IRCC Donation)		3,839	6,397
23)	Grant in Aid Sanctioned but not received		-	230,200,000
24)	Amount Receivable from MHRD		-	69,219,420
25)	Accrued Interest		224,395,493	223,420,520
26)	Excess Expenditure over Income (Donation)		-	8,194,773
27)	Adjustable Accounts – Overspent Amounts (P&C)		94,773,142	56,881,949
28)	Closing Balance - Cash In Hand and at Bank		898,168,246	448,581,176
	Grand Total :		13,061,498,329	12,249,790,321

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31.03.2011
CONSOLIDATED ACCOUNT

(Amount in Rupees)

SR. NO.	PARTICULARS	Current Year Up to 31.03.2011	Previous Year Up to 31.03.2010
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	1,896,500,000	1,627,100,000
	Sanctioned and due 2009-10		110,200,000
	Add: Recurring Grant transfer from Plan (OSC)		180,445,000
	Add: Amount to be received from MHRD		20,833,236
	Less: Shortfall in 2009-2010 adjusted	20,833,236	
		1,875,666,764	1,938,578,236
	Support for recurring Expenses from IRCC		711,000
	Non Plan Grant for VI Pay Commission Arrears		119,468,844
a)		1,875,666,764	2,058,758,080
b)	<u>Plan</u>		
	Opening Balance B/f		40,081,608
	Grant-in-aid released during the year	1,432,200,000	290,000,000
	Add: Amount to be received from MHRD		20,361,842
	Sanctioned and due 2009-10		120,000,000
	Less: Shortfall in 2009-2010	20,361,842	
		1,411,838,158	470,443,450
	Add: Support from IRCC for Equipment and Furniture	6,500,000	60,000
	Add: Support from IRCC for Capital Expenditure / Bldg.	5,315	2,047,186
	Add: Donation receipts towards Capital Expenditure	4,472,647	4,004,447
		1,083,809,265	244,630,395
	Less:- Amount utilised for capital expenditures	10,977,962	6,111,633
	Less:- Capital Expenditure against from other Sources		
b)		328,028,893	225,813,055
c)	Plan (OSC)		
	Opening Balance B/f		311,100,483
	Grant-in-aid released during the year	300,000,000	1,310,445,000
	Add: Amount to received from MHRD		28,024,342
	Less: Shortfall in 2009-2010 adjusted	28,024,342	
		271,975,658	1,649,569,825
	Less: Recurring Grant under OSC transferred to Non Plan		180,445,000
	Less: Amount Utilized for Capital Expenditure	271,975,658	1,469,124,825
		0	0
	Sub Total (a+b+c)	2,203,695,657	2,284,571,135
2	Consultation Receipts for library books	4,730,358	2,989,006
	Net Amount available for Revenue Expenditure (1+2)	2,208,426,015	2,287,560,141
3	Fees from students	182,382,403	158,901,747
4	Other receipts from students	58,470,793	56,622,482
5	All India Entrance Examination	110,802,180	93,421,118
6	Other income and miscellaneous receipts	186,512,897	139,002,722
7	Interest on CPF/GPF investment	71,752,838	61,104,302

(Amount in Rupees)				
Sr. No.	Particulars		Current Year Up to 31.03.2011	Previous Year Up to 31.03.2010
8	Interest on Short Term Deposit		4,335,882	6,280,367
9	Guest House Receipts		9,220,885	8,531,409
10	Leave Salary Received		2,548,410	1,243,417
11	Receipts from Continuing Education Prog.		3,419,736	5,348,859
12	Non Payable Institute Contribution		267,638	11,946
13	Prior Period Income			54,460
14	Insurance Claim			4,992
15	Interest on Investment (Donation)		108,055,645	145,948,808
16	Interest on Investment (PRMS)		9,193,751	
17	Interest on Investment (P&C)		174,344,621	142,546,233
18	Donation Received		1,493,800	10,133,166
	Grand Total		3,131,227,494	3,116,716,169
1	<u>EXPENDITURE</u>			
	<u>Pay and Allowances</u>			
i)	Faculty		575,608,878	355,757,310
ii)	Non Faculty Officers		78,324,997	55,511,925
iii)	Establishment		421,237,952	382,828,925
iv)	Salary and Wages		25,506,430	
v)	IRCC		9,058,786	9,594,664
	<u>6th PC Arrears</u>			
i)	Faculty		8,083,866	363,034,876
ii)	Non Faculty Officers		239,318	6,961,080
iii)	Establishment		11,375,932	82,226,299
	Sub Total		1,129,436,159	1,255,915,079
2	Other Allowances		67,331,114	54,027,125
3	Retirement Benefits		512,293,950	473,902,751
	Sub Total (1, 2 & 3)		1,709,061,223	1,783,844,955
4	<u>Administrative Expenses</u>			
i)	General Expenses		34,503,686	25,073,012
ii)	Other contingent expenses		153,603,315	140,750,283
iii)	Other educational expenses		31,352,702	21,474,952
iv)	All India Entrance Examination		50,472,949	63,619,629
	Sub Total (4)		269,932,652	250,917,876
5	<u>Departmental Expenses</u>			
i)	Consumables/Academic Deptt. and Centres		35,058,328	35,664,459
ii)	Other contingent expenditure Academic Deptt. And Centres		14,188,000	11,298,887
iii)	Maintenance and repairs to equipment & tools		17,030,892	16,060,369
	Sub total (5)		66,277,219	63,023,715

(Amount in Rupees)

SR. NO.	PARTICULARS	Current Year Up to 31.03.2011	Previous Year Up to 31.03.2010
6	Students Gymkhana Expenditure	8,075,216	6,016,049
7	Scholarship	232,497,389	178,342,865
8	Financial Assistance to Hostels (Mess Employees)	78,662,383	69,475,275
9	Health Facilities	34,721,998	28,592,232
10	House keeping and Estate maintenance	277,092,743	295,772,107
11	Water and Electricity Charges	181,720,719	175,924,248
12	Golden Jubilee Expenses		2,956,005
13	PRMS Claim Paid	6,666,012	
14	Provision towards interest payable	244,839	
15	Donation Account	19,689,612	12,937,570
16	Allocation of Interest to Endowment Account	48,040,222	46,099,944
17	Amount transferred to Interest on STD (Donation)		97,044,460
18	Amount Transferred to to Institute Development Fund (Donation)	41,819,611	
19	Amount transferred to IRCC Fund	153,692,443	105,768,869
20	Amount transferred to PRMS General Fund	2,282,900	
21	Excess of Income over Expenditure	750,314	
		3,131,227,494	3,116,716,168

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
RECEIPTS AND PAYMENTS FOR THE PERIOD FROM 1-4-2010 TO 31-3-2011
CONSOLIDATED ACCOUNT

(Amount in Rs.)				(Amount in Rs.)			
SR NO	RECEIPTS	CURRENT YEAR 2010-11	SR NO	PAYMENTS	CURRENT YEAR 2010-11		
1	<u>Opening Balance</u> <u>Cash in Hand and at Bank</u>	441,966,097	1	<u>Capital Expenditure</u> i) Equipment & Tools / Academic & Centers	134,143,250		
2	<u>Grant-in-aid</u> i) Non-Plan ii) Plan iii) OSC	1,896,500,000 1,432,200,000 300,000,000		ii) Equipment & Tools / Other sections iii) Augumentation of Lab. & Workshop iv) Furniture & Fixtures v) Library Books & Journals	19,427,936 45,300 25,158,718 82,943,455		
3	Grant in Aid for 2009-10 recd in 2010-11	230,200,000		vi) <u>Building & Works</u> a) Works completed b) Works in progress	24,652,553 1,043,701,728		
4	Fees from students	182,382,403		Sub Total I	1,330,072,940		
5	Other receipts from students	58,470,793					
6	All India Entrance Examination	104,340,009	2	<u>Revenue Expenditure</u> a) Pay & Allowances i) Pay Establishment ii) Pay Faculty iii) Pay Non Faculty Officer iv) Salary and Wages Arrears 6 th Pay Commission	386,456,613 508,448,795 69,506,043 23,541,826		
7	Other income & Misc. receipts	106,946,734		i) Establishment ii) Faculty iii) Non Faculty Officer	11,340,943 7,595,587 239,318		
8	Interest from CPF/GPF investments	59,515,809		Sub Total 2 (a)	1,007,129,125		
9	Interest on Short Term Deposits	3,921,802					
10	Interest on Investment (IRCC)	172,880,353		b) Other Allowances c) Retirement Benefits	67,295,986 478,526,809		
11	Interest on Investment (PRMS)	9,849,034		d) <u>Administrative Expenses</u> i) General Expenses ii) Other contingent expenses iii) Other Educational expenses iv) All India Entrance Examinations	19,191,910 74,891,137 30,911,599 50,472,949		
12	Refund from SINE (IRCC)	52,950,099		Sub Total 2 (d)	175,467,595		
13	Guest House Receipts	9,216,567					
14	Receipts from Continuing Education Programme	3,419,736					
15	Grants from other Organisation	203,909,447					

(Amount in Rs.)				(Amount in Rs.)			
SR NO		RECEIPTS	CURRENT YEAR 2010-11	SR NO		PAYMENTS	CURRENT YEAR 2010-11
16		<u>Adjustable Accounts</u>		e)		<u>Departmental Expenses :</u>	
	i)	Advances Accounts	631,791,791		I)	Consumable/Academic Dept. and Centres	34,201,865
	ii)	Other accounts	1,594,069,909		ii)	Other Contingent Expenditure/ Academic Deptt. & Centres	13,568,450
	iii)	Refundable Deposits	136,140,724		iii)	Maintenance & Repairs to Equipments & Tools	16,037,301
	iv)	Endowment of Scholarhsip	1,462,487			Sub Total 2 (e)	63,807,616
	v)	Recoverable Deposits	493,133		f)	Students Gymkhana Expenditure	7,819,236
	vi)	Misc. Expenses Recovery	28,622,259				
	vii)	Donation Advance	5,169,469		g)	Scholarship	211,633,612
		Sub Total – 16	2,397,749,772		h)	Financial Assistance to Hostels	78,662,383
17		Sundry Debtors (Main Account)	13,634,310		I)	Health Facilities	35,086,530
		Donation Account	40,000,000		j)	House Keeping and EstateMaintenance	245,125,111
18		Project and Consultancy Account			k)	Water & Elect. Charges	162,862,557
	i)	IRCC	3,041,410			Grants from other organisations	185,228,402
	ii)	Sponsered Projects	1,602,463,346	3			
	iii)	Consultancy Job	215,506,920			<u>Adjustable Accounts</u>	
	iv)	Dept. Development Fund	9,033,663		I)	Advance Accounts	605,752,865
	v)	Research Development Fund	2,487,295		ii)	Other Accounts	1,310,442,359
	vi)	Testing	11,419,470	4	iii)	Refundable Deposits	152,214,515
	vii)	Other Receipts	11,847,777		iv)	Endowment Scholarship	1,460,487
	viii)	Royalty	6,551,674		v)	Recoverable Deposits	11,741,960
19		Guest House bills receivable	15,938		vi)	Fixed Deposits	3,297,892,539
20		Accrued Interest	341,852		vii)	Expenses out of Donation Fund	14,089,613
21		Support from IRCC for Eqp and furniture	6,500,000		viii)	Misc. Expenses	42,858,361
22		Consultancy Library Books	4,730,358		ix)	Advance (Donation)	4,348,824
23		Fixed Deposit Encashed	2,317,398,642			Total 4	5,440,801,523
24		Donation receipts towards capital expenditure	4,472,647	5		Project and Consultancy Account	71,054,213
25		Prepaid Income	1,031,849			Equipment & Tools	519,735,358
						Furniture & Fixtures	215,033
						Books	368,435
26		Non Payable Institute Contribution	267,638	6		Sponsored Project and Consultancy	840,544,412
27		PRMS Fund	2,207,025	7		Interest on Investment (Donation)	17,816,501
28		CPF Fund	46,837,478	8		Refund of Subscription (PRMS)	66,060
29		GPF Fund	51,515,583	9		Medical Claim (PRMS)	6,666,012
30		Donation Fund Account	141,783,212	10		Misc. Expenses	1,000
31		Interest on Investment (Donation)	113,634,445	11		Sundry Creditors	431,540,217
32		Contribution towards pension/ Gratuity received	2,548,410				
33		IRCC Support for Building	5,315	12		<u>Closing Balance</u>	
						Cash in Hand and at Bank	898,168,246
		GRAND TOTAL	12,275,694,911			GRAND TOTAL	12,275,694,911