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ANNUAL REPORT

2009-2010

INDIAN INSTITUTE OF TECHNOLOGY INDORE

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Director's Message

The community at IIT Indore will be focusing on new multi-disciplinary initiatives and the process of setting up a support system that will encourage ideation and its translation into practice has already begun. IIT Indore seeks to create its own niche by internalizing the fact that individual subjects are not merely disciplines with an end in itself but rather points of initiation in to something that can be broadly outlined as systems of human thought.

As part of finding the niche, I foresee an evolutionary move from departments or schools focusing on specific disciplines to centres of understanding and praxis where the boundaries of disciplines shall be constantly tested, where ideational stress will be a way of life and where systems of thought shall be in a perpetual state of conflict all attempting to devise the appropriate solution for the most teething problems facing mankind today. The upcoming campus of IIT Indore is a case in point where the process towards a more porous and membranous notion of thought has been set in motion. We envisage a campus where the design element will account and set the tone for the necessary transactions to take place encompassing the desire to satisfy a mandate towards a responsible and ethical institutional structure, one that shall be part of an ecological resolution than a monumentalized disruption in nature.

The students and faculty of the IIT system have been integral to the planning and execution of several projects elemental to the sustainable growth of our polity. The understanding that democratic inclusion does not function merely as a catch phrase with IITians and requires participatory empowerment is proven by the work that products of the IIT system have done with regard to establishing appropriate protocols and processes for economic self reliance allied with social justice.

We have re-evaluated our manpower requirements in various fields in line to maintain a continued 8-10% economic growth rate. The challenge is to ensure quality and more importantly accountable education for coming generations. In doing so we also have the opportunity to make a significant jump by departing from the constraints of strait-jacketed thought to a more liberal and open environment that we highlighted earlier. IIT Indore seeks to be a decisive player in initiating this conceptual change in the field of education and research.

The advances that India has been making economically and internationally has a lot to do with the quality of education that premier institutes like the IITs have offered to young Indians in the past few decades. The natural acceptance of social inclusion as an abiding credo has ensured that the alumni of IIT do not see themselves as islands distanced from reality, but are steadily building and reconfiguring that reality to accommodate the aspirations of every single Indian.

We at IIT Indore envision a progressive immersion into the myriad complexity of problems political, social and economic - that our society continues to face. We see ourselves allied intimately with the solution that a dynamic and adaptive country like India seeks to find whilst balancing the need for economic growth with the desire for social justice.

Vision

The driving force behind the 21st century is the development of knowledge-intensive societies. This awareness has led to the creation of new institutes of higher learning in India in the past few years. Indian Institute of Technology Indore, established in 2009, is part of this mega-project that envisages India as a Global Technology Leader. Continuing with the tradition of the older IITs, IIT Indore aims to play an active role in this task of propelling India on her growth-trajectory by focusing on education, research and development. IIT Indore visualizes this mission within the context of larger humanistic concerns.

The Institute

IIT Indore is currently functioning from a transit campus situated within the Institute of Engineering Technology that comes under DAVV University, Indore. The Institute occupies the upper two floors and part of the ground floor of M- Block, IET DAVV Campus, Indore. Academic and Administrative activities have been centred in this space right from the inception of IIT Indore in June 2009. IIT Indore, along with IIT Mandi, was established a year later than the other 6 new entrants in the IIT system. The Institute is in the midst of finalizing new space in the environs of the existing facility to accommodate new core laboratories and classrooms.

The disciplines at IIT Indore have been broadly categorized into larger schools where inter disciplinary research would be the new norm and not just a catchphrase. While the School of Basic Sciences in its constituent representation has Mathematics, Chemistry and Physics, the School of Engineering comprises Computer Science and Engineering, Electrical Engineering and Mechanical Engineering. Other than the Undergraduate courses offered, these disciplines also have full fledged PhD programmes up and running. The School of Humanities and Social Sciences includes Economics, English and Philosophy. Sociology and Psychology in the Social Sciences and German, French and Japanese in Languages are also expected as new additions in the near future. Currently Economics and Philosophy offer the PhD Programme.

IIT Indore presently has two Student Hostels; Narmada and Kshipra. Hostel Narmada is for the First Year Students with exclusive floors for Girl students. Hostel Kshipra is where the boys of the second year B.Tech. batch and PhD students reside.

Academics

IIT Indore offers the B.Tech. programme in three streams : Computer Science Engineering, Electrical Engineering and Mechanical Engineering. We also have PhD programmes in the three Engineering disciplines and also in Chemistry, Physics and Mathematics. The School of Humanities and Social Sciences has Ph. D. programmes in Economics and Philosophy. The current student strength is 242, with 227 students in the undergraduate programme and 15 students in the PhD programme.

Undergraduate Programme:

Category	Male	Female	Total
General	101	14	115
OBC	59	05	64
SC	31	02	33
ST	15	00	15
Total	**206**	**21**	**227**

Ph.D. Programme:

Category	Male	Female	Total
General	08	03	11
OBC	03	00	03
SC	01	00	01
ST	00	00	00
Total	**12**	**03**	**15**

The academic calendar is divided into the Autumn and Spring semester. The Autumn semester runs from the last week of July to the first week of December. The Spring semester begins in January and closes in the first week of May. As in other IITs a system of continuous evaluation and assessment is followed at IIT Indore with quizzes, assignments and mid semester and end semester examinations.

Academic affairs of the students are looked into by two committees with faculty representatives from all the Schools. Undergraduate student affairs are handled by the Undergraduate Academic Programme Evaluation Committee (UGAPEC) and Post-Graduate student affairs is under the charge of Post-Graduate Academic Programme Evaluation Committee (PGAPEC).

Other than core courses in the discipline, undergraduate students have the option of taking elective courses from their parent departments and also from other disciplines. In a span of eight semesters, undergraduate students have to clear coursework and practicals with a weightage of around 170 credits to become eligible for their degree. Undergraduates also have a compulsory pre-requisite of 13.5 credits from the School of Humanities and Social Sciences that will be part of the eligibility criterion of 170 credits. PhD students generally have to complete one year of compulsory course work to be eligible for their doctoral work. The credit weightage for doctoral students varies across the disciplines and also depends on their prior academic experience.

Faculty:

Sanctioned Positions	60
Strength	20
Vacancy	40

Designation	**Vacancy**	**Strength**
Professor	09	01
Associate Professor	19	01
Assistant Professor	12	18
Total	**40**	**20**

* In addition to the above, the strength of visiting faculty is 15.

Administration

Administrative staff strength at Indore has risen to 35 in various technical and support roles. The Institute currently has Deans for Administration (Dr. Subhendu Rakshit), Academics (Dr. Neelesh K. Jain) and Research and Development (Dr. N.S. Chaudhuri). Currently the administrative office in charge is Mr. M.G. Narasimha Rao (Assistant Registrar). Institute affairs are looked into by the Board of Governors, comprising;

Members of the Board of Governors

1	Shri Ajay Piramal Chairman, Board of Governors, IIT Indore Piramal Tower, Ganpatrao Kadam Marg, Lower Parel, Mumbai-400 013	Chairman
2	Prof. Pradeep Mathur Director, IIT Indore, M-Block, IET, Khandwa Road, Indore-452 017	Member
3	Shri Ashok Thakur Addl Secretary (HE), Govt Of India, Ministry of Human Resource Development, Department of Higher Education, Shastri Bhavan, New Delhi-110 015	Member
4	Dr Pukhraj Maroo Principal Secretary, Mantralaya, Vallabh Bhawan, Bhopal-462 007	Member
5	Dr Sibaji Raha Director, Bose Institute, 93/1 Acharya Prafulla Chandra Road, Kolkatta-700 009	Member
6	Shri K.K. Singh Chairman & Managing Director, Rolta India Ltd, Rolta Technology Park, Rolta Tower, "A", MIDC- Marol, Andheri (E), Mumbai-400 093	Member
7	Shri Harpal Singh Mentor & Chairman Emeritus, Fortis Healthcare Ltd, B-10, Anand Niketan, New Delhi-110 021	Member
8	Prof. Narendra Chaudhari Professor, Computer Science & Engineering, IIT Indore, M-Block, IET, Khandwa Road, Indore-452 017	Member
9	Dr Neelesh Jain Associate Professor, Mechanical Engineering Department, IIT Indore, M-Block, IET, Khandwa Road, Indore-452 017	Member

10	Shri B. S. Punalkar Registrar IIT Bombay, Powai, Mumbai-400 076	Secretary

Members of the Finance Committee

1	Shri Ajay Piramal Registrar Chairman, Board of Governors, IIT Indore Piramal Tower, Ganpatrao Kadam Marg, Lower Parel, Mumbai-400 013	Chairman
2	Prof. Pradeep Mathur Director, IIT Indore, M-Block, IET, Khandwa Road, Indore-452 017	Member
3	Shri Ashok Thakur Addl Secretary (HE), Govt of India, Ministry of Human Resource, Development Department of Higher Education, Shastri Bhavan, New Delhi-110 015	Member
4	Prof. K. K. Rao Deptt of Bio Science & Bio Engineering, IIT Bomaby, Powai, Mumbai-400 076	Member
5	Prof. M. S. C. Bose Deptt of Mechanical Engineering, IIT Bombay, Powai, Mumbai-400 076	Member
6	Shri S. K. Ray Addl Secretary & Financial Advisor, Govt Of India, Ministry of Human Resource, Shastri Bhavan, New Delhi-110 001	Member
7	Shri B. S. Punalkar Registrar IIT Bombay Powai, Mumbai-400 076	Secretary

Members of the Building and Works Committee

1	Prof. Pradeep Mathur Director, IIT Indore, M-Block, IET, Khandwa Road, Indore-452 017	Chairman
2	Mr. Govind Parchani Superintending Engineer RRCAT, A-99 IDA Scheme No.103 Kesar Bagh Road, Indore–452 012	Member
3	Mr. Rajeev Kumar Superintending Engineer IISER, A-234, New Minal Residency, J. K. Road, Bhopal-462 001	Member
4	Mr. B. Bose Management Consultant B-172, Chittaranjan, New Delhi–110 019	Member
5	Ms. Pratima Dikshit Director (T) MHRD, Department of Secondary and Higher Education Shastri Bhawan, "C" Wing, New Delhi-110 015	Member
6	Mr. Anoop Mukund Kekere Retired Chief Engineer(Electrical) RRCAT, 143, Kalindi-Kunj, Pipalyahana, Indore–452 001	Member
7	Shri B. S. Punalkar Registrar IIT Bombay Powai, Mumbai-400 076	Secretary

Upcoming Campus

Objective

To establish a campus that will create new benchmarks in sustainable and environment friendly building protocols in India.

Vision

The campus will be a seamless and integrated built environment that will facilitate a liberal and democratic sharing of thought. We envisage an institutional structure whose foundations will be reflective of the primary concern and pedagogical philosophy of IIT Indore, an understanding that the community here is involved in the process of teaching and sharing Ideas.

Characteristics of IIT Indore

- Intelligent
- Environment friendly
- Disabled friendly
- Energy efficient
- Low recurring cost on maintenance
- Socially sensitive

Special Features

- Smart Buildings
- Integrated Campus Security Systems
- Networking
- Energy Management
- Renewable Energy (Storage and Transmission)
- Solar Power
- Rain Water Harvesting
- Water Recycling
- Solid Waste Management
- Water Bodies
- Natural Landscaping

Current Status of Project

The government of Madhya Pradesh has been kind enough to commit to provide 500 acres of land for the establishment of IIT Indore. The new campus will be situated near Simrol in the Tehsil of Mhow. The project site is approximately 25 kms from the central thoroughfares of Indore. Land acquisition is in its final stages and tenders have been floated inviting expressions of interest for construction of the boundary wall at the Simrol site. The contour survey work of more than fifty percent of the alloted area has already been carried out. In addition the Institute has started the process for selecting the consultants who will oversee the architectural design and institute master plan.

Site and Resource Optimization

IIT Indore has constituted a committee consisting of experts for optimum utilization of non conventional energy resources and the first meeting took place on August 27, 2010. To cater to the requirement of potable water, the Institute has requested Indore Municipal Corporation for providing a direct water main connection for which in principle agreement has been obtained. MP Power Transmission Company Ltd. has been approached by IIT Indore to establish a substation on the allotted project site so as to ensure uninterrupted power.

Project and Process

In tune with the participatory nature of the IIT system, Faculty are an integral part of any decision making process. To support Infrastructure creation, various faculty committees have been constituted to look into and advise on services such as Energy and Water Resources, Space Management, Transportation, Networking and Communications and Sustainable Design. Proposals submitted by the project consultants will be vetted by the respective committee to ensure that the objective of creating new design benchmarks in sustainable practices is attained. Faculty and Administration have started to freeze the various requirements for Academic and Administrative Infrastructure including Lecture Halls, Laboratories Complex, Core Laboratories and Central Facilities, Computer Centre, Conference and Seminar spaces, Auditorium, Student Activities Centre, Cafeteria, Library and Sports and Athletic stadia. A shift to the permanent campus will be made possible by 2013. The Government of India has approved the Budgeting for the project.

Central Library

IIT Indore's Central Library, aims to be an active participant in the pursuit of knowledge of its stakeholders. It is in the process of building a varied collection, both print and online in all areas of specialization in the Sciences, Engineering and the Humanities.

The Collection

Books ← The Central Library started with a small number of books in 2009. Acquisitions gathered momentum in the year 2010. At present, the Library has a collection of 4000 books and new books are being added to the collection continuously. These include books on all relevant subjects for teaching and for reference. The Library also boasts of a select collection of Fiction, Literature, and general interest books such as sports, films, etc. to take care of the leisure and recreation reading needs of the users.

Periodicals and Newspapers ← At present, the Library subscribes to 15 Periodicals and 6 newspapers.

Electronic Resources ← In today's world of information explosion, access to information resources is more important than ownership. Therefore, the library strives to develop a collection of Online Resources which will provide access to thousands of journal articles, research papers, books, and other resources. The library provides access to ASME Journals, IEEE XPlore Digital Library, and McGraw-Hill's Access Engineering through INDEST Consortium. It also has access to JSTOR through INFLIBNET. Also, subscriptions to many more electronic journals published by reputed societies and publishers such as American Mathematical Society, American Chemical Society, American Institute of Physics, American Physical Society, IEEE, Wiley, etc., have been processed and users will have access from January 2011 onwards.

The Services

At present, the library offers services such as lending facility, Reading Room, Reference Service, and Book Bank. Also, facilities such as claims/ reservation, renewals, overnight lending, photocopying, etc. are provided to users.

Library 2.0 Initiatives : In addition to the services mentioned above, the library has started the following Lib 2.0 initiatives in order to overcome the space and time constraints faced by all libraries while offering more traditional services:

Library Wiki : This was started with a view to making information available to users irrespective of time or space. Users can check the library rules, access the book recommendation form, and check the list of books any time at:

http://centrallibraryiitindore.pbworks.com/

Library Blog : This was started as a channel of communication with users. As yet, this has been used to share information about books, and to invite users' views and comments. The student community has responded well to this channel. The blog can be accessed at:

http://centrallibraryiitindore.blogspot.com/

Twitter Account : The library also has a twitter account which is being used for announcements of events such as presentations on online resources, etc. It can be accessed at:

http://twitter.com/knowledgeforall

Projects In the Pipeline

1. **Library Automation:**

   The library is in the process of selecting a suitable **Integrated Library Management System (ILMS),** which will be finalized soon. In the early part of the year 2011, the automation of all functions of the library will be completed.

   Library Webpage: The institute website is being developed, and the library is aiming at a well designed webpage, which will provide users access to all the collections and services of the library from a single and user-friendly platform.

2. **Library Reading Hall:** The additional space the library has received is being developed into a reading hall and also additional stacking room for the library. The aim is to provide a comfortable and welcoming space to facilitate learning.

The People : No initiative is possible without support from people. The library has a library committee which meets regularly for discussion on policy matters and decision making. The Committee Members are:

Dr. Pritee Sharma, Convener,

Dr. Neelesh Jain, Member,

Dr. Anjan Chakraborty, Member

Ms. Anjali Bandiwadekar, Secretary

Ms. Paridhi Mishra, Student Member

The Library Team

Ms. Anjali Bandiwadekar, Deputy Librarian

Mr. Lala Ram Ahirwar, Senior Library & Information Assistant

Mr. Gati Krushna Nayak, Senior Library & Information Assistant

Mr. Sunil Kapoor, Library Attendant

Student Life

IIT Indore Students'Gymkhana was constituted this year. The students' are in the process of finalizing draft guidelines with respect to the conduct of activities coming under the aegis of the Gymkhana. Not having a permanent campus has necessitated dispersal of the students in hostels located far apart. While the current situation does not lend itself to the feel of campus life, students overcome this by organizing impromptu cultural activities within their respective hostels.

Some of our students have done the Institute proud with their achievements.

- **Archit Karandikar (CSE)** participated in the International Olympiad for Informatics, held at Waterloo, Canada from 14 Aug to 21 Aug 2010. He won the bronze medal.
- **Gulsagar Singh Jassar (CSE)** represented India in the roller skating World Championship at Colombia in Oct. 2010.

The students of IIT Indore also have an active sports culture. Two of our students **Devika Prabhu** (EE) and **Kanika Sankle** (EE) won Silver Medals at the athletic events of Inter-IIT sports meet held at IIT Kanpur.

School of Basic Sciences

Discipline of Chemistry

The discipline of Chemistry of IIT-Indore aiming for a tradition of excellence is engaged in teaching and research at the interstices of various subject boundaries including traditional and emerging fields of science and technology. The faculty members are from diverse streams and specializations and motivated to create a unique interactive platform for the students to explore the arena of fundamental and applied Chemistry and interdisciplinary research. Being a part of an emerging and relatively new institute, together with extremely competent research faculty, the Discipline of Chemistry at IIT Indore provides the opportunity for students to explore new and emerging areas in the frontier sciences.

Along with conducting undergraduate courses the Discipline of Chemistry currently has a research programme for the degree of Doctor of Philosophy in various specializations of Chemistry. The main topics of current research include synthetic organic Chemistry, mechanistic aspects of organic and inorganic transformations, photophysics, organic electronics, nano-chemistry, surface Chemistry, peptide Chemistry, organometallics, inorganic and organometallic pharamaceuticals, coordination Chemistry, green Chemistry and total synthesis of biologically active compounds.

Academic Activities

Programme offered : Ph. D

Student intake :

Ph. D. : 9

Current courses offered :

CH-103	General Chemistry	Undergraduate
CH-151	Chemistry Laboratory	Undergraduate
CH-701	Physical Methods in Chemistry	Ph. D.
CH-703	Biological Chemistry	Ph. D
CH-705	Materials Chemistry	Ph. D
ARP-CH1	Academic Rehabilitation Program	Undergraduate

Sponsored Research Projects

Title:	PI	Funding Agency	Status
"Photophysical and dynamical behaviour of drug molecules in biological media"	Dr. Anjan Chakraborty	DST - Fast Track Young Scientist Scheme	Approved
''Molecular self-assembly directed via chemical reactions for the applications in biology and nanosciences''	Dr. Apurba K Das	DST - Fast Track Young Scientist Scheme	Approved
"Heteronuclear Coordination Polymers Inspired by Cycloaddition and Hydrogen Bonds : Towards Dynamic Porous Metal Organic Frameworks"	Dr. Suman Mukhopadhyay	CSIR	Recommended for funding
"Size and Shape Controlled Magneto-Optical Nanoparticles for Cancer Cell Imaging and Photo-thermal therapy"	Dr. Tridib Kumar Sarma	SERC, DST	Approved
"Perylenedimide derivatives as Two-photon Absorbing materials"	Dr. Rajneesh Misra	DST	Submitted
"Ferrocenyl Porphyrins as Optical Limiting Materials"	Dr. Rajneesh Misra	CSIR	Approved

Publications

1. "Novel alkoxysilane pentacoordinate O=V(IV) complexes as supported catalysts for cyclohexane oxidation with dioxygen", Gopal S. Mishra, Anil Kumar, Suman Mukhopadhyay, Pedro B. Tavaresa, **Applied Catalysis A :General** 384, (2010), 136.

2. "Biocatalytic Induction of Supramolecular Order", A. R. Hirst, S. Roy, M. Arora, Apurba K. Das, N. Hodson, P. Murray, S. Marshall, N. Javid, J. Sefcik, J. Boekhoven, J. H. van Esch, S. Santabarbara, N. T. Hunt, R. V. Ulijn, **Nature Chemistry**, 2010, 2, 1089.

3 ."An Investigation of the Conductivity of Peptide Nanotube Networks Prepared by Enzyme-Triggered Self-Assembly", H. Xu, Apurba K. Das, M. Horie, M. S. Shaik, A. M. Smith, Y. Luo, X. Lu, R. Collins, S. Y. Liem, A. Song, P. L. A. Popelier, M. L. Turner, P. Xiao, I. A. Kinloch, R. V. Ulijn, **Nanoscale**, 2010, 2, 960.

4. "Synthesis and molecular structure of [(CO)3RuBr2)2(μ-SePh)2Ru(CO)4] cluster with a Ru3Se2 chain core", Y. Torubaev, P. Mathur, A. Pasynskii, **Journal of Organometallic Chemistry**, 2010, in press.

5 . "Cyclodimerization of phenyliodoacetylene with elemental tellurium :New pathway to 1 3 ditellurofulvenes "Y, Torubaev ,P Mathur ,B Jha ,M M Shaikh ,I V Skabitsky , **Journal of Organometallic Chemistry** , 2010 , in press , doi :10 1016 / j jorganchem 2010 08 056 .

6 . "Towards the catalytic formation of α , β-vinylesters and alkoxy substituted γ - lactones " P, .Mathur ,R .K .Joshi ,B .Jha ,A .K .Singh ,M .M .Shaikh ,**Journal of Organometallic Chemistry** 695 ,24 ,2687 .

7 . "Biometric sensor for certain phenols employing a copper (I)complex "M, M Shaikh , B J Sanghavi ,A K Srivastava ,P Mathur ,G K Lahiri ,**Anal Chem** .2010 ,82 ,14 ,5983 .

8 . "Reversible single-crystal to single crystal transformations in a Hg (I)derivative 1D-polymeric chain 2D-networking as a function of temperature " M, .M .Shaikh ,A .K . Srivastava ,P Mathur ,G K Lahiri ,**Dalton Trans** .2010 ,39 ,8698 .

9 . "Crystal structure and phase transition Diglycine Perchlorate "L .Panicker ,P .Mathur , M M .Shaikh **Journal of Chemical Crystallography** .Pub Online 01 August 2010 DOI : 10 1007 /s10870-010-9854-z .

10 . "Single-crystal to single-crystal transformations in discrete hydrated dimeric copper complexes " M . M . Shaikh , A . K . Srivastava , P . Mathur , G . K . Lahiri , **Dalton Transactions** .2010 39 ,6 ,1447 .

11 . "Photochemical reactions of 1-ferrocenyl-4-phenyl-1 ,3-butadiyne with Fe (CO)5 and CO " P, .Mathur ,R .Shyam Ji ,S .Boodida ,A .K .Singh ,M .M .Shaikh ,**Journal of Organometallic Chemistry** .2010 ,69 ,7 ,950 .

12 . "Metal carbonyl-promoted reactions of ferrocenylacetylene with sulfur to form thiophene ,dithiine ,thioketone and vinylthioketone derivatives " P, .Mathur ,A .K . Singh ,S Chatterjee ,V K Singh ,M M Shaikh **Journal of Organometallic Chemistry** . 2010 ,695 ,7 ,950 .

13 . "Regio-and stereo-specific addition of organotellurium trihalides to ferrocenylacetylene : Molecular and crystal structure of (Z)-halovinyl organotellurium dihalides " Y. .Torubaev ,P .Mathur ,A .A .Pasynskii ,**Journal of Organometallic Chemistry** 2010 695 9 ,1300 .

Conferences /Symposia /Workshops /Seminars :

Suman Mukhopadhyay

"Interaction of cis-[Pt(N3)2(PPh3)2] with Different Alkenenitriles :Cycloaddition and Unusual Activation of Carbon -Carbon Bonds " Frontiers in Inorganic Chemistry ,IACS , Kolkata ,11th-13th December ,2010.

Seminars organized:

1 . **COMPUTIONAL EXPLORATIONS IN ORGANIC SYSTEMS ,SOLID SURFACES AND BIOMOLECULES**
Speaker **Dr .Bishwajit Ganguly**
Scientist ,Central Salt & Marine Chemicals Research Institute (CSIR)
Bhavnagar ,Gujarat
Date - 13 September 2010

2. **THEORETICAL INVESTIGATION OF MAGNETIC MOLECULES**
Speaker :Prof .S N. Datta
Professor ,Department of Chemistry ,
IIT Bombay
Date - 17 September 2010

3. **NOVEL PHASES IN THE VPO SYSTEM AS CATALYSTS FOR SELECTIVE OXIDATION**
Speaker :**Dr. A. Datta**
Scientist ,Indian Institute of Petroleum Dehradun .
Date - 27 September 2010

4. **FUNCTIONAL MOLECULAR ASSEMBLIES ON SOLID SURFACES**
Speaker :**Dr. Joyanta Choudhury**
Department of Organic Chemistry ,Weizmann Institute of Science ,Israel
Date - 26 October 2010

5. **APPLICATIONS OF FISCHER CARBENES TOWARDS THE SYNTHESIS OF O-HETEROCYCLES AND DIVERSITY ORIENTED SYSNTHESIS TOWARDS NATURAL PRODUCE SCAFFOLDS.**
Speaker :**Dr. Subbhabrata Sen.**
Date - 2 November 2010

Research Facilities :

The department is in the process of building up a sophisticated instrumentation laboratory for conventional and multidisciplinary research .Presently the instrumentation facility in the department includes

1 . UV-Visible spectrophotometer (Carey 100 ,Varian)

2 . Spectrofluorimeter (Floromax ,Horiba)

3 . FT-IR (With KBr & ZnSe Optics) (Tensor 27 ,Bruker)

4 . HPLC (Dionex)

5 . Electrochemical Analyzer

6 . Thermogravimetric Analyzer (Mettler)

7 . Microwave Synthetic Reactor (CEM)

8 . Magnetic Susceptibility Balance (Sherwood scientific)

9 . Lyophilizer

10 . High pressure autoclave

11 . Conductivity meter

12 . Fume-hoods

We are in the process of procuring sophisticated instruments such as 400 MHz NMR ,ESI - Mass spectrometer ,CHNSO elemental analyzer ,Time Resolved Fluorimeter (TCSPC)and Single Crystal X-ray Diffraction Systems . In near future ,the department will procure several advanced instruments such as Scanning Electron Microscopes , Transmission Electron Microscope ,Atomic Force Microscope ,Circular Dichroism Spectrometer ,Raman Spectrometer ,Langmuir Brodgett Trough ,Dynamic Light Scattering confocal microscope , magnetic resonance contrast analyzer ,Powder XRD etc .Further ,an in-vitro biological laboratory will be set up for cell experiments .

Membership of Scientific Societies /Bodies /Organizations :

Dr Apurba K Das
Member of Royal Society of Chemistry

Dr. Suman Mukhopadhyay
Life member of Indian Association for the Cultivation of Science

Faculty Member/Area of Research/Specialization

1. **Dr. Anjan Chakraborty** General Physical Chemistry

Research Interests :

- Photophysics of drug molecules
- Study of different biological systems by fluorescence spectroscopy

2. **Dr. Apurba Kumar Das** General : Organic Chemistry

- Organic Synthesis
- Peptide and DNA based nanostructured materials
- Systems Chemistry
- Biosensors
- Supramolecular electronics

3. **Dr. Rajneesh Misra** General : Organic Chemistry

- Organic Electronics/Photonics
- Functional Dyes

4. **Dr. Suman Mukhopadhyay** General : Inorganic Chemistry

Research Interests:

- Transition-Metal Coordination Chemistry
- Inorganic and Organometallic Pharmaceuticals
- Activation of Small Molecules by Coordination with Biological and Industrial Significance

5. **Dr. Tridib Kumar Sarma** General : Physical Chemistry

Research Interests:

- Nanostructured Materials
- Polymer composites
- Biomimetic materials chemistry
- self and directed assembly of organic-inorganic materials.

6. **Dr. Sampak Samanta** General : Organic Chemistry

Research Interests

- Asymmetric synthesis
- Metal mediated synthetic transformation
- Green chemistry
- Total synthesis of biologically active compounds

6. **Dr. Tushar Kanti Mukherjee** General : Physical Chemistry

Research Interests

- Single molecule fluorescence imaging using TIRFM
- Single molecule spectroscopy in heterogeneous media
- Developing high resolution optical microscope
- Ultrafast fluorescence spectroscopy.

Discipline of Mathematics

Mathematical knowledge plays a crucial role in the progress of society and its continued growth on the exchange of research ideas and the encouragement and teaching of the next generation of mathematical thinkers. Discipline of Mathematics started functioning at IIT Indore in July 2009. The Discipline has a dual role to play in the academic field of Technology. Accordingly, the present faculty members of the Discipline are well equipped to conduct research programs in the following areas of Mathematics.

- Numerical Linear Algebra and Stability Analysis for Stochastic Differential Equations
- Complex Analysis (Geometric Function Theory: Hyperbolic-type Metrics, Quasiconformal Mappings and Univalent Function Theory)
- Numerical Functional Analysis

In addition to the above research areas, currently the discipline has three visiting faculty members whose research areas include Statistics, Combinatorics including Design Theory, Graph Theory and Coding Theory, Algebraic Topology, Ergodic Theory, Probability Theory, and Harmonic Analysis. Also, the faculty members possess expertise in other applied areas such as Error Correcting Codes, Optimization, Inference and Experimental Designs which are directly useful in many engineering projects at M.Tech or industrial level. The faculty members can also offer guidance in areas such as Response Surface Methodology and Time Series Analysis which are interdisciplinary in nature. Interested persons in academia or industrial fields are encouraged to contact the concerned faculty for possible joint research.

In the coming years the discipline will expand both in size and variety of expertise. The discipline has already started Ph.D. programme. It also plans to start a 2-year M.Sc. programme in Mathematics which will comprise a number of basic compulsory courses and few elective courses catering to a variety of needs and interests of students. As and when sufficient expertise in fields such as statistics, applied computing and informatics become available, the discipline also envisages another programme with M.Sc. degree in these subjects which will be especially suitable for the needs of industry. In future, the discipline also hopes to offer 4-year B.Tech. programme in Mathematics and Computing.

Academic Activities

Programme offered : Ph. D

Student intake :

Ph. D. : 1

Current courses offered :

MA-101	Calculus	Undergraduate
MA-102	Linear Algebra and Differential Equations-I	Undergraduate
MA-201	Complex analysis and Differential Equations-II	Undergraduate
MA-202	Numerical Analysis	Undergraduate
ARP-MA1	Academic Rehabilitation Program (Mathematics)	Undergraduate

Publications

Books

Educative JEE Mathematics by Prof. Kapil. D. Joshi, Universities Press, Hyderabad , 2nd edition, April 2010.

Papers

1. On estimation of Transient Stochastic Stability of Linear Systems, S. S. Ahmad and S. Raha, **Journal of Stochastic and Dynamics**, 385, 10, 3, 2010.
2. On Pseudospectra, Critical points and Multiple Eigenvalues of Matrix Pencils, S.S. Ahmad, R. Alam, and R. Byers, **Siam Journal of Matrix Analysis**, 1915, 31, 4, 2010.
3. The Apollonian inner metric and uniform domains, **Mathematische Nachrichten**, M. Huang, S. Ponnusamy, X. Wang and S.K. Sahoo, 1277, 283, 9, 2010.
4. Equivalence of the Apollonian and its inner metric, International Journal of Mathematics and Mathematical Sciences, P. Hästö, S. Ponnusamy and S.K. Sahoo, 2010, 2010.
5. Pre-Schwarzian norm estimates of functions for a subclass of strongly star like functions, Mathematica (Cluj), S. Ponnusamy and S.K. Sahoo, 47, 52, 75, 1, 2010.

Conferences/Symposia/Workshops/Seminars (participated/Papers presented)

1. Series of lectures on linear algebra for ATML (Advanced Training for Mathematics Lecturers) by NBHM (National Board of Higher Mathematics) at IIT Guwahati, July 2010.
2. "Perturbation analysis of rational eigenvalue problems", 2nd IMA Conference on Numerical Linear Algebra and Optimisation, University of Birmingham, UK, Sept. 13-15, 2010.

Membership/honorary positions of Scientific Societies/Bodies/Organizations :

Dr. Sk. Safique Ahmad

Reviewer of International Journal- **Linear Algebra and its Applications (Elsevier)**

Reviewer of International Journal- **Applied Mathematics Letters (Elsevier)**

Dr. Swadesh Kumar Sahoo

Technical Editor of The Journal of Analysis published by Forum d' Analystes, Chennai.

Awards/Achievements

Dr. Sk. Safique Ahmad

Included in the list of "Marquis Who's Who" **in 2011**

Research Labs and Resources

Hardware:

- High End Desktop and Workstations
- Server
- Printers and Scanners

Software:

- MATLAB
- Mathematica

Programming Languages:

- FORTRAN, C, C++

Faculty Member/Area of Research/Specialization

1. **Dr. Sk. Safique Ahmad**

   Research Interests:

   - Numerical Linear Algebra
   - Stabily analysis for Stochastic Differential Equations

2. **Dr. Swadesh Kumar Sahoo**

   Research Interests:

   - Complex Analysis
   - Geometric Function Theory: hyperbolic-type metrics, quasiconformal mappings, and univalent function theory

3. **Dr. V. Anthony Vijesh**

   Research Interests

   - Applied Functional Analysis

4. **Prof. Kapil D. Joshi***

   Research Interests

   - Algebric Topology

5. **Prof. Girish A. Patwardhan***

   Research Interests

   - Design Theory, Graph Theory, Error Correcting Codes

6. **Prof. M.G. Nadkarni***

   Research Interests

   - Ergodic Theory
   - Harmonic Analysis
   - Probability Theory

Discipline of Physics

The ever expanding ocean of knowledge is a priceless heritage of entire human race. In the present era, when science is advancing rapidly, education and research have been identified to be of utmost importance. From ancient times, Physics has attracted the human race due to their curiosity to know about the Origin of the Universe, Gravity, Time and Space, Optics, Electricity, Magnetism, Atomic Structure, Fundamental Particles, Radiation, Heat, etc. Department of Physics aims to educate the students by giving them a blend of knowledge of fundamental and applied Physics, as well as our faculties aspire to develop advanced research areas in this new institute.

Academic Activities

Programme offered : Ph. D

Student intake :

Ph. D. : 3

Current courses offered :

PH-101	Modern Physics	Undergraduate
PH-102	Electrodynamics	Undergraduate
PH-152	Physics Laboratory	Undergraduate
ARP-PH1	Academic Rehabilitation Program (Physics)	Undergraduate

Sponsored Research Projects :

Title:	PI/CI	Funding Agency	Status
"Transition Form Factor of the etaprime meson''	Dr. Ankhi Roy (PI)	DST	ongoing
" Meson Decays with WASA-at-COSY''	Dr. Ankhi Roy (PI)	JCHP-FFE (FFE Funding Program of the Juelich Center for Hadron Physics,Juelich, Germany)	ongoing
"Proposal for Detector Development for QCD Studies with anti-protons at FAIR: Indian contribution to PANDA''	Dr. Ankhi Roy (CI)	DST	Recommended for funding

Publications :

Books:

1. Global Properties of Nucleus-Nucleus Collisions. by M. Kliemant, **Raghunath Sahoo**, T. Schuster and R. Stock,

   The Physics of Quark-Gluon Plasma: Introductory Lectures, Lecture Notes in Physics, Vol. 785, 23-103 (2010).Springer-Verlag Publication, Berlin-Heidelberg, Germany, 2010. ISBN 978-3-642-02285-2

Papers

1. Phases of one dimensional large N gauge theories in a 1/D expansion , Manavendra Mahato in Collaboration with Gautam Mandal, Takeshi Morita, **JHEP**, 1002:034, 2010.
2. In-medium mass from the g+Nb-p°g+X reaction, Ankhi Roy (CBELSA/TAPS Collaboration) **Phys. Rev. C** 82 035209 (2010).
3. Photoproduction of meson pairs: First measurement of the polarization observable Is, Ankhi Roy (CBELSA/TAPS collaboration) **Physics Letters B** 687 (2010) 11.
4. Investigations of low-energy excitations in half-doped Pr0.5Sr0.5MnO3 thin films by the means of THz time-domain spectroscopy. K. R. Mavani, **Bulletin of the American Physical Society**, Vol. 55, No. 2 [Presented at APS meet, march 2010]
5. Parton Energy Loss in Heavy-Ion Collisions via Direct-Photon and Charged-Particle Azimuthal Correlations. B.I. Abelev ....., **R. Sahoo** et al., (STAR Collaboration), **Phys. Rev. C** 82 (2010) 034909.
6. Azimuthal di-hadron correlations in d+Au and Au+Au collisions at $\sqrt{S_{NN}}$ = 200 GeV measured at the STAR detector. M.M. Aggarwal, ..., **R. Sahoo** et al., (STAR Collaboration), **Phys. Rev. C** 82 (2010) 024912.
7. Balance Functions from Au+Au ,d+Au ,and p+p Collisions at $\sqrt{S_{NN}}$ = 200 GeV .M M . Aggarwal, ..., **R Sahoo** et al., (STAR Collaboration) **Phys Rev C** 82 (2010)024905 .
8. Upsilon cross section in p+p collisions at $\sqrt{S_{NN}}$ = 200 GeV .B I Abelev....., **R Sahoo** et al., (STAR Collaboration) **Phys Rev D** 82 (2010)012004 .
9. Higher Moments of Net-proton Distributions at RHIC .M M Aggarwal, ..., **R Sahoo** et al., (STAR Collaboration) **Phys Rev Lett** 105 (2010)022302 .
10. Three-particle coincidence of the long range pseudorapidity correlation in high energy nucleus-nucleus collision. B I . Abelev ....., **R . Sahoo** et al., (STAR Collaboration) **Phys Rev Letts** 105 (2010)022301 .
11. Observation of an Antimatter Hypernucleus . B I Abelev ....., **R Sahoo** et al., (STAR Collaboration) **Science** 328 (2010)58 ,Science DOI 10 1126 /science 1183980 .
12. Longitudinal scaling property of the charged particle balance function in Au + Au collisions $\sqrt{S_{NN}}$ = 200 GeV . B I Abelev ....., **R Sahoo** et al., (STAR Collaboration) , **Phys Letts B** 690 (2010)239 .

13. Spectra of identified high-pT ± and p-pbar in Cu+Cu collisions at $\sqrt{S_{NN}}$ = 200 GeV B I. Abelev, ..., **R Sahoo** et al., (STAR Collaboration) **Phys Rev C** 81 (2010) 054907.

14. Observation of charge-dependent azimuthal correlations and possible local strong parity violation in heavy ion collisions. B I. Abelev....., **R. Sahoo** et al., (STAR Collaboration) **Phys Rev C** 81 (2010) 054908.

15. Charged and strange hadron elliptic flow in Cu+Cu collisions at $\sqrt{S_{NN}}$ = 62.4 and 200 GeV. B I. Abelev ....., **R Sahoo** et al., (STAR Collaboration) **Phys Rev C** 81 (2010) 044902.

16. Observation of $^{+}\,^{-} \rightarrow ^{+}\,^{-}$ Photoproduction in Ultra-Peripheral Heavy Ion Collisions at STAR. B I. Abelev ..... **R Sahoo** et al., (STAR Collaboration) **Phys Rev C** 81 (2010) 044901.

17. Identified particle production, azimuthal anisotropy, and interferometry measurements in Au+Au collisions at $\sqrt{S_{NN}}$ = 9.2 GeV. B I. Abelev ....., **R Sahoo** et al., (STAR Collaboration) **Phys Rev C** 81 (2010) 024911.

18. Center of mass energy and system-size dependence of photon production at forward rapidity at RHIC. B I. Abelev ....., **R Sahoo** et al., (STAR Collaboration) **Nucl Phys A** 832 (2010) 134.

19. System size dependence of associated yields in hadron-triggered jets. B I. Abelev ....., **R Sahoo** et al. (STAR Collaboration) **Phys Letts B** 683 (2010) 123.

20. Midrapidity antiproton-to-proton ratio in pp collisions at $\sqrt{S_{NN}}$ = 0.9 and 7 TeV measured by the ALICE experiment. K. Aamodt, ..., **R. Sahoo** et al., (ALICE Collaboration) **Phys Rev Lett** 105 (2010) 072002.

21. Two-pion Bose-Einstein correlations in pp collisions at $\sqrt{S_{NN}}$ = 900 GeV. K. Aamodt, ..., **R Sahoo** et al. (ALICE Collaboration) **Phys Rev D** 82 (2010) 052001.

22. Transverse momentum spectra of charged particles in proton-proton collisions at $\sqrt{S_{NN}}$ = 900 GeV with ALICE at the LHC. K. Aamodt, ..., **R. Sahoo** et al., (ALICE Collaboration) **Phys Lett B** 693 (2010) 53.

23. Charged-particle multiplicity measurement in proton-proton collisions at $\sqrt{S_{NN}}$= 0.9 and 2.36 TeV with ALICE at LHC. K. Aamodt, ..., **R. Sahoo** et al., (ALICE Collaboration) **Eur Phys J C** 68 (2010) 89.

24. Charged-particle multiplicity measurement in proton-proton collisions at $\sqrt{S_{NN}}$= 7 TeV with ALICE at LHC., K. Aamodt, ..., **R. Sahoo** et al., (ALICE Collaboration), **Eur Phys J C** 68 (2010) 345.

25. First proton-proton collisions at the LHC as observed with the ALICE detector : Measurement of the charged particle pseudorapidity density at $\sqrt{S_{NN}}$ = 900 GeV.K. Aamodt, ..., R. Sahoo et al., (ALICE Collaboration), Eur Phys J. C 65 (2010) 111.

26. Alignment of the ALICE Inner Tracking System with cosmic-ray tracks. K. Aamodt, ..., R Sahoo et al., (ALICE Collaboration) **JINST** 5 (2010) P03003.

Conferences /Symposia /Workshops /Seminars /participated /Papers presented) :

1 . Prof Subhendu Rakshit Workshop on Neutrino Factories Super beams, Beta beams at the Tata Institute of Fundamental Research (20-25, October 2010)

2 . Prof Ankhi Roy -Primenet Workshop at Instituto Superior tecnico ,Lisbon ,Portugal (16 -18th September ,2010)

3 . Prof .Raghunath Sahoo -DAE -BRNS Symposium on Nuclear Physics ,BITS ,Pilani ,20 - 24 Dec .2010 (Talk :QGP phase boundary and Plasma Lifetime from Thermal Properties of ? Mesons) .

Seminars Organized :

1 . Title -QUANTUM CHAOTIC SYSTEM AS A MODEL OF DECOHERING ENVIRONMENT

Speaker Dr ,Jayendra N Bandyopadhyay
Research Fellow ,Centre for Quantum Technologies
National University of Singapore ,Singapore
Date -25 August 2010

Membership of Scientific Societies /Bodies /Organizations :

Prof Subhendu Rakshit :

Member of Indian Physical Society

Laboratory and Research Facilities :

Undergraduate Physics Laboratory (For First year B Tech . :)

This laboratory is equipped with sophisticated instruments .Presently ,40 students can individually perform experiments at a time .The students are exposed to variety of experiments as listed below :

1 . Centrifugal Force
2 . Helmholtz Coils
3 . Thermal Conductivity
4 . LCR Circuit (Computer controlled measurements)
5 . Kundt's Tube
6 . Fresnel's Bi -prism
7 . Grating Spectrometer
8 . Single Slit Diffraction
9 . Hydrogen Spectrum
10 . Specific Change of electron

Research facilities :

The following equipments will be installed in near future :

- High temperature box furnace (1700 ° C)
- Single zone split tube furnace (1200 ° C)
- Hydraulic press with capacity of 15 tons)
- Low speed Diamond Saw
- Closed cycle variable temperature cryogenic system for low temperature measurements and related equipments
- System source meter instrument (multi channel I V test solution)
- DELL Computer workstation (DELL T5500)

Faculty Member /Area of Research /Specialization

Faculty Members

1 . Dr Ankhi Roy

Research Interests :

- Hadron Physics
- Physics beyond Standard Model
- Multivariate Analysis Techniques to analyse rare decay modes

2. Dr. Krushna R. Mavani

Research Interests:

- Terahertz Spectroscopy
- Condensed Matter Physics

3. Dr. Manavendra N. Mahato

Research Interests :

- String theory
- Quantum field theory

4. Dr. Raghunath Sahoo

Research Interests :

- Experimental High Energy Nuclear Physics (Relativistic Heavy Ion Collisions: Quark-Gluon Plasma)
- Phenomenology of Quark-Gluon Plasma, Global Properties and Heavy Flavors

5. **Dr. Subhendu Rakshit**

Research Interests:

- Phenomenological aspects of particle physics
- Neutrino physics
- Supersymmetry,
- Large Hadron Collider related physics
- Neutrino astronomy

6. **Dr. Sarika Jalan**

Research Interests:

- Complex biological networks, Spectral graph theory, Random matrix theory
- Synchronization, Coupled chaotic dynamics on large networks, Adaptation, Evolution

6. **Prof. P. N. Puntambekar***

7. **Dr. Tapas Ganguli***

School of Engineering

Discipline of Computer Science and Engineering

The Discipline of Computer Science and Engineering (CSE) was set up in July 2009. Till date, the discipline has offered the following courses:

1. CS101: Computer Programming and Utilization course during Semester 1 and Semester 3 (Summer semester) of AY 2009-10,
2. CS102: Abstractions and Paradigms of Programming during Semester 2 of AY 2009-10,
3. CS103: Computer Programming, in Semester 1 of AY 2010-11.
4. CS201: Discrete Mathematical Structures, in Semester 1 of AY 2010-11.
5. CS203: Data Structures and Algorithms, in Semester 1 of AY 2010-11.
6. CS253: Data Structures lab, in Semester 1 of AY 2010-11.
7. CS261: Software Development and Program Design Lab – 1, in Semester 1 of AY 2010-11.

The discipline is in the process of establishing the following labs during AY 2010-11: Software Development Lab, Logic Design and Computer Architecture Lab, and Software Engineering Lab. Subsequently, plans are under way to initiate a few additional labs. Current plan includes separate labs for high performance computing, entertainment computing, and database lab.

The discipline has strong focus on research. The discipline specially focuses on high quality research publications. The discipline has active links with researchers in IIT Kharagpur, IIT Guwahati, IIIT, Allahabad, a few universities in India (including University of Pune, University of Hyderabad), and abroad (including Freie Universitat, Berlin, AlCron State University, USA, and Nanyang Technological University, Singapore). To expand the research activities, the discipline is in the process of inducting research students.

The discipline has also active interaction with industries. A few industries include Impetus Computing, Bharat Heavy Electricals Ltd (BHEL). The discipline has involved leading experts as visiting faculty members for teaching specialized courses. By January, 2011, the discipline has plans to induct more visiting faculty having specializations in additional areas. Narendra S. Chaudhari reported path breaking result "P=NP" at Department of Computer and Information Science, University of Hyderabad.

More details are available on University of Hyderabad website http://dcis.uohyd.ernet.in/~wankarcs/index_files/seminar.htm

Student Achievements

Archit Karandikar participated in International Olympiad for Informatics, held at Waterloo, Canada from 14 Aug to 21 Aug 2010. He won the bronze medal.

Mr. Gulsagar Singh Jassar participated at National level skating camp in Sept. 2010 held at Vizag, Vishakhapatnam and he was selected to represent India in skating world Championship at Columbia (South America) in Oct. 2010.

Mr. Ranjodh Singh Dhaliwal won The Gray Carnage: an intercollege Quiz Competition organized by Institute of Engineering and Technology (IET), DAVV, Indore in Sept 2010.

Mr. Bhushan Shah, Ranjodh Singh Dhaliwal, Gulsagar Singh Jassar, and Sahil Dhokad represented IIT Indore in inter-collegiate debate competition organized by Proton Business School, Indore and their team won the best team award (in January 2010).

Mr. Anant Paliwal got the second prize in the competition "Cult Icon" in IIT Indore's festival MRIDANG (in January 2010).

Mr. Anant Paliwal won Mood Indigo (MI)'s Most Talented Award in Dec. 2009.

Mr. Ranjodh Singh Dhaliwal, Mr. Bhushan Shah (with other IIT Indore students) organized, a national level industry simulation competition: "THE ROAD TO RUTAS" in March 2010. The participating teams included NL Dalmia Institute of Management Mumbai, IISER Pune, BITS Hyderabad, IIT Mandi and IIT Gandhinagar.

The discipline has CSE Student Internship (SI) committee consisting of following members:

Tushar Maheshwari (Chairman)

Deepti Kochar (Secretary)

Bhushan Shah, Nihal Balani, Kunal Chaudhary (Executive Members)

The discipline also has CSE Industry Academic Interaction (IAI) Committee with following members:

Anjor Hemant (Chairman)

Rahul Nanda (Secretary)

Abhishek, Archit Karandikar, Ashok Pancily Poothiyot (Executive Members)

Academic Programmes

Degree	Number of Students
B.Tech.	75

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

National

N.S. Chaudhari,

Invited Talk "Computational Learning: Statistical and Soft computing Approaches," 97th Conference of Indian Science Congress Association, 03-07 Jan, 2010, University of Kerala, Trivandrum, India

International

N.S. Chaudhari, A. Tiwari, and J. Thomas,

"A Novel SVM Based Approach for Noisy Data Elimination," 11th International Conference on Control, Automation, robotics and Vision, 07-10 Dec, 2010, Grand Copthrone Waterfront Hotel, Singapore, Accepted for publication

N.S. Chaudhari, and A. Tiwari,

"Binary Neural Network Classifier and it's Bound for the Number of Hidden Layer Neurons," 11th International Conference on Control, Automation, robotics and Vision, 07-10 Dec, 2010, Grand Copthrone Waterfront Hotel, Singapore, Accepted for publication

S. Negi, A. Tiwari, and N.S. Chaudhari,

"Optimization of Boolean Expression based Neural Network Learning by using Rough Set," 2nd International Conference on Information Technology and Business Intelligence, Sponsored by IEEE Computational Intelligence Society, 12-14 Nov. 2010, Institute of Management Technology, Nagpur, India

A. Tiwari and N.S. Chaudhari,

"Intelligent Tutoring System Using Neuro Fuzzy Learning Technique," 2nd International Conference on Information Technology and Business Intelligence, Sponsored by IEEE Computational Intelligence Society, 12-14 Nov, 2010, Institute of Management Technology, Nagpur, India

A. Purohit, N.S. Chaudhari, and A. Tiwari,

"Construction of Classifier with Feature Selection based on Genetic Programming," 2010 IEEE World Congress on Computational Intelligence, 18-23 July, 2010, Centre de Convencions Internacional de Barcelona, Barcelona, Spain

N.S. Chaudhari,

"Intelligent Systems and Polynomial Solvability of NP-Complete Problems," 2010 IEEE Conference on Cybernetics and Intelligent Systems, pp. 132-137, 28-30 June, 2010, Grand Copthrone Waterfront Hotel, Singapore

N.S. Chaudhari, A. Tiwari, U. Thakar, and J. Thomas,

"Semi-supervised Classification for Intrusion Detection System in Networks," 2010 IEEE Conference on Cybernetics and Intelligent Systems, pp. 120-125, 28-30 June, 2010, Grand Copthrone Waterfront Hotel, Singapore

A. Shrivastav, A. Tiwari, and N.S. Chaudhari,

"Network Traffic Classification using Semi-Supervised Approach", The 2nd International Conference on Machine Learning and Computing 2010, 09-11 February, 2010, Bangalore, India

N.S. Chaudhari,

"Polynomial Solvability of 3-SAT," International Conference on Mathematics and Computer Science, pp. 266-271 , 05-06 Feb., 2010, Loyola College, Chennai, India

Journal Papers

National

N.S. Chaudhari,

"Improved Polynomial Algorithm for 3-SAT,'' The Journal of the Indian Academy of Mathematics, vol. 32, no. 1, pp. 251-267, 2010

Recognition Received

N.S. Chaudhari

Visiting Professor, C.R. Rao Advanced Institute of Mathematics, Statistics, and Computer Science (AIMSCS), University of Hyderabad Campus, Hyderabad

Honorary Work

Narendra S. Chaudhari

Service to Academic Institutes

Dean - Research and Development, Indian Institute of Technology, Indore (w.e.f. Oct, 2010)

Member, Governing Board, Indian Institute of Technology, Indore (w.e.f. May, 2010)

Member, Executive Board, Zeal Education, Indore (w.e.f. March, 2010)

Member, Advisory Committee, Swami Vivekanand College of Engineering (SVCE), (ISO 9001:2008 Certified Institute), Indore (w.e.f. January, 2010)

Service to Professional Societies

Chairman, Computer Society of India (CSI) – Indore Chapter (April 2010 to March 2011): Responsibility includes promotion and monitoring the chapter's overall direction, progress and the technical programs

Chairman, Computational Intelligence Society, IEEE Mumbai Branch (April 2010 to Dec 2011). First (founder) chairman, with responsibility to promote, monitor the chapter's overall direction, progress and the technical programs

Executive (and Founder) member - Indian Rough Set Society (founder team member with Founder Chairman of the society as Prof. Sankar Pal, Director, Indian Statistical Institute, Kolkata) (March, 2010 onwards)

Expert - DOEACC Society (An autonomous Scientific Society of Department of Information Technology, Ministry of Communications and Information Technology, Govt. of India)

Services as Editor and associate Editor for International Journals

Editor-in-Chief, International Journal of Computer Science and System Analysis (ISSN no. 0973- 7448), Serials Publications, New Delhi, India

Editor-in-Chief, International Journal of Electronics and Computer Engineering (ISSN no. 0973- 4202), Serials Publications, New Delhi, India

Associate Editor: (i) International Journal of Computer Games Technology (IJCGT) (Hindawi Pub. Co. New York), (ii) Information Technology Journal (ITJ) (Asian Network for Scientific Information and Academic Journals: ANSINET)

Member, Council of Editors: International Journal of Computer Science and Applications (IJCSA)

Member, Advisory Board: Journal of Advances in Engineering Science Section C: Electrical Engineering, Electronics and Telecommunication Engg, Comptuer Engineering, and Information Technology. (ISSN 0973:9041) (Publ. by Sinhgad Technical Education Society, Pune, India)

Member, Editorial Board: International Journal of Engineering Research and Industrial Applications (IJERIA), (Published by Ascent Publications, Airport Road, Pune, India)

Reviewer for Research Papers

Memetic Computing (Springer Verlag) (June 2010)

In addition, reviewer for several IEEE conference papers (major conferences: International Joint Conference on Neural Networks, IEEE International conference on Computational Intelligence, IEEE TENCON in 2010).

Invited lectures

Delivered an Address as a Chief Guest for the event Tech-Knowledge 2010, Organized by Pioneer Institute of Professional Studies, Indore India on 30th Nov. 2010

Participated and Delivered an expert lecture (of 2 hour duration) on Grammatical Inference and Computational Learning in - (All India Council for Technical Education -

AICTE, Govt of India sponsored) National Seminar on Emerging Trends in Engineering Sciences Samrat Ashok Technological Institute (SATI), Vidisha (M.P.) India on 29th Nov. 2010

Judge for Information Technology Excellence Awards and Participated in The National Convention of Computer Society of India with theme: iGen, Hotel Taj End lands, Bandra, Mumbai, India from 25th Nov 2010 to 27th Nov 2010

Delivered an expert lecture on Computationally Hard Problems and polynomial Algorithms for NP-Complete Problems in - (All India Council for Technical Education - AICTE, Govt of India - sponsored) National Seminar on Emerging Trends in Information Technology Medicaps Institute of Technology and Science, Indore (M.P.) India on 20th Nov. 2010

Delivered an Address as Guest of Honor for the event National Seminar for Technology Show-cases 2010, Organized by Acropolis Institute, Indore India on 18th Nov. 2010

Delivered an invited lecture on Models of Computation and Design of Algorithms for hard problems and Participated in the 5th National Conference on Emerging Trends in Information Technology and Business Management (EITBM 2010), Vidya Pratishthan's Institute of Information Technology (VIIT), Baramati (M.S.) India, (09th Oct. 2010)

Delivered an invited seminar talk on the topic of Design of Algorithms for hard problems, at Department of Computer Science, University of Poona, Pune, India on 08th Oct. 2010

Delivered an expert lecture on Computational Models Participated and participated in - Staff Development Program (SDP) at ITM Universe, Gwalior (M.P.) India on 18th Sept. 2010

Delivered an Invited seminar talk for ACM Allahabad Chapter, Allahabad, on the topic of Computational Learning, Indian Institute of Information Technology (IIIT) Allahabad, India on 11st Sept. 2010

Delivered an invited seminar talk on the topic of Computationally hard problems, at Department of Computer Science and Engineering, Indian Institute of Technology (IIT) Guwahati, Guwahati, India on 03rd Sept. 2010

Delivered an invited seminar talk on the topic of Algorithms for Satisfiability problems, at Department of Computer and Information Sciences (DCIS), University of Hyderabad, Hyderabad, India on 28th Aug. 2010

Invited Speaker and Chief Guest, Computer Society of India - Ujjain Chapter, Mahakal Institute of Technology and Management, Dewas Road, Ujjain (Also delivered Expert lecture on the topic of Computational Models (16 July, 2010)

Invited Speaker and Member – Advisory Board, National Conference on Emerging Technologies in Electronics, Mechanical and Computer Engineering, Indore Institute of Science and Technology (IIST), Indore ((17-18 April, 2010)

Expert Lecturer - Delivered expert lecture on the topic Computational Models: History and Trends, at DAVV Auditorium, Khandwa Road, Indore (02nd April, 2010). (The lecture was mainly for senior secondary school - 11th and 12th Class students; other experts included Prof. Ajoy Ghatak of IIT Delhi, who delivered lectures on relativity theory)

Chief Guest – Inaugural Ceremony of Indian Society for Technical Education (ISTE) Chapter at Swami Vivekanand College of Engineering(SVCE), Indore (29th March, 2010). (Also delivered Expert Lecture on Computational Models)

Invited Speaker, and Session Chair, National Conference on Emerging Trends in Computing, Bansal Group of Institutes, Indore ((25-26 March, 2010). Topic: Computational Learning and Language Structure. (Delivered on 26th March, 2010)

Guest of Honor, and Foundation Day Lecturer, Sixth Foundation day of Department of Computer and Information Sciences, University of Hyderabad (23rd March, 2010)

Delivered Foundation day lecture on the topic: Parallel CYK Parsing: Some Algorithmic Formulations DST Auditorium, University of Hyderabad (23rd March, 2010)

Invited Speaker, and Session Chair, (AICTE Sponsored) National Conference on Emerging Technological Trends, (NCETT 2010) organized by VNS Group of Institutes, Bhopal (19-20 March, 2010). Title of Invited Speech: Models of Computation: History and Trends.

Expert Lecture on the topic: Advanced Algorithms, organized by IEEE MP Subsection, Indore (01st Feb. 2010)

Invited Speaker, The Indian Science Congress Association, Kolkata (ISC2010: 97th Annual Conference) Venue: University of Kerala, Trivendrum (03-07 January, 2010). Section: Information and Communication Technologies (ICT). Title of the talk: Computational Learning

External Referee for Ph. D. Theses

External Referee for the Ph.D. Thesis titled: Discovery of Frequent Patterns in Transactional Data Streams, Nanyang Technological University, Singapore (Feb. 2010)

External Referee for the PhD. Thesis titled: Network Security - Enhancing Intrusion Detection System by a study of abnormal TCP/IP Packets, Madurai Kamraj University, Madurai 625021, Tamil Nadu (March, 2010)

External Referee for the Ph.D. Thesis titled: Data Analysis using Independent Component Analysis, Guru Gobind Singh Indraprastha University, Kashmiri Gate, Delhi (May 2010)

External Referee for the Ph.D. Thesis titled: Optimization of Automated Test case design for unit testing of object-oriented software, Barkatullah Vishwavidyalaya, Bhopal (July, 2010)

External Referee for Master of Engineering (M.E.) Theses

External Referee for the M.E. Thesis titled: Data Reduction, Sound Separation, and Sound Enhancement using Principal Component Analysis and Independent Component Analysis, Shri G.S. Institute of Technology and Science, Indore (Nov. 2010)

External Referee for the M.E. Thesis titled: Formalizing Credit Scoring Problem based on Support Vector Machine, Institute of Engineering & Technology (IET), Devi Ahilya University (DAVV), Indore Indore (Aug. 2010)

Award

Pioneer Information Technology Excellence Award - conferred during the 9th National Conference on Information Technology and Business Intelligence (ITBI 2010), Indore, (6th May, 2010). (The award is based on the contributions to Information Technology)

Faculty Members and their Specializations

1. **Narendra S. Chaudhari**
   Algorithms, Theoretical Computer Science, Softcomputing,
   Game Artificial Intelligence

Visiting Faculty Members

1. Sanjay Tanwani
2. Vinod Sathe
3. Maya Ingle
4. Ruchi Vijayvargiya
5. Preetesh Purohit
6. Jaya Thomas
7. Shri Ramesh Thakur
8. Vaishali Chourey
9. Rashmi Yadav
10. Nidhi Dahale

Discipline of Electrical Engineering

The discipline of Electrical Engineering was set up in July 2009 with the goal of undertaking cutting-edge research and imparting state of the art education in Electrical Engineering. Currently, it offers Bachelor of Technology (B.Tech.) and Doctor of Philosophy (Ph.D.) programs. It has qualified and experienced faculty members. It has online access to all the reputed international journals. Currently, department research areas include improving the compatibility of renewable energy systems, grid modelling of bio signals such as EEG and ECG signals for early detection of abnormality and control system engineering. In the age of nanotechnology, the Electrical Engineering discipline has an excellent modelling, simulation and design infrastructure for classical and non-classical devices as well as VLSI/ULSI Circuit and system design facility. The department is also looking forward to interdisciplinary courses like Mechatronics, Nanotechnology etc. Also in due course of time, it will focus on developing its B.Tech. program which should be able to create an engineer who will have sound knowledge of both theory and relevant practice of the discipline.

The discipline is equipped with the latest teaching and research facilities.

Research Labs in Process

Power Electronics and Renewable Energy Systems Lab
Signal Analysis Lab
Semiconductor Optoelectronics and Micro/Nano-Fabrication Lab
Classical and Non-classical Nanoscale Device Modeling Lab
VLSI/ULSI Circuit and System Design Lab
FPGA and Reconfigurable System Design Lab

The discipline has following resources in process:

Hardware

High End Desktop and Workstations
Server
Printers and Scanners
FPGA Boards

Software

MATLAB
Cadence EDA Tools
Silvaco TCAD Tools
Xilinx EDA Tool
System C

Experimental Instruments

Ion-Beam Sputtering Unit

Scanning Electron Microscope

X-Ray Diffraction (XRD)

Atomic Force Microscope (AFM)

Fourier Transform Infrared Spectroscopy (FTIR)

Tube Furnace

Heating Oven

Sandblast Unit

Photoluminescence Setup

Four-probe Hall Measurement Unit

The discipline has IEEE Student Chapter with following members:

Sarfraz Qureshi (Chairman)

Saurabh Kumar (Vice-Chairman)

Ankit Goyal (Secretary)

Kadur Aditya (Event Coordinator)

Deepak Kumar Yadav (Treasurer)

The discipline has EE Student Internship (SI) and Industry Academic Interaction (IAI) Committee with following members:

Jhalak Patel (Chairman)

Ayush Chandra (Secretary)

Academic Programmes

Degree	Number of Students
B.Tech.	76
Ph.D.	01

R&D Activities

Sponsored Research Projects: 03 (Applied)

R. B. Pachori

- "Analysis and Classification of EEG Signals Based on Nonlinear and Nonstationary Signal Models," Department of Science & Technology (DST), Science and Engineering Research Council (SERC), Fast Track Scheme for Young Scientists (Aug. 2010).

S. K. Vishvakarma

- "Unified and Compact Analytical Modeling of Nanoscale Gate-All-Around Multigate MOSFETs," Department of Science & Technology (DST), Science and Engineering Research Council (SERC), Fast Track Scheme for Young Scientists (Sept. 2010).

S. Mukherjee

- "Design, fabrication and characterization of high-quality zinc oxide (ZnO) nanostructure-based nano-devices," Department of Science & Technology (DST), Science and Engineering Research Council (SERC), Fast Track Scheme for Young Scientists (Oct. 2010).

Books/ Chapter in Books

S. Mukherjee, D. Li, A. Gautam, J. P. Kar, and Z. Shi,

"Lead Salt Thin Film Semiconductors for Microelectronic Applications," Invited author of a review book, ISBN: 978-81-7895-501-8, Research Signpost, 2010.

Visitors to the Discipline of Electrical Engineering

Bhooshan Kelkar, Country Manager, IBM India University Relations IBM India Pvt. Ltd, visited IIT Indore on 26th-27th Oct. 2010 for a joint venture for research, helping in academics and student internship program.

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

National

S. Chhabra, R. Bajaj, R.B. Pachori, and R.N. Biswas,

"Features based on Fourier-Bessel Expansion for Application of Speaker Identification System", Proceedings Indian Conference for Academic Research by Undergraduate Students, 26-28 March, 2010, IIT Kanpur, India.

R.B. Pachori, Key Note Speaker, National Conference on Emerging Trends in Signal Processing and VLSI Design-2010 (Topic: Signal Analysis using Wavelets), November 2010, Bhopal, India.

International

A. Parey and R.B. Pachori,

"Modified Empirical Mode Decomposition Process for Improved Fault Diagnosis", Proceedings 8th IFToMM International Conference on Rotor Dynamics, 12-15 September, 2010, Seoul, Korea.

R.B. Pachori and S.V. Gangashetty,

"AM-FM Model based Approach for Detection of Glottal Closure Instants", Proceedings IEEE International Conference on Information Science, Signal Processing and their Applications, 10-13 May, 2010, Kuala Lumpur, Malaysia.

R.B. Pachori and S.V. Gangashetty,

"Detection of Voice Onset Time using FB Expansion and AM-FM Model", Proceedings IEEE International Conference on Information Science, Signal Processing and their Applications, 10-13 May, 2010, Kuala Lumpur, Malaysia.

S. K. Vishvakarma and Tor. A. Fjeldly,

"Analytical Modeling of the Subthreshold Electrostatics of Nanoscale GAA Square Gate MOSFETs" Nanotech-2010, Workshop on Compact Modeling, 21– 25 June, 2010, Anaheim, California, USA.

B. Raj, S.K. Vishvakarma, A.K. Saxena, and S. Dasgupta,

"Modeling and Simulation for Double Gate FinFET Device at 30 nm Technology" Nanotech-2010, Workshop on Compact Modeling, 21– 25 June, 2010, Anaheim, California, USA.

A. Kranti, R. Yan, C.-W. Lee, I. Ferain, R. Yu, N. Dehdashti Akhavan, P. Razavi, J.-P. Colinge,

"Junctionless Nanowire Transistor (JNT): Properties and Design Guidelines", European Solid State Device Research Conference, pp. 357-360, 2010, Seville, Spain.

A. Kranti, Rashmi, S. Burignat, J.-P. Raskin, and G.A. Armstrong ,

"Analog/RF Performance of Sub–100 nm SOI MOSFETs with Non–classical Gate–source/drain Underlap Channel Design", Topical Meeting on Silicon Monolithic Integrated Circuits in RF Systems, pp. 45-48, 2010, New Orleans, USA.

J.-P. Colinge, J.-P. Raskin, A. Kranti, I. Ferain, C.-W. Lee, N. Dehdashti Akhavan, P. Razavi, R. Yan and R. Yu,

"Analysis of the Junctionless Transistor Architecture", Proc. International Conference on Solid State Devices and Materials, 2010, Tokyo, Japan.

H. Inokawa, W. Du, M. Kawai, H. Satoh, A. Ohno, and V. Singh

"Single-Photon Detector Based on Direct Counting of Photogenerated Carriers", Proc. 12th Takayanagi Kenjiro Memorial Symposium, 18-19 November 2010, Research Institute of Electronics, Shizuoka University, Hamamatsu Japan.

V. Singh, H. Inokawa, and H. Satoh,

"Biasing Effects in MOSFET based Charge Transfer Device", Proc. 23rd Microprocess and Nanotechnology Conference, 09-12 November 2010, Kokura, Kitakyushu, Japan.

M. Kawai, V. Singh, M. Nagasaka, H. Satoh, and H. Inokawa

"Analysis of MOSFET Electrometer Sensitivity by Radio Frequency Reflection", Proc. Solid State Devices and Materials, 22-24 September 2010, University of Tokyo,Tokyo, Japan.

H. Inokawa, H. Satoh, A. Ohno, V. Singh, and W. Du

"Single Photon Detector Based on MOSFET Electrometer with Single Electron Sensitivity", Proc. 9th International Conference on Globar Research and Education, 09-12 August 2010, Inter Academia 2010, Riga, Latvia.

V. Singh, H. Inokawa, and H. Satoh

"Effect of Oxide Thickness on Low Frequency Noise in MOSFET based Charge Transfer Devices", Proc. 15th IEEE Silicon Nanoelectronics Workshop, 13-14 June 2010, Honolulu, Hawaii, USA .

V. Singh, H. Inokawa, and H. Satoh

"A comparative study of noise behavior between pulsed and DC operation modes of MOSFET based Charge Transfer Devices" Proc. 57th Japan Society of Applied Physics, Spring meeting, 17-20 March 2010, Tokai University, Kanagawa, Japan.

S. K. Vishvakarma, U. Monga, and Tor. A. Fjeldly,

Invited Talk “Unified Analytical Modeling GAA Nanoscale MOSFETs”, International Conference on Solid-State and Integrated Circuit Technology-2010, 01-04 Nov, 2010, Shanghai, China.

Journal Papers

International

A.F. Mohed, G. Rama Murthy, and R.B. Pachori,

"Novel Orthogonal Signal based Decomposition of Digital Signals: Application to Sensor Fusion", Sensors & Transducers, vol. 114, pp. 56-65, March 2010.

R.B. Pachori and P. Sircar,

"Analysis of Multicomponent AM-FM Signals using FB-DESA Method", Digital Signal Processing, vol. 20, pp. 42-62, January 2010.

S. K. Vishvakarma, A. K. Saxena, and S. Dasgupta,

“Modeling and Estimation of Drain Current for Dual Metal Gate (Hf/AlNx) and Midgap Symmetric Double Gate (SDG) MOSFET," Journal of Computational and Theoretical Nanoscience, vol. 7, no.10, pp. 1941-1947, 2010.

S. K. Vishvakarma, A. K. Saxena, and S. Dasgupta,

"Analytical Modeling of Potential and Drain Current for Symmetric Double Gate (SDG) MOSFET using Self Consistent Solution of 1-D Poisson's-Schrödinger Equations," Journal of Computational and Theoretical Nanoscience, vol. 7, no.10, pp. 1959-1964, 2010 .

V. Komal, S. K. Vishvakarma, R. C. Joshi, A. K. Saxena, and S. Dasgupta,

"Small Signal Capacitance and Glitch Power estimation of Nanoscale MGDG-MOSFET Based Circuits: A Device/Circuit Co-design Approach," Journal of Nanoelectronics and Optoelectronics, vol. 5, no.1, pp. 72-78, 2010.

A. Gautam, S. Mukherjee, and S. Ram,

"Controlled Novel Route to Synthesis and Characterization of Silver Nanorod," Journal of Nanoscience and Nanotechnology, no XX, pp. 1-6, 2010.

S. Mukherjee, D. Li, G. Bi, A. Gautam, S. L. Elizondo, J. Ma, F. Zhao, and Z. Shi,

"CaF2 Surface Passivation of Lead Selenide Grown on BaF2," Journal of Microelectronic Engineering, 2010, In press.

V. Singh, H. Inokawa, T. Endoh, and H. Satoh,

"Fabrication Method of Sub-100 nm Metal-Oxide-Semiconductor Field-Effect Transistor with Thick Gate Oxide" Jpn. J. Appl. Phys., 2010, In press.

T. Morita, V. Singh, S. Nagamatsu, S. Oku, W. Takashima, and K. Kaneto,

"Ambipolar Transport in bilayer Organic Field Effect Transistors based on Poly(3-hexylthiophene) and Fullerene Derivative Films" Jpn. J. Appl. Phys., 49, 2010.

V. Singh, H. Inokawa, T. Endoh, and H. Satoh,

"Low-Frequency Noise Characterization in MOSFET Based Charge Transfer Device at Room and Low Temperatures" Jpn. J. Appl. Phys., 49, 2010.

A. Kranti and G.A. Armstrong,

"Non–Classical Channel Design in MOSFETs for Improving OTA Gain–Bandwidth Trade–off", IEEE Transactions on Circuits and Systems-I, vol. 57, no. 12, 2010.

A. Kranti, C.-W. Lee, I. Ferain, R. Yan, N. Akhavan, P. Razavi, R. Yu, G.A. Armstrong and J.-P. Colinge,

"Junctionless 6T SRAM Cell", IET Electronics Letters, vol. 46, no. 22, pp. 1491-1493, 2010.

Honorary Work

Abhinav Kranti

Reviewer, IEEE Electron Device Letters

Reviewer, IEEE Transactions on Nanotechnology

Reviewer, IEEE Transactions on Electron Devices

Reviewer, Solid-State Electronics, Elsevier

Reviewer, Microelectronic Engineering, Elsevier

Reviewer, Microelectronics Journal, Elsevier

Reviewer, Microelectronics Reliability, Elsevier

Reviewer, Semiconductor Science and Technology, IOP

Amod C. Umarikar

Referee, Ph.D. thesis from Sant Gadge Baba University, Amravati

Reviewer, International Journal of Power Electronics

Reviewer, The Journal of The Franklin Institute

Ram Bilas Pachori

Reviewer, Journal of Circuits and Signal Processing

Reviewer, Signal Processing Journal

Reviewer, Journal of Computational Science

Reviewer, Journal of Visual Communication and Image Representation

Reviewer, National Conference on Communications

Reviewer, IEEE Symposium on Industrial Electronics & Applications

Reviewer, International Conference on Power, Control & Embedded Systems

Reviewer, International Conference on Logic, Information, Control and Computation

Shaibal Mukherjee

Reviewer, Microelectronic Engineering, Elsevier

Reviewer, Journal of Electronic Material, Elsevier

Reviewer, Materials Science in Semiconductor Processing, Elsevier

Reviewer, Journal of Materials Science and Technology, Elsevier

Reviewer, Journal of Materials Science: Materials in Electronics, Elsevier

Reviewer, IETE Technical Review

Reviewer, Optica Applicata

Award

Shaibal Mukherjee

"Who's Who Among Students in American Universities and Colleges," 2010.

Faculty Members and their Specializations

1. Abhinav Kranti

Semiconductor Devices: Physics, Simulation and Modelling, Novel MOS Devices in Bulk/SOI Technology (Planar Single/Double Gate, Vertical FinFETs, Surrounding/Cylindrical Gate MOSFET, Junctionless MOSFET) for Low–Voltage Analog/ RF and Digital Applications, Circuit Design: Operational Transconductance Amplifier (Alleviating Gain–Bandwidth Trade-Off), 6T SRAM (Optimizing Read/ Write Performance). Bipolar Transistors: Electro-Thermal Analysis for Thermal Resistance Optimization, AlGaN/GaN High Electron Mobility Transistors for Microwave Applications.

2. Amod C. Umarikar

Power Electronics, Modelling and Simulation of Engineering Systems with Bond Graphs, Application of Power Electronics in Renewable Energy Systems.

3. Ram Bilas Pachori

Biomedical Signal Processing, Time-Frequency Analysis, Speech Processing, Signal Processing for Communications, and Signal Processing Applications.

4. Santosh Kumar Vishvakarma

Multigate MOSFET Modeling (Square and Circular Cross-Section, Double Gate (DG) MOSFET, FinFET etc.) and their Circuit Applications in Memories, Ultra Low Power Digital & Analog Circuit Design and their Technology, FPGA and Reconfigurable System Design.

5. Shaibal Mukherjee

Semiconductor Thin Film Growth; Design, Fabrication and Characterization of Opto-Electronic Devices (Lasers and Photodetectors), Nano Devices based on Si-Ge and ZnO, Broadband Anti-reflection Coating for Lasers, Surface Passivation for Detectors.

6. Vipul Singh

Organic Electronic/Photonic Devices and their Applications, Photoluminescence Spectroscopy, Thin Film Fabrication/ Characterization, Si Nano Devices, Single Electron Devices, Bulk and SOI MOSFETs, Low Frequency Noise in MOSFETs, MOSFET based Sensors, Low Power Information Processing Circuits and RF-SET.

Discipline of Mechanical Engineering

The discipline of Mechanical Engineering at IIT Indore started functioning in July 2009. Currently, it offers B. Tech. in Mechanical engineering and PhD programs in various specializations of mechanical engineering. The faculty members have specialization in Design engineering, Thermal and Fluid engineering, and Production and Industrial Engineering.

The major goal of the department is to make significant contribution through education and research in Mechanical engineering to solve the problems faced by many states and their societies by maximizing the use of local resources. To achieve this, the focus of the department would be to develop cost-effective and affordable technology (i) to exploit the renewable energy sources to ensure energy security, (ii) to ensure drinking and irrigation water security, and (iii) to ensure food security by making farming and agriculture profitable through cost-effective mechanization and automation. For this the department envisages to develop state-of-art research laboratories and conduct innovative cutting edge research in various specializations of Mechanical Engineering. The specialization specific research areas are:

1. Design Engineering: Vibration, Condition monitoring, Fracture and Fatigue, FEM, Composite materials.

2. Thermal and fluids Engineering: Heat transfer, Thermal hydraulics, Boiling and Condensation, Two-phase flow, Refrigeration and Air-conditioning, Fluid Mechanics, Computational Fluid Dynamics (CFD), Renewable energy sources, Energy Storage, Solid state storage of hydrogen, Thermodynamic and thermophysical properties of metal hydrides, Metal hydride based engineering devices.

3. Production and Industrial Engineering: Processing of advanced materials, Conventional and unconventional or advanced machining processes, Hybrid and micromachining processes, Advanced fine finishing processes, Bone drilling for biomedical applications, Manufacturing process selection, Manufacturing process parameters optimization, Modeling and simulation of manufacturing processes and systems, Computer aided manufacturing (CAM), Computer aided process planning (CAPP), Computer integrated manufacturing (CIM), Application of soft computing techniques such as fuzzy logic, neural networks, genetic algorithms, etc. for various manufacturing applications, Laser forming.

The discipline has set up four main laboratories. The details are as follows:

1. Core Courses Laboratories
   Experimental Engineering Lab
   Central Workshop *

2. Design Engineering Laboratories
   Machine Drawing Lab
   Solid Mechanics Lab *
   Kinematics and Dynamics of Machines Lab *
   Microprocessor and Automatic Control Lab *
   Design Engineering Research Lab *

3. Thermal Engineering Laboratories
   Fluid Mechanics and Machinery Lab *
   Heat Transfer Lab *
   Applied Thermodynamics Lab *
   Thermal Engineering Research Lab *

4. Production Engineering Laboratories
   Manufacturing Process Lab *
   Machining Science Lab *
   Metrology Lab *
   Production Engineering Research Lab *

** **Under development***

Academic Programmes

Degree	Number of Students
B.Tech.	74
Ph.D.	03

R&D Activities

Sponsored Research Projects: 01 (ongoing)

Experimental Investigations and Performance Optimization of High-Precision Finishing of Gears by Electro Chemical Honing (ECH) Process [PI: Prof. N. K. Jain, Co-PI: Prof. P.K. Jain (IIT Roorkee)], Sponsoring Agency: CSIR, New Delhi [Duration: May 2009 to April 2012]

Books/ Chapter in Books

Anand Parey and Naresh Tandon,

"Fault Detection of Spur Gears Using Vibration Monitoring", LAP LAMBERT Academic Publishing GmbH & Co. KG, Saarbrucken, Germany, 2010, ISBN 978-3 8383-9034-5

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

National

P. Shandilya, P. K. Jain, and N. K. Jain,

"On Wire Breakage and Microstructure in WEDC of SiCp/6061 Aluminum Metal Matrix Composites", Proc. of 3rd International and 24th AIMTDR Conference, 13-15 December, 2010, Andhra University, Visakhapatnam, India

International

A. Parey and R.B. Pachori,

"Modified Empirical Mode Decomposition for Improved Fault Diagnosis", Proc. of the 8th IFTOMM International Conference on Rotor Dynamics, Sept. 12-15, 2010, Seoul, South Korea

R. Kumar, L. Dhar, S. Jain and A.K. Asati,

“Comparison of the Performance of Multi Absorber Stand Alone Liquid Desiccant Air Conditioning Systems in Summer and Monsoon Conditions”, Proc. of ASME/ISHMT Conference, pp.1103-1109, 2010, IIT Mumbai, India

A. Das, N.K. Jain, A. Wanner, and V. Schulze,

"Effect of Coating Time and Electrode Polarity in Electro Discharge Coating of Al using TiC/Cu Green Compact Tool", Proc. of 3rd International and 24th AIMTDR Conference, 13-15 Dec. 2010, Andhra University, Visakhapatnam, India

J. P. Misra, H. Singh, N. K. Jain, and P. K. Jain,

"Effect of Electrolyte Composition and Temperature on Finishing of Spur Gears by Pulse Electrochemical Honing (PECH)", Proc. of 3rd International and 24th AIMTDR Conference, 13-15 Dec. 2010, Andhra University, Visakhapatnam, India

Journal Papers

International

S.K. Sahu, P.K. Das, and S. Bhattacharya,

"An Experimental Investigation on the Quenching of a Hot Vertical Heater by Water Injection at High Flow Rate", Nuclear Engineering and Design, 240, pp. 1558-1568, 2010

A. Parey and N. Tandon,

"Gear Tooth Root Crack Detection using Morlet Wavelet ", International Journal of Electronics and Computer Engineering, Vol 1, Issue 3, pp 293-308, 2010

P. Shandilya, N.K. Jain, and P.K. Jain,

"Experimental Studies on Wire Electric Discharge Cutting of SiCp/6061 Aluminum Metal Matrix Composites", Key Engineering Materials, 450, 173-176, 2011

J. P. Misra, N. K. Jain, P. K. Jain,

“Investigations on Precision Finishing of Helical Gears by Electro Chemical Honing (ECH) Process”, Proc. of IMechE, Part B: Journal of Engineering Manufacture, 224, 2010

Honorary Work

Neelesh Kumar Jain

Reviewer, Journal of Materials Processing Technology (Elsevier, London)

Reviewer, International Journal of Machine Tools and Manufacture (Elsevier, London)

Reviewer, Proc. IMechE, Part B: Journal of Engineering Manufacture (Professional Engineering Publishing, UK)

Reviewer, International Journal of Advanced Mfg Technology (Springer-Verlag, London)

Reviewer, International Journal of Mfg Technology and Management (Inderscience)

Reviewer, International Journal of Materials and Product Technology (Inderscience)

Reviewer, 3rd International and 24th All India Manufacturing Technology Design and Research (AIMTDR) Conference (13-15 Dec. 2010) being held at College of Engineering (A), Andhra University, Visakhapatnam-530003, India

Santosh Kumar Sahu

Member, Editorial Board, ISRN Mechanical Engineering, Hindawai Publishing Corporation, USA

Inclusion in Marquis's Who's Who for the year 2011, 28th Edition, USA

Reviewer, Nuclear Engineering and Design (Elsevier, London)

Reviewer, International Journal of Thermal Sciences (Elsevier, London)

Reviewer, Thermal Sciences (Institute of Nuclear Sciences Vincha, Serbia)

Reviewer, International Review of Chemical Engineering (Praise Worthy Prize Inc., USA)

Reviewer, Journal of Renewable and Sustainable energy (American Institute of Physics (AIP), USA)

Reviewer, Journal of Engineering, Science & Management Education, India

Reviewer, (Book) Heat and Mass Transfer, 3rd Edition, by Cengel (Mc-Graw Hill Publication)

Faculty Members and their Specializations

1. **Anil Kumar Emadabathuni**

   Solid State Storage of Hydrogen, Thermodynamic and Thermophysical Properties of Metal Hydrides, Metal Hydride based Engineering Devices, Refrigeration and Air Conditioning.

2. **Anand Parey**

   Condition Monitoring, Noise and Vibration Isolation, and Signal Processing of Mechanical Systems.

3. **Neelesh Kumar Jain**

   Advanced or Non-traditional Machining Processes, Hybrid Machining Processes, Micro-machining and Nano-finishing Processes, Manufacturing Process Selection and Process Parameters Optimization, Manufacturing Process Modeling, Computer Aided Process Planning (CAPP), CAD/CAM, and Integrated Manufacturing Systems, Application of Soft Computing Techniques for Manufacturing Processes.

4. **Ritunesh Kumar**

   Desiccant Air Conditioning Systems, Two Phase Flow, Renewable Energy, Heat Transfer, Biogas, Microbial Fuel Cell, CO_2 Capture.

5. Santosh Kumar Sahu

Thermal Engineering, Thermal Hydraulics, Multiphase Flows, Experimental Thermo-Fluid Science.

6. Satyajeet Chatterjee

Production Engineering, Surface Technology.

School of Humanities and Social Sciences

School of Humanities and Social Sciences

The School of Humanities and Social Sciences offers a corrective to a social mechanism that privileges the notion of rigor associated with paradigms of technology. The implication that technology is about the 'modern' with its positivist strains is a position that needs to be carefully evaluated. While there are undeniable benefits to such a modernist enterprise, the kind of techno immersion that permeates contemporary society needs to be seen with a certain degree of caution. While the human fascination for going beyond natural limitations has created and is creating the digital narratives of the present and the future, it is important that those narratives be seen as an integral part of that larger enterprise called 'life.'

The School at IIT Indore is at a stage where the art of asking the question that holds one to account or justify one's position within an institutional and a larger social framework is welcomed and not looked upon as a call to arms. Territorial/Disciplinary boundaries are not sacrosanct and worthy of defense at all costs but especially on the plains of the Malwa constantly seek new shapes and direction. Permeations and fluidity are perhaps indicative of an innovative and dynamic new temperament that the disciplines here seek to foster and encourage.

Currently Philosophy, Economics and English are the disciplines available at IIT Indore. Sociology, Psychology, French, German and Japanese shall be additions in the near future.

Along with B.Tech. teaching, the development of a strong graduate program is a prime area of focus for the school.

- The **Economics** discipline has the PhD program up and running. The school is preparing to moot a proposal for a two year MS programme and an MPhil programme.
- The English discipline has specializations available in Indian Writing in English, Translation studies and Black Studies. The School is in the middle of framing the academic programme for graduate work and will be calling for PhD students in the 2011-12 session.
- The Philosophy of Science and Ethics and Technology are areas where the discipline of Philosophy has a core competence and the discipline is actively seeking motivated young researchers to work in the field.

The School of Humanities and Social Sciences in association with Central Library, IIT Indore and Alliance Francaise (Bhopal) has floated a short term course to study French. There has been tremendous interest from the students and the first batch of 30 students has already started their course.

Very soon the school hopes to offer a comprehensive foreign languages study programme with German and Japanese as additions.

To examine positionality with reference to the presence of the Humanities and Social Sciences in a predominantly technological Institute, one could think of the necessity of critique. The School at IIT Indore seeks to interrogate emergent social trends that blindly privilege an exclusionist discourse. It could be exclusions based on race, gender, class and most importantly knowledge, as in who controls the production of knowledge and who has access and finally who benefits - these are crucial issues that need to be problematised and finally resolved. A beginning is what is being attempted in this School.

Courses of Study

The School of Humanities and Social Sciences offer following courses during the four years of all B Tech programmes:

Course Code	Course Name	Semester and Year
HS 107	English Literature	Autumn Semester (1st Year)
HS 157	English Language Lab	Autumn Semester (1st Year)
HS 108	Fundamentals of Economics	Spring Semester (1st Year)
HS 201 /HS 203 /HS 205	Philosophy /Psychology /Sociology	Autumn Semester (2nd Year)
HS xxx	HSS Course*	Autumn Semester (3rd Year)
HS 302	Environmental Studies: Social Aspects	Spring Semester (3rd Year)
Institute Elective	HSS Courses#	Autumn Semester (4th Year)

*** Elective courses are offered by faculty members of various disciplines.**

 # Faculty members will also offer courses as Institute Electives during the 7th semester of all B Tech programmes.

The students have to clear minimum 13.5 credits from the School of HSS with maximum of 16.5 credits if a student chooses HSS Course as Institute Elective in 4th year.

Research Activity at the School 2010

Research Project Submitted:

Name of PI: **Dr. Ruchi Sharma**

"The Impact of Patent Policy on India's Innovativeness and Technology Transfer"

Agency: Indian Council for Social Science Research, New Delhi, India

Seminars/ Conferences/Workshops

- **Amarjeet Nayak.** "Whose 'reality' is it anyway? A Study of Indian Village Life as Presented in Aravind Adiga's The White Tiger and Manoj Das's Cyclones" presented in the International Seminar on "Literatures in English in Asia and the Asia Pacific: Reconfiguring the Cultural Map" at Burdwan University, 17 – 18 February, 2010.
- **Amarjeet Nayak.** "Designing a Literature-based Syllabus: Teaching English to Undergraduate Students in an Indian Classroom" presented at the UGC-sponsored Seminar on "Methods, Materials and Technique of teaching English Language" at the Department of English, J. K. C. College, Guntur. June 24 – 25, 2010.
- **C. Bharath Kumar** Participated in a workshop on "Community, Tribes and Modernity" organized by Indian Institute of Advanced Study, Shimla, from 22 February to 4 March 2010 at North-Eastern Hill University, Shillong.
- **C. Bharath Kumar** Presented a paper titled "Citizenship and Multiculturalism" at the National Conference on **Social Harmony, Unity and Sustainable Peace** held at Rajiv Gandhi National Institute of Youth Development, Ministry of Youth Affairs & Sports, Sriperumbudur, from 24th to 26th March, 2010.
- **C. Bharath Kumar** Presented a paper "On Radical Multiculturalism" at a seminar on **Citizenship, Nationality and Globalization** organised from 16th to 18th September 2010 by Department of Comparative Dravidian Literature & Philosophy, Dravidian University, Kuppam.
- **C. Bharath Kumar** Presented a paper "The Rational vs The Social: A Study of Social Constructivism" at a National Seminar on the theme **Science, Society & Liberty** held at Department of Philosophy, Mohanlal Sukhadia University, Udaipur, 12th-13th November, 2010.
- **C. Bharath Kumar** Participated in an Advanced Workshop on "Life and Thought of Gandhi" at the Indian Institute of Advanced Study, Shimla, from 1st to 15 December 2010.
- **Joe Varghese Yeldho** participated in the workshop "Whither Left" led by Akheel Bilgrami, Prabhat Patnaik, and Slavoj Zizek, (January, 2010) Cochin.
- **Joe Varghese Yeldho** participated in the workshop "Subalternity" led by Gayatri Chakravarty Spivak, (April, 2010) School of Social Sciences, MG University, Kottayam.
- **Pritee Sharma** "Impact of Agriculture Productivity on Rural Poverty in India : A State-wise Analysis", Presented at North American Productivity workshop, held at Rice University, Houston, TX, USA during May 31 - June 2, 2010.

- **Pritee Sharma.** "Measurement of Productivity and Efficiency: Methodologies and Applications," CEP workshop organised at Indian Institute of Technology Bombay, during August 17-19, 2010.
- **Ruchi Sharma.** "Measurement of Productivity and Efficiency: Methodologies and Applications," CEP workshop organised at Indian Institute of Technology Bombay, during August 17-19, 2010.

Publications

Books

- **Nayak, Amarjeet.** Locating the Bilingual Writer: Manoj Das and the Politics of the Indian Literary Marketplace. VDM Publishing House Limited, Germany. (ISBN Number: 978-3-639-26988-8)

Articles in Edited Books

- **Nayak, Amarjeet.** "Westward Ho! Half-Baked Realities and the Fully Formed Stereotypes in The White Tiger", ed. R. K. Dhawan, Aravind Adiga's The White Tiger: A Critical Symposium, Prestige Books, New Delhi, 2010. Pp. 196-203.
- **Nayak, Amarjeet.** "An Examination of the Notion of a Nation State in Siddhartha Deb's Surface". Exploring North-East Indian Writings in English, (ed.) Indu Swami, New Delhi: Sarup Book Publishers, 2011, pp. 165-176.

Papers

- **Nayak, Amarjeet.** "Search for a Third Space: A Postcolonial Reading of the Bilingual Writer in Indian Literary Scenario, through Manoj Das as a Case Study", SKASE (Slovak Association for the Study of English) Journal of Literary Studies, Vol. 2, No. 1, 2010. pp.36-50.
- **Nayak, Amarjeet.** "Walking the Patriarchal Tightrope: A Feminist Reading of Othello", Journal of Drama Studies: An International Journal of Research on World Drama in English (including translation), Vol. 3/4 No. 2/1, 2010. pp. 39-45.
- **Nayak, Amarjeet.** "The Bilingual Writer Stripped off His Bilingual Identity in Indian Literary Scene: Manoj Das and the Politics of packaging", Rupkatha: Journal on Interdisciplinary Studies in Humanities, Vol. 2, No. 2, 2010. pp. 196-203.
- **Nayak, Amarjeet.** "Wall-E and the Environmental Apocalypse: The Perils of Thoughtless Consumerism", Jura Gentium: Journal of Philosophy of International Law and Global Politics, Summer 2010 (a Multidisciplinary Online journal from University of Florence, Italy)
- **Nayak, Amarjeet.** "The Market-driven Binary in Indian Literary Scene: Indian Writing in English Vs. Regional Language Literatures", Dialogue: A Journal Devoted to Literary Appreciation (ISSN: 0974-5556), Vol. 6, No. 1, 2010. pp. 25-33.

- **Nayak, Amarjeet.** "Freedom Movement, Partition and the Common Man in Manto's Stories", Pegasus (ISSN 0975 - 8488), Vol. 2, 2010. pp. 96-102.

Honorary Work

- **Amarjeet Nayak** is a member of the Editorial Board of Parnassus: An Innovative Journal of Literary Criticism (ISSN 0975-0266)
- **Amarjeet Nayak** contributed a weekly column "Nuggets from Nayak", in **The Shadow**, an English Daily from Jammu and Kashmir, (Jammu Edition) since February 6, 2010. (24 articles in this weekly column till July, 2010)
- **C. Bharath Kumar** authored a Unit on "Dialectical Materialism" for the **Indira Gandhi National Open University** Post-graduate programme in Philosophy, November 2010.
- **Joe Varghese Yeldho** is a member of the Editorial Board of Discourses: Interdisciplinary Journal of the Humanities and Social Sciences.

Lecture Delivered

- **C. Bharath Kumar** delivered an orientation lecture "Philosophy in the Hi-Tech world" at St. Joseph's Capuchin Philosophical College, The Nilgiris on 12th June 2010.
- **Joe Varghese Yeldho** gave a lecture on the "Critical Humanities" at IISER Trivandrum on August 14, 2010.

Membership of Professional Bodies

Amarjeet Nayak

- Indian Association for Commonwealth Literature and Language Studies
- Indian Society for Commonwealth Studies

Joe Varghese Yeldho

- Modern Languages Association of America

Pritee Sharma

- International Society of Ecological Economics
- Royal Economic Society

Research Facilities

	Software Package	Description
1.	STATA 11	**STATA** is an integrated statistical package for data analysis, data management, and graphics. Stata 11 have features such as generalized method of moments (GMM), competing-risks regression, state-space modelling, predictive margins, a Variables Manager, and more.
2.	ArcView	**ArcView** is geographic information system (GIS) software for visualizing, managing, creating, and analyzing geospatial data.
	Databases	**Description**
1	CMIE Prowess	**Prowess** is a database of over **10,000 Indian companies**. It contains detailed normalized data culled from the audited annual accounts, stock exchanges, company announcements, etc. It has over **ten years of time-series** and is updated with the latest data on a daily basis.
2.	CMIE State Analysis Services	**State Analysis Service database** is replete with data, comparisons and analysis of Indian states.
3.	World Development Indicators	**WDI** is an internationally acknowledged database of **331 indicators for 209 countries from 1960 to 2008.**

Faculty Members and their Specializations

Economics

Dr. Pritee Sharma's research interest pertains to the broad discipline of Applied Economics, with focus on (i) Agricultural Economics, (ii) WTO and Trade Concerns of Developing Countries, and (iii) Management of Environmental and Natural Resources. She has been a part of policy-oriented research projects entailing economic analysis of production and marketing of dairy, sugar, floriculture, farm forestry and non-timber forest products' sectors in India. Currently, she is concentrating on subsidies in agriculture and energy sector, climate change and its implications for rural India.

Dr. Ruchi Sharma is currently working in the area of intellectual property rights and international trade whereby the concern is to understand the impact of the patent policy on the developing countries especially India. Current research project aims at gauging the net impact of patent policy on the innovation and technology transfer to India after complying with the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs).

English

Dr. Amarjeet Nayak works in the area of Indian Writing in English, Postcolonial Theory, Translation Studies, Comparative Literature, English Language Teaching.

Dr. Joe Varghese Yeldho is interested in Urban Spatialization and its transactions with the text. He also works in Event Studies with specific reference to the narratives of the Black Civil Rights Movement in America.

Dr. Lakshmi Iyengar* works in the area of Post War American Fiction. Campus Narratives are also a special area of interest for her.

*** Visiting faculty**

Philosophy

Dr. Bharath Kumar explores the concept of Nationalism in general and the debates in India in particular. The relation of Nationalism to Liberalism, Citizenship, Globalisation etc. are some of the concerns. The attempt is also to understand Multiculturalism in the Indian context.

Dr. C. Upendra is working on Moral Philosophy (Epistemology), History of Philosophy, Philosophical Foundations of Social Sciences.

Committee

Suman Mukhopadhyay	**(School of Sciences)**
R.B. Pachori	**(School of Engineering)**
Joe Varghese Yeldho	**(School of Humanities and Social Sciences)**

Balance Sheet

INDIAN INSTITUTE OF TECHNOLOGY INDORE

CONSOLIDATED ACCOUNTS

BALANCE-SHEET AS ON 31st March 2010

(Amount in Rs.)

Sr. No.		LIABILITIES		Current Year 2009-10
1)		**Capital Fund**		
	a)	Grant utilised for Capital Expenditure		36,417,522
		Total of Sr. No. 1		**36,417,522**
2)		**Other Funds and adjustable Accounts**		
	i)	Staff/Student Funds		160,500
	ii)	Other Adjustable Accounts		934,264
3)		Unutilised Grant in Aid		212,597,662
4)		Unutilised Grant from Other Organisations		1,186,000
5)		**Other Liabilities**		
	a)	Refundable Deposit		327,733
	b)	Sundry Creditors		1,970,802
		Grand Total		**253,594,483**
Sr. No.		**ASSETS**		**Current Year 2009-10**
		Fixed Assets		
1)		Land		1
2)		Equipment & Tools		19,201,935
3)		Furniture and Fixtures		12,291,667
4)		Library Books & Journals		1,171,803
5)		Motor Vehicle		791,947
6)		Equipment/Computers		2,960,169
7)		**Investments**		
	a)	Fixed Deposits/Investment		190,000,000
	b)	Accrued Interest (2009-10)		78,082
8)		Advances Accounts		1,717,872
9)		**Receivables**		
	a)	Sundry Debtors		110,664
10)		Security Deposit		118,720
11)		Cash in hand and at Bank		25,151,623
		Grand Total		**253,594,483**

INDIAN INSTITUTE OF TECHNOLOGY INDORE

CONSOLIDATED ACCOUNTS

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31.03.2010

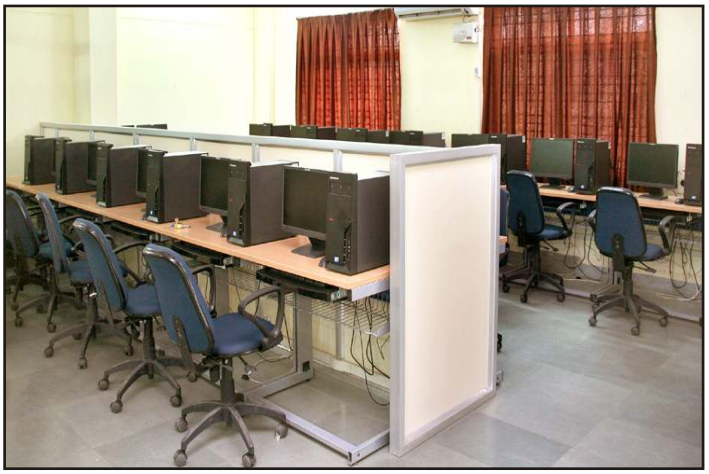
(Amount in Rs.)

Sr. No.		PARTICULARS		Current Year Up to 31.03.2010
		INCOME		
1		**Grant-in-aid from Government of India**		
	a)	Non-Plan		
		Grant-in-aid released during the year		-
	b)	Plan		
	i)	Opening Balance b/f		-
	ii)	Add: Grant-in-aid sanctioned during the year		277,800,000
	iii)	Less: Amount utilised for Capital Expenditure		39,921,924
	iv)	Less: Adjustment of Loss incurred during 2008-2009		1,972,220
	v)	Less: Plan Grant c/f for Capital Expenditure 2010-11		212,597,662
		Total Sr. No. 1		**23,308,194**
2		Fees from Students		4,559,082
3		Other Receipts from Students		3,119,411
4		Other Income & Miscellaneous Receipt		3,618
5		Amount Received from JEE		1,508,400
6		Interest on Short Term Deposit		547,260
		Grand Total		**33,045,965**
		EXPENDITURE		
1		Pay and Allowances		8,678,441
2		Other Allowances		2,645,898
		Sub Total (1&2)		**11,324,339**
3		Administrative Expenses		
	i)	General Expenses		4,076,285
	ii)	Other Miscellaneous Expenses		11,593,770
	iii)	Other Educational Expenses		55,407
		Sub Total (3)		**15,725,462**
4		Departmental Expenses		
	i)	DOC/Consumables		2,186,308
	ii)	DOC/Other Expenditure		117,894
	iii)	Maintenance and Repairs to Equipment and Tools		1,144,663
		Sub Total (4)		**3,448,865**
5		Students Gymkhana Expenditure		233,077
6		Scholarship - UG		243,303
7		Mess Charges		1,771,580
8		Health Facilities		45,496
9		Water and Electricity Charges		253,843
		Grand Total		**33,045,965**

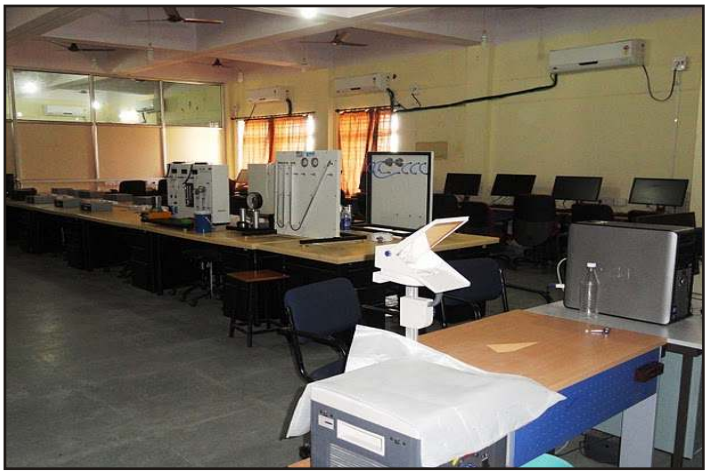
Mathematics Laboratory

Physics Laboratory

Chemistry Laboratory



Computer Science & Engineering Laboratory



Mechanical Engineering Laboratory

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