INTRODUCTION

The Department was established in 1995. By March 2007, the Department has 13 faculty members, 6 supporting staff members, 203 students in the BTech programme, 81 students in the M Tech programme and 20 students in the PhD programme. Till date degrees have been awarded to 271 BTech students, 123 M Tech students and 1 PhD student. In the Eighth Convocation of the Institute, 38 students were awarded BTech degree and 21 students were awarded the M Tech degree in Computer Science and Engineering.

ACTIVITIES

The Department has provided individual workspace with a high-end PC to each and every students of CSE for working 24X7X365. The Department arranged for summer training of the second and third year BTech students at industries and educational institutions all over the country and abroad.

Computer Science and Engineering Association (a student organization) has conducted a series of lectures and organized workshops on different topics during this period. Some students of the Department took part in the ACM-ICPC contest at IIT Kanpur and Coimbatore in 2006 and received certificate of achievement with honourable mention. A Linux User Group is active and conducting several workshops and seminar to promote Linux throughout the Institute. A Solaris User Group is recently formed in same direction. The Department has also initiated an open source project for development of a Network Simulator named as GNS.

During the summer vacation of 2006, the Department provided summer training to nearly thirty students of different institutions of India. The faculty members of the Department involve themselves in different sponsored project and consultancy works.

A new M Tech programme in Computer Science and Engineering with specialization in Information Security has been started in this year.

The Department has organised the 8th International Conference on Distributed Computing and Networking (ICDCN 2006) during 27-30 December 2006. Participants from USA, Canada, UK, Korea, China, Iran, Israel, UAE, Greece, France, Mexico, Italy, Ireland, Germany, etc. took part in ICDCN 2006.

TEACHING PROGRAMME

Apart from the regular courses a large number of specially designed courses, keeping in view the current industry trends, were offered to the students by the faculty of the Department during this period. Students were offered courses in Wireless Networks, Advanced Operating Systems, Topics in Artificial Intelligence, Speech Recognition, Cryptography, Optimization, Intelligent Systems and Interfaces, Distributed Systems, Parallel Algorithms and Mobile Robotics in addition to a set of courses in core areas.

Innovative approaches to teaching traditional courses such as Operating Systems and Databases were also adopted. For instance, the students were taught how to study and modify an Operating System using the Nachos instructional software, use of Network Simulators in network course. They were also trained extensively in using Oracle RDBMS. Hands on experience given to students on RATIONAL suites by personnel from industry. All of these have had a very positive outcome:

FACILITIES

The Department currently has a laboratory with a Sun Ultra Sparc II Server. The Sun Workshop University edition 5.0 compilers are installed which includes Fortran77, Fortran90, C, C++, IPE and dbx. Apart from this, the Department has Xen based 8 Nodes server farm with 2 TB SAN storage and SDLT storage library running with 64-bit Red Hat Enterprise Linux 4 (update 3), several standalone Pentium Servers, and HP PA-RISC server.

Many software packages and environments are available on the servers including all Oracle software, all Microsoft software, all Sun Microsystems software, Nachos OS package, PHIGS graphics library, C++ compilers, Network Simulator-2, GloMoSim, RATIONAL Suites, NQI, Delphi Studio, Visual Prolog and Lisp interpreters. Department also maintains repository for all popular Linux distributions viz Fedora, Debian, Ubuntu, etc.

The Department hardware laboratory is equipped with the following equipment: 136 Channel Colour Logic Analyzer with Pattern Generator Option, 34 Channel Colour Logic Analyzer with Pattern Generator Option, Universal Robotics Training Kit with All Mechanical Hardware, 15 MHz Function/Arbitrary Waveform Generator, Triple output dc Power Supply With GPIB/RS, 2 channel 60 MHz MegaZoom Oscilloscope, Basis 3.5 digit handheld Multimeter, Data Acquisition/ Switch Unit, Wireless Transmitter/Receiver pair, Sampling and reconstruction trainer, TDM pulse code
modulator/transmitter, TDM pulse code demodulator/receiver, Data formatting and carrier modulation transmitter trainer, Carrier demodulation and data reformatting receiver trainer and 8085 Microprocessor Trainer kit. The Department has recently procured TINA software package for hardware laboratory.

Various other specialized systems like LEGO Robotic Invention System, Ultimate Builder Set and Ultimate Accessory Set, Bluetooth Application Training and Application Toolkit, Oracle Academic Initiative (OAI Membership licence), Microsoft Academic Alliance are also available.

The Department has an exclusive library cum reading room for all members of the Department which is equipped with more than 3000 books/CDs and journals like IEEE, ACM, etc.

**SPONSORED PROJECTS/CONSULTANCIES**

**Continuing Research Projects**

MoU with CDAC Kolkata for the ‘Creation of a Speech Corpus for the Manipuri Language’, March 2006 - December 2006

**Title:** Seamless Handover Issues in Next Generation Wireless Networks  
**Sponsoring Agency:** National Institute of Information and Communication Technology, Japan  
**Principal Investigator:** Prof. S. Nandi  
**Co-Investigator:** Prof. G. Barua and Dr. R. Bhattacharjee

**Title:** Information Security Education and Awareness  
**Sponsoring Agency:** Department of Information Technology, Govt. of India  
**Principal Investigator:** Prof. S. Nandi  
**Co-Investigator:** Dr. G Sajith

**Consultancies**

**Title:** ERP Consultancy for GRIDCO & OPTCL  
**Sponsoring Agency:** Orissa Power Transmission Corporation Limited, India  
**Principal Investigators:** Prof. G. Barua and Prof. S. Nandi

**Title:** Assam State Wide Area Network (ASWAN) Project  
**Sponsoring Agency:** Govt. of Assam  
**Principal Investigator:** Prof. G. Barua

**Title:** School Computerization Project  
**Sponsoring Agency:** Assam Sarba Sikhsa Abhijan, Govt. of Assam  
**Principal Investigator:** Prof. G. Barua

**Title:** IT Roadmap of NEEPCCO  
**Sponsoring Agency:** North East Power Corporation  
**Principal Investigator:** Prof. G. Barua

**PUBLICATIONS**

**International Journal**

P. Viswanath, M.N. Murty and S. Bhatnagar  

H.S. Paul, A. Gupta and A. Sharma  

Z. Li, S. Nandi and A.K. Gupta  

J. Xie, A. Das, S. Nandi and A. Gupta  

**Conference (International)**

B.K. Srivastava, G. Khataniar and D. Goswami  
‘Performance enhancement in hierarchical peer to peer systems’, COMMunication Systems softWAr e and middlewaRE, January 2007

A. Roy Chowdhury, M.V.S. Deekshitulu and S. Nandi  

A. Roy Chowdhury, S. Tripathy and S. Nandi  
‘Securing wireless sensor networks against spurious injections’, COMMunication Systems softWAr e and middlewaRE, January 2007

S. Tripathy, S. Nandi and A. Mitra  

B. Dey, Akhil S., S. Nandi  

A. Bhattacharjee and S. Nandi  
‘Class based packet scheduling and service curve’, 14th International Conference on Advanced Computing and Communications, December 2006
S. Tripathy and S. Nandi
'Efficient remote user authentication and key establishment for multi-server environment', 3rd International Conference on Distributed Computing & Internet Technology, December 2006

B. Dey and S. Nandi
'Distributed location and lifetime biased clustering for large scale wireless sensor network', International Conference on Distributed Computing and Networking, December 2006

B. Dey and S. Nandi
'Localized intra cluster chaining for energy efficient data gathering in large scale wireless sensor network', 2nd International Conference on Wireless Communications and Sensor Networks, December 2006

V. Kone and S. Nandi
'QoS constrained adaptive routing protocol for mobile ad hoc networks', 9th International Conference on Information Technology, December 2006

S. Tripathy, S. Nandi and A. Roy Chowdhury
'CARMA: cellular automata-based remote mutual authentication', 9th International Conference on Information Technology, December 2006

S. Tripathy and S. Nandi
'RPAKE: RCA based password authenticated key-exchange scheme', IEEE INDICON 2006, September 2006

S. Tripathy and S. Nandi
'Robust mutual authentication for low cost RFID systems', 4th International IEEE Conference on Industrial Informatics, INDIN'06, August 2006

S. Parmar, S. Nandi and A. Roy Chowdhury

S. Parmar, S. Nandi and A. Roy Chowdhury

S. Reddy and S. Nandi
'Modular approach for anomaly based NIDS', Modelling and Optimization in Mobile, Ad Hoc and Wireless Networks, 4th International Symposium, April 2006

A. Roy Chowdhury and S. Nandi
'Survey of broadcasting techniques for dense wireless computing devices', Wireless and Optical Communications Networks, 2006 IFIP International Conference, April 2006

A. Roy Chowdhury and S. Nandi
'Received signal based minimization of broadcast storm in multi-hop MANET', Wireless and Optical Communications Networks, 2006 IFIP International Conference, April 2006

N. Sarma and S. Nandi
'QoS support in mobile ad hoc networks', 3rd International Conference on Wireless and Optical Communications Networks, 2006 IFIP International Conference, April 2006

S. Tripathy and S. Nandi
'Cryptosystem for low power devices', 4th International Symposium on Turbo Codes in connection with 6th International ITC-Conference on Source and Channel Coding, April 2006

P. Mittal, G. Barua, S. Narang

P. Bhaduri and S. Ramesh

P. Viswanath and R. Pinkesh

P. Viswanath, K. Jayasurya

P. Mitra and C. Chaudhuri
'Efficient algorithm for the extraction of association rules in data mining', ICCSA 2006, Glasgow, UK, LNCS 3981, pp. 1-10

P. Mitra and N. Amarnadh
'Upper bound on dilation of triangulations of cyclic polygons', ICCSA 2006, Glasgow, UK, LNCS 3980, pp. 1-9

V. Suresh Babu and P. Viswanath
Conferences (National)

G. Barua

P. Bhaduri

P. Mitra and N. Das
‘Distributed join algorithm on expander networks’, ReTIS 2006, pp. 9-12

R. Singarapu and S. Nandi

B. Dey, V.K. Yerrabelli and S. Nandi

G. Chauhan and S. Nandi

B. Dey, G. Mazumdar and S. Nandi

S. Pathare, P. Sawant and S. Nandi

CONFERENCES/WORKSHOPS/SYMPOSIA ATTENDED

P. Bhaduri

P. Bhaduri
GM R&D Workshop on Next Generation Design and Verification Methodologies for Distributed Embedded Control Systems, Bangalore, 5-6 January 2007

P. Viswanath
18th Intl. Conf. on Pattern Recognition (ICPR-06), Hong Kong, IEEE Computer Society

P. Viswanath
First International Conference on Signal and Image Processing (ICSIP-06), IEEE Bangalore Section

P. Mitra
International Conference on Computational Science and Its Applications 2006, Glasgow, UK

P. Mitra
National Conf. on Recent Trends in Information Systems 2006, IEEE Calcutta Section

S. Nandi

INVITED TALKS

G. Barua

G. Barua
Invited Talk on Information Technology at TIFAC-Core Meet, Dibrugarh University, December 2006.

P. Bhaduri

P. Mitra

S. Nandi

S. Nandi

SEMINARS/WORKSHOPS/CONFERENCES ORGANIZED

P. Bhaduri
Formal Methods Update 2006 Workshop, 3-6 July 2006

P. Mitra
QIP Short Term Course, ‘Application Specific Algorithms: Design and Analysis’, 4-8 July 2006

The Department organised the 8th International Conference on Distributed Computing and Networking, 27-30
December 2006. Participants from USA, Canada, UK, Korea, China, Iran, Israel, UAE, Greece, France, Mexico, Italy, Ireland, Germany, etc. took part in it.

VISITORS

The following scientists/scholars of national and international repute visited the Department during the year:

Prof. Allain Mille, Claude Bernard Lyon 1 University, France

Prof. Sajal K. Das, University Distinguished Scholar Professor, Director, CreWMaN, CSE Department, the University of Texas at Arlington, USA

Prof. Ashish Mukherjee, Canada University

Mr. Sourav Mukhopadhyay, National University of Singapore

Prof. A. Chakrabarty, Bengal Science & Engineering University, Howrah, West Bengal

Dr. P.V. Bala Subramanyam, Jt. Director, CPRI, Bangalore

Dr. Jayanta Biswas, Research Associate, CEDT, Indian Institute of Science Bangalore

Dr. Shrisha Rao, Assistant Professor, Indian Institute of Information Technology, Bangalore

Prof. Deepankar Medhi, University of Missouri-Kansas City, USA

Prof. Venkatesh Raman, Indian Institute of Mathematical Sciences, Chennai

Mr. Arjun Malhotra, CEO and Chairman of the Board, Headstrong

VISITED ABROAD

Prof. S. Nandi attended IBM System X and AMD Summit at Ho Chi Minh City, Vietnam from 11-13 September 2006.

COLLABORATION

The Department has collaboration with different industries/institutes like Microsoft Academic Alliance, IBM, ORACLE, Redhat, Department of Information Technology and Philips Research Laboratories Bangalore, etc.

OTHER ACTIVITIES

Philips Research Laboratories, Bangalore has initiated MTech Fellowship and Doctoral Fellowships for MTech and PhD students of the Department. Two MTech and one PhD students are availing now.
S. Nandi
PhD (IIT Kharagpur)
Professor and Head
Areas of Interest: Networks (QoS, Wireless networks), Computer and Network Security, VLSI

H.S. Paul
PhD (IIT Kharagpur)
Assistant Professor
Areas of Interest: Distributed Systems, Distributed Algorithms

S.V. Rao
PhD (IIT Kanpur)
Associate Professor
Areas of Interest: Computational Geometry, Pattern Recognition, Image Processing

G. Sajith
PhD (IIT Kanpur)
Associate Professor
Areas of Interest: Parallel and Distributed Computing

K.S. Sudeep (from September 2006)
Senior Lecturer
Areas of Interest: Graph Theory, Algorithms, Combinatorics

P. Viswanath
PhD (IISc Bangalore)
Assistant Professor
Areas of Interest: Pattern Recognition, Data Mining, Randomized Algorithms
DEPARTMENT OF DESIGN

INTRODUCTION

The Department of Design was set up with a vision to enkindle in some of the brightest technical minds of the country a passion for innovation in technology driven by a firm understanding, appreciation and celebration of design.

The fourth batch of students, has completed its BDes programme successfully. All these students have been offered placement in various organizations across the country. Many of the graduating students have opted for higher studies in different universities abroad. The Department continues to receive favourable support from industries in terms of internship and training for its students.

ACADEMIC PROGRAMME

The Department offers a BDes Degree—the only undergraduate level degree of its kind in an Indian Institute of Technology—and a PhD degree in design. The focus of the BDes programme is on the study, invention, and creative use of technologies to create effective, usable and aesthetically pleasing designs. It aims at interdisciplinary research in engineering, design, behavioural and social sciences and to understand the impact of technology on individuals, groups and organisations. The Department envisions to produce successful graduates who will be capable of leading the changing scenarios of today and tomorrow through thought, innovation and values.

A new postgraduate programme in Design leading to the degree of MDes will start from the new academic year 2007-2008.

STUDENT INTAKE

The intake in 2006-2007 academic session is as follows:
BDes: 24

FACULTY STRENGTH

The Department has a faculty strength of 10.
Professor: 2
Associate Professor: 3
Assistant Professor: 4
Senior Lecturer: 1

FACILITIES

The following laboratories/studios in the Department were set up and reorganized:

Graphic Studio
Animation Studio
Presentation Room
Exhibition and Display Room
Communication Design Studio
New Media Laboratory
Bamboo Studio
Drawing and Digital Arts Studio

SPONSORED RESEARCH

Consultancy Project

Title: Product Planning Initiative for Brass and Bellmetal
Craft of Hajo Cluster Assam
Investigator: Mr. R.M. Punekar
Sponsoring Agency: National Resource for Cluster Development, NISIET, Hyderabad

Title: Visual Design for www.yo4ya.com
Investigator: Mr. M. Rane
Sponsoring Agency: www.yo4ya.com

Title: NEDFi-IITG Initiatives for Design of Systems for Income Generation Activities
Sub Area
i) Vending cart based on ‘Dipbahan’ implemented
ii) Attachment for cycle for transporting agricultural/horticultural produce in rural area
iii) Design development of knives and shears in Knogryl village in Meghalaya using craft skills
Investigator: Mr. A.K. Das
Sponsoring Agency: NEDFi, Guwahati

Title: KVIC Technical back up unit Interface
Subgroup 2
Cane and bamboo furniture for rural schools and Primary Health Centres
Group Co-ordinator: Mr. R.M. Punekar
Sponsoring Agency: KVIC, Mumbai

Subgroup 3
a) Design and Development of a semiautomatic loin loom for NE region
b) Vegetable dyeing of silk and application of vegetable dyes for tie and dye and batik in silk
Group Co-coordinators: Mr. A.K. Das and Dr. D. Chakrabarti

Sponsoring Agency: KVIC, Mumbai

Title: Design and fabrication of water iron removal unit in fibreglass

Investigators: Mr. A.K. Das and Dr. M. Purkait

Sponsoring Agency: DRDO, Tezpur

Title: Design and development of water purification unit

Investigators: Mr. A.K. Das, Dr. M. Purkait, Dr. B. Mandal

Sponsoring Agency: DRDO, Tezpur

**PUBLICATIONS**

**Conference Proceedings**

D. Chakrabarti

‘Role of ergonomics in design development: pleasure beyond usability’, Proceedings of the XVII Annual Conference of Physiological Society of India, Kolkata, 8-10 December 2006

J. Nielsen, J. Kumar and P. Yammiyavar


A.K. Das

‘Tools and methods for competitive engineering’, TMCE-06, TU Delft Netherlands and University of Ljubljana, Slovenia, April 2006

**Book**

D. Chakrabarti and A. Das (Eds.)


**PAPERS PRESENTED IN CONFERENCES/WORKSHOPS/SYMPOSIA**

P. Yammiyavar


U. Barua

‘Traditional design and digital compatibility: a look into some ethnic artifacts’, International Conference organized by NORDIK Society of Norway, Bergen University, Norway, 22-24 September 2006

M. Majhi


P. Yammiyavar and J. Kumar


P. Yammiyavar and K.M. Goel


Rajinder, Vikas and P. Yammiyavar


P. Yammiyavar, S. Nainwal and S. Kunhimohammed


J. Kumar and P. Yammiyavar

‘Impact of user’s aspirations on choice of interface: towards validating Indian Psychology Perspective’, Indo-Danish HCI Research Symposium, IIT Guwahati, 14-15 May 2006

K. Gupta and P. Yammiyavar


T. Shah and P. Yammiyavar


A. Singh, S.R.M. Prasanna, P. Yammiyavar, V. Batra and P. Dixit


P. Dixit, V. Batra, P. Yammiyavar, L. Sitorus and J. Buur

‘A cross cultural study in user interface modeling of refrigeration system mechanics’, Indo-Danish HCI Research Symposium, IIT Guwahati, 14-15 May 2006

**CONFERENCES/WORKSHOPS/SYMPOSIA ATTENDED**

M. Rane


R.M. Punekar

National Graphic Design Education Meet, International ICOGRADA Design Week, Industrial Design Centre, IIT Bombay, 5-6 February 2007

U. Barua and M. Rane


Nine students of the Department were members of the design workshop titled ‘Design Local’ at International ICOGRADA Design Week, Industrial Design Centre, IIT Bombay, 5-6 February 2007.
M. Madhukaillya
Workshop on Digital Image Processing and Selected Topics in Film and Media Theory, Werkleitz Gesellschaft–Centre for Media Art Saxony–Anhalt, Germany, April-May 2006.

M. Madhukaillya
Site Specific Multimedia Workshop and Presentation, Khoj International Artist Workshop, Kolkata.

D. Chakrabarti
Conducted a workshop on ergonomics to MDes students of IIT Kanpur, 5-10 November 2006.

D. Chakrabarti
Conducted a workshop on ergonomics at Bongaigaon Refinery and Petrochemicals Limited, 24-25 August 2006.

A.K. Das

INVITED LECTURES OF FACULTY

P. Yammiyavar
‘Catalyzing usability and design in India’, ORACLE India, Bangalore, 14 November 2006

A. Shinde
Presentation on Export Oriented Products Through Practical Experience, Meghalaya, September 2006

D. Chakrabarti
‘Dental Ergonomics’, Clinical Society, Mahatma Gandhi Post Graduate Institute of Dental Sciences, Pondicherry, 25 October 2006

M. Rane
Visiting Faculty to Indus Valley School of Art and Architecture, Karachi, Pakistan in November 2006.

SEMINARS/WORKSHOPS/CONFERENCES ORGANIZED

Typography Workshop
Prof. Wolfgang Weingart, Internationally renowned typographer and retired Professor from the Basel School of Design, Switzerland, visited the Department and conducted a two week workshop on Basic Typography for the second year students of Design during 16-27 October 2006. This workshop was co-ordinated by Mr. M. Rane.

Indo-Danish HCI Research Symposium
The Indo-Danish HCI Research Symposium was organised in collaboration with the School of Informatics, Copenhagen Business School, Copenhagen, Denmark and Chinese Academy of Sciences, Beijing on 14-15 May 2006. The focus of the Symposium was on cross cultural issues in human-computer interaction covering usability, interface design, interaction design, device design, human factors, psychology, sociology, affective computing, information architecture and e-learning amongst other issues. Forty delegates from China, US, Denmark and India attended the event. A total of thirty-four peer-reviewed papers were presented in the two-day event. From the Department there were nine papers and five poster presentations of students. The Convener of the symposium was Prof. P. Yammiyavar.

EXCHANGE VISITS

J. Kumar, a PhD scholar of the Department was deputed to Copenhagen Business School, Denmark for six weeks to undergo training and collect data for his research work, under the Indo-Danish project.

P. Dixit was deputed to Mads Clausen Institute for Product Innovation and Danfoss Systems, Denmark to study user centered design practice in manufacturing industry for a period of ten weeks.

SHORT-TERM COURSES

Title: Training of craftspersons of M/S Barak Bamboo and Cane Pvt Ltd on furniture making using bamboo tiles
Programme Co-ordinator: A. Shinde
Sponsoring Agency: NMBA, TIFAC, New Delhi
Title: Human interface in design and engineering: industrial design perspective encountering various human factors
Date: 6-10 March 2006
Programme Co-ordinator: D. Chakrabarti
Title: Graphic design elements for effective communication
Date: 13-17 November 2006
Programme Co-ordinator: U. Barua
Title: Industrial design considerations in design of plastic products
Date: 11-15 September 2006
Programme Co-ordinator: R.M. Punekar

M. Rane has developed teaching material for the coursework Design Analysis and Critics undertaken between March 2006 - March 2007 as part of the QIP Cell activities.

OTHER DESIGN RELATED ACTIVITIES

U. Barua held a solo painting exhibition of his works at the prestigious Jehangir Art Gallery, Mumbai from 1-7 June 2006. The exhibition was inaugurated by award winning film maker Padmashri Jahnju Barua.

U. Barua was invited to submit his painting for an international painting exhibition exhibited as a group show organized by Indian Artist Network at World Trade Centre,
Sudirman, Jakarta, Indonesia from 15-27 August 2006. The show was inaugurated by Indian Ambassador H. E. Navrekha Sharma.

A. Shinde was nominated as member of the Advisory and Monitoring Committee of National Mission on Bamboo Applications, TIFAC, New Delhi, to review their sponsored project titled: 'Technology Development Assistance to Barak Bamboo and Cane Pvt Ltd, Silchar; M/s Basera Building Centre (BBC), Bhopal; M/s Marboh Bamboo Products Pvt. Ltd, Barapani, East Khasi Hills, Meghalaya; Vighnaraj Bamboo Products Pvt. Ltd. Guwahati.

A. Shinde's entry for the design business proposition was short listed for India's Creative future – Creative Future School being organized at the Indian Institute of Management Bangalore in August 2006 by the British Council.

D. Chakrabarti was invited as external examiner for MSc Physiology Ergonomics special paper practical at Presidency College, Calcutta University, July 2006.

R.M. Punekar organized two training programmes of ten day duration on new lighting fixtures and furniture in bamboo for crafts persons from Kharighuli, Guwahati and Mangaldoi in November and December 2006, as a part of the on going KVIC-IITG TBU project under sub-group Craft and Technology.

A.K. Das undertook design and development of human powered vehicles for multi purpose applications in the context of developing nation.

VISITORS

Mr. Jayant Murthy, Co-founder, Kaizen India, Ahmedabad
Mr. Jasjit Singh Rana, Industrial Designer, Maruti Udyog, New Delhi
Prof. Anirudha Joshi, IDC, IIT Bombay
Prof. Sudarshan Khanna, NID, Ahmedabad
Shri Srivastava, Secretary, NEC, Guwahati

FACULTY MEMBERS

U. Barua
MFA (Visva Bharati University)
Assistant Professor
Areas of Interest: Communication Design

D. Chakrabarti
PhD (Calcutta University)
Associate Professor
Areas of Interest: Ergonomics

A.K. Das
B.Tech (Textile), MBA
MDes (IIT Bombay)
Associate Professor
Areas of Interest: Industrial Design

M. Madhukailaya
BSc, PGDP Communication Design in Video and Film (NID, Ahmedabad)
Senior Lecturer
Areas of Interest: Communication Design

M. Majhi
MDes (IIT Bombay)
Assistant Professor
Areas of Interest: Communication Design (Animation)

R.M. Punekar
MDes (IIT Bombay)
Associate Professor and Head
Areas of Interest: Industrial Design

K. Ramachandran
BE, DIIT (IIT Bombay)
Professor
Areas of Interest: Industrial Design

M. Rane
BFA (Applied Art)
MDes (IIT Bombay)
Assistant Professor
Areas of Interest: Communication Design

A. Shinde
MDes (IIT Delhi)
Assistant professor
Areas of Interest: Industrial Design

P. Yammiyavar
MDes (IIT Bombay)
PhD (IISc Bangalore)
Professor
Areas of Interest: Industrial Design

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INTRODUCTION

The primary objective of the Department is to impart education and training at the undergraduate, postgraduate and research levels with special emphasis on design aspects of electronic systems. The emphasis on the design aspects implies that, while the basic theoretical and analytical skills of the students are adequately developed, the programmes are oriented in such a way that students acquire an overall design perspective and aptitude.

ACADEMIC ACTIVITIES

The Department offers the following programmes:

BTech in Electronics and Communication Engineering
MTech in a) Digital Signal Processing and b) VLSI
PhD in various areas related to the field of Electronics and Communication Engineering.

STUDENT INTAKE

MTech (2006 batch): 44
BTech (2006 batch): 48
PhD: (2006-2007): 10
Total continuing students:

FACULTY STRENGTH

The faculty strength during this period was 18.

Professor: 3
Associate Professor: 6
Assistant Professor: 9

MAJOR EQUIPMENT AND FACILITIES

Various laboratories in the Department are Electronic Circuits laboratory, Control and Instrumentation laboratory, Microprocessor and Embedded Systems laboratory, High Frequency laboratory, DSP and Communication laboratory, VLSI laboratory, Image and Signal Processing laboratory, Medical Electronics and Speech Processing laboratory and a System Simulation laboratory. The laboratories are equipped with the state-of-the-art hardware from HP, Agilent, Tektronix, Fluke, Teac Corporation, Scientech, Aplab, etc. and software from Zuken, Genesys, Mentor Graphics, Microsim, Mathworks, Hyperception, Xilinx, Altera, Zeland SW Inc., Analog Devices, Texas Instruments, etc. The hardware consists of Vector Network Analyser (6 GHz), Spectrum Analyzer (1.8 GHz), Synthesized RF Generators, Digital Storage Oscilloscopes (150-500 MHz), Mixed signal Oscilloscopes (100 MHz), Logic Analyzers (16 and 34+ channels), Arbitrary Waveform generators (80 MHz), Pulse generators (150 MHz), Bench-Top DMM (6.5 Digit), Timer/Counter (10 Digits, 5 GHz), Programmable Power Supplies, LCR Meters, Digital Modulation Signal Generators, PCM Data Recorder, Feedback Control Instruments, etc. The Department has also obtained a few numbers of FPGA development kits from Xilinx and Altera Inc. Some of the available software are Matlab 7.3, HP EEsof, IE3D Electromagnetic Simulation Software from Zeland Software Inc., Analog Device’s Crosscore Visual DSP++, Texas Instruments Code Composer Studio, MicroSim Design Lab, Hypersignal Graphical DSP development software, Elanix SystemView, Agilent VEE Pro, Tektronix’s Wavstar, Cadstar for PCB Design, etc. The recently procured high-end software tools and packages for VLSI design and synthesis include Cadence Bundle, Synopsys Tools Bundle, Magma Standard University, CoWare Tools, Mentor Tools Bundle, Xilinx ISE Foundation Software and XUP Spartan - 3E Starter Kits, Altera Quartus design environment along with Nios-II and other IP packages.

RESEARCH AND DEVELOPMENT ACTIVITIES

The Department has setup a VLSI laboratory under the project entitled ‘Special manpower development programme in VLSI design and related software (SMDP-II)’ sponsored by MIT, Govt. of India.

The Department has set up a sophisticated digital signal processing laboratory with the state-of-the-art equipment from Analog Devices and Texas Instruments, and Real Time DSP Software from Hyperception Inc. The Department has also received a donation from Analog Devices Inc. consisting of hardware kits and Visual DSP software.

The RF/Microwave laboratory is well equipped with sufficient number of Microwave Benches, Antennas, Vector Network Analyzer (6 GHz), RF Power meter, 10 MHz to 18 GHz Power Sensor, 100 KHz to 3 GHz RF Amplifier, etc.

A Chemical-free PCB Prototyping System LPKF PROTOTMAT C-60 from M/s. LPKF Laser and Electronics AG Germany has been set up for in-house development of printed circuit boards for circuits and working modules.

An Industrial Electronics Laboratory based around Super Small Programmable Logic Controller, Thyristorized DC drive Controller, DC Drive and Variacs is also operational.
The Departmental System Simulation Laboratory is equipped with up-to-date PCs and various computational and simulation software like Matlab 7.3, Borland C++, FPGA Advantage from Mentor Graphics, Xilinx's ISE foundation, Zeland's IE3D EM simulation SW, Altera's Quartus webpack, Electronics Workbench, MicroSim Design Lab (EDA software), Cadstar PCB Design, Elanix's SystemView, HP-Eesof, Hypersignal and Operating System such as HP Unix, Sun Solaris, Redhat Enterprise Linux, Microsoft windows 2003 and windows 2000/XP.

SPONSORED PROJECTS

Title: Study of source features for speech synthesis and speaker recognition
Funding: Indo-UK joint research project under UK-INDIA Education and Research Initiative (UKIERI) Standard Awards between IIT Guwahati, IIT Hyderabad and CSTR, University of Edinburgh, UK
Investigators: Dr. S.R.M. Prasanna (IIT Guwahati), Prof. B. Yegnanarayana (IIT Hyderabad) and Dr. Simon King (CSTR, UK)
Duration: 4 years

Title: Modelling, simulation, and prototype development of continuous-phase single/multiple cycle modulation scheme applicability for high data rate long range low power wireless communication system
Consultants: Prof. A. Mahanta, Prof. A.K. Gogoi, Prof. P.K. Bora and Dr. P.R. Sahu
Sponsoring Agency: Motorola India Pvt. Ltd.
Duration: 18 months
Amount: US $22,000

Title: Metamaterials engineered microwave devices: size miniaturization and performance enhancement of microwave devices using metamaterials based sub-wavelength resonators and components
Investigator: Dr. K.R. Singh
Sponsoring Agency: DST, Government of India
Duration: 3 years
Amount: Rs. 8.5 lakh

Title: Study and development of sensor and trigger mechanism for protection against lightning
Chief Investigator: Dr. S. Majhi
Co-investigator: Prof. A.K. Gogoi, Dr. H.B. Nemade
Sponsoring Agency: Army Technical Board, Govt. of India
Duration: 18 months
Amount: Rs. 30 lakh

Title: Special manpower development programme in VLSI design and related software (SMDP-II)
Sponsoring Agency: MIT, Govt. of India
Principal Coordinator: Dr. S. Dandapat
Project Coordinator: Dr. Roy Paily P.
Duration: 5 years

Title: Keyword spotting in continuous speech
Funding: Indo-Swiss joint research project between IIT Guwahati, IIT Madras and IDIAP Switzerland sanctioned by DST, New Delhi
Investigators: Dr. S.R.M. Prasanna, Prof. B. Yegnanarayana and Prof. Hynek Hermansky
Title: Design and development of an Electronic Patient Record (EPR) system
Sponsoring Agency: MHRD
Chief Investigator: Dr. S. Dandapat
Co-investigator: Dr. P.K. Bora
Duration: 3 years 6 months
Amount Sanctioned: Rs. 5 lakh
Status: Completed

Title: Real time control of stiff systems
Sponsoring Agency: MHRD
Principal Investigator: Dr. S. Majhi
Co-investigator: Dr. C. Mahanta
Duration: 3 years 6 months
Amount Sanctioned: Rs. 6 lakh
Status: Completed

Title: Wavelength division multiplexed (WDM) fiber optic link
Sponsoring Agency: MHRD
Year: 2001
Chief Investigator: Dr. A.K. Gogoi
Amount Sanctioned: Rs. 7 lakh
Status: Completed

Title: New techniques for image-compression and motion compensation
Sponsoring Agency: MHRD
Chief Investigator: Dr. J.S. Sahambi
Amount Sanctioned: Rs. 6 lakh
Status: Completed

Title: Advanced DSP in biomedical engineering
Sponsoring Agency: MHRD
Chief Investigator: Dr. J.S. Sahambi
Amount Sanctioned: Rs. 6 lakh
Status: Completed

PUBLICATIONS

Journal Papers

S. Majhi

K.S. Rao and B. Yegnanarayana
'Prosody modification using instants of significant excitation', *IEEE Transactions on Speech and Audio Processing*, pp. 972-980, May 2006
P.R. Sahu and A.K. Chaturvedi
'Performance analysis of a pre-detection EGC receiver in exponentially correlated Nakagami-m fading channels for non-coherent binary modulations', IEEE Trans. on Wireless Commun, 5 (7), pp. 1634-38

S. Ramamohan and S. Dandapat

P. Vinod and P.K. Bora

P.K. Padhy and S. Majhi

M.K. Bhuyan, D. Ghosh and P.K. Bora

R.S. Kshetrimayum and L. Zhu

P.K. Padhy and S. Majhi

S.R.M. Prasanna, C.S. Gupta and B. Yegnanarayana
'Extraction of speaker-specific excitation information from linear prediction residual of speech', Journal of Speech Communication, 48 (10), pp. 1243-1261, October 2006

A. Mitra
'Mobile communication: the health and socio-economic issues', Breakthrough, 12 (1), pp. 16-27, October 2006

H.S. Dhillon and A. Mitra

A. Mitra, Y.V.S. Rao and S.R.M. Prasanna

S.R.M. Prasanna, Y.V.S. Rao and A. Mitra

A. Mitra

L.N. Sharma, S. Das and A.K. Gogoi
'Laboratory experiments through low bit rate Internet link', International Journal of Online Engineering (IJOE: ISSN: 1861-2121), 2 (3), July 2006

S.R.M. Prasanna, C.S. Gupta and B. Yegnanarayana
'Extraction of speaker-specific excitation information from linear prediction residual of speech', Journal of Speech Communication, 48 (10), pp. 1243-1261, October 2006

CONFERENCE PROCEEDINGS

International

P. Vinod, G. Doerr and P.K. Bora

M. Buragohain and C. Mahanta
'Modelling of thermal power plant using full factorial design based ANFIS', IEEE International conference on Cybernetics and Intelligent Systems (CIS) and Robotics, Automation and Mechatronics (RAM) (CIS-RAM 2006), Bangkok, Thailand, 7-9 June 2006

C. Mahanta and P.J. Bhaqat

A. Ali and S. Majhi

PK. Padhy and S. Majhi

PK. Padhy and S. Majhi
S. Kumar, S.K. Singh and R. Bhattacharjee
'A scheme for efficient handoffs in heterogeneous network environment', International Conference on Computers and Devices for Communication (CODEC-06), Kolkata, 18-20 December 2006

B.S. Paul and R. Bhattacharjee
'Studies on the effect of mutual coupling in one ring MIMO channel simulation model', International Conference on Computers and Devices for Communication (CODEC-06), Kolkata, 18-20 December 2006

S. Gulati and R. Bhattacharjee
'Automatic blind recognition of noisy and faded digitally modulated PSK signals', International Conference on Embedded Systems, Mobile Communication and Computing (ICEMC2 2006), PESIT, Bangalore, 4-5 August 2006 (Best paper award, Modulation and SDR Session)

S. Kumar, S.K. Singh and R. Bhattacharjee
'A new handoff scheme for macro-mobility scenario', 3rd International Conference on Wireless and Optical Communications Networks: The Next Generation of Internet (WOCN 2006), Bangalore, 11-13 April 2006

K. Singh and R. Bhattacharjee
'Bit error rate performance of genetic algorithm optimized WDM systems', 3rd International Conference on Wireless and Optical Communications Networks: The Next Generation of Internet (WOCN 2006), Bangalore, 11-13 April 2006

A. Mitra

H.S. Dhillon and A. Mitra

K.M. Krishna and A. Mitra

M.N. Kumar and A. Mitra

N.P. Kumar and A. Mitra

M.K. Bhuyan, D. Ghosh and P.K. Bora
'Feature extraction from 2D gesture trajectory in dynamic hand gesture recognition', Proceedings of the IEEE International Conference on Cybernetics and Intelligent Systems (CIS), Bangkok, Thailand, pp. 1-6, 7-9 June 2006

M.K. Bhuyan, D. Ghosh and P.K. Bora

B. Deka and D. Ghosh

A. Jain, T. Dube and D. Ghosh

V.N. Shankar and D. Ghosh

B. Deka and D. Ghosh

U. Bharali and D. Ghosh
'Cardiac motion estimation from echocardiographic image sequence using unsupervised active contour tracker', Proceedings of the Ninth IEEE International Conference on Control, Automation, Robotics and Vision (ICARCV-2006), Singapore, 5-8 December 2006

N.R. Krishnan, R.P. Paily and H.B. Nemade
'Design of SAW based biosensor for heavy metal ion detection', International Symposium on Nano-Bio Interface, Kolkata, 1-3 March 2006

N.R. Krishnan, H.B. Nemade and R.P. Paily

N.R. Krishnan, H.B. Nemade and R.P. Paily
'Simulation of one port SAW resonator using COMSOL multiphysics', COMSOL Multiphysics user Conference, Bangalore, 17 November 2006 (First prize for the best paper presented in the conference)
M.S. Manikandan and S. Dandapat

M.S. Manikandan and S. Dandapat
‘Wavelet-threshold based ECG compression with smooth retrieved quality for telecardiology’, Proc. 3rd IEEE Int. Conf. Intelligent Sensing and Information Processing, India, December 2006

K.S. Rao and B. Yegnanarayana
‘Voice conversion by prosody and vocal tract modification’, accepted in 9th Int. Conf. Information Technology, Bhubaneswar, Orissa, pp. 111-116, December 2006

S. Sumitra, P. Yugandhar, A. Manohar, K. Vivekanand and S.R.M. Prasanna

S.R.M. Prasanna, P. Yugandhar

S.R.M. Prasanna, A. Mitra, D.K. Sharma, V. Singh, V.A. Kumar

H.S. Jayanna and S.R.M. Prasanna
‘Variable segmental analysis based speaker recognition in limited data conditions’, IEEE-Int. Conf. on Signal and Image processing (ICSSIP), Hubli, Karnataka, December 2006

B.V. Kalyan and P.K. Bora

D. Dey and R.S. Kshetrimayum
‘High gain and efficient patch antenna on micromachined GaAs EBGs with increased bandwidth’, Annual IEEE Indicon, New Delhi, September 2006

S.K. Manusani, R.S. Kshetrimayum and R. Bhattacharjee
‘Robust time and frequency synchronization in OFDM based 802.11a WLAN systems’, Annual IEEE Indicon, New Delhi, September 2006

M.K. Bhuyan, D. Ghosh and P.K. Bora

G. Haobijam and R.P. Paily
‘Systematic analysis, design and optimization of on-chip spiral inductor for silicon based RFIC’s’, IEEE INDICON, Delhi, 15-17 September 2006

P. Baburaj and S. Majhi
‘Modified smith predictor controller for network congestion control’, Proc. of IEEE INDICON-06, New Delhi, Sept. 2006

P.K. Padhy and S. Majhi

S. Gulati and R. Bhattacharjee

B.S. Paul and R. Bhattacharjee
‘Effect of array geometry on the capacity of outdoor MIMO communication: A study’, IEEE INDICON 2006, India Habitat Centre, New Delhi, 15-17 September 2006

S.K. Manusani, R.S. Kshetrimayum and R. Bhattacharjee
‘Robust time and frequency synchronization in OFDM based 802.11a WLAN systems’, IEEE INDICON 2006, India Habitat Centre, New Delhi, 15-17 September 2006

G. Haobijam and R.P. Paily
‘Design and optimization of on-chip spiral inductor for silicon based RF IC’S’, VLSI Design And Test Symposium, Goa, 9-12 August 2006

D.V. Bhargava and R.P. Paily
‘Design and study of an electrostatic torsion micro actuator for beam steering in horizontal plane’, VLSI Design And Test Symposium, Goa, 9-12 August 2006

N. Jain, K.S. Reddy, S. Dandapat

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G.S. Raja, S. Dandapat
'Stress compensation for improvement in speaker recognition', Proceedings of IEEE India Annual Conference (INDICON 2006), New Delhi, 15-17 September 2006

T.V. Sagar, K.S. Rao, S.R.M. Prasanna, S. Dandapat
'Characterization and incorporation of emotions in speech', Proceedings of IEEE India Annual Conference (INDICON 2006), New Delhi, 15-17 September 2006

D. Satyarthi, B.A.N. Raju, S. Dandapat

M.S. Manikandan and S. Dandapat
'Wavelet based ECG compression with large zero zone quantizer', Proceedings of IEEE India Annual Conference (INDICON 2006), New Delhi, 15-17 September 2006

M.S. Manikandan and S. Dandapat

P. Krishnamoorthy and S.R.M. Prasanna

N. Gandhi, P. Krishnamoorthy and S.R.M. Prasanna
'Reduction of musical noise in spectral subtracted speech using excitation source information', Proceedings of IEEE India Annual Conference (INDICON 2006), New Delhi, 15-17 September 2006

H.S. Jayanna, K.C. Gujala, S.R.M. Prasanna

H.S. Jayanna and S.R.M. Prasanna

V.A. Kumar, A. Mitra, S.R.M. Prasanna

Book Chapters
Y.V.S. Rao, A. Mitra and S.R.M. Prasanna

INVITED LECTURES OF OUR FACULTY

In India

Prof. P.K. Bora delivered an invited talk on 'An Overview of Bioelectronics' at the seminar on Bioelectronics at Tezpur University on 27 March 2007.

Dr. S. Dandapat delivered an invited talk on 'ECG Instrumentation and Compression' at the seminar on Bioelectronics at Tezpur University on 27 March 2007.

Dr. S. Majhi delivered invited lectures on (i) 'Basics of Fuzzy Logic Control' and (ii) 'Design of Fuzzy Logic Controllers' at National Institute for Teachers Training and Research, Guwahati, 23 August 2006.

Dr. C. Mahanta delivered an invited talk on 'Neural Networks and Applications' in NEC sponsored Workshop on Neural Networks and Genetic Algorithm (WNNGA) organised by Dept. of Statistics and Computer Science, St. Anthony's College, Shillong on 22 March 2007.

Dr. S.R.M. Prasanna delivered a tutorial on 'Speech Processing' in First International Conference on Signal and Image Processing (ICSIP) held at B.V. Bhoomaraddi College of Engineering and Technology, Hubli, Karnataka during 7-9 December 2007.

Dr. S.R.M. Prasanna delivered an invited talk on 'Research Issues in Speech Processing' at Sri Siddhartha Institute of Technology Tumkur, Karnataka on 11 December 2007.

Dr. A. Mitra gave an invited talk titled 'A New Approach Towards Low Cost, Low Power Adaptive Signal Processing' at G.S. Sanyal School of Telecommunications, IIT Kharagpur on 1 July 2006.

VISITORS FROM OTHER INSTITUTES/ UNIVERSITIES

Prof. N.V. Thakor, Professor of Biomedical Engineering in Johns Hopkins University, USA, 13-14 February 2007

Prof. K.V. Srivathsan, Director IIITM-K (Trivendrum), 7 March 2007.

SHORT-TERM COURSES

A short-term course on 'Biomedical, Speech and Image Processing' was organised during 26-30 December 2006. Dr. S.R.M. Prasanna and Dr. S. Dandapat were the coordinators.
INVITED LECTURES
Dr. Chandrasekhar Sarma, Infineon Technologies, Fishkill, NY, USA delivered an invited talk on ‘Status of logic technology processing: how photolithography is driving device scaling’ on 12 January 2007.

Prof. Nitish V. Thakor, Professor of Biomedical engineering in Johns Hopkins University, USA, delivered a talk on 13-14 February 2007.

AWARDS AND HONOURS
Mr. Dipto Dey, an MTech student and Mr. Abhishek Rawat, a BTech student of the Dept. have won the first and third prize respectively in Motorola's MOTOFWRDINDIA Competition 2006.

FACULTY MEMBERS

R. Bhattacharjee
PhD (Jadavpur University)
Associate Professor
Areas of Interest: Electromagnetics, Antennas and Microwaves

P.K. Bora
PhD (IISc Bangalore)
Professor
Areas of Interest: Image Processing and Computer Vision

S. Dandapat
PhD (IIT Kanpur)
Associate Professor and Head
Areas of Interest: Biomedical Signal Processing, Speech Processing and Medical Image Processing

A.K. Gogoi
PhD (IIT Kanpur)
Professor
Areas of Interest: Electromagnetics, Microwave Engineering, RF System Design

A. Mahanta
PhD (IIT Delhi)
Professor
Areas of Interest: Digital Signal Processing

C. Mahanta
PhD (IIT Delhi)
Associate Professor
Areas of Interest: Control Systems, Stochastic Systems

S. Majhi
DPhil (University of Sussex, UK)
Associate Professor
Areas of Interest: Relay Control Systems, Control Algorithms and Identification

A.K. Mishra
PhD (University of Edinburgh, Edinburgh, UK)
Assistant Professor
Areas of Interest: Radar Signal Processing and VLSI

A. Mitra
PhD (IIT Kharagpur)
Assistant Professor

H.B. Nemade
PhD (IIT Bombay)
Associate Professor
Areas of Interest: Industrial/ Ultrasonic Instrumentation, Non-destructive testing

R.P. Palathinkal
PhD (IIT Madras)
Assistant Professor
Areas of Interest: MOSFET Devices and VLSI Technology

S.R.M. Prasanna
PhD (IIT Madras)
Assistant Professor
Areas of Interest: Speech, Audio, image and Biomedical Signal Processing, Fuzzy Logic, Neural Networks and Pattern Recognition

A. Rajesh
PhD (thesis submitted), (IIT Kanpur, India)
Senior Lecturer
Areas of Interest: Coding and Modulation Techniques

K.S. Rao
PhD (IIT Madras)
Assistant Professor
Areas of Interest: Speech processing, Prosodic aspects of speech, Digital Signal Processing, Neural networks

J.S. Sahambi
PhD (IIT Delhi)
Associate Professor
Areas of Interest: Digital signal Processing, Wavelets, Microprocessors

P.R. Sahu
PhD (IIT Kanpur)
Assistant Professor
Areas of Interest: Mobile Communications: Diversity combining techniques over fading channels

K.R. Singh
PhD (NTU Singapore)
Assistant Professor
Areas of Interest: Electromagnetic Band Gap, Filters, Metamaterials, Computational Electromagnetics and Periodic Structures

R. Sinha
PhD (IIT Kanpur)
Assistant Professor
Areas of Interest: Speech and Audio Processing, Speech Recognition, Signal Processing
INTRODUCTION

The Department of Humanities and Social Sciences has a unique niche in the academic programme of the Institute. It currently comprises six disciplines, namely, Economics, English, Philosophy, Psychology, Sociology and History and Archeology. The courses offered at the BTech level are designed with a view to providing academic inputs that complement the technology programmes of the Institute. All the six disciplines endeavour to highlight the fact that science and technology must eventually address the needs of human beings. However, apart from imparting knowledge in some of the contemporary areas, the courses also encourage students to deliberate on issues relating to ethical and social roles of technology. A growing understanding of the importance of interdisciplinarity is today one of the Department’s major strengths. Some of the current academic concerns in the six disciplines focus on this aspect of knowledge. The Department also has a vibrant Doctoral Programme in which scholars are encouraged to excel in high quality research through rigorous coursework that hone their theoretical, critical and empirical tools. The wide range of areas of interests of the faculty members ensures a broad vision and openness in the Department’s academic programmes.

ACADEMIC ACTIVITIES

PhD Programme
The Department is running PhD programme in Economics, English, Philosophy and Psychology.

BTech and BDes Programme
The Department offered elective courses in Economics, Philosophy, Psychology, English, Sociology and History and Archeology to the first and third semester students during July-November 2006 Semester. Elective courses were offered in Economics, Philosophy, Psychology, Sociology, History and Archeology to the fourth semester students and Economics, English, Sociology, Philosophy, Psychology, History and Archeology to the sixth semester students and English, Sociology, Philosophy, Psychology, History and Archeology to the eighth semester students during December 2006-April 2007 Semester.

Preparatory Programme (English)
The Preparatory Programme that started at IIT Guwahati from 1998 is continuing. The Department offered courses in both the semesters of the programme in 2006-2007.

STUDENT INTAKE

Eight PhD students – four each in Economics and English – are admitted in the Department during 2005-2006.

FACULTY STRENGTH

There are fourteen faculty members in the Department as on 31 March 2007; three in English, two each in Economics, Philosophy, Sociology, Psychology, and History and Archeology besides one visiting professor.

Professor: 1 (Visiting)
Associate Professor: 6
Assistant Professor: 3
Senior Lecturer: 4
Total Faculty: 14

MAJOR EQUIPMENT AND FACILITIES

The department will be using the facilities of the Institute Computer Centre for its Language Laboratory. Software for facilitating the language skills of the students in the areas of Phonetics and Language learning has already been procured. The Psychology Laboratory has procured hardware and software that are being utilized mostly by the research scholars. There is a proposal to have a full-fledged Psychology Laboratory in the Department.

SPONSORED PROJECTS

Ongoing

Title: Ground water markets in Assam: Issues of equity and reliability
Co-Investigator: Dr. S. Borbora
Sponsoring Agency: Indian Council of Social Science Research, New Delhi

Title: Ground water markets in Assam: Issues of equity and reliability
Principal Investigator: Dr. M.K. Dutta
Sponsoring Agency: Indian Council of Social Science Research, New Delhi

Title: Situation of the internally displaced persons in Assam and their rehabilitation by the Government
Principal Investigator: Dr. S.D. Hazarika
Sponsoring Agency: Maulana Abul Kalam Azad Institute of Asian Studies, Kolkata, Ministry of Culture, Government of India
PUBLICATIONS

International Journal

A. Barua

A. Barua
'Environmental Ethics and the Third world Perspective', Environmental Science and Technology, 2, pp.457-461, American Science Press, Houston, November 2006

A. Barua

A. Barua and A. Thoibisana

K. Barua

K. Barua

National Journal

S. Borbora

A. Barua

A. Barua
'Engineers as Philosophers? A Philosophical Approach to Engineering', JIINNSÅ, 11 (1 May), pp. 17-30, 2006

K. Barua
'Towards a more vibrant classroom: the necessity of change in framing and teaching English Courses in Higher Education', Role of Higher Education for Social Change in India with Special Reference to North Eastern Region, Golden Jubilee Celebration Volume, pp. 59-64, Shillong College, Shillong, July 2006

K. Barua
'It was only yesterday', Volume on Fourth Spring Festival of Books for Children, Anwesha, pp. 17-18, Guwahati, 2006

M.K. Dutta

M.K. Dutta

S.D. Hazarika
'Political Participation of women and the dilectics of 73rd Amendment', Indian Journal of Political Science, 67 (2), pp 245-260, April-June 2006

Deepti S.

Conference Proceedings

International

S. Borbora

S. Borbora
'Outsourcing and offshoring in IT Sector', CD Proceeding of the Indian Perspective, the International Conference on Management “Double Digit Growth: Asian Perspective”, IBS Ahmedabad, 5-7 January 2007

A. Barua

A. Barua
'Buddhism and Democracy in the Asia pacific', 3rd APARRI International Conference on Democracy and Its Discontents, The University of California at Berkeley, organized by the Asia-Pacific Americans and Religious Research Initiative, sponsored by The University of California at Berkeley, pp. 16-19, 3-5 August 2006
A. Barua
‘Feminist Critic of Science: A Post-modern Perspective’, International Seminar on Truth, Interpretation and Language: Critiques and Reconstructions, organized by the Dept. of Philosophy, University of Mumbai in collaboration with ICPR, 20-22 March 2007

A. Barua

K. Barua
‘To garden the Wilderness: John Fowles’s The Tree’, Literature, Writing, and the Natural World, EAPSU Conference 2006, Mansfield University of Pennsylvania, 20-22 October 2006

K. Barua

K. Barua

K. Barua

K. Barua

M.K. Dutta

M.K. Dutta

M.K. Dutta
‘Enhancing Utilization Efficiency of Irrigation through Ground Water Markets: A Study from Assam in Eastern India’, 5th Japan Economic Policy Association Conference, Ayoama Gakuin University, Tokyo, Japan, 2-3 December 2006 (CD Rom)

S.D. Hazarika and S. Garg

National

A. Barua
‘Relevance of the Gandhian Thought’, Seminar on Gandhian Thought on Education, Majhihira National Basic Educational Institute, Purulia, West Bengal, pp. 19-23, 1-3 November 2006

A. Barua
‘Ecstasy and Education’, Seminar on Quality in Higher Education: Evolving strategies for total quality management in North Eastern Region, Jointly organized by Internal Quality Assurance Cell (IQAC), Patkai Christian College, Dimapur and National Assessment and Accreditation Council (NAAC), Bangalore, pp. 95-98, 18-19 December 2006

OTHER PUBLICATIONS (BOOKS, CHAPTERS, ETC.)

Book Chapter

K. Barua

R.M. Punekar

A. Saikia

Entries in Encyclopedia

R.M. Punekar

Indian institute of Technology Guwahati
R.M. Punekar

Book Review

R.M. Punekar

R.M. Punekar

R.M. Punekar

S. Sarma
A book review article titled 'Unique Struggle' in FRONTLINE, Vol. 23, Issue 19, 23 September to 06 October 2006

A. Saikia

PAPERS PRESENTED IN CONFERENCES/WORKSHOPS/SYMPOSIA

International

S. Borbora

S. Borbora
'Outsourcing and Offshoring in IT Sector: The Indian Perspective', International Conference on Management: Double Digit Growth: Asian Perspective, IBS Ahmedabad, 5-7 January 2007

K. Barua
'To garden the Wilderness: John Fowles's The Tree, Literature, Writing, and the Natural World', EAPSU Conference 2006, Mansfield University of Pennsylvania, 20-22 October 2006

K. Barua

K. Barua

K. Barua

K. Barua

A. Barua

A. Barua
'Buddhism and Democracy in the Asia Pacific', 3rd APARRI International Conference on Democracy and Its Discontents, University of California, Berkeley, organized by the Asian-Pacific Americans and Religious Research Initiative, 3-5 August 2006

A. Barua
'Lincoln, Nehru, and Democracy', International Conference on Abraham Lincoln and Democracy, Lincoln Center for American Study, Louisiana State University, Shreveport, USA, 11-12 August 2006

A. Barua
'Feminist Critic of Science: A Post-modern Perspective', International Conference on Truth, Interpretation and Language: Critiques and Reconstructions, Dept. of Philosophy, University of Mumbai in collaboration with ICPR, 20-22 March 2007

A. Barua
'Sankaradeva and the Cultural Renaissance in the Vaishnavite Assam', International Conference on Bhakti Movement and Srimanta Sankaradeva, Assamese and the Assamese Dept. Praghyotish College, Guwahati, 8-9 March 2007

R.M. Punekar and A. Nath
'Fasting, Feasting: Food, Consumption and Politics of Power', International Conference on Food: Representation, Ideology and Politics, Centre for Advanced Studies, Dept. of English, Jadavpur University, Kolkatta, 16-18 November 2006
N. Tripath, S. Nongmaithem and V. Agarwal
‘Organizational Citizenship Behaviour: Some Antecedents’,
26th International Congress of Applied Psychology held at
Athens, Greece, 16-21 July 2006

L. Das
‘Contemporary Cognitive Poetics and Indian Aesthetic
Theories’, Biannual International Conference of Internationale
Gesellschaft für Empirische
Literaturwissenschaft, Munich, Germany, 5-9 August 2006

M.K. Dutta
‘Bridging the Digital Divide: The Case of Community
Information Centres of Assam in North East India’,
International Conference on ICT Solutions for Socio-
Economic Development (ISED 2007), CDAC, Bangalore,
12-13 March 2007

M.K. Dutta
‘Management of Ground Water through Water Markets: A
Study from Assam in Eastern India’, 9th Biennial Conference of
International Society for Ecological Economics, New Delhi,
16-18 December 2006

M.K. Dutta
‘Enhancing Utilization Efficiency of Irrigation through Ground
Water Markets: A Study from Assam in Eastern India’, 5th
Japan Economic Policy Association Conference at Aoyama
Gakuin University, Tokyo, Japan, 2-3 December 2006

S.D. Hazarika and S. Garg
‘Cultural Democracy and the role of Media: A case in India’,
4th International Conference on Cultural Policy Research,
University of Music and Performing Arts Vienna campus at
Anton-von-Webern-Platz 1, A-1030 Vienna, Austria, 12-16
July 2006

Deepthi S.
‘Social Computing: Experiences from Rural India’,
International symposium on Human Computer Interaction,
IIT Guwahati and Department of Informatics, Copenhagen
Business School, Denmark, 14-15 May 2006

Deepthi S.
‘Changing Identities: Gender and Employment in the Call
Center Industry in India’, International seminar on Gender
and Access in South Asia, Bangladesh Institute of
Development Studies (BIDS) and IUSSP, Paris, 14-18
November 2006

Deepthi S.
‘Vedic Sciences: Relevance and Application in the Age of
Information Societies’, 2nd World Congress on Vedic Sciences,
Benaras Hindu University, Varanasi, 9-11 February 2007

National

S. Borbora
‘Women in Agriculture, economic emancipation leading to
empowerment’, Regional Workshop on Social and
Institutional Framework for Female Participation in
Agriculture, National Institute of Public Cooperation and
Child Development (NIPCCD), Guwahati Regional Centre,
Guwahati, 28-30 June 2006

S. Borbora
‘WTO Beyond Hong Kong: Focus on Agriculture’, National
seminar on Global Convergence of Commerce Education,
Dept. of Commerce, NEHU and Institute of Chartered
Accountants of India, New Delhi, NEHU, Shillong, 7-8
November 2006

S. Borbora
‘Common Market Approach for Tourism Development in
the North East’, 8th Annual conference of NEEA, Mizoram
University, Aizwal, 16-17 November 2006

A. Barua
‘Relevance of the Gandhian Thought’, Seminar on Gandhian
Thought on Education, Majhihira National Basic Educational
Institute, Purulia, West Bengal, 1-3 November 2006

A. Barua
‘Ecstasy and Education’, Seminar on Quality in Higher
Education: Evolving strategies for total quality management
in North Eastern Region, Internal Quality Assurance Cell
(IQAC), Patkai Christian College, Dimapur and National
Assessment and Accreditation Council (NAAC), Bangalore,
18-19 December 2006

A. Barua and A. Thoibisana
‘Phenomenological Methodology’, Seminar-cum-workshop
on Philosophical Methods, ICPR, New Delhi and Manipur
University, Manipur, 28-31 January 2006

A. Barua
‘Crossing the Borders: An inter-religious Dialogue in
Medieval Assam’, National seminar on Peace in Dialogue
in India’s North-East, ICSSR and Dept. of HSS, IIT Guwahati,
Guwahati, 1-2 February 2007

A. Barua
‘Philosophy as Metaphysics: a Heideggerian Perspective’,
National Seminar on Current Debates in Metaphysics, ICPR
and IIT Bombay, Mumbai, 16-19 February 2007

A. Barua
‘Transcendental Phenomenology and Its Critics’, National
seminar on Post Modernism: Modernism and its
Discontents’, ICPR and Philosophy Dept. NEHU, Shillong,
14-16 March 2007

A. Barua and A. Thoibisana
‘Language and Life World: Wittgensteinian and Heidegger’,
National Seminar on Post Modernism: Modernism and its
Discontents, ICPR and Philosophy Dept. NEHU, Shillong,
14-16 March 2007
A. Barua and A. Thoibisana
‘Feminist epistemology and the Philosophy of Science’, National seminar on Philosophy, Science and Technology, ICPR and Gauhati University, Guwahati, 28-29 March 2007

K. Barua

R.M. Punekar and A. Nath
‘Social Spaces and Voices in Jane Austen’s Persuasion’, National seminar on Re-Reading Jane Austen, Dept. of English, Gauhati University, 30 October – 1 November 2006

L. Das
‘Defamiliarising the Familiar: A Reading of Selected Short Stories of Shashi Deshpande’, National seminar on Tradition and Transformation, Sahitya Akademi, Guwahati, 27-28 March 2007

N. Tripathi, S. Nongmaithem and N. Kumar

S.D. Hazarika and S. Garg

S. Sarma
‘Application of GIS to describe historical urban development in Guwahati City, Assam’, NEGeo2006 conference, National Informatic Centre, Govt. of India and Mycoordinates, New Delhi, Administrative Staff College, Guwahati, 21-22 September 2006

A. Saikia

A. Saikia
‘History of Reading in the 19th Century Assam’, 29th session of Indian Folklore Congress, NEHU, Shillong, 20-22 September 2006

V. Prabhu
‘Mind your business: An enquiry into business ethics’, National seminar on Moral Philosophy: Contemporary Perspectives, Women’s College, Tinsukia, 18-20 November 2006

V. Prabhu
‘Wittgenstein on Values: A struggle towards perfection’, IWPC/81st Session of Indian Philosophical Congress, Delhi, 15-20 December 2006

Deepti S.
‘Employment in the Call Center Industry: Opportunities and Adversities for Women in Bangalore City’, 32nd All India Sociological Conference, Chennai, 25-29 December 2006

Deepti S.

A. Basu
‘Visual Field Superiority as a Function of Stimulus Type and Content with respect to Familiarity’, XVI NAOP Conference, IIT Bombay, 14-16 December 2006

A. Basu, M.K. Mandal, T. Dutta and A. Basu

CONFERENCES/WORKSHOPS/SYMPOSIA ATTENDED

National

R.M. Punekar attended and participated in the National Seminar on Peace in Dialogue: Reflections from the North-East organized by the Dept. of Humanities and Social Sciences at IIT Guwahati, 1-2 February 2006.

S.D. Hazarika attended and participated as a Resource Person on a discussion on Globalisation and North East India and chaired an interactive session with Participants on Gender at the workshop on Rethinking Rights, Justice and Development in India, organized by Calcutta Research Group and Panos Institute South Asia, Guwahati, 20-23 April 2006.

S. Sarma attended a three-day training programme on Geoinformation Technologies and their applications at IIT Guwahati, 18-20 September 2006.

A. Basu attended the National Seminar on Counseling Psychology in the 21st Century: Trends and Techniques, Gauhati University and Psychologist’s Association of North East India (PANEL), 10-11 November 2006.

INVITED LECTURE OF FACULTY

India

S. Borbora invited and attended the Regional Consultation on ‘WTO and South Asia: Strategizing Beyond Hong Kong’ jointly organized by the Centre for Trade and Development (Centre) and the Asia-Pacific Trade and Investment Initiative, UNDP regional Centre, Colombo during 21-22 April 2006 at New Delhi.
S. Borbora chaired a session on ‘Women in Agriculture and Land rights’ in the Regional Workshop on Social and Institutional Framework for Female Participation in Agriculture organized by National Institute of Public Cooperation and Child Development at their regional centre (NIPCCD), Guwahati during 28-30 June 2006.

S. Borbora delivered a lecture on ‘WTO’s Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) at Assam Administrative Staff College, Khanapara, Guwahati on 5 July 2006.


S. Borbora chaired the inaugural session as well as the valedictory session of the National Seminar on Peace in Dialogue: Reflections on the North East organized by the Dept. of HSS, IIT Guwahati on 1 February 2007.

S. Borbora invited as a Resource Person and delivered a lecture on ‘Organizational Constraints in Implementing Schemes and Networking with Agencies to Achieve Food Security’ on 22 March 2007 in a Training Programme on Achieving Institutional Linkages for Sustainable Nutritional Security and Role of Women organized by National Institute of Public Cooperation and Child Development at their regional centre (NIPCCD), Guwahati.

S. Borbora was a panelist in a discussion on VISSION 2020 for NE at IIT Guwahati on 31 January 2007.

S. Borbora attended the PanIIT Global conference during 25-26 December 2006 as a member of the official delegation from IIT Guwahati.

A. Barua was a Resource Person in a ICPR sponsored workshop cum seminar at Manipur University, 28-31 January 2007.

A. Barua gave a key-note speech, ‘Introducing Phenomenology’, at the Lecture Series on Phenomenology, organized by the Dept. of Philosophy, Gauhati University and the ICPR, 30 March 2007.

K. Barua delivered lectures to PhD students on ‘Towards a Persuasive Communication Skill and Scientific Presentation’ at the Department of Physics, IIT Guwahati, 5-7 September 2006.

K. Barua gave a lecture on ‘Orientation for Scientific Literature survey/review articles’ at the Physics learning camp for undergraduate students, organized by Bharat Jan Vigyan Jatra in collaboration with IIT Guwahati, 27 November – 2 December 2006.

N. Tripathi was invited to address employees of United Bank of India on ‘Stress and Time Management’ at Two-day Training Programme on Personality Development at Indian Institute of Bank Management, Guwahati on 28 November 2006.

R.M. Punekar chaired the session ‘Knowledge, Art and Activism’ in the 9th International Conference on Knowledge-Systems in a Climate of Creativity: Indian Perspective organized by the Forum on Contemporary Theory, Baroda at Udaipur, 17-20 December 2006.

R.M. Punekar was invited as resource person and requested to engage the session on ‘From Untouchable to Dalit’ on 1 December 2006 for the 12th Refresher Course on Postcolonial Studies: History, Theory and Practice organized by the Department of English, Gauhati University, 27 November – 17 December 2006.

R.M. Punekar was invited as resource person and requested to engage the session on ‘Dalit Literature’ on 1 December 2006 for the 12th Refresher Course on Postcolonial Studies: History, Theory and Practice organized by the Department of English, Gauhati University, 27 November – 17 December 2006.

A. Saikia delivered a lecture on ‘Writing and Imagining History as a Discipline in Assam 1897-1970’ in UGC Refresher Course in Academic Staff College, Guwahati on 28 October 2006.


S.D. Hazarika delivered a lecture on ‘Individual and Society’ on invitation from Indira Gandhi Open University for their distance education programme aired by All India Radio at 4-5 P.M., 28 May 2006.

V. Prabhu was invited as a panelist for the national seminar on ‘Amartya Sen: The Philosopher’, Madura College, Madurai, 26-27 March 2007.

Deepthi S. delivered a lecture on the topic ‘Intellectual Property Rights (IPR) and Traditional Knowledge’ in an awareness programme on Intellectual Property Rights (IPR) and Patents for Capacity Building organized at IIT Guwahati from 15-17 September 2006.

Abroad

A. Barua

‘Heidegger’s Comportment Toward East-West Dialogue’, Discussant Participant, Department of Asian Studies, University of Texas, Austin, 8-9 August 2006.
INVITED LECTURES/VISITORS

Sanjib Barua, delivered a lecture on 'From Frontier to a Post Frontier: Rethinking the Development Challenges of NE India', 25 September 2006.

Arnab Dey presented a seminar on 'Tea Plantation and Labour conditions in Assam: Literary Representations, Public Debates and Colonial Control in the late Nineteenth and Early Twentieth Century', 10 October 2006.

M.S. Prabhakar delivered a talk on 'Nation and State in NE India', 28 November 2006.

Uma Dasgupta delivered a talk on 'Science and Nationalism in India', 27 February 2007.


A. Christy Williams presented a seminar on 'Asian Elephants – what will it take to save them?' 28 March 2007.

Minakshi Rajeey, Associate Professor in Economics at ISEC, Bangalore presented a seminar on 'Contract labour Act in India: A pragmatic view', 28 April 2006.

G.J.V. Prasad, Professor, School of Language and Literature, JNU, New Delhi presented a seminar on 'A Minute Stretching into Centuries: Macaulay, English, India', 1 May 2006.

SHORT-TERM COURSES

A. Basu participated in a short-term course on teaching skills in IIT Kharagpur, April 2006.

SEMINARS/ WORKSHOPS/ CONFERENCES ORGANISED


S.D. Hazarika organised a national seminar on 'Peace In Dialogue: Reflections on North East India' in collaboration with ICSSR-NERC during 1-2 February 2007 at IIT Guwahati.

SPECIAL MENTION

S. Borbora: Member, Referee Board, Gyan Management – An International Bi-Annual Journal of Management and Technology.

S. Borbora: Elected as Secretary, North Eastern Economic Association in its Annual Meeting held at Mizoram University during 16-17 November 2006.

A. Barua: Paper Setter/Examiner, Department of Philosophy, NEHU, April 2006.

A. Barua: Member, Board of Post Graduate Studies, NEHU, Shillong (Tura Campus), 2006-2007.

N. Tripathi: Elected to the working committee of National Academy of Psychology (NAOP) as a member in December 2006.

R.M. Punekar: Invited as a panel member at the interviews conducted by NERIST, Itanagar for teaching positions in their Humanities and Social Sciences Dept. in May 2006 and February 2007.

R.M. Punekar: Edited and helped publish a souvenir on the occasion of the Inter-IIT Sports Meet conducted by IIT Guwahati in December 2006.

FACULTY MEMBERS

A. Barua
PhD (NEHU)
Associate Professor
Areas of Interest: Phenomenology of Cognitive Science, Phenomenology of Religion, Ethical Issues related to Science and Technology

K. Barua
PhD (Gauhati University)
Associate Professor
Areas of Interest: Commonwealth Literature, Comparative Studies, Cultural Studies, Comparative studies and translations

S. Barua
PhD (University of Chicago)
Visiting Professor
Areas of Interest: International Politics, North East India Studies

A. Basu
PhD (IIT Kharagpur)
Senior Lecturer
Areas of Interest: Cognitive Psychology, Cognitive Neuroscience, Laterality, Emotional Intelligence

S. Borbora
PhD (Gauhati University)
Associate Professor and Head
Areas of Interest: Development Economics, Industrial Economics and Labour Economics

L. Das
PhD (Dibrugarh University)
Associate Professor
Areas of Interest: Cognitive Studies, Literary Theory, Gender Studies, Consciousness Studies, Posthumanism and Technology
M.K. Dutta
PhD (Gauhati University)
Assistant Professor
Areas of Interest: Water Resource Management, Environmental Economics, Agricultural Economics

S.D. Hazarika
PhD (NEHU)
Senior Lecturer
Areas of Interest: Sociological issues related to Gender and Displaced Communities, Technology and Society, Alternative Science, Complimentary and Alternative Medicine

V. Prabhu
PhD (Pondicherry University)
Senior Lecturer
Areas of Interest: Philosophy of Technology, Applied Philosophy, Peace Studies, Critical Thinking Applied Ethics, Philosophy of Education

R.M. Punekar
PhD (Gujarat University)
Associate Professor
Areas of Interest: Culture and Translation Studies, Modern British Literature, Indian Writing in English

Deepthi. S
PhD (University of Mysore)
Senior Lecturer
Areas of Interest: Social Stratification Studies, Cyber Sociology, ICT and Development

A. Saikia
PhD (University of Delhi)
Assistant Professor
Areas of Interest: Social and Environmental History of 19th and 20th Century Assam

S. Sharma
PhD (Deemed University of Pune)
Assistant Professor
Areas of Interest: Archaeology of Northeast India, Colonial History of Assam, Cultural Policy

N. Tripathi
PhD (IIT Kanpur)
Associate Professor
Areas of Interest: Organizational Behaviour, Human Resource Management, Social/ Environmental Psychology, I-O Psychology
DEPARTMENT OF MATHEMATICS

INTRODUCTION

The Department of Mathematics continued to offer both undergraduate and postgraduate level mathematics courses to BTech (all branches), MSc (in Mathematics and Computing) and PhD students during the year. The Department has started a BTech programme in Mathematics and Computing from the academic year 2006. The Department continued to organize seminars under the IIT Guwahati Mathematics Seminar Series in which several distinguished mathematicians from India and abroad delivered talks. During the year, the Department conducted two short-term courses under QIP.

ACADEMIC ACTIVITIES

Preparatory Programme
The Department offered courses in both the semesters of 2006-2007 for the preparatory programme.

BTech Programme
The Department offered Mathematics-I (MA-101) and Mathematics-III (MA-201) courses in the odd semester and Mathematics-II (MA-102) in the even semester to BTech students. Over and above these courses, the Department also offered two 4th semester Science Elective courses to BTech students and the course MA-203 to 4th semester CSE students.

BTech (Mathematics and Computing) Programme
The Department has started a BTech programme in Mathematics and Computing from July 2006 and 19 students have been admitted to the programme.

MSc (Mathematics and Computing) Programme
The MSc programme in Mathematics and Computing which was started in July 2000, admitted its seventh batch of 22 students in July 2006. In addition, there are 16 students in the second year of MSc programme.

PhD Programme
At present, the Department has 20 PhD students out of which 3 were admitted during the year.

STUDENT INTAKE

MSc – 22
PhD – 3

Degrees Awarded
MSc – 11
PhD – 1

FACULTY STRENGTH

There are sixteen faculty members in the Department as on 31 March 2007.

Associate Professor: 8
Assistant Professor: 6
Senior Lecturer: 2

MAJOR EQUIPMENT AND FACILITIES

The Departmental Computer Laboratory is fully functional and is being used by the MSc and PhD students. The Laboratory has sophisticated mathematical softwares. IIT Guwahati continues to house a Regional Mathematics Library funded by the National Board for Higher Mathematics (NBHM).

RESEARCH AND DEVELOPMENT ACTIVITIES

Apart from regular research activities like guiding students, the faculty members of the Department collaborated with the researchers of other premier institutions.

SPONSORED PROJECTS

New
Title: Analytical and Inverse Modelling for Estimating Aquifer Parameters of a Confined Aquifer (new)
Investigators: Dr. S.N. Bora and Dr. G. Barua (Department of Civil Engineering)
Sponsoring Agency: DST
Duration: 2 years
Amount Sanctioned: Rs.8 lakh

Ongoing
Title: Laplacian Eigenvalues of Graphs
Investigators: Dr. S. Pati and Dr. A.K. Lal
Sponsoring Agency: DST
Duration: 3 years
Amount Sanctioned: Rs.2.75 lakh

Title: Layer Resolving Numerical Schemes for Singular Perturbation Problems
Principal Investigator: Dr. S. Natesan
Sponsoring Agency: DST
Duration: 4 years

Title: Developing web-based (e-learning) course material under (NP-TEL) scheme
Investigators: Dr. M.G.M. Prasad and Dr. D.C. Dalal
Sponsoring Agency: MHRD
Title: Lecture Notes on Matrix Computations
Investigator: Dr. R. Alam
Sponsoring Agency: QIP CD Cell, IIT Guwahati

PUBLICATIONS

International Journal

S.C. Martha and S.N. Bora
‘Water wave diffraction by a small deformation of the ocean bottom for oblique incidence’, Acta Mechanica, 185, pp. 165-177, 2006

S.C. Martha and S.N. Bora

R.B. Bapat, A.K. Lal and S. Pati

S. Barik, M. Neumann and S. Pati

S. Barik, B.K. Sarm and S. Pati

S. Natesan, C. Conca and M. Vanninathan

J. Vigo-Aguiar and S. Natesan

V. Shanthi, N. Ramanujam and S. Natesan

S. Natesan, R.K. Bawa and C. Clavero

J.C. Kalita

J.C. Kalita, and M.M. Gupta
‘New paradigm continued: further computations with the stream function velocity formulation for solving Navier-Stokes equations’, Communications in Applied Analysis, 10 (4), pp. 461-490, 2006

J.C. Kalita and P. Chhabra

J.C. Kalita, P. Chhabra and S. Kumar

S. Maity, C. Arackaparambil and K. Meyase

D. Gupta and N. Selvaraju

R.K. Sinha and B. Deka

R.K. Sinha and J. Geiser

R.K. Sinha, R.E. Ewing and R.D. Lazarov

S. Mishra and S.B. Rao

M.G.P. Prasad and T. Nayak

M. Prabhakar and R. Mishra

M. Prabhakar and R. Mishra
‘Minimal Degree Sequence for 2-Bridge Knots’, Fundamenta Mathematicae, 190, pp. 191-210, 2006
EXPANDING YOUR KNOWLEDGE

CONFERENCE PROCEEDINGS

International

B.K. Sarma and M. Nath
‘On singularity of unicyclic graphs’, Book of abstracts of International Congress of Mathematicians, Madrid, Spain, 22-30 August 2006

D.C. Dalal, S.K. Pandit and J.C. Kalita

J.C. Kalita, N. Kumar and A.K. Dass

J.C. Kalita and S. Sen
‘HOC formulation of the transient Navier-stokes equations in primitive variables’, Book of abstracts of International Congress of Mathematicians, Madrid, Spain, 22-30 August 2006

S.N. Bora

S. Natesan, R.K. Bawa and C. Clavero

R.K. Bawa and S. Natesan

S. Maity, C. Arackaparambil and K. Meyase

S. Maity, A. Nayak and S. Ramsundar

S. Maity, S. Ramsundar

S. Maity, R.P. Singh

S. Maity, R.P. Singh

National

S.N. Bora

PAPERS PRESENTED IN CONFERENCES/WORKSHOPS/SYMPOSIA

International

A. Saikia
‘Euler Systems and Cyclotomic Units’, International Conference on Number Theory, Harish Chandra Research Institute, Allahabad, 1-5 December 2006

B.K. Sarma
‘On singularity of unicyclic graphs’, International Congress of Mathematicians, Madrid, Spain, 22-30 August 2006

D.C. Dalal
‘Application of Fluid Mechanics in Industry and Environment held in the Physics and Applied Mathematics Unit’, Indian Statistical Institute, Kolkata, 28-31 August 2006

J.C. Kalita
‘HOC formulation of the transient Navier-stokes equations in primitive variables’, International Congress of Mathematicians, Madrid, Spain, 22-30 August 2006

R. Alam
‘Pseudospectra of matrix pencils and some distance problems’, International Workshop on structured perturbations and distance problems in Matrix Computations, Mathematical Research and Conference Centre, Bedlewo, Poland, 26-30 March 2007

Annual Report 2006-2007
S. Pati
‘On Graphs with a Reciprocal Eigenvalue Property’,
Western Canada Linear Algebra Meeting, July 2006

S. Natesan, R.K. Bawa
‘Second-Order Numerical Scheme for Singularly Perturbed
Reaction-Diffusion Robin Problems’, South African Society
for Numerical and Applied Mathematics (SANUM 2006),
University of Stellenbosch, South Africa, 3-5 April 2006

S. Maity
International Conference on Distributed Computing and
Internet Technology – ICDCIT 2006, Bhubaneswar, 20-
23 December 2006

S. Bora
‘Structured eigenvalue condition numbers and backward
errors of a class of polynomial eigen value problems’,
International Workshop on structured perturbations and
distance problems in Matrix Computations, Mathematical
Research and Conference Centre, Bedlewo, Poland, 26-
30 March 2007

National

D.C. Dalal
Mathematics and Applications – Recent Trends (MART-
2007), Department of Mathematics, The University of
Burdwan, 10-12 January 2007

D.C. Dalal
‘Mathematical Analysis and its Applications in Real-world,
Problems’, Department of Mathematics, Berhampur
University, Orissa, 16-17 September 2006

CONFERENCES/WORKSHOPS/SYMPOSIA ATTENDED

A. Saikia
International Congress of Mathematicians (ICM) 2006,
Madrid, Spain, 22-30 August 2006

B.K. Sarma
International Congress of Mathematicians 2006, Madrid,
Spain, 22-30 August 2006

D.C. Dalal
Mathematics and Applications – Recent Trends (MART-
2007), Department of Mathematics, the University of
Burdwan, 10-12 January 2007

D.C. Dalal
Mathematical Analysis and its Applications in Real-world,
Problems held in the Department of Mathematics,
Berhampur University, Orissa during 16-17 September
2006

D.C. Dalal
Application of Fluid Mechanics in Industry and Environment
held in the Physics and Applied Mathematics Unit, Indian
Statistical Institute, Kolkata during 28-31 August 2006

J.C. Kalita
International Congress of Mathematicians, Madrid, Spain,
22-30 August 2006

R. Alam
International workshop on structured perturbations and
distance problems in Matrix Computations held at the
Mathematical Research and Conference Centre in Bedlewo,
Poland, 26-30 March 2007

S. Natesan
International Congress of Mathematicians, Madrid, Spain,
22-30 August 2006

S.N. Bora
SANUM 2006: Annual Congress of South African Society
for Applied Mathematics

S. Maity
International Conference on Distributed Computing and
2006

S. Bora
International workshop on structured perturbations and
distance problems in Matrix Computations held at the
Mathematical Research and Conference Centre in Bedlewo,
Poland, 26-30 March 2007

INVITED LECTURES OF FACULTY

R. Alam delivered invited talk at the International Workshop
on Structured Perturbations and Distance Problems in Matrix
Computations held at Mathematics Research Centre and
Conference in Bedlewo, Poland, 26-30 March 2007.

D.C. Dalal
1. National Conference on Mathematics and Applications –
Recent Trends (MART-2007) held in the Department of
Mathematics, the University of Burdwan, Burdwan, 10-12

2. National Conference on Mathematical Analysis and its
Applications in Real-world Problems held in the Department
of Mathematics, Berhampur University, Orissa, 16-17
September 2006.

S. Pati
1. National Workshop on Graph Theory and Applications at
North Eastern Regional Institute of Science and Technology,
9-16 October (India).
Invited Talk: Nonnegative Matrices and Graph Spectra: A Brief Introduction (3 talks)
Invited Talk: Generalizations of Fiedler’s Monotonicity Theorem.

S. Bora
1. Invited to speak at the International Workshop on Structured Perturbations and Distance Problems in Matrix Computations organized by N. J. Higham (University of Manchester), V. Mehrmann (TU Berlin), S. M. Rump (TU Hamburg-Harburg), T. Szulc (Pozwan University) and D. B. Szyl'd (Temple University) at the Mathematical Research and Conference Centre in Bedlewo, Poland, 26-30 March 2007.

VISITORS FROM OTHER INSTITUTES/UNIVERSITIES
Professor Volker Mehrmann, TU Berlin, Germany.
Dr. Jayadev Siddhanta Athreya, Department of Mathematics, Yale University, USA.
Professor Murlu M. Gupta, Department of Mathematics, The George Washington University, Washington DC, USA.
Professor Ram N. Mohapatra, Department of Mathematics, University of Central Florida, Orlando, USA.
Professor S. G. Dani, School of Mathematics, Tata Institute of Fundamental Research, Mumbai.
Professor H. B. Valikar, Department of Mathematics, Karnataka University, Dharwad.
Dr. N. G. Bhowmik, Principal Scientist Emeritus, Watershed Science Section, Illinois State Water Survey, USA.
Mr. Partha Sarathi Mandal, Indian Statistical Institute, Kolkata.
Dr. D. D. Bhatia, Department of Mathematics, University of Texas-Pan American, Edinburg, Texas, USA.
Dr. Harish Pillai, Department of Electrical Engineering, IIT Bombay, Mumbai.
Professor A. S. Vasudeva Murthy, TIFR Centre, Indian Institute of Science, Bangalore.
Dr. Parag Kr. Deb, Cotton College, Guwahati.
Professor Narayan Rangaraj, Dept. of Mechanical Engg., IIT Guwahati.
Dr. T. C. Panda, Berhampore University, Orissa.
Professor P. C. Das, Institute of Mathematics and Applications, Bhubaneswar.
Dr. Anindam Sengupta, Department of Statistics, University of Calcutta, Kolkata.
Professor C. S. Seshadri, Chennai Mathematical Institute, Chennai.
Professor Swadhin Pattanayak, Institute of Mathematics and Applications, Bhubaneswar.
Professor Aloknath Chakrabarti, Department of Mathematics, Indian Institute of Science, Bangalore.

Professor Aloke Goswami, Stat-Math Division, Indian Statistical Institute, Kolkata.

SHORT-TERM COURSES
S. N. Bora

R. Alam and R. Sinha
Coordinators of QIP Short-Term Course on ‘Matrix Computations’, IIT Guwahati, December 2006

INVITED LECTURES/ VISITORS
A. Saikia
1. Department of Mathematics, Gauhati University, December 2006.

D. C. Dalal
1. Advanced Training Programme in Mathematics organized by the Department of Mathematics, Gauhati University, Guwahati during 14-30 December 2006.

J. C. Kalita
Worked as a Visiting Assistant Professor, Department of Mathematics, the George Washington University, Washington DC, USA, between 28 June – 26 December 2006.

S. N. Bora
1. Popularizing Mathematics in Colleges: Challenges and Solutions, Assam University, Silchar, 25 April 2006.
2. Water Wave Scattering by a Small Undulation on the Ocean Bottom, Research and Development Section In-house Seminar, IIT Guwahati, 5 June 2006.

S. Bora
Delivered lectures in the QIP Short-Term Course on Matrix Computations held in December, 2006, at IIT Guwahati.
S. Natesan

2. Delivered lecture in the Third National Workshop on Techniques in Applied Mathematics, Department of Applied Mathematics, University of Calcutta, Kolkata, 8-10 October 2006.

FACULTY MEMBERS

R. Alam
PhD (IIT Bombay)
Associate Professor and Head
**Areas of Interest:** Numerical Functional Analysis, Numerical Linear Algebra

S. Bandopadhyay
PhD (ISI Delhi)
Assistant Professor
**Areas of Interest:** Operations Research

S. Bora
PhD (IIT Guwahati)
Assistant Professor
**Areas of Interest:** Perturbation Theory, Numerical Linear Algebra

S.N. Bora
PhD (DalTech, Canada)
Associate Professor
**Areas of Interest:** Water Wave Dynamics, Ocean Engineering, Flow Through Porous Media

D.C. Dalal
PhD (IIT Kharagpur)
Associate Professor
**Areas of Interest:** Fluid Dynamics

J.C. Kalita
PhD (IIT Guwahati)
Assistant Professor
**Areas of Interest:** Computational Fluid Dynamics, Numerical Methods for PDEs

K.V. Krishna
PhD (IIT Delhi)
Senior Lecturer
**Areas of Interest:** General Algebra, Theoretical Computer Science

S. Maity
PhD (ISI Kolkata)
Assistant Professor
**Areas of Interest:** Combinatorics, Cryptography, Fault-Tolerant VLSI Architectures

S. Natesan
PhD (Bharathidasan University, Thiruchirappalli)
Associate Professor
**Areas of Interest:** Differential Equations, Homogenization, Numerical Analysis

S. Pati
PhD (ISI Delhi)
Associate Professor
**Areas of Interest:** Spectral Graph Theory

M.G.P. Prasad
PhD (IIT Kanpur)
Associate Professor
**Areas of Interest:** Complex Dynamics and Fractals

M. Prabhakar
PhD (IIT Delhi)
Senior Lecturer
**Areas of Interest:** Knot Theory

A. Saikia
PhD (University of Cambridge, UK)
Assistant Professor
**Areas of Interest:** Algebraic Number Theory

B.K. Sarma
PhD (Delhi University)
Associate Professor
**Areas of Interest:** Spectral Graph Theory, Combinatorial Matrix Theory

N. Selvaraju
PhD (IIT Madras)
Assistant Professor
**Areas of Interest:** Queueing Theory, Stochastic Modelling, Operations Research

R.K. Sinha
PhD (IIT Bombay)
Associate Professor
**Areas of Interest:** Numerical Analysis