

Semester-II notes 2011-12

bitscan

BITS Pilani



BITS Pilani
Pilani Campus

innovate

achieve

lead

editorial

turn of events

The second semester 2011-12 was quite an eventful one for the institute. It saw the **Vision 2020 Mission 2012** projects taking off to an adventurous voyage. The semester saw the commencement of the construction for the new academic building. On the academic front a pool of humanities electives was finalized to be implemented in 2012-13 academic session. The semester was also remarkable for the Institute's aggressive expansion of its various postgraduate and PhD research programmes in a large number of disciplines.

Akin to the preceding semesters, this semester also, both teachers and students kept winning laurels to the Institute. To count among the most outstanding events is the winning of the award for the best hostel facilities which was shared by BITS Pilani and Manipal University. Prof. Arya Kumar, Dean, Student Welfare, BITS Pilani received the award at the *India Today Aspire Education Summit 2012*. It was an honour and privilege to have Mrs. Margaret Alwa, the Governor of Rajasthan who visited the institute on its most prestigious annual ceremony of Convocation. The memories of Mrs. Margaret Alwa's visit will be cherished by the BITS Community for a long time to come.

That research at BITS has also taken a big stride forward, got further manifested as **Prof. Navneet Goyal, Dr. Poonam Goyal, and Prof. Sundar B** of Computer Science & Information Systems, bagged 1.20 crores project on A New Distributed *Computing Framework for Data Mining* from Dept. of Electronics & Information Technology, New Delhi. This semester the Department of Computer Science & Information Systems has also made us proud by grabbing 2.89 crore rupees with five major projects including the FIST of DST.

Dr. Anil Kumar has been awarded Harrison McCain Foundation Award for the year 2012, by Acadia University, Canada, in the Visiting Professorship category and

Dr. Sangeeta Sharma received AIMS Outstanding Editor's Award, 2012 by The Association of Indian Management Scholars, International, USA.

As always, this semester also saw our students adding more spectacular and colourful feathers to the illustrious cap of the Institute by winning prestigious prizes in various competitions. **Team BITS** from Birla Institute of Technology and

Science, Pilani, Rajasthan, India was selected to participate in Shell Eco-marathon Asia 2012, which was held at the Sepang International Circuit in Kuala Lumpur, Malaysia during 4-7 July 2012. Shell Eco-marathon is an event that challenges students to design, build and test energy efficient vehicles. The car named **Eklavya** gave a mileage of 69.9 km/l of gasoline.

In addition to this, many faculty members of the Institute visited several universities and institutes in India and abroad to broaden their horizon of knowledge and share their experiences beyond boundaries. Moreover, during this semester a good number of distinguished speakers and experts visited our Institute and delivered talks and lectures to share their knowledge with BITS fraternity. To cap it with further distinction, the semester also witnessed faculty members from various disciplines being rewarded with grants from several prestigious agencies for carrying out research projects in their respective areas.

Convocation 2012

→ Inauguration of Convocation 2012



Convocation 2012 of Pilani campus was held on Sunday, 22 July 2012 at the Institute auditorium. Smt Margaret Alwa, Governor of Rajasthan was the Chief Guest. Vice Chancellor Prof. Bijendra Nath Jain presided over the function. 1193 pass out candidates of 2012 received their degrees in the convocation, out of these, 201 candidates were dual degree holders. The degrees include B. E. and M.E. in various branches of engineering, MSc (Hons) in various branches of Sciences, M. Sc (Tech), B. Pharm, M. Pharm., M. B. A., M. P. H., and Ph.D. For the class of 2012, Mr. Chandrasekaran K was awarded the gold

→ Pass-out students



medal, Mr. Mohit Khandelwal the silver medal and Mr. Lokesh the bronze medal.

Speaking on the occasion, the Chief Guest Smt. Margaret Alva said that universities must contribute to the cultural, and social life of the community through outreach programs that enable students to interact with local communities and understand their concerns. She said that the university graduates must become messengers of change. Member of the Board of Directors, Smt. Manjushree Khaitan was also present on the occasion and conveyed her best wishes to the graduates.

Vice Chancellor Prof. B N Jain said that BITS aspires to be listed as one among the top 3 research led institutes by 2015 and by 2020 counted among the leading 25 technical universities in Asia. Prof. Jain called upon the graduating students to use their knowledge and experience fruitfully to serve the people of the country and those elsewhere.

Director of the Pilani campus, Prof. G Raghurama apprised of the fact that the faculty of various departments of the Institute, from Sciences to Engineering and Management, and Computer Sciences to Humanities and Social Sciences, are actively involved in research work under research grants from both government departments and industries. He said that the students of the Institute continue to receive recognition and awards by winning various competitions at the national and international level. Mr. Mohit Khandelwal administered the Oath to the graduating students which was followed by Vote of thanks by Prof. R N Saha, Deputy Director, Administration, BITS Pilani.

academia : a confluence of ideas

seminars/conferences/ workshops/training programmes

BITSMUN (18-20 February 2012)

→ Inauguration of BITSMUN



BITS Model United Nations was a three-day event organized by the BITSMUN society. BITSMUN, a Simulation of the United Nations and its various councils, was organized during 18 - 20 February 2012 and it witnessed participation from various outside colleges. Along with the councils which were simulated, a speakers conclave was also organized. Two speakers Raghav Narsalay and Anshu Gupta gave talks as a part of this conclave. The Chief Guest of the Inauguration Ceremony was Peter Vrooman - Spokesperson for the U.S. Embassy.

National Conference on Modeling, Computational Fluid Dynamics and Operations Research (4-5 February 2012)

National Conference on Modeling, Computational Fluid Dynamics and Operations Research, organized by the Department of Mathematics, BITS Pilani, Pilani campus was held during 4-5

→ Inauguration of the Conference



February, 2012. About a hundred participants attended this conference. It consisted of lectures on areas such as operations research, modeling and computational fluid dynamics etc.

The conference was inaugurated by Professor Bhu Dev Sharma, Jaypee Institute of Information Technology, Prof. Bijendra Nath Jain, Vice Chancellor BITS Pilani, and Prof. G Raghurama, Director, BITS Pilani, Pilani Campus.

Prof. C B Gupta, organizing secretary of the conference and Prof. Balam Dubey, Head of the Mathematics Department of BITS Pilani, introduced theme of the conference – computational fluid dynamics. In his address, Prof. Sharma stated that India is capable of becoming a dominant intellectual power on this planet owing to institutes like BITS Pilani where there is no dearth of enthusiastic researchers.

Workshop on Visual Storytelling (18-20 February 2012)

A three-day workshop on Visual Storytelling, organized by the Department of Languages, was inaugurated on 18 February 2012 at BITS Pilani. The resource persons of the workshop were Mr George M Thomas and Mrs Ashwini Chaudhary, Assistant Director, Crossfire Films. Dr. Pushp Lata, Head of the Languages Department, welcomed the resource persons and advised the students to utilize the opportunity to enrich their knowledge of Film Making from the workshop. Dr. Geetha B, the coordinator introduced the theme of the workshop to the audience. The workshop covered different aspects of Visual Storytelling like the different types of stories, different techniques of making a film, etc. It also included the way of reviewing and analyzing the films.

Microsoft Technology Day (10 March 2012)

Microsoft Technology Day was organized by the Computer Science and Information Systems Association, BITS Pilani on 10 March, 2012. On this occasion, a free workshop was conducted by Mr. Prabhjot Bakshi, a Microsoft Certified Trainer and Application Developer from Ahmadabad, on “Windows Phone App Development” for the benefit of the students. The workshop provided the skills to the students that enabled them to participate in the Windows Phone Hackathon, an event sponsored by Microsoft during the Annual Technical Fest of BITS Pilani, Apogee 2012 organized during 16-20 March 2012. Around 70 students attended the workshop.

Workshop on Rapid Prototyping (10-11 March 2012)

A two-day workshop on “Rapid-Prototyping” was organized during 10 - 11 March by Prof. Amit Kumar Singh and Prof. Tufan Chandra Bera, Department of Mechanical Engineering. The event witnessed an impressive turnout of 54 students and Professors, cutting across branches and degrees. There were up to 10 outstation participants, with 3 visiting Professors, and the rest being research scholars from other institutes of higher learning and a few B.E. (Hons.) M.E. (Hons.) students of BITS. Prof. Amit Kumar Singh, Prof. Tufan Chandra Bera and Prof. K S Sangwan (Faculty-in-Charge, Workshop and Head, Department of Mechanical Engineering) were the key resource persons for the workshop. Prof. R N Saha, Deputy Director (BITS Pilani, Pilani Campus), was the Chief Guest for the valedictory ceremony.

→ Workshop on Rapid-Prototyping



Think Again - Ig Nobel Conclave (17- 18 March 2012)

Think Again - Ig Nobel Conclave was held at BITS Pilani during 17- 18 March 2012. It was the **first ever Ig Nobel laureates' conclave** held in Asia. Earlier, such conclaves have been organized by institutes like Harvard University, MIT, Oxford etc. Ig Nobel Prizes honor achievements that first make people laugh, and then make them think.

→ Prof. B N Jain and Prof. G Raghurama with Dr. Elena Bodnar



The Think Again Conclave was organized by the Department of Paper Evaluation and Presentation in association with **Improbable Research, US** and was sponsored by BITSAA and Eduquity.

International Conference on Technological Advancements in Chemical and Environmental Engineering” (TACEE 23 - 24 March 2012)

A two-day International conference on Technological Advancements in Chemical and Environmental Engineering (TACEE 2012) was organised by the Department of Chemical Engineering during 23-24 March 2012. The conference covered topics from various fields such as Chemical Engineering, Transport Phenomena, Catalysis, Polymer Sciences, and Process Control etc. Dr. Chandra Shekhar, Director, Central Electrical and Electronics Research Institute (CEERI), Pilani was the Chief Guest, at the

→ Inauguration of the Conference



inaugural ceremony and Prof. S Gurunaryanan, Dean, WILP Division, BITS Pilani, Pilani Campus was the Guest of Honour. The conference had a large turnout of about 207 participants. There were also six guest lectures by invited academicians and industry professionals, specializing in these fields. These included talks from Prof. Vilas Gaikar (Chair Professor, Institute of Chemical Technology, Mumbai), Prof. B V Babu (Director, J K Lakshmiapat University, Jaipur), Prof. Ashok Bhaskarwar (Chair Professor, IIT-Delhi) and Dr. S Rajagopal (Director, Indian Oil Corporation, Faridabad).

Symposium on 'Recent Trends in Chemical Sciences' (25 March 2012)

One-day Symposium on Recent Trends in Chemical Sciences was organized at BITS Pilani, Pilani Campus on 25 March. The seminar was organised with the idea of bringing together related research in different departments under the common head of chemical sciences. Addressing the symposium, the Chief Guest Prof. R N Saha pressed on the need of organising such symposiums more than once a year. As the guest of honour, Prof. G Sundar expressed his happiness over the growing research in the Institute and particularly in the Department of Chemistry. Dr. Dalip Kumar welcomed all the participants and informed them about the ongoing research and teaching activities in the department.

Prof. S C Sivasubramaniam concluded the ceremony applauding the enthusiastic participation from different departments.

visits by faculty:

enriching the learning experience

International visits

Prof. Arya Kumar and **Prof. Anil Bhat** presented a paper and participated in the REE 12 Asia -

→ Prof. Arya Kumar and Prof. Anil Bhat at REE 12 Asia Round Table



Round Table on Entrepreneurship Education by Stanford Technology Venture Program, organized by Thammasat University, Bangkok, Thailand, during 1 - 3 February 2012.

Prof. Navneet Goyal visited the School of Computing, National University of Singapore (NUS) to deliver an invited talk in the South Asia Workshop on Research Frontiers in Computing held at NUS during 29 May - 01 June, 2012. The title of the talk was *Data Mining: A System's Perspective*. He also delivered a talk at Advanced Digital Sciences Center (ADSC), Singapore on 28 May 2012. The title of the talk was *Scalable Distributed Computing Solution for Data Mining*.

Varinder Kumar Mittal presented a research paper titled *Drivers and Barriers of Environmentally Conscious Manufacturing*:

→ Mr. Varinder Kumar Mittal at LCE 2012



A comparative study of Indian and German organizations at the 19th CIRP International Conference on Life Cycle Engineering, Berkeley, 2012 (LCE 2012) during 23-25 May, 2012 at University of California, Berkeley, California, USA.

Pushp Lata, Devika and Sushila Shekhawat visited Singapore to attend and present their papers at the *Annual International Conference on Language, Literature and Linguistics* held in

→ Dr. Pushp Lata, Dr. Devika and Dr. Sushila Shekhawat at Annual International Conference on Language, Literature and Linguistics



Singapore during 9-10 July 2012. **Pushp Lata** presented a paper on *Integration of Web based Interactive and Multimedia Learning Materials for Off-Campus Students: A Case Study*; **Devika** on *Breaking the barrier to move beyond: a Charismatic Display of Self Belief in Arundhati Roy and Manju Kapur* and **Sushila Shekhawat** on *Variegated Shades of a Women in Indian Films: A Study of Mirch Masala and Arth*.

Manoj Dutta presented a research paper in the 8th IEEE Co-sponsored Conference WIAD 2012, hosted by the Center for Telecommunication Research of King's College London in the Strand

→ Dr. Manoj Dutta at Center for Telecommunication Research of King's College London



Campus of King's College. This conference was technically co-sponsored by the IEEE UKRI Communications Chapter, IEEE UKRI Information Theory Society and IEEE Signal Processing.

Rajesh Mehrotra chaired the session in 3rd International Conference on Environmental Research and Technology, ICERT 2012 Conference held during 30 May - 01 June in Penang, Malaysia.

Anil Kumar visited Department of Biomedical and Pharmaceutical Sciences, College of Pharmacy, University of Rhode Island, Kingston, USA during 29 May - 27 July 2012 for collaborative research work and interacted with Prof. Keykavous Parang and Dr. N. Seeram.

G Venkiteswaran attended a talk on *Stratified Monte Carlo Integration and Applications* at 10th International Conference on Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing, held at the University of New South Wales, Sydney, Australia on 16 February 2012.

Trilok Mathur presented a paper on *Fekete-Szegő Inequalities for Generalized Sakaguchi Type Functions* at the International Conference

→ Dr. Trilok Mathur presenting a paper



on Applied and Engineering Mathematics (ICAEM-2012) organized by World Congress on Engineering (WCE-2012) and IAENG (International Association of Engineers) held during 4 - 6 July, 2012 at Imperial College, London, UK.

Jitendra Panwar visited Penang, Malaysia to deliver presentation at the 3rd International Conference on Environmental Research and

→ Dr. Jitendra Panwar delivering an oral presentation



Technology (ICERT 2012) organized by Institute of Industrial Technology, Universiti Sains, Malaysia, during 30 May - 1 June 2012.

Navneet Khanna presented a paper titled *Effect of heat treatment conditions on the machinability of the Ti64 and Ti54M alloys* at 5th CIRP International conference on High Performance Cutting, held at ETH Zurich, Switzerland during June 2012.

Samik Chowdhury presented a research paper titled *Public Retreat, Private Expenses and Penury - A Study of Illness Induced Impoverishment in Urban India* at the 13th Annual Global Development Network (GDN) Conference, organized by the Central European University, Budapest, Hungary, during 16-18 June 2012.

invited talks delivered/ workshops conducted by faculty members

Prof. Sangeeta Sharma was invited by RA Poddar Institute of Management, Jaipur to deliver a talk on *Business Etiquette* on 17 January 2012. She was also invited for a talk on *Writing Project Reports* at JKPS Gurgaon on 5 May 2012. She was an invited speaker in the International Conference on Creativity and Innovation – Breaking down the barriers to reach the bottom of the pyramid at JKPS, Gurgaon. She spoke on *Fostering creative environment at workplace* on 17-18 February 2012. She was a plenary speaker in National Symposium on *Interrogating New Worlds of English Language Teaching* at Maharaja Ganga Singh University, Bikaner on 24-25 February 2012. The title of speech was *Teaching Vocabulary: Evidence based practices*. She was invited as a resource person at National workshop on Science, Technology and Development Communication, BIT, Noida during 9-10 April 2012 to speak on *Communication: the Omphalus of the Curriculum of Technical Education*. She conducted a workshop on Communication Skills and Public Speaking at NADP, Nagpur on 16-17 July 2012 and was also invited to deliver a talk on *Questioning Skills* for 60 teachers at Birla Balika Vidyapeeth, Pilani on 28 July 2012.

Inamur Rahaman Laskar delivered a talk on *Triplet Harvesting Materials: Applications in Organic Light Emitting Devices* at Aligarh Muslim University on 11 March 2012.

Anil Kumar delivered an invited talk on *Novel Task Specific Ionic Liquids as Soluble Support in Organic Synthesis* at National Symposium on Recent Trends in Chemical Science and

Technology, Department of Chemistry, IIT Patna held during 3 -4 March 2012. He delivered a talk on *Task Specific Ionic Liquids: Application in Organic Synthesis* at National Conference on Green and Sustainable Chemistry held at Department of Chemistry, University College of Science, Tumkur University, India on 25 February 2012.

Dipendu Bhunia delivered an invited lecture on *A Systematic Design Approach of Coupled Shear Walls* at the workshop on Recent Developments in Design and Construction Techniques of Brick Masonry Buildings on 3 - 4 March 2012 at Department of Civil Engineering, IT BHU, Varanasi, Uttar Pradesh.

Manoj Soni delivered a keynote address on *Renewable Energy – The future* in National conference on Non Conventional Sources of Energy Development and Its Application in Rural Area and Industries, at Marudhar Engineering College, Bikaner on 30 March 2012. He also delivered a keynote address on *Renewable Energy – The Innovative Technologies* in National conference on Emerging Trends in Renewable Energy Technology, ETRET- 2012, at Uttam Devi Mohan Lal (UDML) College of Engineering, Jaipur on 20 April 2012.

G Venkiteswaran delivered a talk on *Networking in Unix Environment* at A. M. Jain College, Chennai on 22 February 2012.

Manoj Kannan was invited to participate as a resource person in the Faculty Development Programme at Vivekananda Institute of Technology (VIT) University, Jaipur. He delivered two lectures on 6 July 2012.

Rahul Banerjee delivered a keynote Lecture on *A Pervasive Computing Approach for Assisting the Elderly* at VIT, Jaipur at the “Computia 2012” conference on 28 January 2012. He also gave an invited expert lecture titled *Cloud-Assisted Pervasive Computing: State-of-the-Art* at PCE, Jaipur on 4 February 2012

Sarvesh Satija delivered a keynote address at Valedictory Function of a three-day national conference on *Creative and Innovative Trends in Management* organized by Department of Commerce and Management, Shri Jagdish Prasad Jhabarmal Tibrewala University, Jhunjhunu during 20 – 22 April 2012.

Subit K Saha delivered an invited talk entitled *Study on mixed micellization behavior of cationic Gemini surfactants with hydroxyl substituted spacer and ionic liquid in water and water-organic solvent mixed media* in the Conference on Photochemistry and Luminescence (CPL-2012)

organized by the Department of Chemistry, Indian Institute of Technology, Guwahati during 9-10 March 2012. He also delivered an invited talk entitled *Guest Molecule Induced Nanotubes of Cyclodextrins and Their Secondary Aggregation Forming Rod-like Structures* in the National Conference on Condensed Matter Physics (NCCMP 2012) organized by the Department of Physics, BITS Pilani in collaboration with CSIR-CEERI, Pilani during 24-25 February 2012. He co-chaired a technical session in the Conference on Photochemistry and Luminescence (CPL-2012) organized by the Department of Chemistry, Indian Institute of Technology, Guwahati during 9-10 March, 2012.

C B Gupta delivered a talk on *Simulation and its application in queueing theory* at National Conference on Numerical and Mathematical Modeling in Electrical Engg. and Applied Sciences at Poornima College of Engineering, Jaipur on 21 January 2012. He gave a lecture on *Applications of Mathematics to Sciences* in National Seminar on Mathematical and Physical Sciences at DN (PG) College, Meerut on 17 March 2012. He delivered a talk on *Applications of Mathematics in Electronic engineering* in National conference on Recent Advancements in Communication Systems and Image Processing at BKBIET, Pilani on 3 April 2012.

Prof. Arya Kumar delivered a talk on *Higher Education in India – Challenges Ahead* at VIT, Jaipur on 9 April 2012. Prof. Arya Kumar participated as an expert invitee in the Board of Studies meeting of IIS University, Jaipur on 23 April 2012, to deliberate upon course curriculum for the proposed MBA (Executive) programme being introduced by the university from 2012-13.

Jitendra Panwar delivered an invited lecture on *Nanotechnology for enhanced P mobilization in arid soils* at Mangalayatan University, Aligarh, India on 19 February 2012. He also delivered a lecture on *Mycosynthesis of nanoparticles and their characterization* on 24 February 2012 at Central Arid Zone Research Institute, Jodhpur, India.

Hari Om Bansal delivered an invited talk on *Smart Grid: A Step Towards Energy Sustainability* at Marudhar Engineering College, Bikaner. He also gave a lecture on *Smart Grid: A Reliability Perspective* at Malviya National Institute of Technology and Science, Jaipur. He delivered a talk on *Hybrid Electric Vehicles in Smart grid Scenario* at Malviya National Institute of Technology and Science, Jaipur.

Rakesh Choubisa chaired a session in the National conference on Advances in Physics which was held on 25-26 February 2012 at Physics Department, Indian Institute of Technology (IIT), Roorkee.

significant projects

Principal Investigator and Name of the Department	Title of the Project	Funding Agency	Amount and Duration
Navneet Goyal, Poonam Goyal, and Sundar B Computer Science & Info. Systems	A New Distributed Computing Framework for Data Mining	Dept. of Electronics & Information Technology, New Delhi	INR 1.20 crores 3 years
Navneet Goyal, Head, Computer Science & Info. Systems	Setting up a Mobile Computing Lab.	DST FIST grant	INR 53.0 lakhs
Rahul Banerjee Computer Science & Info. Systems	Analysis, Simulation and Validation of Mobile Adhoc Networks Technology for Military Communication	Army Technology Board	INR 49 Lakhs 1.5 years
J P Misra and Poonam Goyal Computer Science & Info. Systems	Design & Development of a Network Security Operations Centre	Army Technology Board	INR 49 lakhs 1.5 years

Principal Investigator and Name of the Department	Title of the Project	Funding Agency	Amount and Duration
Rahul Banerjee Computer Science & Info. Systems	A Highly Available Tactile Networking Architecture Involving MANETS for Indian Army.	Ministry of Defense, Govt. of India	INR 49 Lac, 1.5 years
P R Deepa Biological Sciences	Identification of potential molecular inhibitors of all catalytic domains of Fatty acid synthase (FASN) at the enzyme activity and gene expression level	Department of Biotechnology (DBT), Ministry of Science & Technology, Govt. of India	INR 33.67 Lakhs 3 Years
Sandhya Mehrotra Biological Sciences	Analyzing structural and functional evolutionary links between Rubisco and Carbon concentration mechanism proteins	Department of Science and Technology, New Delhi under SERC fast track scheme for young scientists.	INR 23,96,000 3 years
Inamur Rahaman Laskar Chemistry	Synthesis of platinum(II) based pure blue-emitting triplet harvesting materials and their applications in white organic light emitting diodes as single emissive dopants	CSIR	INR 20.20 lacs 3 years
Paritosh Shukla Chemistry	Transition metal – catalysed coupling/ reductive coupling of saturated alkyl halides with electron withdrawing alkenes	UGC	INR 11, 95, 800.00 3 years
Sundar B and Murali P Computer Science & Info. Systems	A Modeling and Design Framework for Social Networking Infrastructure on Mobile Devices using P2P overlays	Aditya Birla Group, Science & Technology Center	INR 10 Lakhs 1.5months
Yashvardhan Sharma Computer Science & Info. Systems	An Agent based tool for prediction, analysis, reporting and dispensing of Climate data	UGC	INR 8.85 Lakhs 3 years
Smita Raghuvanshi Chemical Engg	Removal of Heavy Metals from Industrial Wastewater using Biofiltration	UGC, New Delhi, India	INR 5,50,000/- 3 years
Dipendu Bhunia Civil Engineering	Investigation into the Behavior of Coupling Beam & Investigation of the Effect of Carbonation on the Properties of Concrete	Research Initiation Grant, BITS Pilani & DST-SERC Major Project, New Delhi	INR 2 Lakhs and 34 Lakhs Duration:
Sangeeta Sharma Languages	Evaluation for Teach India Campaigns in Rajasthan	Pratham Education Foundation	INR 50,000/ 4 months (January-April 2012)

distinguished lectures at BITS Pilani

Speaker	Designation	Topic	Date
Prof. Ioannis A. Kakadiaris	Director, Computational Biomedicine Lab, Depts. of Computer Science, Electrical & Computer Engineering, Biomedical Engineering University of Houston, TX, USA	<i>Computational Intelligence: From Biometrics to Biomedicine</i>	16 January 2012
Prof. Phani Tetali	Associate Professor IIT Mumbai	All about Animation	14 March 2012
Prof. Suresh Agarwal	Professor, Dept of English, Maharaja Ganga Singh University, Bikaner	Introducing Teachers to Multimedia Pedagogy in Rural Schools	24 March 2012
Prof. Sanjay Kumar	Associate Professor, JK Lakshmipath University, Jaipur	Multimedia Pedagogy in Rural Schools	24 March 2012

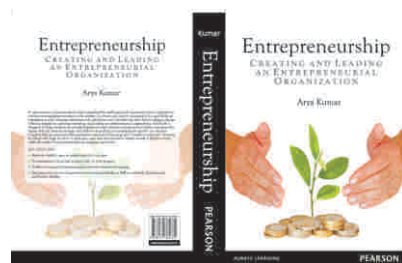
academic attainments of faculty

Editorial / review work, members of editorial board or other committees - appointed during January - July 2012

Name of Faculty	Editorial / review work
Sangeeta Sharma Humanities and Languages	Appointed as a member of Editorial Board, JK Journal of Management & Technology, JK Padampat School of Management, Gurgaon.
Rajiv Gupta Civil Engineering	Reviewed nine papers in reputed journals namely Construction & Building Materials, Elsevier, Recent Trends in Civil Engineering & Technology, STM (Science, Technical & Medical) Journals; Smart and Sustainable Built Environment, (Emerald); Journal of Materials in Civil Engineering, ASCE, Indoor and Built Environment, (SAGE Journals, UK); Recent Trends in Civil Engineering & Technology. International Journal of Low-Carbon Technologies (Oxford Journals); Smart and Sustainable Built Environment, (Emerald); Recent Trends in Civil Engineering & Technology.
Anil Kumar Chemistry	Reviewed research articles for international journals namely Bioorganic & Medicinal Chemistry Letters, Current Organic Chemistry, Journal of Heterocyclic Chemistry, Applied Catalysis A: General, Journal of Agricultural and Food Chemistry, Chemical Biology & Drug Design, Journal of Chemical Sciences, Green Chemistry Letters and Reviews, Catalysis communication.
Varinder Kumar Mittal Mech. Engineering	Reviewed an article for the Journal of Cleaner Production (Elsevier).

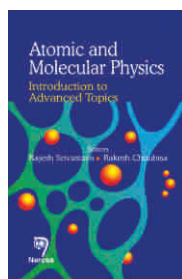
Name of Faculty	Editorial / review work
Rajesh Mehrotra	Reviewed two articles for Plant Molecular Biology Reporter
Dipendu Bhunia Civil Engineering	Acted as a reviewer in Structure & Infrastructure Engineering Journal, Taylor & Francis Group
Manoj Soni Mech. Engineering	Reviewed a paper for Energy The International Journal. He has also reviewed five sample chapters of proposed publication on Engineering Thermodynamics of Oxford University Press
Rahul Banerjee CS&IS	Served as the member of the Board of Editors of the International Journal of Computer Networking and Distributed Systems (IJCNDS), published by Inderscience.
Smita Raghuvanshi Management	Reviewed an article in <i>Journal of Membrane Science & Technology, OMICS publications</i> . She has also contributed a chapter in the book, <i>Bioremediation and Sustainability: Research and Applications</i> , Edited by Mudhoo A and Mohee R, Scrivener Publishing LLC, Salem MA, USA, April 2012.
Subit Kumar Saha Chemistry	Reviewed four articles for the Journal of Colloid and Interface Science (Elsevier), the Journal of Photochemistry and Photobiology A: Chemistry (Elsevier), and the Global Journal of Physical Chemistry (Simplex Academic Publishers).
Chandra Bhan Gupta Mathematics	Acted as Editor-in-Chief for 2 nd Annual International Conference on Operations Research and Statistics (ORS 2012) proceedings, held at Bali, Indonesia on 7-8 May 2012. He was nominated a member of the committee on curriculum development for Fundamental Sciences/ Humanities at the various levels in the vocational education framework by AICTE, New Delhi. He was appointed a member of Chief Technical Advisory Board for International Journal of Soft computing and Engineering. He has also reviewed five papers in reputed journals.
P R Deepa Practice School Division	Reviewed a manuscript under consideration in the Journal, Molecular Vision
Jitendra Panwar Biological Sciences	Reviewed two research papers for African Journal of Biotechnology.

in print



Entrepreneurship,
Arya Kumar, Pearson,
New Delhi, 2012

*Atomic and Molecular Physics-
Introduction to advanced topics*,
Rajesh Srivastava and Rakesh
Choubisa, Narosa Publishing
House, New Delhi, 2012



joining hands

MoUs

Sustaining the collaborative efforts, BITS signed the following MoUs with institutions in India and abroad:

- With La Trobe University, Australia, to programs of cooperation and to foster collaboration, promote academic, education and research interaction and cooperation on 21 February 2012.
- With Bharat Dynamics Limited to engage in collaborative research in areas of mutual interests on 29 February 2012

- With Avaya India Pvt. Ltd. to foster collaboration, promote academic, education and research interaction and cooperation on 29 May 2012.
- With BMC Software Pvt. Ltd. to foster collaboration, promote academic, education and research interaction and cooperation on 29 May 2012.
- With University of Rhode Island, USA for faculty and student exchange and to foster collaboration, promote academic, education and research interaction and cooperation on 7 June 2012.

accolades & achievements

Award for academic excellence

Sangeeta Sharma received AIMS Outstanding Editor's Award, 2012 by The Association of Indian Management Scholars, International, USA. The award distribution ceremony took place at FLAME, Pune on 4 January, 2012. Her book *Technical Communication* co-authored with Prof. Meenakshi Raman, second edition has been reviewed by South African Technical University and is accepted for adaptation for the institutions under this university. **Hari Nair's** doctoral dissertation in History *Contra imperio: El discurso de derecho natural y la autonomia de los indios americanos [Against empire: The discourse of natural law and the autonomy of the American Indians]* won the special mention of the jury, for the prize Edmundo O'Gorman, at the ceremony held in Mexico City on 5 December 2011. **Samik Chowdhury** has presented research paper titled *Public Retreat, Private Expenses and Penury - A Study of Illness Induced Impoverishment in Urban India* at the 13th Annual Global Development Network (GDN) Conference, that took place at the Central European University, Budapest, Hungary, during 16-18 June 2012. **Anil Kumar** has been awarded Harrison McCain Foundation Award for the year 2012, by Acadia University, Canada, in the Visiting Professorship category.

Chandra Bhan Gupta has been listed among top 100 scientists of the world in 2012 by International Biographical Centre, Cambridge, England.

The best of India's **education sector** were honoured at the **India Today Aspire Education Summit 2012**. The award for best hostel facilities

→ Prof. Arya Kumar getting award



was shared by BITS Pilani and Manipal University. Prof. Arya Kumar, Dean, Student Welfare, BITS Pilani, received the award.

student round up

Team BITS from Birla Institute of Technology and Science, Pilani, Rajasthan, India was selected to participate in Shell Eco-marathon Asia 2012, which was held at the Sepang International Circuit in Kuala Lumpur, Malaysia during 4-7 July 2012.

→ Shell Eco-marathon Asia 2012



Shell Eco-marathon is an event that challenges students to design, build and test energy efficient vehicles. The car named **Eklavya** gave a mileage of 69.9 km/l of gasoline. This has become the first Indian team to successfully run the vehicle on track in the Event in its first attempt. The Team included J.S. Rathore (Faculty Adviser), Rishi Saharia (Team Leader), Saransh Jain (Driver), Devesh Gupta (Reserve Driver), Piyush Bindu

(Team Member), Saurabh Kataria (Team Member).

Kartic Bhargav K R (2009A3TS170P) and **Sukant Dewangan** (2009A3PS042P) got the award for the work Effectuation of Wireless Sensor Networks for Human Rescue Missions using RF signal detection (published in ACM DL ICPS) in the event ACWR '11, International Conference on Wireless Technologies for Humanitarian Relief held at Kerala, from December 18 to 21, 2011.

Three students (Vibhav Agarwal, Naresh Raghuraman, Apurv Singhal) of BITS, Pilani designed and successfully made Operational Web Portal on CDMA/GSM Tower Information for Reliance Communications Ltd., New Delhi and they were highly appreciated by entire IT Department of Reliance Communications Ltd. At the time of their special presentation IT Head of RCOM issued a separate Certificate to them.

Bhate Shantanu Rajendra (2009A3A7165P) was selected for the Mitacs Globalink Program for summer 2012 in this ten week long research project. He has also been selected to work at the University of British Columbia, Vancouver (at the Department of Electrical and Computer Engineering).

Divya Joshi (2010A3PS160P) and **Anupam Purwar** (2009A4PS301P) won the Best Paper award in IEEE Student Conference on Recent Trends in Electrical and Electronics Engineering organized by Gitam University, Vizag during 24-25 February 2012.

Suvonil Chatterjee, (2010A8PS337P) received Mantra Innovator of the Year Award, Mantra Awards by BITSAA and CEL, May 2012, Pilani.

Ayush Rawat (2011A2PS567P) was selected to undertake a summer internship under the guidance of Dr. Marcelo Sanchez at Texas A&M university, College Station, Texas (USA). He undertook a research project on Soil Mechanics and Behaviour Expensive Soil for two months during summer vacations.

Jaskirat Jassal (2007B4A3379P) contributed to recently released Animation film Madagascar 3: Europe's Most Wanted, which is a big hit worldwide, and he was accredited by mentioning

his name along with the senior cast in the screen credits of the movie at the end.

Anubhav Tyagi represented a team PhotoWalkr at New York at the 4th annual Kairos Global Summit about entrepreneurial innovation and its implication in solving the problems of future. This summit had all the major colleges in the world such as Harvard, USC, Berkley, NYU, Cambridge, Oxford, ESADE and others.

renewing the bond

→ Golden Jubilee Reunion



Six alumni, along with their families, visited campus to celebrate their **Golden Jubilee Reunion** during 4 - 5 March 2012. They refreshed their golden memories by visiting Saraswati temple, Shiv Ganga, Cannought market and other places including their hostels. A meeting was arranged with Prof. B N Jain, Vice-Chancellor, Prof. G Raghurama, Director and other officials where in Prof. B N Jain and Prof. Raghurama talked about future plans of the institute and the active role on the part of Alumni to take the institute to a premier position in India and Asia in the coming years.

project embryo

Speaker	Designation and Affiliation	Title of the Talk	Date
Piyush Gupta	<ul style="list-style-type: none"> PhD student of Civil Engineering at University of Illinois at Urbana Champaign. BITS Pilani, 2005-09 	Fracture and Fatigue Mechanics	1 February 2012
Gary C Kessler	<ul style="list-style-type: none"> Associate Professor at Embry-Riddle Aeronautical University, FL, USA Independent consultant and practitioner in the areas of computer and network forensics, mobile device forensics, computer and network security, Editor-in-chief of the Journal of Digital Forensics, Security and Law. 	Cryptography	12 February 2012
Mihir Sarkar	<ul style="list-style-type: none"> PhD Student at MIT Media lab 	Designing technology for musicians and music listeners	22 March 2012
Eva Nemeth	<ul style="list-style-type: none"> Physiotherapist, National gymnastics school, CA, USA 	Sustainable Body Movement 24/7 for the 21st Century Lifestyle	10 April 2012
Prof. Nilay Yajnik	<ul style="list-style-type: none"> Professor and Chairman - Information Systems Area at Narsee Monjee Institute of Management Studies (NMIMS), Mumbai 	E-Business for Business	12 April 2012

caring beyond our walls

Science Day

As a part of its celebrations for the National Science Day on 28 February, Science Association of BITS, Pilani organized a quiz for school kids. About 40 invited school students from three different schools; Birla Public School, Birla Balika Vidyaapeeth and Birla School Pilani participated in

the celebration. Following the quiz was a lecture by Dr. Navin Singh, Assistant Professor, Department of Physics, BITS, Pilani on the Physics of the DNA. Later in the evening, in collaboration with the Astronomy Club, a Sky watching session was also organized for the school students.

NSS

The BITS-Pilani Chapter of the National Service Scheme (NSS) organized its 31st Annual Blood Donation Camp during 11 - 12 February 2012, in collaboration with the Indian Red Cross Society, New Delhi. It was inaugurated by the Director of Pilani Campus, Prof. G Raghurama who was also

among the first few donors. The camp included a team of 12 doctors from IRCS-Delhi on call for the entire period. 900 people volunteered for the cause, and a total of 725 units of blood was collected. This year, for the first time ever, facilities were made for pledging one's eyes as well. 204 people came forward to sign the documents over the two days.

Farewell to Graduating Students

Farewell party for the graduating students was held on 27 April 2012. Around 480 students and faculty members participated in the event. Prof. B N Jain, Vice Chancellor advised passing out students to face the upcoming challenges with courage, uprightness and integrity. Prof. G Raghurama, Director advised that one should have grace in what one does and should have gratitude to all that he has been gifted with. Prof. Arya Kumar wished them the very best in all walks of life. Prof. Surekha Bhanot and Dr. Sanjiv Chaudhary also addressed and wished them all the success in their life ahead.

MATRIX

MATRIX, the art and literature appreciation club of BITS Pilani organized a quiz *PARADOX* conducted by Vibha Chandramouli and Sumanth Suresh. The club also organized a series of reviews in which many outstanding books and movies were reviewed. The first event of the semester had Prof. A K Sarkar, Diwakar Pant and Arnab Hazra Snigdha Serikeri, Uday Kovur and Diwakar Pant as panelists. They introduced books such as *The End of Poverty*, *Emperor of all Maladies* and *Quiet Flows the Don*. This was followed by a review of the book *Into the Wild* by Vineet Pandey, Saranya Vatti, Krishna Pramod and Prof. Sudeep Mohan. Another review of the semester was of the Orhan Pamuk classic *My Name is Red* by Diksha Sharma, Sukanya Mondal, Bhavesh Sangem, Akitav Sharma, and Camellia Debnath.

During APOGEE, *Mythology Quiz* was organized by Trishanu and Deepraj which received a very good response. APOGEE also saw the introduction of *Comic Quiz* organized by Sankalp Gilda and Shruti Shenbagam and *How it Should Have Ended* - judged by MATRIX Prof-in-Charge Dr. Geetha B. MATRIX During these book-exchange programs, works of various authors - from Ayn Rand to Andre Agassi, from P.G. Wodehouse to K D Wentworth - were shared and discussed. The semester ended for MATRIX with the valedictory ceremony. The ceremony was graced with the presence of dignitaries which included Dr. Geetha B, Dr. Rishikesh Vaidya and

Dr. Kaushar Vaidya, Prof. A K Sarkar, and Dr. M Ishwara Bhat.

Ragamalika

Ragamalika, the classical music and dance club of BITS Pilani organized Thyagaraja Aradhana on the Founder's Day which involved the rendition of The Pancha Ratna Kritis, the most elegant compositions of Sri Saint Thyagaraja. In Sangamam 2K12, the biggest event of the second semester, a classical depiction of the origin of Indian classical dance through the language of dance and music was performed. This featured only two dancers, Kuheli Jati and Sushmita Inguva and was titled *Nrityodaya*.

Ragamalika presented two fresher's concerts – one featuring the Hindustani musicians of the club and the other showcasing the talents of their Carnatic counterparts. Shaam-e-Ghazal: One of the most sought after shows in the raag calendar, and was welcomed by an august audience. The musical festival treated the crowd to some memorable ghazals by Jagjit Singh, Ghulam Ali, Hariharan and others. Psenti Concert, the last event of the semester, Psenti- Semite Riddhidev Bannerjee displayed his musical proficiency and mesmerized the audience.

APOGEE-2012

APOGEE, 30th Annual Technical Festival had its fair share of pre-fest extravaganza with a myriad of interesting events. Pre-fest online events such

→ [APOGEE 2012](#)



as Lacuna, Qrious and Doper's Quiz, Stock Market Simulation set good standards early on. Apart from all of this, workshops on designing gliders, financial modeling, etc. helped keep the morale up as APOGEE came closer.

Inaugurated by its own fort Mr. Mani Shankar, Film-maker and ex-BITSian, who talked about the skewed gender ratio, his futile scholastic pursuits, the redundant BITS curriculum and the rich learning curve characteristics of such facts. Six Ig Nobel prize winners for the “Think Again” Conclave, held in association with BITSAA were invited. Day 1 of the Ig Nobel conclave saw Kees Moeliker, Gauri Nanda and Dr. Ilja Van Beest took the stage. With promises of a better second instalment, the final day of the *Think Again* conclave witnessed Dr. Richard Stephens, Dr. Elena Bodnar and Dan Meyer pick up the thread from the previous day's segment.

→ APOGEE 2012



Among the many kernel events of this APOGEE including Dhiti, Windows Phone Hackathon, Full Throttle Grand Prix (F.T.G.P), I-strike and new event Stock Market Simulation (SMS) developed by Economics and Finance Association achieved a great success this year. There were about thirteen quizzes organized during APOGEE among them – Brain of BITS (B.O.B.), Over Head Transmission (O.H.T.) and India Quiz were a few. Different clubs like Dance, Music, Mime Clubs also performed during APOGEE.

Undoubtedly Mithali was one of the major highlights. All the clubs and association contributed into making APOGEE a resonating success.

INTERFACE (10-12 February 2012)

The 35th Annual Management festival of BITS Pilani, *INTERFACE 2012* was organized by the Department of Management, BITS Pilani from 10 - 12 February 2012 with the theme *Aarambh* – the creative beginning. The festival was inaugurated by the Chief Guest Mr. Valmeeka Nathan, Vice-President and Head, Manufacturing Business Unit, Infosys Ltd. and Mr. Sameer Hanchate, a Film Maker and the Director of the movie “*Gafla*” as the

keynote speaker. In the inauguration ceremony, Mr. Valmeeka Nathan, ex-BITSian, encouraged the students by talking about the theme of the festival and how creativity helps them compete in today's dynamic market. This year the main highlight of the fest was the guest lecture which was delivered by Mr. Sarath Babu (CEO, Foodking) on Entrepreneurship and a workshop on Film Making organized by Mr. Sameer Hanchate.

Among the various events organized during the fest, the famous one was *Prashn Chinh*, a quiz event in which the first position was secured by Shaheed Sukhdev College of Business Studies, Delhi and second position by BITS Pilani. In York & Slog 2.0, teams of BITS Pilani got both first and second position. Barter King was the other famous event in which first position was secured by Narsee Monjee Institute of Management Studies, Mumbai, and second by IPE, Hyderabad. In B-Plan IIT Roorkee won the first rank and second rank was captured by SP Jain Institute of Management and Research. In the finals of Case study, there was a tie on first rank between IMT Ghaziabad and SITM Pune and second rank was obtained by MICA, Ahmedabad. This year around 70 outstation participants, from the famous Institutes like FMS, NMIMS, Great Lakes and SBIM Pune, participated in Interface 2012.

UGC Centre for Women Studies

UGC Center for Women Studies, conducted a workshop on *Computer Awareness - II* at BITS Pilani on 21 January 2012 to promote awareness among women participants regarding the use of computer and to learn how to work with MS Office and Internet. The resource person for the Workshop was Dr. Virender Singh Nirban, Assistant Professor, Languages Department, BITS Pilani. Prof. Sangeeta Sharma, Coordinator, UGC Centre for Women Studies along with Ms Madhusmita Das co-ordinated the event.

→ Workshop on Computer Awareness



The Centre also celebrated the International Women's Day on 16 March 2012 in LTC Lawns of BITS, Pilani. In this event around 80 women from BITS & CEERI campus participated. Prof. Sangeeta Sharma, Coordinator, UGC Centre for Women Studies welcomed the participants. Dr. Devika from the Department of Languages and Ms. Madhusmita from the Centre for Women Studies coordinated the event. Various games like-Song and dance competition, balloon bursting, free dance were organized and prizes were distributed to the winners.

→ Dr. Devika at Workshop on Common Errors in English



Apart from this, a workshop was also organized on Common Errors in English. Around 70 participants from different schools of Pilani, participated in this Workshop. Dr. Devika, from the Department of Languages, BITS Pilani was the resource person. Prof. Sangeeta Sharma, Coordinator, UGC Centre for Women Studies welcomed the resource person and the participants. Dr. Devika made the participants aware of the types of errors people usually commit. The participants had high appreciation for the workshop and expressed their interest to have this type of workshops in future.

CEL (Centre for Entrepreneurial leadership)

E Week 2012(11-18 February 2012)

E-Week 2012 was held during 11 - 18 February in the institute. Prof. G Raghurama, Director, inaugurated it by highlighting the importance of entrepreneurship for economic development.

→ Prof. G Raghurama inaugurating E-Week 2012



Prof. Arya Kumar, Dean (SWD) shared his thoughts on entrepreneurial opportunities and need for taking up entrepreneurship as a career option. He also focused on the role that National Entrepreneurship Network has been playing to catalyse and create an eco-system conducive for the promotion of entrepreneurship. A number of students participated enthusiastically in the event.

NIRMAAN

Continuing the trend, various activities were organized and several initiatives were taken by Nirmaan this semester. As a part of Gyan Bodh several activities were conducted such as Formalized English classes, Open day activities to develop logical thinking and aptitude of the kids. Inter Connectivity of Schools in which Fundraising among BITS professors for Utkarsh scholarship and collecting for the needy student database from various schools for the same was done. The activities of the school adoption programme were - Installing Notice boards and dustbins in the school, organizing cultural function on the Republic day, sweaters distribution, Building up an online resource center for all teaching activities. There were many activities under the Shiksha Ki Ore programme and Disha. Under the Community Development Initiative Kite flying competition and cricket matches were organized for the inter-hostel cultural festival, INBLOOM. A career workshop for kids with the help of Disha team was also conducted. Apart from this, the self help Groups in Harinagar, Khedla also organised various activities. Moreover, many events were organised during Apogee like Dhiti, India quiz, and some lectures by famous personalities like Dr. H C Verma and Farhaad Contractor, an ancient water technology scientist. Other activities

included a lecture by a TFI fellow 2009, Abhik Bhattacharji and a successful conduction of 'Save One Rupee a Day' drive. As a

part of Parishodh, Nirman got two projects for web-designing and launched Parishodh internships in collaboration with NIF and TIDE.

introducing new faculty

Name	Designation	Discipline
Harikrishnan Gopinadhan Nair	Assistant Professor	Department of Humanities and Languages
Amol Marutao Marathe	Assistant Professor	Mechanical Engg.
Dr. Santosh Kumar Padhi	Assistant Professor	Biological Sciences
Samik Chowdhury	Assistant Professor	Economics and Finance
Dr. Rajeev Sakhuja	Assistant Professor	Chemistry
Dr. Surojit Pande	Assistant Professor	Chemistry
Archana Khosa Kakkar	Lecturer	Pharmacy
Dr. Indresh Kumar	Assistant Professor	Chemistry
JayendraNath Bandyopadhyay	Assistant Professor	Physics

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Special Thanks to Mr. Piyush Gupta, Ms. Poonam Vyas, Ms. Suman Luhach, Ms. Neerja Vyas and Ms. Chasul

innovate

achieve

lead

BITS Pilani

Pilani Campus



mediaspeak

बिट्स के 2 छात्रों को 70-70 लाख पैकेज
बिट्स का तकनीकी महोत्सव 'अपोजी' शुरू
द्यूट ऑफ बिट्स के मनी पैकेट लाख रुपए
204 ने लिया नेत्रदान का संकल्प
एनएसएस के शिविर में 24 घंटे में हुआ 25 यूनिट रक्तदान
ग्लोबल नोबल awardees meet at BITS, Pilani
प्रदूषण नियंत्रण व ऊर्जा पर शोध की महती आवश्यकता
बिट्स पिलानी में तकनीकी महाकुंभ अपोजी-2012 का आरंभ
मिथाली में धिरके युवाओं के कदम
अपोजी के चौथे दिन विभिन्न प्रतियोगिताएं हुईं
बिट्स पिलानी को मिला इंडिया टूडे अवार्ड
पिलानी में जूटेंगे 625 यूनिवर्सिटी के बिट्स में पांच दिवसीय तकनीकी महोत्सव 'अपोजी 2012' आज
रोबोटिक स्पर्धाओं की धूम
बिट्स पिलानी में तकनीकी महाकुंभ अपोजी - 2012 का तीसरा दिन
आत्म निर्भर परियोजना समर्पित
बैटरीरिया खत्म करेंगे खाद की जरूरत
India's space programmes have come of age: Raghavan
बिट्स के पिलानी रि
बिट्स पिलानी की राष्ट्रीय सेवा योजना
बिट्स पिलानी के वैज्ञानिकों की खोज
A dream come true at BITS Pilani

JAIPUR: Twenty-three pharmacy students of BITS Pilani awarded scholarships by Ratan Tata Trust for the academic year 2011-12. The scholarship amount was Rs 48,50,000 this year. Sir Ratan Tata Trust scholarships are awarded to meritorious students.

Experts lay stress on research in Mathematics
 India has produced a large number of researchers who have made a mark. It is possible for India to become a knowledge power.

204 ने लिया नेत्रदान का संकल्प
 एनएसएस के शिविर में 24 घंटे में हुआ 25 यूनिट रक्तदान

ग्लोबल नोबल awardees meet at BITS, Pilani
 Research, speak about his area of research, hormonal therapy in the male...

प्रदूषण नियंत्रण व ऊर्जा पर शोध की महती आवश्यकता
 बिट्स पिलानी के वैज्ञानिक तकनीकी महाकुंभ अपोजी-2012 का आरंभ

बिट्स पिलानी को मिला इंडिया टूडे अवार्ड
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आत्म निर्भर परियोजना समर्पित
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बिट्स पिलानी के वैज्ञानिकों की खोज
 बिट्स पिलानी के वैज्ञानिकों की खोज

A dream come true at BITS Pilani
 बिट्स पिलानी के वैज्ञानिकों की खोज



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