

# DST-INSPIRE INTERNSHIP SCIENCE CAMP - 2013



Department of Science & Technology  
Govt. of India

*In association with*



Jagadis Bose National Science Talent Search  
Govt. of West Bengal

**39th Science Camp Entitled:**

**'Learning Science'**

**November 26 - 30, 2013**

**At JB Centre of Excellence for Student – Scientists**

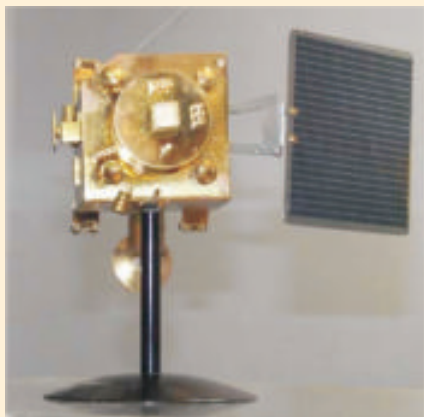


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## 'Learning Science'

### **About JBNSTS**

Jagadis Bose National Science Talent Search (JBNSTS), Kolkata was conceptualized in 1958 by visionaries such as Dr. B C Roy, Sir J J Ghandy and others to commemorate the Birth Centenary Celebration of India's first modern scientist, Acharya J C Bose. The program was inaugurated by Pandit Jawaharlal Nehru. JBNSTS is an autonomous institute promoted by the Department of Higher Education, Government of West Bengal. It is administered by a Governing Body with representatives from the State Government, academia and industry. Since 1961, JBNSTS is awarding the prestigious Jagadis Bose Scholarships to selected group of undergraduate students of science, engineering and medicine.



In the last five decades, JBNSTS has grown to become a premiere institute of non-formal science education in the eastern and northeastern States of India with the objective towards pursuit of excellence through motivation, identification and nurture of young talented science students. It helps students to realize the importance of excellence in the scientific world and try to cultivate this in their own lives as students of science. JBNSTS also encourages students towards the learning of basic sciences and inculcates scientific spirit in the minds of young high school and undergraduate students. Focus has been given on unconventional and dynamic methods of non-formal accelerated learning through "out-of-class" activities, which have led to the recognition of intellectually sensitive and inquisitive minds. Since 2004, JBNSTS has launched an innovative middle school science Teachers Training Program which has brought into its ambit motivated teachers from the districts of West Bengal. JBNSTS has developed science kits and

distributed to the teachers for demonstrating scientific principles to the middle school students in the classroom. The financial support for most of the activities of JBNSTS is provided by the Department of Higher Education & Department of Science & Technology, Government of West Bengal. In addition, Council of Scientific & Industrial Research (CSIR), Department of Science & Technology (DST), Government of India & Industries also collaborate with JBNSTS activities.

### **About DST-INSPIRE Program**

**Innovation in Science Pursuit for Inspired Research** (INSPIRE) is one of the innovative programs developed by the Department of Science & Technology for attraction of talent to Science. The basic objective of INSPIRE is to attract talent to the study of science at an early age and thus build the required critical human resource pool for strengthening and expanding the Science & Technology system and Research & Development base. It is a program with a long term foresight. A striking feature of the program is that it does not believe in conducting competitive exams for identification of talent at any level. It believes in and relies on the efficacy of the existing educational structure for identification of talent.

#### **INSPIRE Program has three schemes:**

**Scheme for Early Attraction of Talent for Science:** It aims to attract talented youth to study science by providing INSPIRE award of Rs.5,000/- to one million young learners in the age group 10-15 years for a duration of five years and arrange summer and winter camps for youth in various locations for top 1% in Class X board examinations with global leaders in science to experience the joy of innovations on an annual basis through INSPIRE internship.

#### **1. INSPIRE Award**

In order to seed and experience the joy of innovation, every year two lakh school children in the age-group of 10 to 15 years i.e., 6th to 10th standards are being identified for the INSPIRE Award. Each INSPIRE Award envisions an investment of Rs.5,000/- per child. The scheme plans to reach at least two students per secondary school during the next five years.

#### **2. INSPIRE Internship**

Motivating talented youth to take-up research as a personal undertaking by rubbing shoulders with global icons of science including Nobel Prize Winners, is the objective of INSPIRE Internship. This component of the program aims at working as a life-long catalyzing experience for the 11th graders in science stream.

**Scholarship for Higher Education:** Scholarship for Higher Education (SHE) aims at attracting talented youth into undertaking higher education in science intensive programs, by providing scholarships and mentoring through ‘summer attachment’ to performing researchers. The scheme offers 10,000 scholarships every year @ Rs 0.80 lakh per year to talented youth in the age group 17-22 years, for undertaking Bachelor and Masters level education in Natural and Basic Sciences. However, the 18 Science subject such as (1) Physics, (2) Chemistry, (3) Mathematics, (4) Biology, (5) Statistics, (6) Geology, (7) Astrophysics, (8) Astronomy, (9) Electronics, (10) Botany, (11) Zoology, (12) Bio-chemistry, (13) Anthropology, (14) Microbiology, (15) Geophysics, (16) Geochemistry, (17) Atmospheric Sciences and (18) Oceanic Sciences, either as major/honors or their combination in BSc/Integrated MSc/Integrated MS course will be under the scope of INSPIRE Scholarship. The main feature of the scheme is mentorship support being planned for every scholar through INSPIRE scholarship.

This scheme offers 10,000 scholarships every year @ Rs.80,000/- each for undertaking Bachelor and Masters level education in the Natural & Basic sciences, possessing any of the following criteria:

- a. Students who happen to be among the top 1% in 12th standard at their respective Board Examinations and are pursuing courses in Natural and Basic sciences at the B.Sc. or Integrated M.Sc. levels. Courses are not included other than Natural and Basic sciences in the current scheme in view of the focus on research in Basic sciences.
- b. Students who have secured in the Joint Entrance Examination of JEE-Advance top 10,000 ranks, JEE-Main (top 10,000 ranks) plus those clearing NEET (top 10,000 ranks), and who also opt to study Natural and Basic sciences in any academic institute or university leading to graduate and post-graduate degree, would be eligible for scholarship.
- c. Students admitted to Indian Institute of Science Education and Research (IISER), National Institute of Science Education and Research (NISER), Department of Atomic Energy Centre for Basic Sciences (DAE-CBS) at the University of Mumbai or happen to be Kishore Vaigyanik Protsahan Yojana (KVPY), National Talent Search Examination (NTSE), Jagadis Bose National Science Talent Search (JBNSTS) scholars and Science Olympiad Medalists, opting to undertake courses in the Natural & Basic sciences leading to B.Sc. and M.Sc. degrees are eligible for “SHE” scholarship.

**Assured Opportunity for Research Careers:** Assured Opportunity for Research Careers (AORC) aims at attracting, attaching, retaining and nourishing talented young scientific Human Resource to strengthened the R&D foundation and base by offering doctoral INSPIRE Fellowship in the age group 22-27 years, in both Basic and Applied sciences (including engineering and medicine). It also aims at assuring opportunities for post-doctoral researchers through a scheme (similar to the New Blood program of the Royal Society of UK) through contractual and tenure track positions for five years in both Basic and Applied sciences areas through an INSPIRE Faculty Scheme.

### 1. INSPIRE Fellowship

INSPIRE fellowship aims at enhancing research fellowships for doctoral studies and opening up partnerships with private sector for topping the Government’s efforts in nurturing talents for scientific research. This scheme is applicable to Basic and Applied sciences as well as Medicine, Agriculture etc. with provision of multiple entries. The fellowship will be offered to (1) University 1st Ranker in a particular subject at PG level examination in Basic and Applied Science courses as well as (2) INSPIRE scholar, who have secured aggregate marks of 65 % or above at the 2 year MSc or 5 year Integrated MSc/MS.

### 2. INSPIRE Faculty Scheme

INSPIRE Faculty Scheme opens up an ‘Assured Opportunity for Research Career (AORC)’ for young researchers in the age group of 27-32 years. It is expected to augment high quality scientific manpower in scientific and educational institutions. It provides attractive opportunities to young achievers for developing independent scientific profiles and intends helping them emerge as S&T leaders in the long term. The Scheme offers contractual research positions. It provides career opportunities, but it is not a guarantee for tenure positions after 5 years.



## 'Learning Science'

### Organizing Committee

#### Academic Committee:

Prof. (Dr.) Papiya Nandy, Hony. Director, JBNSTS  
Dr. Paromita Roy, Dy. Director, JBNSTS  
Dr. Abhijit Kar, Scientific Officer, JBNSTS  
Dr. Smarajit Manna, Student Advisor, JBNSTS

#### Camp Coordinators:

Shri Joydip Das, Asst. Director (Admin), JBNSTS  
Mr. Dipankar Sarkar, JBNSTS

#### Mentors

##### **Dr. Deb Shankar Ray**

Professor and Director  
Indian Association for the Cultivation of Science  
Jadavpur, Kolkata

##### **Dr. Debasish Bhattacharyya**

Scientist-G, Structural Biology & Bio-Informatics Division  
Indian Institute of Chemical Biology, Kolkata

##### **Dr. Ashesh Nandy**

Center for Interdisciplinary Research and Education Kolkata

##### **Dr. Mukul Kr. Basu**

Former Emeritus Scientist, Director Grade Scientist  
& Head of Bio-membrane Division  
Indian Institute of Chemical Biology, Kolkata

##### **Dr. Parthasarathi Mukhopadhyay**

Associate Professor, Department of Mathematics  
R K Mission Residential College, Narendrapur

##### **Shri Samar Bagchi**

President  
Kishore Bharati Development Society, Kolkata

##### **Dr. B.N. Das**

Science Communicators' Forum, Kolkata

##### **Shri G S Rautela**

Director General, National Council of  
Science Museums, Kolkata

##### **Dr. Swapan Kr. Das**

Chief Scientist, Refractories Division  
Central Glass & Ceramic Research Institute, Kolkata

##### **Dr. Amita Chatterjee**

Emeritus Professor, School of Cognitive Science,  
Jadavpur University, Kolkata



##### **Dr. Subhrangsu Aditya**

School of Bio Science & Engineering  
and School of Cognitive Science  
Jadavpur University, Kolkata

##### **Dr. Paromita Roy**

Deputy Director  
JBNSTS, Kolkata

##### **Dr. Bimal Kr. Roy**

Professor and Director  
Indian Statistical Institute, Kolkata

##### **Dr. Anupam Basu**

Professor, Computer Science & Engineering &  
Prof-in-charge, Media Lab Asia  
Indian Institute of Technology, Kharagpur

##### **Dr. P. Pramanik**

Professor, Department of Chemistry  
Indian Institute of Technology, Kharagpur

##### **Dr. Sujit K. Basu**

Professor and Former Vice Chancellor  
Visva Bharati University, Shantiniketan  
& Working President, Rabindra Bharati Society, Kolkata

##### **Dr. Riddhi Majumder**

Assistant Professor, Department of Microbiology  
St. Xavier's College, Kolkata

##### **Dr. Abhishek Dey**

Associate Professor, Department of Chemistry  
Indian Association for the Cultivation of  
Sciences Jadavpur, Kolkata

## **CAMP RULES**

### **Welcome to the 39<sup>th</sup> Science Camp 'Learning Science'**

Here you will have a unique experience of learning science through active interaction with great scientists and be encouraged to share your ideas with others. No test/grade – only learning science in a different way.

#### **General Instructions:**

- The camp hours are from **09:00 a.m. to 6:00 p.m.** You are to attend all the sessions in your school uniform. **MOBILE PHONES MUST BE KEPT IN SWITCHED OFF MODE DURING ALL ACADEMIC SESSIONS.**
- Each participant has to make registration twice daily, once in the morning and other in the afternoon before starting of post lunch session.
- All the participants will be divided into groups. There will be a group leader for each group selected by group members of each group. On **30<sup>th</sup> November, 2013** during 10:00 a.m. – 01:00 p.m. there will be a session for Project Presentation on 'Toy Making'. Each group will get 10 minutes for presentation/ demonstration and 5 minutes for discussions.
- You will not be given any home work, but you are expected to interact freely with the experts, your group members and other groups.
- SUBMISSION OF ALL DOCUMENTS AND REIMBURSEMENT WILL BE MADE AT **REGISTRATION DESK ONLY.**

#### **Submission of important documents:**

- You are required to submit an attested copy of your 10<sup>th</sup> Standard Board Examination Mark Sheet, held in 2013 and filled-in STUDENT'S INFORMATION SHEET during the afternoon registration on **26<sup>th</sup> November, 2013.**
- All students of the Science Camp will receive a library membership of British Council Library (BCL) (with 1 year validity). During that period you will be able to borrow book(s) from BCL and search/ read books online. You will be given a 'Registration Form' (**26<sup>th</sup> November, 2013**) for the library membership which you need to fill up and submit to us on **27<sup>th</sup> November, 2013 during afternoon registration.**
- Travel bills (local, as per norms) are to be submitted on **29<sup>th</sup> November, 2013 during morning registration.**
- You are required to fill up the FEED BACK SHEET and submit it on **30<sup>th</sup> November, 2013 during afternoon registration.**

#### **Reimbursements:**

- Reimbursement for Travel expenses and BCL membership card distribution will be made on **30<sup>th</sup> November, 2013 during 01.00 p.m. to 02.00 p.m.**
- On the last day i.e. **30<sup>th</sup> November, 2013** you will receive the **Participation Certificate.**

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### **Name of the participating schools:**

- Modern High School for Girls', Kolkata
- Indus Valley World School, Kolkata
- South Point High School, Kolkata
- Abhinav Bharti High School, Kolkata
- St. Xavier's Collegiate School, Kolkata
- Bhavan's Gangabux Kanoria Vidya Mandir, Salt Lake
- Sailendra Sircar Vidyalaya, Kolkata
- Delhi Public School, Ruby Park, Kolkata



### BRIEF INTRODUCTION TO THE EXPERTS

#### DR. PAPIYA NANDY

Prof. Papiya Nandy received her Masters degrees in Physics from University of Calcutta and University of California at Santa Barbara and Ph.D. on Liquid Crystals from Kent State University, USA. Her post-doctoral work was in Experimental Biophysics from Max Planck Institute, Göttingen, Germany. Later she was Associate Professor of Physics in University of Ulm, Germany. She joined Physics department in Jadavpur University and besides teaching for more than 30 years in the Science and Engineering faculties, she was and still is in charge of several research projects. Her field of research encompasses membrane biophysics. She has more than hundred research publications in peer reviewed journals and 3 patent awards. She has guided more than 12 Ph.D. Thesis and 20 Masters Thesis. She is currently the Emeritus Fellow of Jadavpur University and the Hony. Director of JBNSTS, of which she is a scholar from the first batch in 1960. Here her objective is to make JBNSTS a vibrant and dynamic institute and to motivate, identify and nurture young talented science students and establish the base of Scientific enquiry and culture of tomorrow.

#### DR. DEB SHANKAR RAY

Dr. Deb Shankar Ray is presently the Director of Indian Association for the Cultivation of Science, Kolkata. He is a Senior Professor of Physical Chemistry department of the same institute. He did his M.Sc. and Ph. D. from Calcutta University. His academic career includes the positions such as Lecturer in the Department of Chemistry, Jadavpur University, Sr. Lecturer, Reader, Professor and Sr. Professor at IACS. His current interests in research lies on nonlinear dynamics, chemical dynamics and stochastic processes, particularly in the context of rate theory of chemical reactions, quantum Brownian motion, nonequilibrium fluctuation induced phenomena like ratchets and pattern formation in reaction-diffusion systems. Prof. Ray has published more than 105 research papers in various National & International Journals.

#### DR. DEBASISH BHATTACHARYYA

Dr. Debasish Bhattacharyya, currently the Deputy Director and Scientist G, Division of Structural Biology and Bioinformatics, Indian Institute of Chemical Biology, Kolkata, obtained his Ph.D. degree in Chemistry from Calcutta University. His major area of research is Protein Structure-Function and Enzymology. Dr. Bhattacharyya has published 58 research papers and reports, one review article and he has one patent also. In his academic career, he has occupied several distinguished positions such as adjunct faculty at Department of Biochemistry, Calcutta University, School of Life Sciences and Biotechnology, Jadavpur University, Department of Life Science, Tripura University, Post Graduate Sections of Bethune College and Bijoigarh College and NIPER. Dr. Bhattacharyya has been serving as a member of Board of Studies of Calcutta University, Biochemistry (B.Sc). There are 12 students were awarded Ph. D. degree and 5 students are currently working for Ph.D. under his research guidance. Dr. Bhattacharyya has received various research grants from DST, DBT, ICMR, CSIR. etc.

#### DR. ASHESH NANDY

Dr. Ashesh Nandy is currently associated with Center for Interdisciplinary Research and Education, Kolkata. He is a member of the Condensed Matter Physics Research Centre, Jadavpur University. He did his B.Sc. and M.Sc. in Physics from Calcutta University and received his Ph.D. from University of California, Santa Barbara, USA. He was a postdoctoral fellow of Syracuse University, U.S.A. and Max plank Institute, Göttingen, Germany. He was associated with the Computer Division of Lipton India Ltd and Indian Institute of Chemical Biology, Kolkata, School of Environmental Science, Jadavpur University as Visiting Scientist. He was a recipient of several scholarships: Earle C Anthony Fellowship from University of California, Max Plank institute fellowship and is a JBNSTS scholar of the first batch. His current research interest focuses on bioinformatics.

#### DR. MUKUL KUMAR BASU

Dr. Basu is a Former Emeritus Scientist, Director Grade Scientist & Head of Bio-membrane Division at Indian Institute of Chemical Biology, Kolkata. He did his Ph.D. in Physical Chemistry from Jadavpur University in 1970. He is a Fellow of Royal Society of Chemistry, London; West Bengal Academy of Science & Technology, Kolkata; National Academy of Sciences, India; Indian Academy of Sciences, Bangalore, India. His research interest includes Host-parasite interactions, Structure function of biomembrane and model membrane, Drug targeting at specific sites using different vesicular delivery modes and Surface properties of membrane systems. Dr. Basu has published more than 100 research articles in national and international peer reviewed journals. He has co-authored two books. He has also acted as a reviewer of national and international journals. He had been felicitated as 'Scientist of Merit' by Science Association of Bengal for outstanding activities in the field of scientific research and development on National Science Day (February 28) in 1995. He was nominated by Director General, CSIR, to act as an expert on advanced drug delivery systems under 'The New Millennium Indian Technology Leadership Initiative (NMITLI) Programme' in 2000. He has also been felicitated by Institution of Chemists (India) for delivering H. K. Sen Memorial Award lecture on Site Specific Drug Delivery in 2008.

**DR. PARTHASARATHI MUKHOPADHYAY**

Dr. Mukhopadhyay is the Associate Professor of Mathematics in Ramkrishna Mission Residential College, Narendrapur. He is also a guest faculty (Post Graduate) at Ramkrishna Mission Vidyamandir, Belur Math. Dr. Mukhopadhyay is M.Sc. in Pure Mathematics and also completed M. Phil & Ph.D. in Mathematics from C.U in the year 1991 & 2000 respectively. He published lot of papers in National & International Journals. He also published books for undergraduate level and school level. He attended many conferences & seminars at National & International level. He is a life time member of the Calcutta Mathematical Society.

**SHRI SAMAR BAGCHI**

Shri Bagchi is presently the President of Kishore Bharati Development Society. He is the former Director of Birla Industrial & Technological Museum and at that time another 5 science museums in eastern India were under his jurisdiction. He is connected with science popularization and is a board member of several educational institutions. Shri Bagchi has organized the popular science quiz program “Quest” in Doordarshan from 1983 – 88. In 1992, he has got National Award for his contribution in Science Popularization through Mass Medium. He is a member of the Advisory Committee in NCERT and Council of Science & Technology, Govt. of W. Bengal. He is also an environmental & social activist.

**DR. B.N. DAS**

Dr. Das was reader in Physics in Vivekananda College, Kolkata. After retirement he joined as a guest lecturer in P.G. teaching in Presidency College. Then he was appointed as the Joint Secretary of National Executive Council of I.A.P.T and later on he acted as a Vice President over there. Presently he is associated with Science Communicators Forum, as Vice President. He has been relentlessly working to improve Science Education in Schools. He has also visited some renowned National & International organizations. Paris, Work shire, London are those international locations.

**SHRI GANGA S RAUTELA**

Mr. G.S. Rautela is the Director General of the National Council of Science Museums, a network of 27 science centres in India. Prior to this, he was the Director of Science City, Kolkata and Director of Nehru Science Centre, Mumbai, Project Co-ordinator of Hall of Science, Technology and Energy, New Delhi, Regional Science Centre, Bhopal and Curator, Nehru Science Centre, Mumbai. After obtaining masters degree in Physics, he did his research work in Science Education at National Council of Educational Research and Training, New Delhi and thereafter chose to become a science communicator. He joined the National Council of Science Museums, Kolkata in 1979 and later worked for various science centres across the country. During his career spanning 33 years in science education and communication field, he has contributed to development of science centres and museums, hands-on and minds-on science exhibits, exhibitions and activities and non-formal science education programmes for students, teachers and general public and research on ‘Learning in non-formal Setting’. He is associated with number of organizations engaged in enhancing public understanding of science. He is currently engaged in science education research/literacy programmes and proliferation of non-formal science education initiative of Govt. of India. He has largely devoted his time in improving the quality of science education in our schools and colleges. He is also associated with International Science & Engineering Fair since its launch in India in 1998 by Intel. Shri Rautela, also is very active in the museum field at national and international level. He served as Chairman of the International Committee on Museum Education and Cultural Action of the ICOM and presently is the Secretary of ICOM India Trust. He is member of governing boards of number of educational institutions, science centres, museums and planetariums in the country. Shri Rautela has published over 50 articles, research papers and monographs on science, education and science centre/museum related issues.

**DR. SWAPAN KR. DAS**

Dr. Swapan Kumar Das, Chief Scientist, CSIR-Central Glass & Ceramic Research Institute, Kolkata obtained his Ph D degree in Ceramic Engineering in 1994 after completing his M. Tech Degree from Calcutta University. He served industries namely Graphite India, BHEL, Murdeshwar Ceramics in the R&D and Technology Department quite for a long time. Then he moved to CSIR -NML, Jamshedpur & CGCRI. He is engaged in R&D on High temperature materials (Refractory), Wear Resistant Ceramics, Solid Waste utilization and Traditional Ceramics. He has developed several technologies and transferred many of them to industries. He involved in many projects with industries like Vizag Steel Plant, ESSER Steel, Tata Steel, TRL Krosaki, DVP Ltd. Kerneos, ACE Caldreys. He has in his credit more than 120 published papers and 25 patents. He received several awards such as Ganpule, Deokaran, VA Altekar, best project award, and CGCRI Diamond Jubilee award and most recently he received Refractory Technologist Award, 4th CIDC Viswakarma Award and IRMA award for his contribution in Refractory Science & Technology. He visited several countries as Session Chairman, invited speaker in the international conferences and also as International Advisory Board Member. He has represented BIS as Indian team leader for ISO TC33/Refractory meeting held at Kyoto, Japan in 2011. He is serving IITs, Universities as Ph D supervisor, M. Tech Thesis guide, conducting examinations. He guided post doctorate foreign student under CSIR-TWAS scholarship programme. He is the regular reviewer of many National and International science index journals. He is an Expert Member of many committees such as DST, Vizag Steel Plant campus interview, Calcutta University Ph D committee and Chairman of many selection committees at CSIR-CGCRI and NML.

## 'Learning Science'

### **DR. AMITA CHATTERJEE**

Dr. Chatterjee is an Emeritus Professor, School of Cognitive Science, Jadavpur University. She is the first Vice-Chancellor of the prestigious Presidency University, retired recently as a Professor of Philosophy from Jadavpur University. Dr. Chatterjee did her post-graduation from Calcutta University and was awarded PhD from the same university. She taught philosophy for more than 30 years at Jadavpur University. Areas of her research interests include Epistemology, Philosophy of Mind, Logic and Philosophy of Logic, Philosophy of Biology, Philosophy of Cognitive Science, General Philosophy of Science and Cognitive Sciences.

### **DR. SUBHRANGSU ADITYA**

Dr. Aditya, M.B.B.S. from NRS Medical College (2000), senior JBNSTS scholar (1995) is currently pursuing his research at School of Bio Science & Engineering, Jadavpur University. Besides, He is a guest faculty for the M. Phil. Course in Cognitive Science in the School of Cognitive Science, Jadavpur University as. He is also a guest faculty for the Advanced Diploma Course in Stress Management in the Center for Counselling Services and Studies in Self-Development, Jadavpur University (CCSSS-JU). He is an associate member of SAMIKSHANI Centre for Psychoanalytical Studies and Mental Therapy. He has publications in various international journals (such as International Journal of Artificial Intelligence and Soft Computing, 2012; International Journal of Computational Vision and Robotics, 2009) and conference proceedings (such as 2010 IEEE Students' Technology Symposium; International Joint Conference on Artificial Intelligence: IJCAI-2007; International Workshop on Spatial Issues in Language and Vision: SLIV-2005); authored a bilingual book entitled "Ragaragir paristhiti kibhabe samlano jay" ("Managing anger provoking situations") published from Jadavpur University Press (JUP), 2012 and book chapters (such as "Ethical Issues in Mental Health Services from Consumers' Perspective" published in the book Ethical Issues in Mental Health Services, 2009; "Determinants of Perception: A Neurophysiological Perspective" published in the book Determinants of Perception, 2009). He participated as a resource person in the UGC Sponsored Refresher Course "Art and Science of Mechatronics and its Application in Robotics" held at Electrical Engineering Department, Jadavpur University. He was invited to present a paper entitled "Protecting Children in Cyberspace" at the Institute of Engineers (India), West Bengal State Centre, on the World Telecommunication and Information Society Day, May 17, 2009 and a talk on "Brain Mapping and Brain Computer Interfacing (BCI)" in the "Faculty Development Programme under TEQUIP-II" at College of Engineering and Management, Kolaghat, January 18, 2013. His current areas of interest are Cognitive Neuroscience, Biosignal Processing, Artificial Intelligence, Psychological Counselling, Stress Management, Cyber-relationship etc.

### **DR. PAROMITA ROY**

Dr. Paromita Roy did her Bachelors in Psychology (with special paper in family counseling), as well as in Masters in Industrial Psychology and Organizational Behavior from Delhi University. She received her PhD from Delhi University in Clinical Psychology and worked in the field of cognitive deficits in schizophrenia from Delhi University. Dr. Roy has extensive field experience in the area of clinical psychology. Her expertise is in educational psychology, soft skill training, human resource development, curriculum planning, strategy development, pedagogy, teacher training and student counseling. She has been with JBNSTS since 1993. Her focus is on educational paradigms with a socio-holistic view. With her long experience with creative science students and teachers, she has been instrumental in designing tailor made science enrichment programs.

### **DR. BIMAL K. ROY**

Professor Bimal K. Roy is presently the Director, Indian Statistical Institute, Kolkata. He did his Bachelor of Statistics & Master of Statistics from Indian Statistical Institute, Kolkata and Ph.D. in Combinatorics from University of Waterloo, Canada. During his academic career, Dr. Roy occupied several distinguished positions such as assistant professor and associate professor at Department of Computer Science, SUNY at Utica, lecturer, associate professor at Computer Science Unit and professor at Applied Statistics Unit, Indian Statistical Institute, Kolkata. He is associate editor of Journal of Ad Hoc & Sensor Wireless Networks, Journal of Wireless Sensor Networks and member of UNESCO Technical Advisory Committee for Asia-Pacific region, Program advisory committee for Mathematical Sciences, Department of Science and Technology (DST), India, Technical Advisory committee for surveys, Reserve Bank of India and Board for Security and Assurance, National Association of Software and Service Companies (NASSCOM). Prof. Roy is the Founder-Secretary, Cryptology Research Society of India. His research interest involves all aspects of Statistics and its applications including Combinatory and application of Statistics in Cryptology and Design of Experiments. He is a recipient of many awards and honors such as India - Reliance Platinum Jubilee Award for innovation in Physical Sciences, National Academy of Science, 2007 and IBM Faculty Award 2007 for research, teaching and initiative in Cryptology and Security.



**DR. ANUPAM BASU**

Dr. Anupam Basu, currently Professor, Computer Science & Engineering and Prof-in-charge, Media Lab Asia - IIT-KGP Lab, did his Ph.D. from IIT Kharagpur. He is a fellow of Indian National Academy of Engineering. In his academic career Dr. Basu is the recipient of several awards and honors such as da Vinci Award by the Engineering Society of Detroit, U.S.A and Multiple Sclerosis Society of Michigan, U.S.A, Sir. J. C. Bose Memorial Award for Best Engineering Paper in IETE, and Alexander von Humboldt Fellowship He has publishes many research papers in reputed journals and is receiving several project grants.

**DR. P. PRAMANIK**

Dr. Pramanik is currently a Professor of Chemistry at IIT, Kharagpur. He did his Ph. D. from IIT, Kharagpur. His research areas are Nanoscience and Nanotechnology and Material Chemistry. He has published several research papers in national and international peer reviewed journals. Dr. Pramanik received Chemical Research Society of India Medal in 2002.

**DR. SUJIT K. BASU**

Dr. Sujit K. Basu currently the Director, NSHM Knowledge Campus, Kolkata did his M. Sc with gold medal from Calcutta University and Ph. D from the University of North Carolina at Chapel Hill, USA and post doctoral research from the Universite de Montreal, Canada. Dr. Basu occupied various distinguished positions in renowned institutes such as Presidency College, Kolkata, Indian Statistical Institute, Kolkata, Indian Institute of Technology, Kharagpur, Indian Institute of Management Calcutta, Army's National Institute of Management, and the Vice-Chancellor of Visva-Bharati. He was also the Director General at the Institute of Integrated Learning in Management, New Delhi and the Director of the International School of Business, Kolkata and also at the NSHM Knowledge Campus, Kolkata and the Director at the Management Development Institute popularly known as MDI, Gurgaon. He is a statistician of international repute and has contributed extensively to the development of knowledge specially in the area of mathematical statistics. He is well known for his research in probability theory, statistical inference, reliability theory and inventory control. He has published extensively in top national and international journals and visited various countries like USA, Canada, China, Japan, Taiwan, Iran, Korea and several countries in Europe. In recognition of his academic contributions, Professor Basu received various awards and honors such as the title of Fellow from the West Bengal Academy of Science and Technology, elected member of the prestigious International Statistical Institute, Amsterdam, Netherlands. University Medal of Highest Honour from The Kyung Hee University, Korea, the P.C. Mahalanobis Medal from Indian Science News Association, University Medal of Highest Honor by the Soka University, Tokyo, etc. He has edited a number of volumes in statistics and is a Co-Editor of the prestigious Indian journal of statistics SANKHYA. Besides, he has published articles both in Bengali and English on the Indian Nobel Laureate Rabindranath Tagore, his thoughts and philosophy and other contemporary topics.

**DR. RIDDHI MAJUMDER**

Dr. Majumder is the Assistant Professor at Department of Microbiology of St. Xavier's College. He did Graduation in Botany (Hons.) and post-graduation in Biophysics and Molecular Biology from University of Calcutta. He obtained Doctoral degree in Biological Sciences from Tata Institute of Fundamental Research (Deemed University), Mumbai, INDIA on thesis titled "Mechanism of endocytosis: genetic and molecular studies." Dr. Majumder did his post-doctoral research at NCBS-TIFR, Bangalore in collaboration with Center for Basic Neuroscience, UT Southwestern, Dallas, USA on the role of endocytosis in signaling and development. His present research interest lies on cellular trafficking and signaling using *Drosophila* as model system.

**DR. ABHISHEK DEY**

Dr. Dey is presently the Associate Professor at the Department of Chemistry of Indian Association for the Cultivation of Sciences, Kolkata. He has completed his Ph.D. from Stanford University, CA, USA. Now he is associated with Indian Association for the Cultivation of Science, Kolkata. During his academic career he has been awarded by different prestigious awards like Jagadis Bose National Science Talent Search Award (1997), Jawaharlal Nehru Center for Advanced Scientific Research Summer Fellowship (1998), Bijoy Memorial and Bholanath Das scholarship for best science student of Presidency College, Kolkata (1998), MCM fellowship, Indian Institute of Technology, Kanpur (1999-2001), Summer Fellowship at University of Tromso, Norway (2001), Best Poster Award, 2nd Asian Biological Inorganic Chemistry Conference, Goa, India(2004), Faustus Best Poster Award, 12th International Conference of Bio-Inorganic Chemistry, MI, USA (2005), Evelyn Laing Mc Bain Stanford Graduate Student Fellowship, Stanford University, USA (2006-2007), ACS Division of Inorganic Chemistry, Young Investigator Award(2007). Till now he has 31 publications in reputed national and international science daily and journals.

## 'Learning Science'

### Day to Day Program

#### Day 1 : Tuesday, November 26, 2013

- 09:00 a.m. – 10:00 a.m. Registration  
10:00 a.m. – 11:30 a.m. **Welcome Address** by the Hony. Director, JBNSTS and Orientation of Participants  
11:30 a.m. – 01:00 p.m. **Motivational Lecture**  
**Dr. Deb Shankar Ray**, Professor and Director Indian Association for the Cultivation of Science, Jadavpur, Kolkata  
01:00 p.m. – 02:00 p.m. Lunch & Interaction  
02:00 p.m. – 03:30 p.m. **"How to address Alzheimer's disease"**  
**Dr. Debasish Bhattacharyya**, Scientist – G  
Structural Biology & Bio-Informatics Division, Indian Institute of Chemical Biology, Kolkata  
03:30 p.m. – 05:00 p.m. **"Team Sprit in Science"**  
**Dr. Ashesh Nandy**, Center for Interdisciplinary Research and Education, Kolkata  
05:00 p.m. – 06:00 p.m. Session for **British Council Library**

#### Day 2 : Wednesday, November 27, 2013

- 09:00 a.m. – 10:00 a.m. Registration  
10:00 a.m. – 11:30 a.m. **"Site-Specific Drug Delivery"**  
**Dr. Mukul Basu**, Former Emeritus Scientist, Director Grade Scientist & Head of Bio-membrane Division, Indian Institute of Chemical Biology, Kolkata  
11:30 a.m. – 01:00 p.m. **"Story of Calculus"**  
**Dr. Parthasarathi Mukhopadhyay**, Department of Mathematics, R K Mission Residential College, Narendrapur, Kolkata  
01:00 p.m. – 02:00 p.m. Lunch & Interaction  
02:00 p.m. – 05:00 p.m. **"Demonstration of Science Experiments"**  
**Shri Samar Bagchi**, President, Kishore Bharati Development Society, Kolkata  
& **Dr. B.N. Das**, Science Communicators' Forum, Kolkata  
05:00 p.m. – 06:00 p.m. **Summing up Session**

#### Day 3 : Thursday, November 28, 2013

- 09:00 a.m. – 10:00 a.m. Registration  
10:00 a.m. – 11:30 a.m. **"Misconceptions in Science – Questions you should have asked" & "Careers in Science"**  
**Shri G S Rautela**, Director General, National Council of Science Museums, Kolkata  
11:30 a.m. – 01:00 p.m. **"Intervention of Ceramic Science and Technology for Humanity: A Holistic Approach"**  
**Dr. Swapan Kr. Das**, Chief Scientist, Refractories Division Central Glass & Ceramic Research Institute, Kolkata  
01:00 p.m. – 02:00 p.m. Lunch & Interaction  
02:00 p.m. – 05:00 p.m. **"Students' & Parents' Counseling"**  
**Dr. Amita Chatterjee**, Emeritus Professor, School of Cognitive Science, Jadavpur University,  
**Dr. Subhrangshu Aditya**, School of Bio Science & Engg. & School of Cognitive Science,  
Jadavpur University & **Dr. Paromita Roy**, Deputy Director, JBNSTS, Kolkata  
05:00 p.m. – 06:00 p.m. **Summing up Session**

#### Day 4 : Friday, November 29, 2013

- 09:00 a.m. – 10:00 a.m. Registration  
10:00 a.m. – 11:30 p.m. **Motivational Lecture**  
**Dr. Bimal K Roy**, Professor and Director, Indian Statistical Institute, Kolkata  
11:30 a.m. – 01:00 p.m. **Motivational Lecture**  
**Dr. Anupam Basu**, Professor, Computer Science & Engg. & Professor-in-charge, Media Lab Asia, Indian Institute of Technology, Kharagpur  
01:00 p.m. – 02:00 p.m. Lunch & Interaction  
02:00 p.m. – 03:30 p.m. **"Challenges of Nano-Science and Technology"**  
**Dr. P. Pramanik**, Professor, Department of Chemistry, Indian Institute of Technology, Kharagpur  
03:30 p.m. – 05:00 p.m. **"Quantitative Techniques in Decision Making"**  
**Dr. Sujit K. Basu**, Professor & Former Vice Chancellor, Visva Bharati University, Shantiniketan & Working President, Rabindra Bharati Society, Kolkata  
05:00 p.m. – 06:00 p.m. **Summing up Session**

#### Day 5 : Saturday, November 30, 2013

- 09:00 a.m. – 10:00 a.m. Registration  
10:00 a.m. – 01:00 p.m. **Project Presentation** by participating students  
01:00 p.m. – 02:00 p.m. Lunch & Interaction  
02:00 p.m. – 03:30 p.m. **"Observing few Wonders of Modern Biology"**  
**Dr. Riddhi Majumder**, Assistant Professor Department of Microbiology, St. Xavier's College, Kolkata  
03:30 p.m. – 05:00 p.m. **Motivational Lecture**  
**Dr. Abhishek Dey**, Associate Professor  
Department of Chemistry, Indian Association for the Cultivation of Sciences, Jadavpur, Kolkata  
05:00 p.m. – 06:00 p.m. **Summing up Session**