The 41\textsuperscript{st} Refresher course on Experimental Physics was organised by St. Xavier's College, Kolkata and was jointly sponsored by Indian Academy of Sciences, Bangalore, Indian National Science Academy, Delhi and the National Academy of Sciences of India, Allahabad and St. Xavier's College, Kolkata from September 04 – September 19, 2012.

The course started with a short inaugural program on 4\textsuperscript{th} September around 10:30 am, right after having the participants registered for the program. The Principal, Rev. Fr. Felix Raj welcomed the director of the course, Prof. R. Srinivasan and emphasized on the fact that such an effort has been made for the first time by the Dept. of Physics at St. Xavier's College. He also welcomed the participants and wished them a successful workshop. Prof. Srinivasan, in his address, spoke about the history and the utility of this refresher course and also gave a brief introduction on the contents of the course. The course co-ordinator, Dr. Subnahnkar Ghosh also welcomed the participants and expressed his gratitude to the entire Physics department and the Principal for making this happen. After this program, lectures by different resource persons started.

The first day witnessed lectures by Dr. Sudipto Roy of St. Xavier's College, Dr. Sougata Bhattacharya of Vidyasagar College and Dr. Shibaji Banerjee of St. Xavier's College. The lectures spanned from a short description and working principles of instruments which would be used for the experiments like a constant current, a DC Differential Amplifier, signal generators and power amplifiers to actual description of experiments like the determination of Young's modulus using dynamical method, rigidity modulus and finding temperature coefficient of a copper resistance. The second day started with a talk by Dr. Aparajita Nag from BKC College on Capacitance meter and determination of di-electric constant of benzene and dipole moment of acetone. This was followed by a talk on Debye relaxation and its determination using a serial light bulb by Dr. Shibaji Banerjee, Stefan's const. and determination of high resistance through capacitor discharge by Dr. Sudipto Roy before lunch.

The post-lunch session, Dr. Sougata Bhattacharya talked about AC experiments using L, C and R circuits followed by a lecture on thermal diffusivity measurement of brass by Prof. Srinivasan. On the third day, the pre-lunch session was started by Dr. Sudipto Roy with a talk on thermal and electrical conductivity of Copper and thermal conductivity determination of a poor conductor, which was followed by a lecture on phase-sensitive detection and lock-in amplifier by Prof. Srinivasan and finally ended with a talk on verification of Curie-Weiss law for a ceramic capacitor by Dr. Aparajita Nag. In the post-lunch session, Dr. Sougata spoke about AC bridges with Prof. Srinivasan speaking about using the lock-in amplifier to measure mutual inductance and low resistance. Finally the day ended with a lecture on error analysis by Dr. Shibaji Banerjee. The fourth day had lectures on Non-linear circuits by Prof. Srinivasan, B-H loop and k/e determination using a transistor by Dr. Aparajita Nag, calibration of a Cu-Con thermocouple and a Si diode as a temperature sensor by Dr. Sudipto Roy and finally passive filter by Dr. Sougata Bhattacharya. The last day in the first week had an introductory lecture on Fourier analysis by Prof. Srinivasan. After this, the participants were divided into groups of two each and were set experiments to perform at the rate of two per day. Some of the experiments were such that a single set-up was used to perform multiple investigations which was the best part of this refresher course. It was the genius of Prof.
Srinivasan and his team members and several years of hard and dedicated labour that resulted in such compact set-ups in which one could perform several experiments simply to gain valuable insights into varied and different physical phenomenas. The participants were expected to perform seventeen experiments in the course of 9 days, with each day being divided into 2 halves – pre-lunch and post-lunch.

The 2nd week witnessed some special lectures by scientists and celebrated physics teachers on different aspects of Experimental Physics. The first such lecture was delivered by Prof. P. K. Chakroborty, Dean, P. G. Studies, St. Xavier's College on simple experiments that he had designed for exemplifying simple physical phenomenas. The next one was delivered by Dr. D. N. Bose on Silicon thin films and their specialities. This was followed 2 days later by a lecture by Dr. Anjan Burman of S.N.Bose National Centre for Basic Sciences on Magnetic nano-dots and their studies. In this series, the final lecture was delivered by Dr. Achintya Dhar of IIT, Kharagpur on X-ray studies of thin films and nano-structures. These lectures were interspersed by a couple of lectures on alternate days by Prof. Srinivasan on determination of inversion temperature of Fe-Cu thermocouple by thermo-emf analyser and tracking the phase transition of Nitinol, which is a shape memory alloy by tracking the change of resistance of a material with temperature.

Finally, all the participants finished their experiments by Tuesday, 18th September, 2012 leaving a the last day for discussion, feedback and the valedictory session. However, there were also a couple of slots in the 2nd week where the participants had an interactive discussion session on the experiments and their difficulties, if any with Prof. R. Srinivasan.

The course was quite a revelation in terms of designing and using low cost instruments to demonstrate important physical phenomenas. The resource persons with extremely helpful and co-operative. The participation and continual support of Prof. Srinivasan during the experiment sessions everyday was out of the world. Finally, to end, as pointed out by Prof. Srinivasan throughout this course, it was realized that it is important to have small, basic and simple designs for experiments to be able to maintain and handle them better during an academic curriculum.