



Online Workshop On Undergraduate Physics Experiments



Organized by

Department of Physics, Victoria Institution (College)

in Collaboration with

***Indian Association of Physics Teachers,
Regional Council 15***

Date: 27th, 28th Nov & 2nd Dec, 2021

We feel concerned that regular practical classes could not be held for the last eighteen months due to the pandemic. To partly compensate for this loss VIC is going to organize an Online Workshop on Undergraduate Physics Experiments in collaboration with IAPT, RC 15. **This workshop is dedicated to the memory of Late Prof. D. P. Khandelwal, founder of the IAPT.**

Our aim is to enhance the ability of the students to perform experiments using simple and easily accessible equipments. Through demonstrations and discussions, resource persons will explain possible ways of performing the experiments. This will enable students to carry out most of these experiments, **EVEN AT HOME**. Students will thus be better equipped to learn the subject through direct experience.

Registration Link: <https://forms.gle/MBQU82DLhBbPJgzX6>

Registration closes on 24/11/2021 at 1:00 PM

E-certificate of participation will be provided.

Contact: E-mail:-vicphysicswebinar@gmail.com

Sample Experiments

- 1) Young's Modulus of a steel ruler by the method of flexure.
- 2) Determination of the focal length and radius of curvature of an equiconvex lens using the lens as a concave mirror.
- 3) Velocity of sound by the resonance air column method.
- 4) Determination of
 - a) an unknown resistance and
 - b) an unknown current in a circuit by a potentiometer.
- 5) Dispersion of light in a lens using LED's of different colors.

Program schedule

27th Nov, 2021: 6PM

28th Nov, 2021: 4PM

2nd Dec, 2021: 7PM

Patrons

Dr. Nibedita Chakrabarti

Principal

Victoria Institution (College)

Convenor

Dr. Surajit Chakrabarti

Associate Professor of Physics (Retired),
Maharaja Manindra Chandra College.

Currently Guest Faculty :

Ramakrishna Mission Vidyamandira, Belur Math

Prof. Gour Prasad Das

President, IAPT, RC15

Distinguished Visiting Faculty,

Department of Physics,

St Xavier's College, Kolkata

Co-Convenor

Dr. Shinjinee Das Gupta

Head, Department of Physics,
Victoria Institution (College)

A Report on the
Online Workshop On Undergraduate Physics Experiments
Organized by the Department of Physics, Victoria Institution (College), Kolkata
in Collaboration with the Indian Association of Physics Teachers, Regional Council 15
(Dedicated to the memory of Late Prof. D. P. Khandelwal, Founder of IAPT)

Educational system has suffered enormously during the pandemic. Practical based subjects have suffered the most as experiments can hardly be done in online mode. In order to partly compensate this loss, a three-day **Online Workshop On Undergraduate Physics Experiments** was organized by the **Department of Physics, Victoria Institution (College), (VIC) in Collaboration with the Indian Association of Physics Teachers, Regional Council 15 (IAPT, RC 15)**. The workshop was held on 27th, 28th Nov & 2nd Dec, 2021. Resource persons delivered online talks on several experiments at the undergraduate 1st and 2nd year levels with demonstrations and videos. The experiments were so designed that **the students could perform them using simple and easily accessible equipments even at their homes.**

The welcome address in the Inaugural session was delivered by Dr. Pratibha Pal, Associate Prof, Dept. of Physics, VIC . This was followed by an introduction of IAPT by Dr. Bhupati Chakrabarti. The motivation for organizing this workshop was highlighted by Dr. Surajit Chakrabarti, a senior member of IAPT.

Dr. Bhupati Chakrabarti, Ex-Professor, City College, Kolkata and former General Secretary of IAPT, the resource person of the first technical session, discussed the method to determine the Young's Modulus of a long wooden ruler in the form of cantilever by observing of its free end oscillation and also verification of Newton's Law of cooling by measuring the heat loss by a glass of water using a digital thermometer. Mr. Soumen Sarkar, Assistant Teacher of Physics, Karui P.C. High School, Hooghly, WB demonstrated the measurement of the focal length of a biconvex lens, focal length of a concave lens by the method of combination using the torch of a mobile phone as a source of light. He then explained how to find the refractive index of water kept in a bucket with a plastic ruler immersed in it. The idea of parallax was explained with a video demonstration by Dr. Surajit Chakrabarti, Ex-Professor, Maharaja Manindra Chandra College. He also enlightened the participants on the measurement of the focal length of an equiconvex lens and its radius of curvature using the lens as a concave mirror without the use of a spherometer.

On second day Dr. Makhan Lal Nanda Goswami, Associate Professor of Physics, Midnapore College, Medinipur, gave a lecture on the measurement of horizontal component of earth's magnetic field and magnetic moment of a bar magnet using a magnetic needle. Dr. Surajit Chakrabarti explained how to measure the velocity of sound by the method of resonant air column in a 250 ml semi-transparent measuring cylinder partially filled with water. He used the source of sound from the PHYPHOX app, which can be downloaded free on a smart phone. Dr. Makhan Lal Nanda Goswami then explained how the traditional potentiometric and meter bridge experiments could be easily performed from home

replacing the potentiometer by a handy small 10 turn 100-ohm pot. The theoretical basis of a potentiometer was explained by Dr. Surajit Chakrabarti. . Resource person of the last session of this day, Mr. Deep Narayan Ghosh, Assistant Teacher of Physics, Vidyasagar Shishu Niketan, H.S. school, Medinipur spoke about home experiments using a thermistor.

The third day started with the demonstration of Mr. Sanjoy Kumar Pal, an Assistant Teacher of Physics, Anandapur H.S. School, Paschim Medinipur on the study of charging and discharging of a capacitor through a resistor using the mobile phone charging adaptor instead of a conventional dc power source. The last presentation of the workshop was by Dr. Syed Minhaz Hossain, Associate Professor at the Department of Physics, IEST, Shibpur. He spoke on the principle of Light Emitting Diode using band diagram: I-V characteristics and emission spectra and also a method of determining Planck's constant..

A small kit which contained lenses, measuring cylinder, bar magnets along with a magnetic needle, one digital thermometer, one multi turn pot, few resistances, capacitances etc. were provided by IAPT, RC15 to the 1st and 3rd Sem. Physics Hons. students of VIC so that they could carry out most of these experiments at home.

About 50 students participated in this workshop from various colleges of West Bengal as well as from other states of India. Most of them responded positively and are showing interest in carrying out the experiments at home. A post workshop discussion WhatsApp group has been created where the students are posting their results and communicating with the resource persons. It is very heartening to find students performing the experiments from home even after a month of the formal presentations. There is a plan for a follow up program, where the students will give short presentations on their experiences of performing the experiments at home.

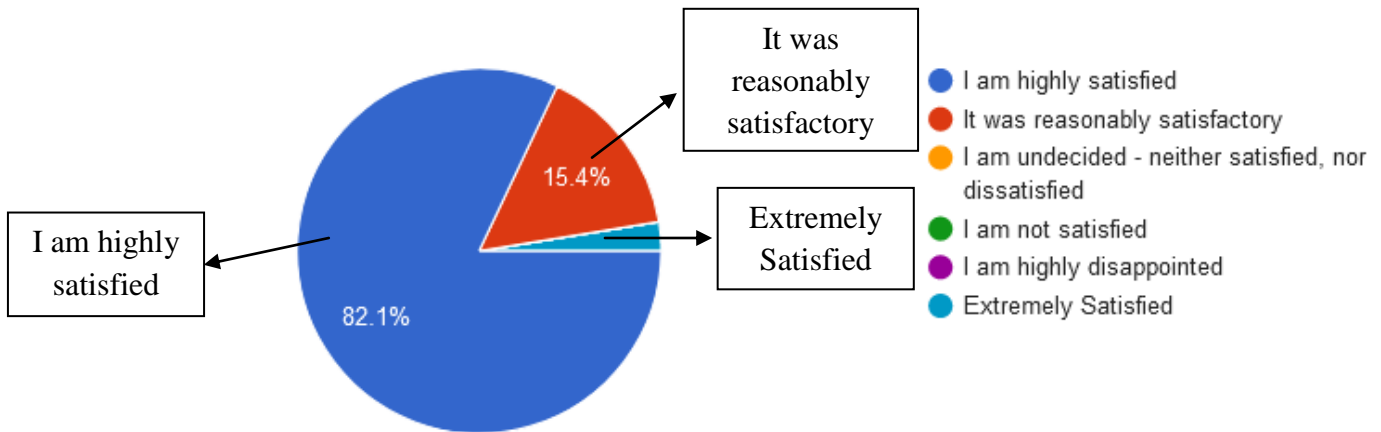
Faculty members of the Dept. of Physics, VIC conveyed their sincere thanks towards the resource persons, who took this challenging job of designing these experiments and demonstrating them online and also to the members of IAPT, RC 15 for providing the experimental kits.

Dr. Nibedita Chakrabarti, Principal, VIC and Prof. Gour Prasad Das, President, IAPT, RC15 and Distinguished Visiting Faculty, Department of Physics, St Xavier's College, Kolkata were the patrons of this workshop. Dr. Surajit Chakrabarti and Dr. Shinjinee Das Gupta, HOD, Dept. of Physics, VIC were the convenor and co-convenor of this online workshop respectively. Technical support was provided by Smt. Kathakali Biswas, SACT, Dept. of Physics, VIC. Dr. Gayatri Pal, Smt. Swarnalekha Bandyopadhyaya senior teachers in the Dept. of Physics, VIC and the members of IAPT RC 15 provided the crucial support for this endeavour. The concluding remarks were given by the President of IAPT, RC15 Prof. G.P. Das and the vote of thanks was delivered by Dr. Subhendu Chandra, Assistant Prof., Dept. of Physics, VIC. The whole programme was conducted online by Dr. Shinjinee Das Gupta.

The summary of the various user feedback could be collated almost instantaneously, and a representative report is illustrated below. The feedback form was prepared by Dr. Shinjinee Das Gupta and Dr. Chinmoy Kumar Ghosh, a senior member of IAPT.

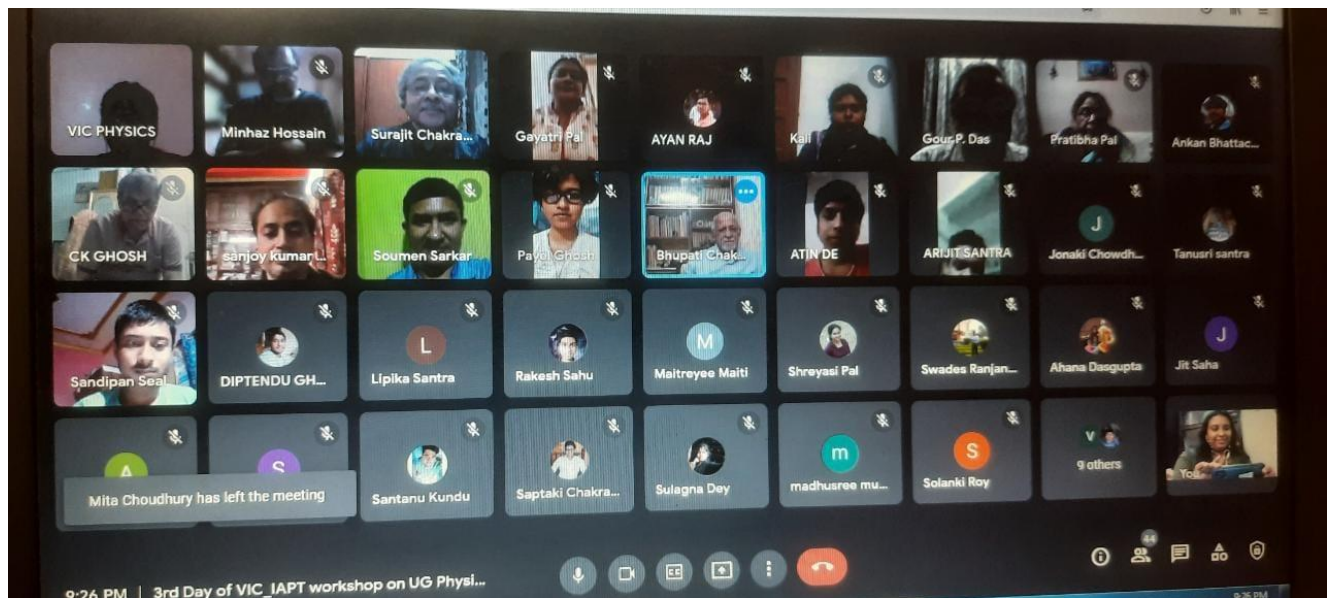
How would you rate the overall workshop experience?

39 responses



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Shinjinee Das Gupta , SurajitChakrabarti



A screenshot of the online program