Learning Physics through Python.

UGC-DAE Consortium for Scientific Research, Kolkata Centre, is in the process of developing a range of innovative, low cost teaching tools based on the routinely available resources for the undergraduates. These tools are expected to be illustrative and contribute in their understanding of the basics of the subject, apart from rejuvenating the fun factor in the learning process. And all this with an accompanying rigor on the extracted numbers ! The Kolkata Centre of the Consortium, has been hosting and supporting such innovative endeavors for College and University community across the country.

The Python Language has emerged as an efficient tool in the practice of science teaching at different levels. The solution to problems along with visual representations of the same is believed to effectively articulate the associated methodologies and has been an impetus to the widespread usage of this tool. In this light, the Victoria Institution (College), Kolkata, in collaboration with the UGC-DAE CSR, Kolkata Centre, intends to host a workshop on Python, on a digital platform, during July 6th - 10th 2020. The E-Workshop will focus on the application of Python, to complement the conventional classroom teaching at the UG & PG level, particularly in the context of the topics such as Mathematical Methods, Statistical Physics and Quantum Mechanics, along with others, that are typically covered in the Physics curriculum at the UG / PG level. The workshop is envisaged to provide a brief introduction to Python, starting from its installation and followed by specific applications of this tool in solving problems that are routinely encountered in the teaching of the subject. It is envisaged to have two lectures (around 45 minutes duration) per day.

The target audience primarily would be a group of selected faculty members / students, from colleges and the objective would be to create a sustained culture for such innovative teaching methodology.

The participation to this workshop is by nomination. The Head of the Department / Institution may recommend the names of few faculty members / students from UG / PG section (previous & final year) for the purpose. An order of preference may please be indicated against the names of the recommended participants. Owing to very limited resources, we are apologetic that it might not be possible to honour all the recommendations. Kindly include the contact details (mobile & email) of the recommended participants in the communication.

The recommendations may please be sent (electronically) at the earliest (on or before July 1st 2020) to, Dr, Subhendu Chandra, Convenor. The exact platform for hosting the lectures and the resources along with other details shall be eventually communicated to the registered participants.

Dr. Sandeep S Ghugre	**Dr. Subhendu Chandra**	**Dr. Shinjinee Das Gupta**
(Convenor)	**(Convenor)**	**(Co-Convenor)**
UGC-DAE CSR, KC	**Victoria Institution (College)**	**Victoria Institution (College)**
Email : ssg@alpha.iuc.res.in	**Email:subhendu170975@gmail.com**	**Email : shinjinee14@gmail.com**
Mobile No: +91-9831037171	**Mobile No: +91- 9433288395**	**Mobile No: +91-9433136758**

Patrons

Dr. Nibedita Chakrabarti, Principal, Victoria Institution (College)

Dr. A K Sinha, Director, UGC DAE CSR, Indore

*Dr. Abhijit Saha, Centre Director, UGC DAE CSR, Kolkata Centre*

Web Based Workshop on
Teaching Physics at the UG & PG Level using Python
Organized by
Department of Physics, Victoria Institution (College),
In collaboration with
UGC-DAE Consortium for Scientific Research, Kolkata Centre
July 6th – 10th 2020

The Python Language has emerged as an efficient tool in the practice of science teaching at different levels. The solution to problems along with visual representations of the same is believed to effectively articulate the associated methodologies and has been an impetus to the widespread usage of this tool. In this light, the Victoria Institution (College), Kolkata, in collaboration with the UGC-DAE CSR, Kolkata Centre, organized a workshop on Python, on a digital platform, during July 6th - 10th 2020. The E-Workshop highlighted the application of Python, to complement the conventional classroom teaching at the UG & PG level, particularly in the context of the topics such as Mathematical Methods, Statistical Physics and Quantum Mechanics, along with others, that are typically covered in the Physics curriculum at the UG / PG level.

The workshop was attended by about 180- participants, comprising of both students as well as faculty members, from regions across the country (Maharashtra, Gujrat, Assam, Telangana, Andhra Pradesh, Tamil Nadu, Kerela, Madhya Pradesh and West Bengal). The inaugural session was addressed by the following dignitaries, Dr. Nibedita Chakrabarti, Principal, Victoria Institution, College, Dr. A K Sinha, Director, UGC DAE CSR, Indore and Dr. Abhijit Saha, Centre Director, UGC DAE CSR, Kolkata Centre. Prof. Amitava Raychaudhuri, Professor Emeritus , University of Calcutta, delivered the key note address, which highlighted the relevance of numerical computations in various branches of Physics, and its evolution since it's inception.

The workshop was preceded with a pre-workshop session on 4th July 2020, wherein support was extended to the participants to get Python installed on their respective systems. Besides ensuring that majority of participants had a working Python toolkit on their systems, this efforts to a large extent helped identify and address the technical issues with this novel digital platform, which resulted in a glitch free running of the entire workshop. The workshop was conducted daily in to two sessions of about an hour each, which were complimented by discussions on the digital platform, to address the queries and concerns of the participants. First two sessions were primarily devoted towards a whirlwind introduction of Python to the participants. The subsequent sessions were centered around the applications of Python especially problem solving methods in the domain of Mathematical Method, Statistical Physics and Quantum Mechanics. The presentations were complimented with lecture notes as well as the codes, which were shared with all the participants, an unique feature, of this workshop, which was based on the spirit of Open Source philosophy. The concluding session was conducted by Dr Pratibha Pal.

The resource personnel for this workshop were Dr S S Ghugre, UGC DAE CSR, KC and Ms Kathakali Biswas, Victoria Institution (College). Dr Subhendu Chandra, Dr Shinjinee Das Gupta and Dr G Pal, provided the crucial support for this endeavor. Following the efforts of our colleagues from Victoria College, especially Dr Shinjinee Das Gupta, the summary of the various user feedback could be collated almost instantaneously, and a representative report is illustrated below :
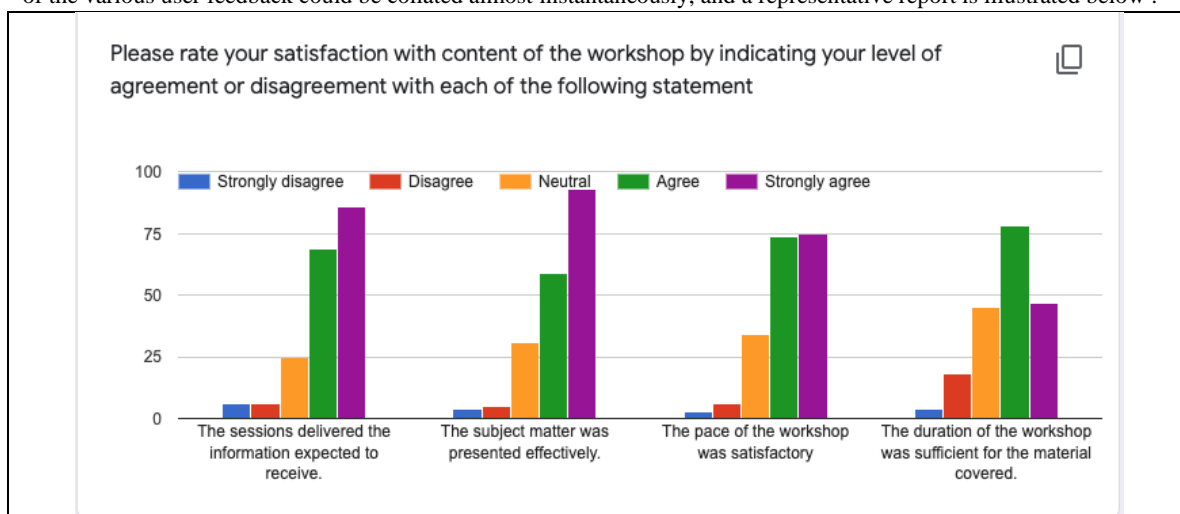
The entire Nuclear Physics Group of UGC DAE CSR and the Department of Physics, Victoria Institution (College) were involved in the organization of this workshop, besides participating in the same .

Dr S S Ghugre, Dr R Raut, Dr P V Rajesh, Shri Kaushik Basu, Shri Mukesh Kumar, UGC DAE CSR, KC
Dr S Chandra, Dr G Pal, Dr S Das Gupta, Ms K Biswas, Dr P Pal, Victoria Institution (College)