



Since 1915

Women's Christian College

Lighted to Lighten



ACADEMIC ACTIVITIES 2019-2020

DEPARTMENT OF PHYSICS



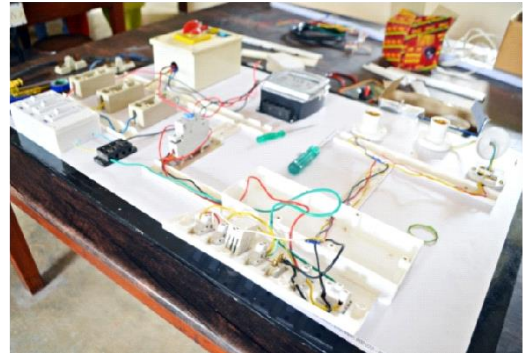
Academic activities

2019-2020

Workshop on 'Basic Electrical Wiring and Safety'

The workshop on 'Basic Electrical Wiring and Safety' was conducted by the Department of Physics, on 25 July & 30 September 2019. 30 students of III B.Sc. Physics, 25 students of M.Sc. Physics from our college participated in the workshop in two batches along with 11 faculty members of the departments. Dr. G Kumar Sathian, Managing Director of Floranix Pvt. Ltd., served as the resource person for the theoretical session. His two technical assistants conducted the hands-on training session along with him.

The theory of generation, transmission and distribution of electricity, single and three phase AC connection, domestic wiring, electrical cables and colour codes, energy meters, fuses and power rating of various domestic appliances was explained in detailed during the theoretical session. The safety measures to be taken while handling electric wires, switch boards, panels and plugs were also discussed. The hands-on wiring training session helped the participants to experientially learn wiring on a domestic EB board model and to change fuse on their own. The workshop created an awareness towards electrical safety and equipped the participants to handle various electrical components with required technical knowledge.



Workshop on “The Art of Photography”

The department of Physics in collaboration with Srishti Digilife Private Limited, Chennai, organized a one day Workshop on “The Art of Photography” on September 27th, 2019. 101 students from all disciplines from Shift I and II participated in the Workshop.

Mr. Leonard Goh, Product Head for Srishti Digilife, Managing Profoto for Singapore, India, Malaysia, Thailand and Srilanka was the resource person for the two morning sessions on 'Introduction to photography' and 'Cameras & Lighting'. He described the art and social aspects of photography and gave an outlook on the importance of lighting by a live demo shoot. The session was interesting and interactive.

The first session in the afternoon was handled by Mr. Diinesh Kumble, a renowned Wild Life Photographer, visiting faculty at the Mindscreen Film Institute, Chennai and the first wildlife photographer to be included on Sony India's "Elite Artisan" panel. He explained the documentation of creatures, in and out of their habitats. He shared experiences about the good understanding of animal behavior in order to anticipate interesting situations to capture in photography.

The second session in the afternoon was handled by Ms. Amrita Samant, founder of 'Mommy Shots by Amirtha', a Sony Photography Artisan, a profoto Mentor and a member of the International Association of Newborn Photographers. She is also our alumna. She is one of India's most recognized and sought after maternity and child photographers. She described the journey of her passion towards photography and shared the aspects of modern, sentimental and natural photography for maternity, newborn and child.

Lecture on Diffractive Optical Elements (DOEs), interferometry



A special lecture by Dr. Shanti Bhattacharya, Professor, Department of Electrical Engineering, IIT Madras and an alumna of WCC was organized by the Physics

Association 'Hi-Phy' on 5th August 2019. She spoke on her research area of interest and expertise, 'Diffractive Optical Elements (DOEs), interferometry, design of optical MEMS for telecommunications and sensors'. The students of UG and PG Physics were motivated and inspired by this lecture.



Lecture on Embedded Microcontroller ATmega 328 & its Applications

In recent years in the field of electronics, embedded systems have generated a lot of processing power and functionality. In order to have an insight and a better understanding of this field, a one-day lecture with hands-on training on 'Embedded

Microcontroller ATmega 328 & its Applications' was conducted by the Department of Physics on 25th September 2019 for III B.Sc. students. The resource person Dr. G. Kumar Sathian, Managing Director of Floranix Pvt. Ltd., Chennai delivered the lecture emphasizing the importance of electronics and the usage and designing of innovative electronic projects using ATmega 328, which would benefit the society. The lecture was interspersed with hands on training sessions which stimulated many informal discussions among the participants. The training and experience gained by the participants in the programme enabled them to use their knowledge to enhance their career prospects as well as equipped them with additional skills to face the challenges in the industry.





Lecture on 'Physics in Meteorology'

A special lecture by Dr. B. Amudha, Scientist-E, regional meteorological center, Indian meteorologic department, Chennai, entitled 'Physics in Meteorology' was organized as a part of the Physics intercollegiate fest, Hi-Phy on 28th January 2020.

The talk was very informative and it instilled a greater knowledge in the audience from WCC and other colleges. The department magazine "Quark 2020" was released during the inaugural programme.





FACULTY DEVELOPMENT PROGRAMME-Digital Image and Video Documentation

The department of Physics and Internal Quality Assurance Cell in collaboration with Srishti Digilife Private Limited, Chennai, organized a Faculty Development Programme on “Digital image and video documentation” on January 31st, 2020. 66 faculty members from all disciplines from Shift I and II participated in the programme. Mr. Vivek Mariappan, a documentary photographer of Srishti Digilife, Chennai, was the resource person for the programme. The outline of his talk was based on the importance of shooting with our phone, necessary accessories for mobile photography, choosing a camera app, tips and ideas on smart phone photography, editing on a smart phone and mobile videography. He started with an introduction by saying “Mobile camera is a tiny device which fits in your hands and pocket quite easily. But the point is how to make most of that tiny camera to explore the creative freedom”. He emphasized that it is always good to use natural lighting as it is available in abundance and place the subject in line with natural light.

He explained that one of the easiest and best ways to improve the mobile photos is to turn on the camera's gridlines which superimposes a series of lines on the screen of the smartphone's camera. This is based on the "rule of thirds" -- a photographic composition principle that says an image should be broken down into thirds, both horizontally and vertically so that there are nine parts in total. According to this theory, if we place points of interest in these intersections or along the lines, the photo will be more balanced, levelled, and will allow viewers to interact with it more naturally. He described how to set the focus, embrace negative space, find different perspectives, play with reflections, use leading lines, set camera app's exposure manually and look for

symmetry. Then he asked the participants to consider buying a mobile tripod that can be bent to any angle as it gives freedom to mount the smart phone for quick hands-free shots.

He highlighted the importance of aperture in the smart phone. A bigger aperture means that more light will land on the sensor as the diaphragm of the lens expands, while a smaller aperture will restrict the amount of light that can enter and create a narrower depth of field. This would result in a photo where the foreground may be sharp and in focus, but the background is blurry. He said that the night mode on smart phones is something fascinating to use for landscape photography. This mode rely heavily on using the available light to create an exposure for which there is a need to hold the phone very steady in order to obtain sharp images, particularly when shooting with longer exposure times. He advised to use the night mode function on the mobile phone camera where it is possible to get very sharp results without camera shake or blurriness, even when the subject is moving. He explained about some of the commonly available modes in smart phones such as HDR, Panorama, Portrait, Professional and monochrome. He also projected some of the stunning pictures taken by him using the different modes available.

Finally he described that editing is a fundamental part of the photography process, as it can turn good shots into stunning imagery. He recommended a free photo editing software called Snapseed where we can edit parameters like brightness, contrast, saturation, highlights, shadows, and more. The session was interspersed with hands on session which stimulated many informal discussions among the participants. The programme equipped the faculty with the knowledge of extra tools and software needed to capture, edit and share their images for official documentation purposes.





Educational Trip to Hyderabad

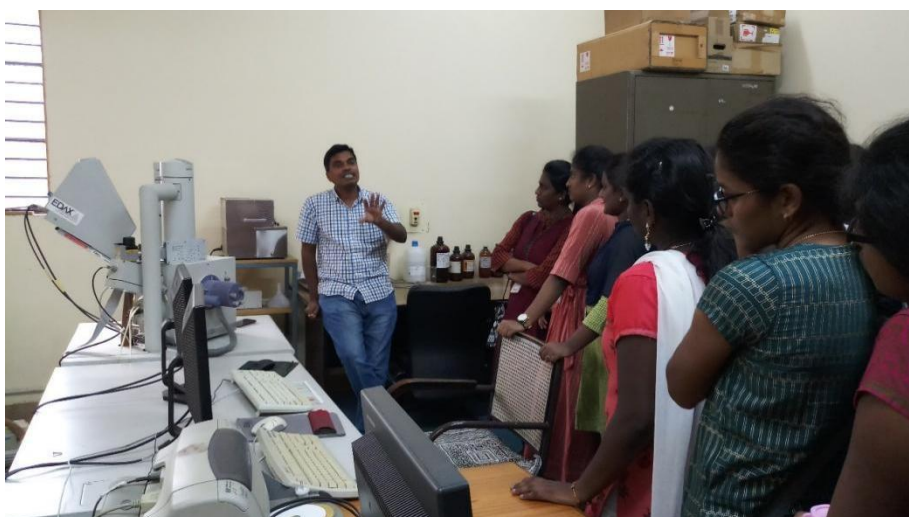
41 students of III B.Sc. Physics travelled to Hyderabad on 13.11.19 for a two-day study tour accompanied by Dr. Kalavathy Santhi and Dr. A. Christina Nancy.



The first day of the trip (14.11.19) included sightseeing of Golconda fort, Salar Jung Museum, Chowmahalla Palace and Charminar which are places of historical importance in Hyderabad. The second day of the trip (15.11.19) was exclusively spent in the Central University of Hyderabad. The morning session comprised of visit to the Laser laboratory in the

School of Physics where Dr. Prem Kiran, Assistant Professor, Advanced Center of Research in High Energy Materials explained clearly the theoretical background of laser experiments and demonstrated the application of laser and the experiments done using laser.

In the post lunch session, the students visited the Central Instruments laboratory (CIL) of the University which is a central facility that houses state-of-art sophisticated analytical instruments such as Scanning Electron Microscopy, Confocal Microscope, Spectroscopy (X-Rays, UV-VIS-IR), Spin Resonance studies, Vibrating Sample Magnetometer (VSM) and Differential Scanning Calorimeter. They had an opportunity to see the demonstration of these instruments given by Dr. Syed Maqbool Ahmed, Principal Scientific Officer, CIL. Both the sessions at Central University were truly informative, educative and inspired many students to aspire for an opportunity to continue their higher education and research at reputed institutions.



Educational Visit to Sriharikota:

41 students of I B.Sc. Physics accompanied by Dr. T.S. Renuga Devi and Ms. Hannah Jerrin, visited Sriharikota on 11.12.19, to witness the launch of PSLV - C48 which is the 50th rocket in the PSLV series. It was also the birthday of Dr. Vikram Sarabhai, the father of Indian Rocket Science. The students were made to sit in a viewing gallery, directly facing the path to be traced by the launching rocket. The enthusiasm of the audience was impeccable despite the scorching heat.

Exactly at 3.25 p.m., as the crowd cheered and counted down to zero, the PSLV- C48 was launched. It was a wonderful sight to behold and was far more exciting than viewing it on the T.V. This one day trip proved to be useful, intellectually stimulating and also a great fun experience for the entire class.



Educational Trip to Birla Planetarium

Dr. Christina Nancy, Dr. J. Sharmi Kumar and Ms. Hannah Jerrin Thangam accompanied 31 students of Non-Major Elective course Astrophysics and III year B.Sc. Physics students of Astrophysics and Astronomy to B.M. Birla Planetarium in Periyar Science and Technology Centre campus. The Planetarium provides a virtual tour of the night sky and holds cosmic shows on a specially perforated hemispherical aluminum inner dome. It also houses eight galleries, namely, Physical Science, Electronics and Communication, Energy, Life Science, Innovation, Transport, International Dolls and Children and Materials Science, with over 500 exhibits. Students were thrilled to see superior starry sky and have a close look at planetary objects with the most advanced Hybrid Projection System and a new 15-metre

hemispherical dome.



Educational visit to Vainu Bappu Observatory, Kavalur

The third core elective 'Astrophysics and Astronomy', second year non-major elective 'Astrophysics' and second core students were taken to Vainu Bappu Observatory, associated with the Indian Institute of Astrophysics, on 9th March 2020. A total of 43 students were accompanied by Dr. Christina Nancy, Dr. J. Sharmi Kumar and Ms. Hannah Jerrin Thangam. The students were able to witness the Orion nebula, planet Venus and moon on the full moon day through the 14 inch Celestron telescope situated in the observatory. Dr. P. Anbazhagan, engineer-in-charge at the observatory explained the science of detectors used along with the telescope and their imaging technique. The students also interacted with a research scholar who informed them about the type of research carried out at the institute and encouraged them to pursue their career in Astrophysics.



Outreach Programme – 29 & 30 July 2019

Six students with the department outreach programme coordinator Dr. A. Christina Nancy, conducted various activities related to basics of electricity, electrical wiring and safety



Day: 1

Information on the level of understanding of the women participants on electrical safety was gathered through a questionnaire prepared by the students. The concept of the flow of current was depicted through a game called 'current pass' which served as an icebreaker to make to participants more active and involved. The basics of electricity such as resistance, voltage, flow of electrons, electricity generation and transmission through power lines were taught with a power point presentation and a model. An insight about the transmission of electricity from power stations to our homes was given through a model. A Role play was performed to describe the working of a phase selector, single/three-phase domestic connection, changing fuses, usage of tester and things to check in the EB meter board in case of power cut.

The wiring of the domestic electric board and the colour code of the electric wires were demonstrated with the help of a wired model board. At the end, a hands-on-session in which each participant was given a chance to wire a junction box, switch board and to change fuse on their own on the model board, was conducted.

Day:2

The second day started with the revision of the previous day's concepts which was followed by a memory game. The aim of the game was to make them understand the difference between conductors and insulators. The following session was a short talk on

power consumption which included power consumed by various electrical appliances and ways to reduce power consumption. The various effects and the path of electricity in human body was also clearly explained. The safety measures to be taken while handling electricity related things were demonstrated through a skit. The importance of wearing slippers while using electrical devices, the importance of insulation, work of a lightning arrestor, fire accidents and precautions were enacted through the skit. The participants were also taught how to clean switch boards at home, following which the first aid and measures to be taken after an electrical accident were discussed. The most interactive part of the second day session was the hands-on training of wiring the 2 and 3 pin plugs and the switches. Finally, the participants' understanding and knowledge on electrical wiring and safety was assessed through written feedback submitted by them.