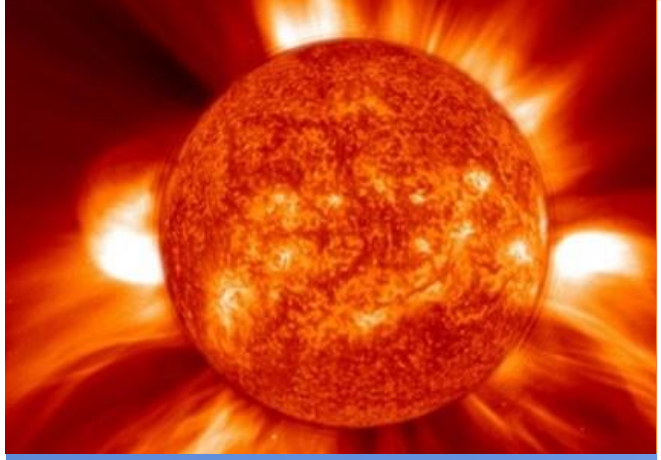
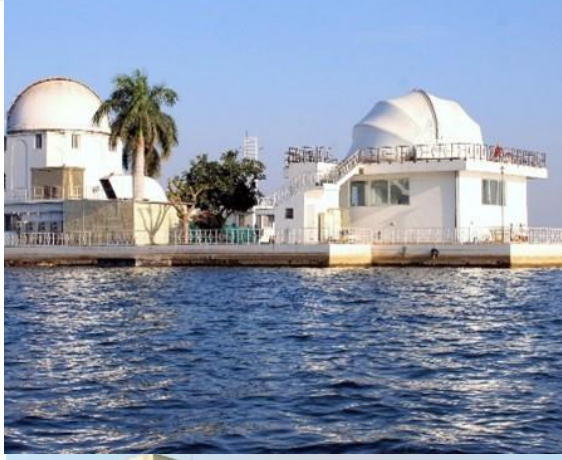




CSSTEAP SHORT COURSE ON

Solar Physics

and

Planetary Science

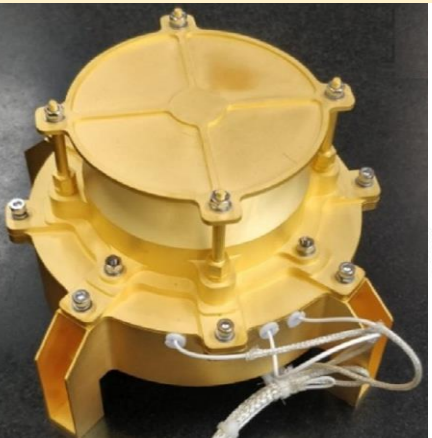
June 6 – 20, 2025

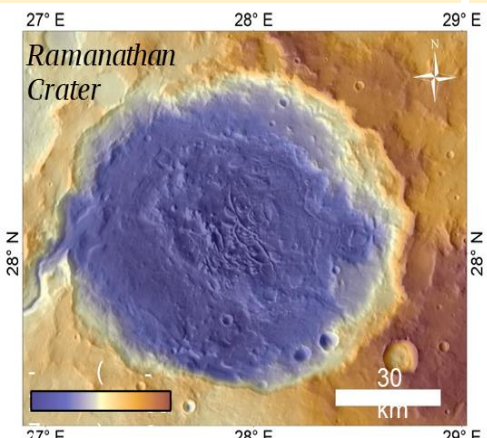
Organized by

Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP)
(Affiliated to the United Nations)
IIRS Campus, 4, Kalidas Road, Dehradun, India
www.cssteapun.org

Conducted by

Physical Research Laboratory (PRL)
(A Unit of Dept. of Space, Govt. of India)
Navrangpura, Ahmedabad, India
www.prl.res.in





Introduction

The Sun not only supports life on Earth but it is also responsible for a host of phenomena in the inter-planetary space. To understand these phenomena, it is necessary to explore the physics of the Sun from its core to its atmosphere. Importantly, the solar plasma exhibits a complex and dynamic behavior in the form of sunspots, flares, coronal mass ejections, plasma jets, the 11-year solar cycle, coronal loops etc. and is primarily due to the continuously changing solar magnetic field. The Udaipur Solar Observatory (USO) of the Physical Research Laboratory (PRL) uses multi-wavelength observation, numerical modelling, and theoretical/computational research to study the dynamics of the Sun thoroughly. A suite of telescopes including the Multi-Application-Solar Telescope (MAST), GONG (Global Oscillation Network Group) telescope, along with a CALLISTO solar radio spectrometer is employed. These ground-based observations are further augmented with data from various space-based observatories. The 100 TF supercomputer, Vikram-100 of PRL, is utilized to perform the computationally intensive numerical simulations.

The study of the interiors, surfaces, and atmospheres of solar system objects and the processes that govern them, constitutes Planetary Science research at PRL. This is accomplished through theoretical models (computer simulations), laboratory analysis of extraterrestrial material, planetary remote sensing, and observations from scientific instruments flown on space missions. Research in Planetary Science includes study of processes from subsurface of planetary bodies to the inter-planetary medium.

Physical and chemical processes in planetary atmospheres are studied using observations, theoretical simulations and modelling. Test chambers are also developed and used to simulate Lunar, Martian and Venusian environments. Analysis of isotopes (primordial and cosmogenic) and elemental abundances in meteorites is used to characterize past and contemporary processes in early solar system objects and in terrestrial reservoirs. Geological processes in planetary bodies are studied by petrological, morphological, chemical composition and isotopic studies of planetary samples and their terrestrial analogues by state-of-the-art experimental facilities established at PRL. Data from remote sensing of planetary bodies are investigated with the objective to study surface geology and morphology.

Initiated with Chandrayaan-1 and the associated landmark discovery of OH/H_2O on the Moon, design and development of payloads for planetary missions have now become one of the prime activities at Planetary Sciences Division of PRL. Recently, PRL has developed and delivered payloads for Chandrayaan-2 & 3 and the Aditya L1 missions. In addition, several other important instruments are being developed for upcoming planetary missions of ISRO.

Objective of the Course

The objective of the course is to create an understanding of the basics and current research trends in Solar Physics and Planetary Science. The course aims to raise awareness about these subjects among highly motivated students who aspire for a career in scientific research and technology. It will also benefit professionals working in areas of atmospheric science, space physics, satellite systems, satellite communication and navigation.

Course Contents

In Solar Physics, the following topics will be covered:

Overview of Solar Physics, Sunspots and solar active regions, solar cycle, solar dynamo theory, Solar magneto-hydrodynamics, Solar eruptions (flares and coronal mass ejection), Solar wind observations and theory, Space Weather, the Sun-Earth connection, Solar observations, Current trends in Solar Physics.

In Planetary Science, the following themes will be covered:

Planetary Atmospheres, Planetary surfaces and interiors, Planetary Material and Analogues, Space Instrumentation, Interplanetary Processes, Current trends and future explorations in Planetary Sciences.

In addition to attending the theory sessions, the participants will also gain hands-on experience by using some of the high-end instruments and their data. During the course, they will visit Udaipur Solar Observatory (USO), Optical Aeronomy Laboratory at Mt Abu, and various labs of PRL.

Eligibility

Applicants should have a Master's degree in Physics, Astronomy, Astrophysics, Solar Physics, Atmospheric Science, Meteorology, Geology or other equivalent qualification relevant to Space Science, OR a Bachelor's degree in Engineering, (B.E./ B. Tech.) in Electronics, Environmental Science and allied fields. Applicants having teaching or research experience would be preferred. Since the whole course will be conducted in English, the applicant should have proficiency in the English language.

How to Apply

Applicants should apply online through the CSSTEAP website:

https://admissions.cssteapun.org/login

Applicants are requested to send the application forwarded by the Head of their respective institute or organisation.

Announcement of course: February 14, 2025

Application deadline: March 31, 2025

In case of any difficulties while submitting the online form, please send an e-mail to **websupport@iirs.gov.in**

Applicants are advised to check the website **www.cssteapun.org** regularly for further updates and information.

Course Fee and Accommodation

A course fee of US $300 (equivalent amount in INR for Indian participants) is applicable which includes course materials. However, for government sponsored candidates from Asia Pacific region, the Director CSSTEAP may waive off the course fee. Course fee may be sent through online transfer/ NEFT/RTGS/SWIFT in favour of CSSTEAP, payable at Dehradun with following bank details:

Banking Institution: Punjab National Bank

Account Name: Centre for Space Science and Technology Education in Asia and the Pacific

SWIFT: PUNBINBBDPR

IFSC Code: PUNB0445600

Bank Address: Survey of India Branch, New Cantt. Road, Dehradun, India

The candidates are expected to make their own arrangements for all expenses. Accommodation for the participants will be arranged in the International hostel at SAC Bopal, Ahmedabad in twin sharing basis. During the stay in the hostel, the participants will be charged Rs. 120/day.

A few fellowships covering to-and-fro international air travel, domestic air travel in India and living expenses (15,500/- INR for two weeks) in India are available from the Government of India. However, first preference will be given to the fully sponsored/self-sponsored candidates and then to the candidates whose sponsoring organization will be bearing international to-and-fro travel expenses.

Number of Seats

20: Government Nominated Candidates

5: Paid Seats (Private and Self-Sponsored Candidates

Health Insurance

Medical, life and disability insurance should be undertaken before reaching India, by the participants themselves or on their behalf, by their sponsoring institute/organization. No medical expenses will be borne by CSSTEAP. However, participants who receive the Fellowship of the GOI will be paid medical expenses for minor ailments on an actual basis (as outpatients only) as and when such expenses are incurred. CSSTEAP will have only limited liabilities as far as medical expenses are concerned. Candidates in sound physical and mental health only need to apply.

About CSSTEAP

The CSSTEAP was established in India in November 1995 with its headquarters in Dehradun and is considered as the Centre of Excellence by UNOOSA. The 1st campus of the Centre was established in Dehradun, India and is hosted by Indian Institute of Remote Sensing (IIRS), a constituent unit of Indian Space Research Organisation (ISRO). The CSSTEAP has been imparting training and educational programmes related to RS & GIS, Satellite Communication, Satellite Meteorology, Space & Atmospheric Science, Global Navigation Satellite Systems, and Small Satellite Mission, helping participants in developing research skills through its Post Graduate and Certificate programmes.

About PRL

Known as the cradle of Space Sciences in India, the Physical Research Laboratory (PRL) was founded in 1947 by Dr. Vikram Sarabhai. As a unit of the Department of Space, Government of India, PRL carries out fundamental research in selected areas of Physics, Space & Atmospheric Sciences, Astronomy &Astrophysics, Solar Physics, Planetary and Geosciences.

Contact Details

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