



SPACE SCIENCE & **T**ECHNOLOGY

AWA**R**ENESS **T**RAINING

VISIT: <https://jigyasa.iirs.gov.in/START>

START-2023: Overview of Space Science and Technology



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Introduction

The Indian Space Research Organisation (ISRO) has an active space science programme that covers various domains of space science research including Planetary science and exploration, Astronomy & Astrophysics, Heliophysics / Sun-Earth interaction, Atmospheric science, and also research driven by Microgravity platforms arising as part of the new human space programme. Under the expanding programme in space sciences, ISRO encourages greater participation from academia, for generating human resources in space science and technology, expanding the user base of the space exploration mission data, and fostering an ecosystem to facilitate active participation of the students in space science and technology research. The first step towards this goal is to create general awareness on the various domains of space science and technology.

In view of this, ISRO has envisaged the Space science and Technology Awareness Training (START) programme, as an awareness programme in space science and technology. The programme will be organised in online mode in order to reach out to as many of the space enthusiasts as possible. Although primarily aimed at the under-graduate and post-graduate students of science and technology, the programme is designed to be suitable for any individual with a basic, systematic training in science, at least up to the high school level.

In this programme, the post-graduate and final year undergraduate students are registered through a few nodal academic centres, known as START host institutes/nodal centres. However, interested individuals of any background, who are not eligible / could not register through nodal centres, can also attend the live sessions through the other channel of individual registrations, which are described in this brochure.

The START programme will be conducted through ISRO E-CLASS platform (<https://eclass.iirs.gov.in>).

Objective

The prime objective of START is to attract the youngsters to the fields of space science and technology, by creating an overall awareness of the different facets of space science and technology. This would also serve the purpose of making the students aware of the cross-disciplinary nature of space science and technology activities, which eventually will help them appreciate the importance of system-level thinking.

Scope

The lecture modules are thematically arranged to address different facets of space science and technology like Earth and Near-Earth Space, Solar System Exploration, Space Mission Design and Observations, Astronomy, Astrophysics, Cosmology, as well as technological aspects like accessing the space, space instrumentation, to name a few. In addition to these, there will be lectures on Indian space exploration programme and research opportunities in the fields of space science and technology. The schedule and contents of the training session are provided in *Annexure*.

Expected Outcome

It is expected that after the completion of the first event of the START programme, several students, as well as individuals in India will be aware of the different scientific and technological facets of the space science & technology activities. They will also be aware of how do their respective domains of curriculum fit to different aspects of space science and exploration. It is expected that, through this programme, the students will be also aware of the Indian contributions to the domains of space science and exploration, and how do they fit in the global arena of exploratory endeavors. In this process, even if a small fraction of the participants acquire the temperament of system-level thinking, it may sow the seed of preparing future leaders to take forward the country's space exploration programme. Such

participants may be kept engaged with space exploration-related activities, eventually to groom them to space scientists and technologists of excellence.



State-wise number of the nodal centres

Pan-India Coverage of START 2023

In response to the announcement of opportunity issued by ISRO/DoS, two hundred and eighty-two Indian Educational Institutions / Universities / Colleges were selected as the host institute/ nodal centre of START 2023.

Eligibility

START is aimed to reach out to the maximum beneficiaries

not only to students belonging to Indian Institutions but also to any interested individuals. The students of approved nodal centres as well as individuals can register and join the online training programme by choosing the appropriate category for registration as detailed below.

Course Fee: START programme is offered by ISRO free of cost. There is no registration fee / admission fee.

Category-1: Students from approved START host institutes/nodal centres

Post-graduate students and final year under graduate students of physical sciences (Physics and Chemistry) and technology (e.g. Electronics, Computer Science,

Mechanical, Applied Physics, Radiophysics, Optics & Opto-electronics, Instrumentation and other associated subjects) studying in Indian educational institutes/Universities/Colleges are eligible to be considered for the training under this category. Participation certificate / merit certificate will be provided to the eligible students

Once the participant registration is open, the student participants of approved nodal center can register in ISRO website for START programme by selecting their Institute as ISRO START nodal center. Before attempting for registration, students are requested to check the list of START nodal centres, as provided in the Annexure-2, to ensure that their college/University/Institute is there in the list of approved nodal centres.

- The identified coordinator of the host institute will review all the applications under his/her Institute submitted in the ISRO E-CLASS and approve the eligible student participants.
- All the approved participants will also get their login credentials for ISRO E-CLASS.
- The coordinator will conduct the live classes in his/her Institute where all the approved participants will join the session in a group.
- However, ISRO E-CLASS platform will also allow the participants to join the live session with an Individual login with the permission of coordinator.
- At end of each session, the attendance of each participant will be submitted by the coordinator through E-CLASS.
- The participants attaining minimum 70% attendance in live sessions will be eligible for online examination.
- The online examination will be conducted through ISRO E-CLASS LMS in a scheduled date and time. The online examination will be conducted under close supervision of coordinator of START.
- The successful participants will be awarded with merit certificate from ISRO.

To know more about the procedures involved, students may go through the guidelines as provided in section “*Guidelines for the Students Registered through START Nodal Centre*”.

Those who are not eligible or could not register through this channel can register the programme through the category-2 channel.

Category-2: Individuals of any background

Interested individual participants (including students who are not eligible / could not join through the category-1) of any background can directly register and attend the live sessions through Youtube Channel of IIRS-

<https://www.youtube.com/@edusat2004> .

Individuals while registering directly in ISRO website will automatically get the login credentials. Individual participants may go through the guidelines as provided in section “*Guidelines for individual participants*” to know more about the procedures involved.

Certificate to Participants: Important criteria

Category 1 – Students Registered through Nodal Centres

- Minimum 70% of attendance in the live online session is needed to appear in the online examination. They are eligible for participation certificate.
- Success criteria for the examination is 50% marks or above. Successful candidates will be provided merit certificate.

Category 2 – Individual Participants

All the participants with training dedication of minimum 11 hours may be awarded with “Training Participation” certificate.

Guidelines for the Coordinators

1. The registered coordinators and their Institute will be approved by ISRO after a process of assessment. All the approved coordinators will receive approval email with their login credentials for accessing the ISRO E-CLASS Coordinator Management System (CMS)- <https://eclasscms.iirs.gov.in> .
2. The coordinator will coordinate the programme at his/her Institute and motivate the prospective students to join the ISRO START programme.

3. The coordinator will review and approve the applications under his/her Institute depending on the applicant's aptitude, merit/academic performance.
4. The coordinator will conduct the ISRO live sessions in his/her Institute as per the schedule and monitor the students. The live session will be available in E-CLASS CMS and Youtube Channel of IIRS-
<https://www.youtube.com/@edusat2004>
5. The coordinator will submit daily attendance of each student through E-CLASS CMS.
6. The coordinator will conduct online examination under his/her supervision as per the exam schedule. The exam URL and password will be shared by ISRO before commencing the examination. The Secrecy and Privacy of examination portal and password needs to be maintained.
7. The coordinator will download and sign the training "Merit Certificate" for distributions to the students.
8. The coordinator will submit training feedback at end of the programme.
9. The contribution of Nodal centre coordinator to promote space science and technology in education and research will be recognized by ISRO. At the end of each programme the coordinator will be awarded with a certificate from ISRO. The participating Institute will also get a separate certificate of appreciation.

Guidelines for the Students Registered through START Nodal Centre

The participants registered through START Nodal centers need to follow the below guidelines.

1. The participant's registration must be approved by the coordinator of START nodal centers. The participants can register and see their application status through URL- <https://elearning.iirs.gov.in/edusatregistration/> . In case, the application is pending for approval then participants are advised to contact the coordinator of respective nodal center.

2. All the approved participants will receive email with login credentials of ISRO E-CLASS platform (<https://eclass.iirs.gov.in>)
3. The training programme will be conducted in online mode in **live** session. The day-to-day schedule will be published in E-CLASS platform.
4. Participant has to join the daily classes as per the lecture schedule published by ISRO.
5. The participant will join the live sessions in a group through their nodal center and will have to strictly maintain the training lecture schedules and guidelines.
6. The daily session attendance will be submitted by the coordinator through E-CLASS CMS.
7. In case, the participants are not able to join the live session through nodal center, then they can also join it through E-CALSS platform using their login credentials with the prior permission of co-ordinator. In this case, the attendance will be automatically recorded by the system based on the active presence in the live session.
8. All the sessions will also be available “offline” under participant’s login in E-CLASS platform after 24 hours of live session.
9. The participants can post the questions related to the session topic either through their coordinator or directly through E-CLASS chat box. A few relevant questions will be selected by the moderator for discussion at end of the session.
10. The participants with 70% attendance will be eligible for online examination.
11. The schedule for online examination will be announced by ISRO and all the eligible participants has to appear in online examination under invigilation/ supervision of coordinator of respective nodal centre.
12. All the participants need to submit their training feedback at end of the programme.
13. The participants scoring minimum 50% score in online examination will be awarded with “**Merit Certificate**” from ISRO.
14. The certificate will be distributed through coordinator of respective nodal centre.

Guidelines for individual participants (Not applicable for those who have registered through the START Nodal Centres)

The participants registered as “**Individual registrations**” need to follow the below training guidelines.

1. The participants with individual registration will be automatically approved. All the registered participants will get their login credentials for ISRO Learning Management System (LMS)- <https://isrolms.iirs.gov.in> .
2. The training programme will be conducted in online mode in **live** session through IIRS YouTube Channel- <https://www.youtube.com/@edusat2004> . The day-to-day schedule will be published in ISRO LMS.
3. After login to the ISRO LMS, the participant will be able to see the following major components:
 - a. Training Guidelines & Announcements;
 - b. Recorded Video Sessions;
 - c. Attendance;
 - d. Quiz;
 - e. Chat Box;
 - f. Training Feedback;
 - g. Training Certificate.
4. The participants have to participate in daily quiz published in the ISRO LMS.
5. The training activity of the participants in ISRO LMS will be recorded by the system as “Training Dedication”.
6. The training dedication will be recorded for each participant based on time dedicated to the training activities (video logs, participation in daily quiz, participation in discussion forum and training feedback submission).
7. All the participants with training dedication of minimum **11 hours** will be awarded with “**Training Participation**” certificate.

8. The training participation certificate will be available for download in ISRO LMS.

Contacts

Queries on the START Programme (Programme contents, eligibility etc.) and Feedback

Dr. Praveen Kumar K,
Deputy Director,
Science Programme Office (SPO), ISRO Headquarters, Bangalore
Email: start@isro.gov.in

Technical & Training Management (URL, E-CLASS, LMS, Registration, Login, Certificates etc.)

Dr. Harish Karnatak,
Head, GIT&DL Department
Indian Institute of Remote Sensing (IIRS), ISRO, Dehradun
Email: websupport@iirs.gov.in

Annexure: Schedule and Contents

- The nominal schedule is subject to change due to unforeseen requirements
- The times are mentioned in Indian Standard Time (IST)

Date: July 20, 2023, Thursday

***Inauguration and Introductory Lecture on India's Space
Exploration Endeavour***

	Time	Agenda Item	Speaker / Lead (Dr./Prof./Mr./Ms.)
1.	10:30-11:00	Welcome	<ul style="list-style-type: none">Tirtha Pratim Das, Director, SPO, ISRO HQRaghavendra Pratap Singh, Director, IIRS
		Opening Remarks	Shantanu Bhatwadekar , Scientific Secretary, ISRO
		Special Remarks	A.S.Kiran Kumar, Chair, Apex Science Board, ISRO, Former Chairman, ISRO /Secretary, DOS
		Inaugural Address	S.Somanath, Chairman, ISRO/ Secretary, DOS
End of the inaugural programme			

2	11:30-12:30; Plus 20 minutes of interaction	Introductory talk: "India's Space Exploration Endeavour: Context of ISRO's START programme"	Tirtha Pratim Das, Director, SPO, ISRO HQ
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Outline of the Introductory Talk:

Space to an Earthling; Aeronautics vis-à-vis Astronautics; The context of space research and exploration; Techniques in space research: observation vis-à-vis modelling; Space-based observations: Merits of space-based observations, observation platforms; Configuring scientific missions: a step-by-step approach;

The legacy of India's space exploration programme; Major verticals in India's space exploration programme, and their interconnection; Overview of the Indian space science missions; Indian science mission data archival; Future directions in space science exploration; System science/engineering and multidisciplinary nature of space science & technology; Relevance of the START programme.

Date: July 21, 2023, Friday

Lecture-2	Space observations of Geosphere - Biosphere – atmosphere interactions and climate	Dr. Suresh Babu, SPL, VSSC	11:00 to 12:00 hours; Plus 20 minutes of interaction
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Basics of geosphere, biosphere and atmosphere and its interactions, atmospheric composition, atmospheric radiation and radiative transfer, radiation balance of the earth – atmosphere system, Long-term changes in Earth's atmosphere and climate, Space based observations of essential climate variables and climate change, Earth science missions for climate studies.

Lecture-3	Earth's Magnetic Field and Geospace	Prof. Archana Bhattacharyya, IIG	15:00 to 16:00 hours; Plus 20 minutes of interaction
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Measurement of Earth's magnetic field: Instruments used for measurement and some developments in India, Ground-based magnetic observatory network in India, Satellite observations; Geo-space: Earth's ionosphere and thermosphere, Earth's magnetosphere, Interaction of the magnetosphere and the solar wind, Variability of the ionosphere and thermosphere; Geo-space observations in India: Ground based ionosondes, radars, network of receivers for recording signals from GNSS and IRNSS, Optical observations, In-situ observations by instruments on board rockets and satellites; Modelling the geomagnetic field: Separation of components arising from sources internal to the Earth, sources in Earth's crust, and sources outside the Earth, Crustal anomalies mapped in India, Ionospheric and magnetospheric current systems, Studies of equatorial and low latitude ionospheric currents over India; Geomagnetic storms and their effects on modern day technology, An extreme event recorded at an Indian observatory, Importance of Arctic and Antarctic studies of geomagnetic storms conducted by India; Indian studies of Equatorial plasma bubbles and their effects on GNSS radio signals, using Indian satellite data.

Date: July 24, 2023, Monday

Lecture-4	Earth's Ionosphere, Magnetosphere, Sun-Earth interaction and Space Weather	Dr. Tarun Kumar Pant, SPL, VSSC	11:00 to 13:00 hours; Plus 20 minutes of interaction
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Discovery of ionosphere and thermosphere, Genesis of atmosphere, ionosphere, solar radiation and spectrum, processes controlling dynamics and energetic of atmosphere-ionosphere system, Terrestrial magnetic field and its characteristics, important latitudinal differences in thermosphere ionosphere, Equatorial thermosphere ionosphere system and dominant large scale processes, Earth's upper atmosphere on small and long spatio-temporal scales, Transionospheric communication and navigation, errors and mitigation, Current status of thermosphere-ionosphere research in India and across the globe & future directions.

Introduction to Sun and Solar Processes, Solar plasma and magnetic field, sunspots, solar transients and solar activity, Solar Wind, Interplanetary Space, planets and their atmosphere, ionosphere and magnetosphere, Earth's magnetosphere, Solar wind interaction with Earth's magnetosphere, ionosphere atmosphere system, Impact on

Earth, life on Earth, and technology in space, Space Weather and situational Awareness, Prediction, realtime monitoring and forthcoming missions.

Date: July 25, 2023, Tuesday

Lecture-5	Introduction to Remote Sensing of Earth and planetary bodies	Dr. R.P. Singh, IIRS, ISRO	11:00 to 12:00 hours; Plus 20 minutes of interaction
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Basics of Remote Sensing, Orbits and Sensors, Evolution of India Earth Observation Program, Global Remote Sensing Program, ResourceSat Satellites, Oceansat Satellites and Cartosat Satellites, Satellite Meteorology, Remote Sensing for Natural Resource Applications, Climate Change Studies, Chandrayan Missions, Mars Orbiter Mission, Future directions

Lecture-6	Rockets to access the Near-Earth Space: Sounding Rockets & Launch Vehicles	Mr. Sheeju Chandran, VSSC, ISRO	15:00 to 16:00 hours; Plus 20 minutes of interaction
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Brief history of rocketry; basic principles; governing laws; comparison between various forms of aerospace vehicles; introduction to space; sounding rockets; types and applications; launch vehicles; mission design; basic principles of satellites, types of orbits and their applications; Classification of rocket stages based on propulsion systems; types of propulsion systems a. solid b. liquid c. Semi-cryo and d. Cryogenics; major vehicle systems – structures, avionics, materials, propulsion systems, Control Navigation and guidance systems; brief history of Indian Space program; major missions; launch vehicles.

Chemistry and Space

Date: July 26, 2023, Wednesday

Lecture-7	Chemistry in Space Technology	Dr. S. A. Ilangovan, VSSC, ISRO	11:00 to 12:00 hours; Plus 20 minutes of interaction
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Chemistry in the domains of Propellant and Rocketry; Materials Science; Energy Generation; Instrumentation and Analysis; Life Support Systems; Planetary Exploration and Astrobiology

Lecture-8	Chemistry in Space Science	Dr. Bala, PRL	15:00 to 16:00 hours; Plus 20 minutes of interaction
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Atmospheric chemistry, aerosol chemistry, geochemical weathering / surface chemistry, photochemistry in the atmosphere/upper atmosphere, astro-chemistry and its significance in astrobiology

Date: July 27, 2023, Thursday

Lecture-9	The Sun	Dr. K. Sankarasubramanian, URSC, ISRO	11:00 to 12:00 hours; Plus 20 minutes of interaction
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General Characteristics of the Sun as of currently known, Solar Interior - energy generation, Propagation of energy from interior to surface - radiative as well as convective transfer, Solar Atmosphere - photosphere, chromosphere, and corona -definition and its characteristics, Magnetism - effect of convection, rotation for active region creation and observations, Solar wind.

Lecture-10	The Solar System: Formation, evolution and the present state	Prof. Debabrata Banerjee, PRL	15:00 to 16:00 hours; Plus 20 minutes of interaction
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Solar system; theories of origin; Terrestrial planets; Giant planets; Asteroids, meteorites, comets; Extinct radionuclides (^{26}Al based chronology) and understanding solar system formation timescales; Planetary properties – orbit, mass, size, shape, temperature, magnetic field, composition (surface and atmosphere); structure; Moon –

formation and evolution; Mars – origin, structure, geological processes; outstanding problems in lunar and Martian science.



Date: July 28, 2023, Friday

Lecture-11	Scientific Payload development for Solar System Exploration	Dr. Tirtha Pratim Das, SPO, ISRO HQ	11:00 to 12:00 hours; Plus 20 minutes of interaction
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What are scientific payloads; Specialty of the scientific payloads; ; In-situ and Remote Sensing observation techniques; Scientific payload development: a step-by-step approach; Important functional parameters: (i) resolution, (ii) throughput, (iii) range, (iv) dynamic range, (v) sensitivity; Trade-off between the functional parameters; Testability of scientific payloads; Proof-of-Concept model and its demonstration; Interfaces of scientific payloads; characterization and calibration of scientific payloads; Overall specifications of scientific instruments: functional, mechanical/structural, data-rate; Operation of scientific payloads in space; Scientific data archival, levels of data archival.

Lecture-12	Planets in the Solar System	Prof. Varun Sheel, PRL	15:00 to 16:00 hours; Plus 20 minutes of interaction
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Evolution and Chemistry - Secondary Atmospheres, Planetary Water, Carbon Cycles, Nitrogen Cycles and the Role of Biogeochemistry; Basic Atmospheric Structure - Temperature and Pressure Profiles; Atmospheric Composition and Dynamics - Chemical Composition of Various Planetary Atmospheres, The General Theory of Atmospheric

Motions, Atmospheric Storms, The Climatic Effects of Aerosols, Sulfuric Acid Hazes, Global Cloud Effects; Upper Atmospheres and Ionospheres; Thunderstorm Electrification.

Date: July 31, 2023, Monday

Lecture-13	Origin and Evolution of the Moon	Prof. Ramananda Chakrabarti, IISc	11:00 to 12:00 hours; Plus 20 minutes of interaction
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Origin of the Moon – pre- and post-Apollo ideas; time of formation of the Moon; constitution and composition of the Moon; the lunar magma ocean; Geochemical and isotopic insights into some lunar processes

Lecture-14	Minor Bodies in the Solar System – Asteroids, Comets and Meteors	Dr. Kinsuk Acharya, PRL	15:00 to 16:00 hours; Plus 20 minutes of interaction
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Definition, science objectives to study them, overview of physical and chemical aspects, formation and reservoirs, past missions and discuss current status of the field, specify the major scientific questions for future missions. Various facets of laboratory and numerical modelling studies to understand these objects.



Date: August 01, 2023, Tuesday

Lecture-15	Mission Design for Space Exploration	Dr. Ritu Karidhal, URSC, ISRO	11:00 to 12:00 hours; Plus 20 minutes of interaction
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Mission Objectives for Earth-bound, Moon-bound , interplanetary missions, Introduction to Orbital Mechanics , Different types of orbits , Interplanetary trajectories, Attitude Measurement Sensors and Control, Propulsion , Power , Thermal and Communication Requirements, Onboard Autonomy and Automation, Mission planning , analysis and operations, Ground Stations and ground segment .

Lecture-16	Observational Techniques for Space Science	Dr. V. Girish, SPO	15:00 to 16:00 hours; Plus 20 minutes of interaction
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Introduction to ground based observations; Need for space based observations, effect of atmospheric extinction and diffraction; need for multi-wavelength observations; vantage points for space observations; major observational techniques

Astronomy, Astrophysics and Cosmology

Date: August 02, 2023, Wednesday

Lecture-17	Basics of Astronomy & Astrophysics	Dr. R. Niruj Mohan, IIA	11:00 to 13:00 hours; Plus 20 minutes of interaction
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Introduction to astronomy Celestial sphere: coordinates – motion of stars, Sun, Moon – Eclipses; Stars: Proper motion – colours – magnitudes – nova – binary stars Galaxy – Milky Way – star clusters – dust lanes – nebulae – supernovae – shape and size Galaxies – morphological types – motion of stars

Introduction to astrophysics Doppler effect: stellar motion in our galaxy – exoplanets - dark matter – redshifts – Hubble expansion Fusion and

thermodynamics: stellar structure – stellar evolution – chemical history of Universe – thermal history of Universe Compact objects: White dwarfs – neutron stars – black holes, Exoplanet, Kepler Mission, Biosignature, Search of Extra-Terrestrial Intelligence, Drake Equation, Possibility of life in solar system, Polycyclic Aromatic Hydrocarbons.

Date: August 03, 2023, Thursday

Lecture-18	Exoplanets and Earth-like Exoplanets	Dr. Aravind Singh Rajpurohit, PRL	11:00 to 12:00 hours; Plus 20 minutes of interaction
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Introduction to Exoplanets; A brief history of their discovery, Orbits and dynamics; Observational Techniques for exoplanet detection : (i) Radial velocity method (ii) Transit and Occultations (iii) Microlensing (iv) Direct Imaging ; Statistical distribution of their population; Their interiors and Atmosphere ; Types of exoplanets; Various space base and ground base surveys and follow-up spectroscopic observations for exoplanets.

Lecture-19	Introduction to Astrobiology and Search of Life Beyond Earth	Prof. Sudha Rajamani, IISER, Pune	15:00 to 16:00 hours; Plus 20 minutes of interaction
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Astrobiology: Fundamental questions and tools; emergence of life on Earth- the transition from chemistry to biology, early Earth conditions and its implications for the sustenance of early life-forms, search for life beyond Earth: Fundamental implications of Astrobiology for understanding if there is life beyond Earth and the solar system, bio-signatures for detecting life-forms and examples of some techniques used to search for them indigenous S&T activities and facilities available within the country for facilitating search of life outside of Earth.

Research institutes involved in some of these activities, educational pursuits and opportunities available for training to become an Astrobiologist.

Date: August 04, 2023, Friday

Lecture-20	Introduction to Cosmic Rays	Dr. P. K. Mohanty, TIFR	11:00 to 12:00 hours; Plus 20 minutes of interaction
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A historical perspective of cosmic ray discovery, energy spectrum and composition, possible sources, detection on space and ground, cosmic ray research around the globe and within India, cosmic ray interaction in the earth's atmosphere and production of secondary cosmic rays, solar modulation of cosmic rays and its application to space weather research, cosmic rays and lightning, cosmic ray muon tomography and discovery of hidden chambers.

Lecture-21	Introduction to Cosmology	Prof. Tarun Sauradeep, RRI	15:00 to 16:00 hours; Plus 20
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			minutes of interaction
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Homogeneous and isotropic universe – geometry and evolution;
Cosmic content, Large scale structures in matter and radiation, Current
understanding of cosmic origin and other frontier problem.

Date: August 07, 2023, Monday

Lecture-22	Research Opportunities in Space Science and Technologies	Dr. K. Praveen Kumar, SPO, ISRO HQ	14:00 to 15:00 hours; Plus 20 minutes of interaction
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Introduction on various verticals of Space Science, Major Indian Institutions involved in Space Science Research, Major Science missions and archived data for utilisation, Various projects with Research Fellowship support (Data Analysis AO Projects, Scientific payload development AO projects, Project fellowship by other agencies), Sponsored Research (RESPOND) basket, Space Technology Cells (STC), Regional Academic Centres (RACs), Space Technology Incubation Centres (STIC), Major Venues for presenting Scientific findings, Training opportunities- AstroSat and Aditya-L1 Science Support Cells, Space Science mission data analysis workshop and training.

Concluding Session	15:30 to 16:00 hours
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