SELF STUDY REPORT

FOR

2nd CYCLE OF ACCREDITATION

INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY

INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY (IIST) AN AUTONOMOUS INSTITUTE DEPARTMENT OF SPACE, GOVT. OF INDIA
VALIAMALA
695547
https://www.iist.ac.in

Submitted To

NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL

BANGALORE

August 2024

1. EXECUTIVE SUMMARY

1.1 INTRODUCTION

The Indian Institute of Space Science and Technology (IIST)-Thiruvananthapuram is a unique academic institution conceived to nurture a specialist workforce for the prestigious Indian Space programme. Spread across **120 acres** with an eco-friendly ambience and located at the foothills of Sahyadri, IIST is a distinguished centre of excellence in science and technology, focusing on space applications. Inaugurated **in 2007** by **Dr Manmohan Singh,** IIST is **Asia's first institute** dedicated to India's commitment to exploring space studies. IIST has been moulded by great personalities such as **Dr A. P. J. Abdul Kalam**, **Prof. U. R. Rao**, **Dr B. N. Suresh**, **Dr G. Madhavan Nair**, and many other stalwarts in the field.

The **curriculum at IIST** is designed judiciously by **blending science, engineering, humanities, applied research, and technology**. The vision is augmented by excellent infrastructure, a student support system, effective governance, industry collaboration, alumni engagement, and community outreach initiatives.

The esteemed reputation of IIST, its strategic alignment with India’s Space programmes, and its close **collaboration** with **ISRO** collectively provide a distinctive platform for student training and research, thereby augmenting students’ expertise.

IIST offers **two undergraduate, one dual-degree, fifteen postgraduate, PhD, and post-doctoral programmes** to develop highly skilled professionals for the space sector and offer skilled human resources for ISRO. The UG admissions are based on **JEE (Advanced)**, and PG and PhD admissions are through **GATE or national-level examinations**.

IIST has efficient **state-of-the-art laboratories. T**he institute has expert **faculty members from 11 states**, supported by skilled non-teaching staff. **Female** faculty strength is **20%**, while **female student strength is 22%,** which aligns with the mandated **supernumerary seats** for CFIs**.** The student-faculty ratio of **9:1** promotes personalised attention, encouraging a culture of curiosity and innovation.

The emphasis on interdisciplinary research fosters innovation and the development of new technologies, positioning IIST at the forefront of space science and technology. For example, **SSPACE** developed and successfully launched a student satellite, **INSPIREsat**, jointly with the Laboratory of Space Physics, University of Colorado. Another project of significance is **VYOM** – a sounding rocket realised and launched with the active involvement of IIST students; the first of its kind in India, and Payloads (**PILOT, ARIS) for PS-4 on the POEM platform of PSLV C-55.**

IIST fosters entrepreneurship initiatives through an innovation and incubation centre, STIIC. IIST shares a common boundary with the Liquid Propulsion Systems Centre and has a symbiotic relationship with VSSC and other centres of ISRO. Students have options to address and solve ISRO's real-life problems.

Our **alumni** have significantly contributed to successful space missions such as **Chandrayaan-3, Aditya L-1, the Mars Orbiter Mission (Mangalyaan)**, and the upcoming human spaceflight mission, **Gaganyaan**.

The campus life includes various extracurricular activities, **clubs**, and events catering to diverse interests. The institute encourages students to explore their passions in **sports/arts/community service**, fostering well-

rounded personalities and honing strong leadership skills.

The institute has **achieved excellence** in **green and energy audits**, demonstrating a commitment to a sustainable educational environment. IIST is a place where dreams take flight and the future of space is explored. With its commitment to excellence, innovation, and **holistic development**, IIST inspires and empowers the next generation of space scientists/engineers to India's vision of becoming a global space sector leader. The supportive campus community and wellness programmes encourage them to become competent professionals and responsible citizens.

Vision

"To be a world-class educational and research institution contributing significantly to Space endeavours".

The governance and leadership of Indian Institute of Space Science and Technology are aligned with the institute's vision and motto, which is stated as, "Vidhya sandhi hi pravachanam sandhanam". The motto literally translates to "Education is the conjunction between the Acharya or Teacher, the base element and the disciple the secondary element, teaching acts as a catalyst".

Mission

- Create a unique learning environment enriched by the challenges of the Space Programme.
- Nurture the spirit of innovation and creativity.
- Establish Centres of Excellence in niche areas.
- Provide ethical and value based education.
- Promote activities to address societal needs.
- Network with national and international institutions of repute.

1.2 Strength, Weakness, Opportunity and Challenges(SWOC)

Institutional Strength

- IIST is dedicated to teaching, learning and research in space sciences, applications and technology. IIST offers undergraduate, postgraduate, and doctoral programmes focused on Aerospace Engineering, Avionics, Remote Sensing, Astrophysics, and related disciplines. The curriculum is designed to meet the rigorous demands of the space industry, combining theoretical knowledge with hands on practical training.
- IIST exists as a symbiotic counter part of ISRO, which provides faculty and students with access to cutting-edge facilities to support advanced learning and research.
- The institute strongly emphasises research and development, with numerous projects funded by ISRO and other government agencies including DST, NBHM, etc. An Advanced Space Research Group

(ASRG), established for collaborative research with ISRO centres, coordinates and oversees the effective implementation of ISRO-IIST research activities.

- The institution currently offers UG admission through IIT-JEE Advanced Exams and M.Tech and PhD admission through GATE and other national level exams. IIST also has students from 21 states of the country. This positions the students to play an active role in Indian Space programme and also showcases the rich cultural diversity of the institute.
- IIST has highly qualified faculty with 100% PhD degree and with significant experience in academia and industry. The faculty are involved in ground-breaking research and have strong connections with international/national space agencies, including academic and research institutions.
- Key facilities at IIST include labs related to aerodynamics, satellite testing and fabrication centres, a ground station, advanced propulsion and laser diagnostics, nanoscience and technology, and virtual reality.
- The institute has a strong placement record, with recruitment from ISRO and other organisations. IIST collaborates with several international organizations like Caltech, JPL, Delft, University of Colorado, Nanyang Technical University, etc., facilitating student exchange programmes, inculcating research initiatives, and enabling exposure to global advancements in space technology.
- The institute encourages innovation and entrepreneurship among its students and faculty. Space Technology Innovation and Incubation has been established to foster a start-up culture, particularly in the field of space technology and related areas.
- IIST has the capability of small satellite production and already three of them are placed in orbits by PSLV. The Small-Spacecraft Systems and Payload Centre (SSPACE) enables students to develop and operate live space missions, exemplified by the launch of IIST's first student satellite, INSPIREsat-1, and PILOT and ARIS on the PSLV C-55 mission.
- The institute has a distinguished stream of alumni, who have brought honour to their alma mater through their achievements in the space sector and other diverse fields. Our alumni were part of Chandrayaan-3, Aditya L-1, Mangalyaan, and are contributing to the human spaceflight mission, Gaganyaan. This network provides mentorship, collaboration opportunities, and industry affiliations for the current students.
- Students enjoy the patronage of ISRO scientists and have access to facilities in the centres. Further IIST is a fully residential campus which is green and serene with its bio-diversity preserved. The institute has regular visits of luminaries the recent being that of the Honourable External Affairs Minister Dr Jaishankar, Honourable Minister of Electronics and IT, Shri Rajeev Chandrasekhar and the Honourable Vice President Shri Jagdeep Dhankar.

Institutional Weakness

- IIST has an exclusive Indian national admittance. Students’ exposure to international peer groups needs to be reinforced. Despite these limitations, they get opportunities to interact with experts from international institutions like Caltech and ANU as part of their internship programmes.
- IIST offers a specialised number of programmes with around 1200 students, which is relatively low compared to other universities in the country.
- Curriculum was rigid with limited options for interdisciplinary courses, now being addressed by implementation of NEP guidelines.
- Being a young institute, the alumni network of IIST is in its formative phase.
- The all-inclusive campus facilities are essential for students as it is fully residential. It is addressed to a great extent but yet to be completed.
- To provide better academic support, improve motivation, to impart more soft skills and for better

emotional support, faculty availability should be ensured full time. Current faculty residencies outside the campus may hinder these; still this issue is being addressed by faculty members staying back on week days and weekends who are provided with transport facilities. This issue will be further resolved with the construction of faculty quarters within the campus in the near future.

- It is noted that non-availability of Massive Open Online Courses (MOOC) and SWAYAM courses affects further improvement in ranking of the institute. However the institute has now become a member of SWAYAM and will be implementing MOOC/SWAYAM courses in the near future.

Institutional Opportunity

- IIST has the **potential to become a global leader** in space science and technology education, studies, and research.
- The students of the Indian Institute of Space Science and Technology (IIST) are expected to **play a significant role in Indian space programmes**, including top management positions in the Department of Space at the national level and in the global space sector.
- IIST can diversify its academic activities by **introducing interdisciplinary programmes** and courses that combine space science and technology with fields such as **artificial intelligence, biological sciences, social sciences, robotics, data science, environmental science, and remote sensing** which have a direct impact on society.
- The range of UG, PG and PhD programmes can be expanded by including **more specialised areas of space science such as maths and computing, artificial intelligence, chemical engineering, sensor development, 5G/6G research, semi-conductor technology, astrobiology, planetary sciences, space law, space economics**, etc. The integration of these courses **in line with NEP** would attract a wide range of students and foster innovation.
- Expanding **partnerships with both national and international companies** can provide students with more internship and employment opportunities.
- Enhancing **collaborations with global agencies, international universities, and industry leaders**, can bring more research and development projects.
- Upgrading programmes and initiating **faculty/student exchanges** can bring more exposure to students and faculty members. IIST provides more opportunities to **participate in international space missions and collaborative research projects**, which will gain global acceptability.
- In alignment with the provisions of the **New Space Policy of India 2023**, fostering entrepreneurship and providing support to start-ups in the private space sector can catalyze innovation and generate new employment opportunities.
- Fostering **alumni interaction** can play a crucial role in enhancing the institute’s reputation and providing career opportunities for current students.
- Improved **engagement with various ISRO centres** can lead to the involvement of IIST students and faculty in various space missions and projects. This will lead to collaborative research and **development of cutting-edge technologies**.
- Developing more Massive Open Online Courses (**MOOC**) and online degree programmes in space science and technology can reach a global audience and can place IIST as an international hub of space education.
- The introduction of virtual laboratories and simulation tools can provide students with hands-on experience and learning opportunities.
- IIST can contribute more to the development of **sustainable green technologies** for space missions.
- By way of more innovations in earth sciences and space applications that serve society in a better way, IIST can contribute to improvements in space economy.

- By path breaking research and ideas, IIST can contribute to complement the advanced programmes of ISRO/DoS.

Institutional Challenge

- Although the focus on space science and technology represents a notable advantage, the institution's academic portfolio exhibits **limited diversity**. Nevertheless, the broadening of research areas into diverse fields of study has bolstered IIST's reputation and relevance. Furthermore, IIST's faculty strength and applied programmes have the potential to **augment its capabilities and strengthen its position**.
- Despite achieving national and international recognition**, IIST's unique characteristics and strengths** are not adequately captured by existing national ranking frameworks, which often prioritize parameters such as student enrolment numbers and program diversity. The institution's **specialised focus** and modest student body, differing from conventional universities, pose a challenge in meeting the mandatory requirements of these frameworks. This needs to be properly resolved through representation.
- The rapid pace of technological advancements in space science and technology presents significant challenges, necessitating **continuous updates to the curriculum, shifts in research focus, and upgrades to infrastructure**. This demands the acquisition of **more experienced and skilled personnel** to effectively adapt to the evolving landscape.
- Engaging alumni in mentorship for institutional development is challenging, due to the work schedule in mission projects.
- **Developing multidisciplinary programmes that integrate space science with other emerging fields such as Artificial Intelligence, Machine Learning**, etc., leading to a degree is challenging.
- **Attracting globally recognised academicians**, and specially trained graduates from reputed research organisations and retaining them is challenging due to the salary package and emoluments.
- Retaining the motivation of students in an environment away from home in conjunction with life in a multi-cultural environment poses challenges. Focus should be on all-round development now made possible by NEP implementation.

1.3 CRITERIA WISE SUMMARY

Curricular Aspects

The Indian Institute of Space Science and Technology (IIST) offers a comprehensive range of academic programmes, comprising **two undergraduate, one dual-degree, fifteen postgraduate, PhD, and post-doctoral programmes**, spanning seven departments. The undergraduate and postgraduate programmes operate on a Choice Based Credit and Semester System, facilitating flexibility and interdisciplinary learning. The institute's curriculum is designed to disseminate advanced knowledge in Space Science and Technology, strongly emphasising interdisciplinary approaches. Furthermore, curriculum development is aligned with the institute's vision and mission statements and is informed by stakeholder feedback analysis. The focus of IIST is to become a world-class educational and research institute that contributes to space endeavours and develops skilled human resources to meet the demands of the space industry with an equal emphasis on fundamental research.

IIST has introduced courses on entrepreneurship, employability and skill development by offering electives and

through specialised interdisciplinary labs/facilities such as STIIC, SSPACE, STIC, EMERALD, APLD, CHEMISENS, NEMS-and-Microelectronics-characterisation-lab, MEMS-and-Nano-Fab-lab, AFM, ESI Mass-Spectrometer, Operational-Ground-station-and-Mission-Control, Atomic-Layer-Deposition, 3D-printing-facility, Anechoic-Chamber, High-Performance-Computing, etc.

The curriculum at IIST is methodically designed to foster skill development by integrating mini-projects, engineering design projects, and course projects, including field projects, research projects, and internships, in most courses. This approach enables students to acquire expertise and skills in relevant areas, empowering them to contribute to ISRO missions and projects without additional training. The curriculum follows the Outcome-Based Education (OBE) framework. The connection between Graduate-Attributes, Programme Outcomes and Course Outcomes with the Sustainable Development Goals is ensured. Academics, research, and extension activities are fine-tuned as per the recommendations of each department's annual academic audit. The students are exposed to the latest knowledge updates in the field through seminars, workshops, symposia, and lectures throughout the year. Research aptitude and industry readiness are attained through projects/internships and hands-on exposure to state-of-the-art experimental facilities. Through the Academic Bank of Credit, credit transfer and transmission of student credentials to the National Academic Depository will be enabled.

Curriculum revisions are done regularly with the broad objective of meeting the national/global needs. During 2018-23, IIST revised the curriculum of all the programmes after taking the inputs of peers/teachers/alumni/professionals/R&D-experts/industry, vetted by the Department-Curriculum-Committee, Board of Studies, and approved by the Academic Council. Depending upon the need/suitability, IIST offers new courses with academic flexibility, allowing students to opt for elective/SWAYAM/NPTEL courses.

The students of IIST are permitted to carry out their projects at various ISRO centres/R&D organisations, and industries, reinforcing both hard and soft skills effectively in their area of specialisation. Students also participate in designing/developing satellites through experimental learning and learn skills required to make satellites/payloads. Recently, IIST created history by sending two scientific payloads to space on-board PSLV C55. The payloads, ARIS-201F and PiLOT101F, were put into the low earth orbit approximately 600 km onboard the POEM 2 platform of the PSLV-C55 on April 22, 2023. These payloads were designed, fabricated, tested, and qualified by the faculty and students of IIST, with the help of various ISRO entities.

Teaching-learning and Evaluation

Since its inception, the institute has provided utmost care and importance to academics and its development. The teaching, learning, and evaluation ecosystems are nurtured with utmost diligence and care at IIST. By offering **programmes ranging from undergraduate to postdoctoral level** and maintaining a **healthy teacher-student ratio**, one of the best among similar institutes in the country, IIST continues its commitment to providing quality education to students. The institute appoints faculty members who are **PhD holders** trained by **premier institutes in the country or abroad.** By **selecting students for programmes through various national level tests like IIT-JEE (Advanced)/CSIR/UGC/GATE/JEST,** the institute has never compromised the quality while ensuring social justice and equality by adhering to the reservation policy adopted for various **marginalized sections and girls**. By organising **induction programmes, mentoring, counselling, internships, and remedial classes,** as well as offering opportunities for highly motivated students to engage in project works associated with the **Small-spacecraft Systems and PAyload CEntre (SSPACE)**, set up by the Institute for the **Development of satellite systems**, the institute has been committed to address the needs of both slow and advanced learners. By giving students opportunities to **participate in projects on satellite payload development, launch vehicles, and related subsystems** at different ISRO/DoS centres, the institute

helps them attain hands-on experience in emerging technological development related to space science and allied areas. Thus, it plays a major role in shaping future space scientists in the country. The **toppers** of each of the branches of the undergraduate programmes get an opportunity to do their **Master's at California Institute of Technology (Caltech),** USA, along with **a two-month internship at Jet Propulsion Laboratory (JPL)** of NASA, under the **DoS-Caltech Professor Satish Dhawan Endowment scheme** borne by IIST. Receiving only a handful number of revaluation applications or almost **zero complaints about the grading** are testimonies to the transparent and vigorous evaluation system prevailing in the institute.

Research, Innovations and Extension

IIST aims to foster interdisciplinary and collaborative research work within its departments, with ISRO centres and other academic and research organisations. The institute generates technologies to meet the needs of the local, national, and global community. Research facilities are updated by funding from the **Department of Space (DoS) and extramural research projects** sanctioned by government and non-government agencies. The research policy encourages faculty members to engage in fundamental and applied research for societal benefit. The research culture at IIST has produced skilled human resources in Space Science and Technology. To keep up with advancements in the space sector, **the Advanced Space Research Group (ASRG) has been established in 2020.**

IIST has enrolled around **285 PhD scholars** in the last five years, with **130 PhD degrees awarded till 2023.** Faculty members have undertaken over **200 research projects** with funding of over **60 crores from government agencies** and have published over **1100 research articles** in peer-reviewed journals. The institute has established **Centres of Excellence** in niche areas such as **Propulsion, Nanoscience, and Virtual Reality**.

IIST has also established an **Intellectual Property Rights (IPR) cell** with well-defined policies. The cell guides and processes applications for patents and copyrights, which has resulted in **16 granted patents** in different areas of science and technology. IIST has **17 international and 38 national Memoranda of Understandings/Agreements** (MoUs/MoAs) and many research collaborations with reputed academic/research organisations.

IIST has established a **Space Technology Innovation and Incubation Centre (STIIC)** to promote innovation, entrepreneurship and start-ups. STIIC assists young researchers in converting novel ideas into practical applications, contributing to a knowledge-driven environment. There are **nine such units at IIST**. The institute provides opportunities for students from **other institutions for internships and projects** using its advanced research facilities. Over **400 students** have been hosted by IIST for these programmes free of cost.

The institute also engages in **outreach programmes** with the local community through science camps, cleaning drives, awareness workshops, and leadership programmes. These initiatives provide practical experience and foster collaboration, leadership skills, and social responsibility in our students.

Infrastructure and Learning Resources

IIST cultivates a conducive environment for innovation and creativity, supported by an infrastructure that includes four academic buildings equipped with **32 classrooms, 3 large seminar halls, and nine mini conference halls with ICT capabilities**. The institute allocates approximately 15-25 crores annually for continuous enhancement and augmentation of facilities and 3-6 crores for maintaining academic and physical

facilities.

IIST has a **six-storey air-conditioned, WiFi-enabled library building with 4371.51 Sq.m area.** The library is automated using **Koha ILMS,** and the facility searches the **OPAC** of other **DoS/ISRO libraries**. IIST is a member of the ***Antariksh Gyaan*, the ISRO library consortium**. The library comprises **35,438 books, 8,116 e-books, 6000 plus e-journals, 147 print journals,** a map collection and **1,391 back volumes**. The e-resources can be accessed from anywhere in the world at any time. The institute has developed the **IRINS i**nstance of IIST. Three multi-functional production printing cum scanner machines are functional at the library. A **graphic design facility** and **printing/binding** of UG/PG/PhD theses/conference materials/papers/posters are available in the library.

Apart from the library, the IIST campus houses an administrative block, **a multipurpose hall, an open-air theatre, 11 hostels** (nine for boys and two for girls), a student activity complex with modern sports equipment and a **sophisticated gymnasium, two football grounds, a volleyball court, a squash court, 12 TT tables, a billiard table, a basketball ground, 5 basketball practice posts, a net-cricket pitch, badminton courts and facilities for chess and carroms.** It also houses a **health centre, a Bank with an ATM,** two cafeterias, one student mess (with **mechanised food-making equipment and baking Borma**), canteens with three large dining halls, a self-sufficient drinking water-treatment plants, a sewage treatment plant, an institute transport division (Buses/light-vehicles/ambulance/goods-vehicles/traveller), **e-vehicles**, vehicle repairing workshop & fuel station. Facilities like **clean drinking water** in all buildings cater to the comfort and well-being of students and staff alike.

The institute's commitment to technological advancement is evident through its facilities, such as the **Audio/Visual lab for professional video recording/editing, documenting and archiving visual ethnographic records**. **The Multidisciplinary Computing Centre (MCC) boasts of 120 teraflops, 40 high-end workstations, 2 GPU servers, and 200 TB storage for cutting-edge computational research**. In addition, the academic departments have very specific computational labs equipped with workstations and computers. **92 instructional and research labs** equipped with the most modern equipment provide hands-on experience, including the **Small-Spacecraft Systems and Payload Center**, where students engage in innovative satellite payload development.

A high-speed intranet/internet network (**1 GBPS+100 MBPS**) powered by the National Knowledge Network facilitates uninterrupted access to academic resources and administrative systems. The institute's digital platform - **iCampus**, streamlines **attendance marking, grading, and result publishing**. Additional digital tools include **webmail, an online food booking facility, and secure purchase, procurement and communication platforms**.

Security measures are vigorous, with **biometric access and CCTV cameras** ensuring safety on the campus. Automation via biometric systems enhances efficiency in attendance management. The institute maintains strict **IT protocols**, including **antivirus protection** and **plagiarism detection software, fostering a favourable ecosystem for quality research**.

A well-organized mechanism governs the efficient utilisation and maintenance of physical, academic, and support facilities, ensuring optimal use of resources across academic, administrative, and residential spaces.

Student Support and Progression

IIST has achieved extraordinary student enrichment progress by enhancing **student-centred learning, promoting student research, encouraging projects** with field surveys, participation in **payload making, student activities, support systems, and student progression**. IIST facilitates academic pursuits by providing **financial assistance for B.Tech. students through DoS assistantship**, while all the **M. Tech. students benefit from AICTE scholarships**. IIST fellowships financially support all PhD scholars and post-doctoral fellows on par with national standards **or through funding from external agencies**. The institute has also established multiple forums for **student grievance redressal**, promoting an inclusive and supportive environment. These forums, **faculty mentoring and a dedicated student counsellor** ensure that students receive essential guidance and support throughout their academic journey. Apart from faculty mentoring, a **Buddy Mentoring System** in the institute facilitates students' academic and personal growth through peer support and guidance.

A significant milestone for IIST students is the opportunity to join the **Indian Space Research Organisation (ISRO) as Scientists/Engineers**. This opportunity is available to all B.Tech students with a **CGPA of 7.5 and above**. The active **Placement Cell** at IIST ensures students are well-placed by opening job placements for B.Tech, M.Tech, and PhD graduates in other companies and industries.

While many students pursue **higher studies** in **internationally reputed institutions**, some have ventured into **entrepreneurship by establishing their start-ups**, and a notable number have joined **government civil service**s or secured employment with **private companies**. This diversity of career pathways underscores the institute’s capacity to prepare students for a broad spectrum of professional endeavours.

IIST is unwavering in its commitment to the holistic development of its students, emphasising both academic excellence and extracurricular engagement. The **Student Activity Board** is pivotal in overseeing and coordinating various student activities. The institute also promotes student representation in various committees, ensuring that their voices are heard at all levels.

IIST housing, a **pan-Indian residential community,** hosts student-driven programmes and intercollege **technical festivals and cultural festivals, Annual Sports Day, Model United Nations (MUN**) and other programmes which highlight the student community's cultural, creative and technical talents. Active student clubs cater to a myriad of interests, from technical innovations to cultural expressions, providing platforms for students to explore and nurture their passions. IIST fosters technical and non-technical skills among students by **organising talks, discussions, symposia and workshops**, thus celebrating cultural diversity through various events. These initiatives enrich the student's academic experience and contribute to their overall personal growth. **Alumni support** has been substantial and instrumental in these endeavours, offering mentorship, resources, and opportunities for current students.

The student outreach club, **NIRMAAN,** actively engages with the society and institute through community outreach programmes, educational initiatives, and social campaigns. IIST’s comprehensive approach to student activities, support, and progression ensures its students are exceptionally well-prepared to excel in their chosen fields and contribute meaningfully to society.

Governance, Leadership and Management

IIST is deemed to be a University under the **Department of Space**, Govt. of India. Its governance system comprises a **Governing Body, Board of Management and Academic Council**. The statutory bodies of the institute include academicians from premier institutes, senior scientists, industry experts, and government

representatives. The well-defined hierarchical structures ensure an effective administration of the institute, focusing on **policy-making, strategic planning, and resource management**.

The **Governing Body** makes policy decisions and takes care of financial matters. The **Board of Management**, chaired by the Director of IIST, makes academic and administrative decisions. **The Academic Council** is constituted per the guidelines of UGC, where the **Director** of IIST is the Chairman and the **Dean (Academics)** is the Secretary of the Council.

The Director, IIST, leads the institute, with Deans, Registrar, Department Heads, faculty members, officers, and staff despatching their duties. The Registrar heads the administration of the institute. The Dean (Academics) manages academic activities; the Dean (R&D) handles projects and other research-related activities as per the recommendation of the Research Council; the Dean (IPR) handles patent-related activities, and the Dean (Student-Activities/Welfare/Outreach) supports student activities and ensures the well being of students in the campus. IIST has 96 faculty members on roll, 26 technical officers/staff, 11 permanent administrative officers, 9 office assistants, and 341 contract employees.

The **IQAC of IIST** has contributed significantly to quality assurance strategies and processes by constantly reviewing the teaching-learning process. It has institutionalized the practice of digitizing academic and administrative activities and collaborative research. It ensures programmes enhance the quality of the institute as per **NAAC guidelines**.

The **Deputy Registrar (Academics)** oversees exams, admissions, and other academic activities. The **Deputy-Registrar (Finance)** monitors accounts and financial matters; the procurement of various equipment/facilities is managed by the **Deputy-Registrar (Purchase)** and **Deputy-Registrar (Stores)**, and administration is managed by the **Deputy-Registrar (Administration)**. Recruitment and review are handled by the **Deputy Registrar (Recruitment and Review)**. A **Senior Administrative Officer** monitors the Establishment, Public Relations and Transport Operation & Maintenance Division (TOMD). Other sections include the library, canteen, CMD, computer system group, software support group, Hindi section, hostel office, medical centre, transport, and CISF. The Director constitutes various committees for proposing policies, suggestions, and recommendations. The Director/Registrar oversees civil works within the campus. The human resources requirements for academic, administrative, and research activities are monitored and assessed, and vacancies are notified in leading print media and websites.

Institutional Values and Best Practices

IIST strives for excellence, innovation, sustainability, equity, and inclusion. **To foster gender equity** and **promote inclusivity**, the institute conducts gender audits every year. A **Gender Sensitization Committee and an Internal Complaints Committee (ICC)** address gender issues and complaints, organize programs on health, safety, and gender awareness and ensure adequate facilities for women employees and female students on campus. Student induction programs emphasize education on ethical conduct and the prevention of sexual harassment. IIST has **students from 21 states,** which reflects an inclusive environment. IIST supports student celebrations **such as Holi, Diwali, Dusshera, Pongal, Onam, Ugadi, Ramzan and Christmas,** providing an inclusive atmosphere and creating harmony among the student community towards different cultures**.**

Various committees, including **the SC/ST Cell, Students Grievance Redressal Cell, and Anti-ragging Cell,** ensure a peaceful academic environment. **Hindi Pakwada, World Hindi Day, and special language classes**

are part of the official language implementation in the institute. The support for economically and socially challenged students by providing reservation and fee-wavering as per norms are in place. The **Student Outreach Club** NIRMAAN bridges the gap between academia and the community through outreach programs, educational initiatives, and social campaigns, instilling civic responsibility and leadership in students. The campus is **Divyangjan-friendly,** with ramps, lifts, and accessible toilets in all academic and non-academic buildings.

Committed to sustainability, IIST sources **500kw (at peak) of its power** from renewable energy, operates a **water treatment plant for recycling**, employs a **no-waste incinerator,** and has authorized recycling methods.

IIST boasts a lush green campus with aesthetic landscaping, 4 ponds and a bio-diversity park and takes pride in our efficient practices adhering to green protocol in the field of waste management, rain water harvesting, energy and bio-diversity conservation. IIST has been certified with A+ Grade by Haritha Kerala Mission, Government of Kerala as a GREEN institution for imparting the culture of environmental conservation to society.

The institute celebrates **Swachhta Pakhwada** to promote cleanliness and net-zero campus. IIST participated in the **Azadi Ka Amrit Mahotsav** and observed days of all national importance to honour constitutional values and encourage unity.

Learning through Real-time Applications at IIST in Small-Spacecraft Systems and Payload Centre (SSPACE) is one of the best practices of the institute, which enables students to develop and operate live space missions, exemplified by the launch of IIST's **first student satellite, INSPIRESat-1**, and successful technology demonstration missions like **PILOT and ARIS on the PSLV C-55** mission, showcasing IIST's commitment to innovation in space science and technology. Hands-on experience for students in **ISRO/other Aerospace industries and R&D Labs i**n the form of internship is one of the unique best practices for inculcating technical skills and industrial practices before embarking on their careers.

IIST's innovative approach to teaching and research in space science and technology allows **real-time participation in the Indian space sector,** generating **highly skilled human resources,** a unique and distinctive feature of the institute.

Space Technology Innovation and Incubation Cell (STIIC) is yet another initiative that proclaims the performance of the Institute in its distinctive area of space research as out of 9 incubated companies, 5 foster innovative space technologies.

2. PROFILE

2.1 BASIC INFORMATION

Name and Address of the University	
Name	INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
Address	Indian Institute of Space Science and Technology (IIST) An Autonomous Institute Department of Space, Govt. of India Valiamala
City	THIRUVANANTHAPURAM
State	Kerala
Pin	695547
Website	https://www.iist.ac.in

Contacts for Communication					
Designation	**Name**	**Telephone with STD Code**	**Mobile**	**Fax**	**Email**
Director	S Unnikrishnan Nair	471-2568402	7022267122	471-2568401	registrar@iist.ac.in
IQAC / CIQA coordinator	Kuruvilla Joseph	471-2568497	9447366479	471-2568463	registrar@iist.ac.in

Nature of University	
Nature of University	Deemed University

Type of University	
Type of University	Unitary

Establishment Details	
Establishment Date of the University	03-01-2007
Status Prior to Establishment,If applicable	

Recognition Details		
Date of Recognition as a University by UGC or Any Other National Agency :		
Under Section	**Date**	**View Document**
2f of UGC		
12B of UGC		

University with Potential for Excellence	
Is the University Recognised as a University with Potential for Excellence (UPE) by the UGC?	No

Location, Area and Activity of Campus							
Campus Type	**Address**	**Location***	**Campus Area in Acres**	**Built up Area in sq.mts.**	**Programmes Offered**	**Date of Establishment**	**Date of Recognition by UGC/MHRD**
Main campus	Indian Institute of Space Science and Technology (IIST) An Autonomous Institute Department of Space, Govt. of India Valiamala	Rural	120	71118.92	UG-B.Tech, PG-M.Tech/M.Sc, PhD		

2.2 ACADEMIC INFORMATION

Furnish the Details of Colleges of University

Type Of Colleges	Numbers
Constituent Colleges	0
Affiliated Colleges	0
Colleges Under 2(f)	0
Colleges Under 2(f) and 12B	0
NAAC Accredited Colleges	0
Colleges with Potential for Excellence(UGC)	0
Autonomous Colleges	0
Colleges with Postgraduate Departments	0
Colleges with Research Departments	0
University Recognized Research Institutes/Centers	0

Is the University Offering any Programmes Recognised by any Statutory Regulatory Authority (SRA)	: Yes

SRA program	Document
AICTE	110984_12787_1_1716188355.pdf

Details Of Teaching & Non-Teaching Staff Of University

Teaching Faculty												
	Professor				Associate Professor				Assistant Professor			
	Male	Female	Others	Total	Male	Female	Others	Total	Male	Female	Others	Total
Sanctioned	37				48				15			
Recruited	29	8	0	37	37	11	0	48	8	1	0	9
Yet to Recruit	0				0				6			
On Contract	0	0	0	0	0	0	0	0	0	0	0	0

Non-Teaching Staff				
	Male	**Female**	**Others**	**Total**
Sanctioned				24
Recruited	11	9	0	20
Yet to Recruit				4
On Contract	0	0	0	0

Technical Staff				
	Male	**Female**	**Others**	**Total**
Sanctioned				31
Recruited	20	6	0	26
Yet to Recruit				5
On Contract	0	0	0	0

Qualification Details of the Teaching Staff

Permanent Teachers										
Highest Qualification	**Professor**			**Associate Professor**			**Assistant Professor**			
	Male	Female	Others	Male	Female	Others	Male	Female	Others	Total
D.sc/D.Litt/ LLD/DM/MCH	0	0	0	0	0	0	0	0	0	0
Ph.D.	29	8	0	37	11	0	8	1	0	94
M.Phil.	0	0	0	0	0	0	0	0	0	0
PG	0	0	0	0	0	0	0	0	0	0
UG	0	0	0	0	0	0	0	0	0	0

Temporary Teachers										
Highest Qualification	**Professor**			**Associate Professor**			**Assistant Professor**			
	Male	Female	Others	Male	Female	Others	Male	Female	Others	Total
D.sc/D.Litt/ LLD/DM/MCH	0	0	0	0	0	0	0	0	0	0
Ph.D.	2	0	0	0	0	0	0	0	0	2
M.Phil.	0	0	0	0	0	0	0	0	0	0
PG	0	0	0	0	0	0	0	0	0	0
UG	0	0	0	0	0	0	0	0	0	0

Part Time Teachers										
Highest Qualification	**Professor**			**Associate Professor**			**Assistant Professor**			
	Male	Female	Others	Male	Female	Others	Male	Female	Others	Total
D.sc/D.Litt/ LLD/DM/MCH	0	0	0	0	0	0	0	0	0	0
Ph.D.	0	0	0	0	0	0	0	0	0	0
M.Phil.	0	0	0	0	0	0	0	0	0	0
PG	0	0	0	0	0	0	0	0	0	0
UG	0	0	0	0	0	0	0	0	0	0

Distinguished Academicians Appointed As

	Male	**Female**	**Others**	**Total**
Emeritus Professor	0	0	0	0
Adjunct Professor	1	0	0	1
Visiting Professor	1	0	0	1

Chairs Instituted by the University

Sl.No	Name of the Department	Name of the Chair	Name of the Sponsor Organisation/Agency
1	Aerospace Engineering	Prof. Satish Dhawan Professor	DoS
2	Avionics	Professor of Practice	ISRO
3	Avionics	Prof. Satish Dhawan Professor	DoS
4	Avionics	Brhamaprakash Professor	DoS

Provide the Following Details of Students Enrolled in the University During the Current Academic Year

Programme		From the State Where University is Located	From Other States of India	NRI Students	Foreign Students	Total
UG	Male	3	131	0	0	134
	Female	2	23	0	0	25
	Others	0	0	0	0	0
PG	Male	15	85	0	0	100
	Female	9	25	0	0	34
	Others	0	0	0	0	0
Doctoral (Ph.D)	Male	18	10	0	0	28
	Female	25	6	0	0	31
	Others	0	0	0	0	0

Does the University offer any Integrated Programmes?	Yes
Total Number of Integrated Programme	1

Integrated Programme	From the State where university is located	From other States of India	NRI students	Foreign Students	Total
Male	2	19	0	0	21
Female	0	4	0	0	4
Others	0	0	0	0	0

Details of UGC Human Resource Development Centre, If applicable

Year of Establishment	Nill
Number of UGC Orientation Programmes	0
Number of UGC Refresher Course	0
Number of University's own Programmes	0
Total Number of Programmes Conducted (last five years)	0

Accreditation Details

Cycle Info	Accreditation	Grade	CGPA	Upload Peer Team Report
Cycle 1	Accreditation	B	2.87	Report of peer team-2016(iist).pdf

2.3 EVALUATIVE REPORT OF THE DEPARTMENTS

Department Name	Upload Report
Aerospace Engineering	View Document
Avionics	View Document
Chemistry	View Document
Earth And Space Sciences	View Document
Humanities And Social Sciences	View Document
Mathematics	View Document
Physics	View Document

Institutional preparedness for NEP

1. Multidisciplinary/interdisciplinary:	The undergraduate, dual-degree, postgraduate, doctoral, and post-doctoral programs offered by the seven academic departments of IIST are diverse and comprehensive, allowing students and scholars to explore various fields related to Aerospace Engineering, Electronics and Communication Engineering, Engineering Physics, Physics, Chemistry, Mathematics, and Humanities. These varied departments highlight the strong multidisciplinary and interdisciplinary nature of courses at IIST. The NEP curriculum committee has initiated changes to align the curriculum with NEP-2020 guidelines. IIST's undergraduate programs incorporate a multidisciplinary and interdisciplinary approach, enabling students to develop a holistic understanding and skill set essential for addressing complex challenges in Aerospace Engineering and Electronics and Communication Technology. The B.Tech in Aerospace Engineering focuses on aerospace principles, experiments, and applications, including aircraft and spacecraft design, aerodynamics, propulsion, robotics, and more. This multidisciplinary program involves applying principles from various disciplines, equipping students with the necessary skills to address challenges in the aerospace industry. The B.Tech in Electronics and Communication Engineering (Avionics) covers the fundamentals of the discipline, including electronic circuits, communication systems, signal processing, VLSI, power electronics, electrical engineering, and related topics. Through this program, IIST students gain knowledge in Avionics and Control Systems, integrating Electronics, Electrical Engineering, and Computer Science with Aerospace/Avionics applications. The Dual Degree Program in Engineering Physics branches into four major postgraduate programs (M.Tech/Master in Science) at the end of the third year, offering specializations in Solid State Physics, Earth System Science, Astronomy and Astrophysics, and Optical Engineering. The 15 postgraduate programs span six departments, promoting multidisciplinary research and learning. The curriculum is revised every three years, with this exposure reflected in global placements and admissions to higher education. Additionally, IIST emphasizes offering electives

	from all departments, enhancing the programs' multidisciplinary nature. The courses offered by Department of Humanities in human values, culture, management, space, economics, and society are significant aspects of this approach. Students can choose courses from different departments, expanding their knowledge base and encouraging interdisciplinary connections. IIST offers Ph.D. programs in all disciplines, encouraging multidisciplinary research. Doctoral students can collaborate across departments and with other ISRO centers/units, fostering interdisciplinary research and innovation. Students can also audit courses, offering them an opportunity to gain perspectives in new and different disciplines. IIST’s current curriculum is designed to integrate knowledge, ideas, and methodologies from different fields, leading to innovative research and problem-solving in a complex world.
2. Academic bank of credits (ABC):	As directed by the UGC, the National Academic Depository-Academic Bank of Credit (NAD-ABC) is set to be integrated into the educational framework of IIST. As a registered participating institution with NAD-ABC, IIST is fully digitizing its academic records, making them accessible to students through their Digi Locker accounts. Since 2021, IIST has been uploading degree certificates via Digi Locker, in addition to issuing physical certificates during convocation. To date, 698 degree certificates have been deposited with NAD-ABC. The digitization of mark statements is ongoing, with 700 mark statements from 2019 successfully uploaded and published in ABC. The entire process of publishing all mark statements for students (UG from the admission year 2020, Dual Degree from the year 2019, and PG from the year 2022) is expected to be complete by August 2024. Starting from the academic year 2024-25, semester results will be published in Digi Locker, in addition to i-Campus - IIST's academic portal.
3. Skill development:	The curriculum of all programs at IIST is meticulously designed to equip students with the necessary skills to thrive in a rapidly changing world. Graduating undergraduate students from IIST are often directly absorbed into ISRO centers as Scientists/Engineers. The inclusion of mini-projects, engineering design projects, and course projects in

	most courses enables students to gain relevant knowledge and skills, allowing them to contribute directly to real ISRO missions without needing additional training. Both undergraduate and postgraduate students are encouraged to undertake one-year projects at various ISRO centers and R&D organizations, fostering the hard and soft skills required to excel in industries and their areas of specialization. IIST students have the unique opportunity to work on real-time missions and participate in the design and development of satellites and payloads from the conceptual stage to materialization. This hands-on experience boosts their confidence and equips them with the skills needed to work in satellite and payload areas. IIST has achieved significant technology demonstrations, with five student payloads flown on PSLV missions. Notable recent successes include the launches of PILOT – the PSLV In-orbit On-board computers and Thermals, and ARIS-2 – the Advanced Retarding Potential Analyzer for Ionospheric Studies on the PSLV C55 in April 22, 2023, and the INSPIRESAT-4 satellite on July 30, 2023. These payloads were designed, fabricated, tested, and qualified by IIST students with support from faculty and various ISRO entities. Mandatory value-added courses such as Introduction to Social Science and Ethics, Economics, and Principles of Management are included in the curriculum for all undergraduate students. These courses are intended to develop engineers with a humanitarian perspective and societal knowledge, enhancing their analytical capabilities and critical thinking. ISRO scientists and engineers deliver lectures and provide hands-on sessions related to ISRO Launch Vehicle and Satellite Missions. Students are also encouraged to take skill-based NPTEL/Swayam courses through online and distance learning modes to upgrade their skills. Awareness programs and talks by alumni and external experts further aid in the development of diverse skills.
4. Appropriate integration of Indian Knowledge system (teaching in Indian Language, culture, using online course):	The institute offers an elective course on Indian Knowledge Systems for final-year B.Tech students across all branches. This course aims to empower learners by connecting them with historical contributions and integrating this knowledge into present contexts, thereby shaping their future in

	alignment with the ethos of ancient knowledge traditions. Students will gain a comprehensive understanding of ancient knowledge by exploring India's contributions to Mathematics and Astronomy, their applications in allied fields, and the principles of inquiry and innovation inherent in the Indian knowledge systems syllabus. As part of the course, students have visited the ancient palaces of Kuthiramalika and Padmanabhapuram. Additionally, yoga trainers regularly provide classes and talks for students under the Yoga Club of IIST. Faculty members have developed e-content materials on the life and contributions of Aryabhatta and the observatory in Thiruvananthapuram, enhancing students' understanding of the history of astronomy. The Department of Humanities also offers an elective course on Visual Communication, focusing on the origin and development of art and painting in India.
5. Focus on Outcome based education (OBE):	Outcome-Based Education (OBE) has been initiated at IIST to clearly define the outcomes students should achieve upon completing their undergraduate and postgraduate programs. The Institute has established a committee to launch, facilitate, and oversee OBE activities in alignment with the National Board of Accreditation (NBA) standards. This committee is chaired by a senior faculty member and includes representatives from all departments. Regular meetings are held to assess the progress of OBE implementation at the institute. As part of syllabus revisions, course outcomes are developed for various courses and reviewed within the respective departments. These outcomes are crafted according to NBA guidelines and Bloom's taxonomy. The course outcomes are displayed on the institute’s website alongside the syllabus. Each department specifies and internally reviews their program outcomes. For undergraduate programs, Program Specific Outcomes (PSO) and Program Educational Objectives (PEO) are developed. Similarly, for postgraduate programs, program educational objectives and outcomes are formulated, reviewed internally, and published on the website. Course outcomes for laboratory courses are also formulated and reviewed. At the beginning of each semester, faculty members present the course outcomes, course plans, assessment methods, and the mapping between course outcomes and program outcomes to the students. Question papers,

	assignments, and tutorials are prepared in alignment with the course outcomes. The assessment of course outcomes is currently conducted through a feedback mechanism and the Student Satisfaction Survey (SSS) at the end of each semester. The feedback and SSS results are regularly analyzed, and corrective measures are implemented based on the findings.
6. Distance education/online education:	IIST as of now has not offered distance/online education. The institute has registered itself as member of Swayam and has initiated steps to offer courses.

Institutional Initiatives for Electoral Literacy

1. Whether Electoral Literacy Club (ELC) has been set up in the College?	The institute has applied for the registration of Electoral Literacy Club (ELC) to the Election Commission of India.
2. Whether students' co-ordinator and co-ordinating faculty members are appointed by the College and whether the ELCs are functional? Whether the ELCs are representative in character?	Student's co-ordinator: Aashish Gupta- B.Tech Co-ordinating faculty members: Dr. Shaijumon C S, Dr. Lekshmi V Nair
3. What innovative programmes and initiatives undertaken by the ELCs? These may include voluntary contribution by the students in electoral processes-participation in voter registration of students and communities where they come from, assisting district election administration in conduct of poll, voter awareness campaigns, promotion of ethical voting, enhancing participation of the under privileged sections of society especially transgender, commercial sex workers, disabled persons, senior citizens, etc.	Electoral Literacy Club (ELC) aim to educate and engage students about democratic processes, voting rights, and active citizenship. Even though the registration is pending, various programs for sensitizing democratic process among students have been organized under the Quiz club of IIST. Mock elections and debates, voter registration sessions, guest lectures and discussions were conducted. IIST student trips were organized to Nedumangadu municipality and nearby schools to sensitize about democratic processes of the country. Awareness program about electoral bonds, election funding etc for IIST students were conducted. Model Parliament has been organized as part of IIST Model United Nations Program.
4. Any socially relevant projects/initiatives taken by College in electoral related issues especially research projects, surveys, awareness drives, creating content, publications highlighting their contribution to advancing democratic values and participation in electoral processes, etc.	IIST has initiated a program named Nirmaan for uplifting the underprivileged children in government schools. As part of this regular programs were organized to make the children aware about democratic values, electoral system of the country etc. As part of course projects under the courses named 'Introduction to Economics' and 'Social

	Science and Ethics', undergraduate students conducted surveys among the local community to understand the awareness about the democratic processes of the country.
5. Extent of students above 18 years who are yet to be enrolled as voters in the electoral roll and efforts by ELCs as well as efforts by the College to institutionalize mechanisms to register eligible students as voters.	Large number of students were enrolled as voters because of the efforts of IIST Quiz Club. Class representatives of Quiz Club has identified the students were not enrolled as voters and gave necessary information related to the voter enrollment.

Extended Profile

1 Students

1.1

Number of students on rolls year wise during last five years

2022-23	2021-22	2020-21	2019-20	2018-19
842	818	807	741	714

File Description	Document
Institutional Data in prescribed format	View Document

1.2

Number of final year outgoing students year wise during last five years

2022-23	2021-22	2020-21	2019-20	2018-19
255	236	211	209	213

File Description	Document
Institutional data in prescribed format	View Document

2 Teachers

2.1

Number of full time teachers in the institution year wise during the last five years

2022-23	2021-22	2020-21	2019-20	2018-19
96	98	99	99	98

File Description	Document
Institutional data in prescribed format	View Document

2.2

Total number of full time teachers worked/working in the institution (without repeat count) during last five years:

Response: 99

File Description	Document
Institutional data in prescribed fomat	View Document

3 Institution

3.1

Total expenditure excluding salary year wise during the last five years (INR in lakhs)

2022-23	2021-22	2020-21	2019-20	2018-19
6662.06	4504.81	4143.94	7038.25	5794.98

4. Quality Indicator Framework(QIF)

Criterion 1 - Curricular Aspects

1.1 Curriculum Design and Development

1.1.1

Curricula developed and implemented have relevance to the local, regional, national, and global developmental needs, which is reflected in the Programme outcomes (POs), and Course Outcomes(COs) of the Programmes offered by the University

Response:

IIST offers **2 B.Tech**., a **dual degree**, **15 Postgraduate**, **Doctoral** and **Post Doctoral programmes.** ? All B.Tech courses' **POs/PSOs/COs** were prepared and mapped to align with local/national/ regional/global developmental goals. The curricula of all programs are designed to provide students with a multi-track option, where a student can achieve foundational knowledge through core courses, knowledge in interdisciplinary fields through an appropriate choice of elective courses, and hands-on experience through internship and project work.

Based on the feedback from faculty and students, the course content and delivery are periodically reviewed/modified, mapping them to ?local/national/regional/global imperatives.

?**Local and Regional Developmental needs**

The local and regional needs are always considered while developing the program curriculum. The course project components in the continuous assessment encourage students to take up projects related to real-life problems in the local or regional areas.

Courses such as

- I**mage processing, computer vision, remote sensing, geographical information systems, and LIDAR technology** provide solutions for smart city development, climate observation, precision agriculture/farming, and cultural heritage monitoring.
- **Embedded systems, Navigation and Guidance, the Internet of Things, Pattern Recognition and Machine learning, Sensors, and Actuators** lead to telecommunication, healthcare, and surveillance.
- **Machine design, Industrial Engineering, Engineering Workshops, Engineering Graphics, and Machine Drawing** courses lead to designing and developing machines and equipment for day-to-day applications.
- **Gender studies, Cultural studies, Social sciences, and Introduction to Economics and Ethics** lead to studies on cultural identity, economic development, and social communication.

(Eg: Water body filtration systems, ***Ponmudi*** Climate Observatory, sanitization machine during Covid, cancer detection, Natural Resource mapping and management, real estate markets, urban mapping modelling,3D digital documentation of Koyikkal Palace.)

National and Global developmental needs

In line with National and global needs, IIST prepares students to thrive in a globalized world.

- On a national level, the courses of BTech and MTech programs, such as **Satellite Communication, Aerospace Propulsion, Earth Resource and Tectonic Systems, Geographic Information Systems,** etc are structured to align with the vision of the Indian Space Programme.
- Courses on **Renewable Energy, Materials for Renewable Energy Conservation, Electro-Chemical Energy Storage Systems**, etc, are designed with national development goals and priorities.
- Courses like **Industrial Management, Entrepreneurship? and Innovation and Communication Skills** focus on employability/entrepreneurship/skill development as reflected in the PSOs/COs.
- **Projects and internships** are mandatory, and students are encouraged to take up topics relevant to ISRO's needs and the nation's development goals.
- The students' outreach internship fulfils the geoinformatics requirement of state and central institutions through interaction with them.

(Eg: Analyzing satellite data for urban mapping and modeling, natural resource mapping, data analysis on disaster management, participating in real ISRO projects such as payload design, navigation system development, Interference mitigation for NGSO satellite, Sensors for human space flight, agricultural and forest resource assessment, geoinformatics information for local bodies in the state and National institute of hydrology)

Additionally, International collaborations of the institute, student exchange programs with foreign universities, internship opportunities for students at foreign universities, and toppers getting an opportunity to enrol in the Master’s program at CalTech with an additional two-month internship at JPL, NASA prepares students to engage at the international level. By fostering global awareness and equipping graduates with the necessary skills, the institute prepares them to participate actively in a globalized world.

File Description	Document
Upload Additional information	View Document

1.1.2

The Programmes offered by the institution focus on employability/ entrepreneurship/ skill development and their course syllabi are adequately revised to incorporate contemporary requirements

Response:

The institute's commitment to preparing students for the industrial/scientific workforce is evident in its programme design, curriculum development, and focus on skill development. The academic programs are meticulously crafted to prepare students for successful careers, emphasising employability,

particularly in space science and technology. IIST was formed to provide human resources to the Indian Space Programme. This focus is seamlessly integrated throughout the curriculum, from foundational courses like Introduction to Aerospace Engineering to advanced courses such as Satellite Communication and Aerospace Propulsion, as well as specialized electives such as **Machine Learning, Electric Propulsion, Aerospace Vehicle Design, Space Flight Dynamics, Aerospace Propulsion**.

Courses like Computer Programming, Embedded System applications, and Deep Learning for Computational Data Science are critical for skill development in modern-day society. Invited talks and training programs facilitated by the Placement and Guidance Cell and institute-level talks organized by the institute on personality development and corrective measures, life skills, stock market, and 21st-century skills aim to equip students with essential life skills for personal and professional growth.

By incorporating real-world scenarios, case studies, and practical projects into the coursework, students gain valuable hands-on experience that directly impacts employability. Internship opportunities in ISRO centres, other industries and Universities, both within the country and abroad, allow students to apply their knowledge in professional settings and build strong networks with potential employers.

The institute recognizes the growing importance of entrepreneurship and fosters an innovative mindset among students. Courses like Principles of Management, Entrepreneurship and Innovation, and Organizational Behaviour are designed to foster entrepreneurial skills among students. The IIST Alumni Association also organizes talks on topics such as Entrepreneurship Opportunities in the Space Sector, further reinforcing these crucial aspects of the curriculum. Entrepreneurial workshops, guest lectures from industry leaders, and business-plan competitions instill confidence in students to pursue their own ventures. The institute houses 9 start-ups (**https://www.iist.ac.in/stiic),** growing yearly.

The course syllabi are meticulously reviewed and updated regularly to ensure they reflect the latest industry trends and in-demand skills.

This ongoing revision process involves collaboration with ISRO, industry professionals, advisory boards comprising of experts in the field, and regular student feedback surveys.

File Description	Document
Upload Additional information	View Document

1.2 Academic Flexibility

1.2.1

Percentage of new courses introduced out of the total number of courses across all programmes offered during the last five years

Response: 27.77

1.2.1.1 **Number of new courses introduced during the last five years:**

Response: 133

1.2.1.2 **Consolidated number of courses offered by the institution across all Programmes (without repeat count) during the last five years :**

Response: 479

File Description	Document
Subsequent Academic Council meeting extracts endorsing the decision of BOS	View Document
Minutes of Board of Studies meeting clearly specifying the syllabus approval of new courses	View Document
Institutional data in the prescribed format (data template)	View Document

1.3 Curriculum Enrichment

1.3.1

Institution integrates cross-cutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability and other value framework enshrined in Sustainable Development Goals and National Education Policy – 2020 into the Curriculum

Response:

- IIST recognizes the importance of educating individuals to meet the challenges of the 21st century. This is reflected in the curriculum, which integrates cross-cutting topics like professional ethics, gender equality, human values, environmental awareness, and sustainability.
- As Asia's first space institute, IIST offers quality education on **Space science and technology, aligned with Sustainable Development Goals (SDG)-4 and National Education Policy (NEP)**.
- Four courses, as part of the undergraduate programmes, cover various aspects related to gender, gender equality, issues faced by marginalized communities, environmental issues and solutions, and sustainable development. Specifically, courses like Introduction to Economics, Social Science and Ethics, and Principles of Management offered by the Department of Humanities are linked to SDG-1,2,5,6,8,9,10.
- Courses related to Environmental Science and Engineering, Materials for renewable energy conversion, and Electrochemical energy storage systems offered by the Department of Chemistry have relevance to SDG - 3,11,13,14,15.
- Courses related to Remote sensing and **GIS for Natural Resourses and Environmental Management** , **Atmospheric and Ocean studies, Aerosol/Cloud Climate Interaction, Satellite Meteorology and Oceonography, General Circulation and Monsoon, Air-Sea Interaction, Hydro Meteorology, Radiation Processes in Atmosphere** offered by the Department of Earth and Space Science are relevant to SDG- 3,11,13,14,15.
- The Aerospace and Avionics department offers courses related to industry innovation and infrastructure which has relevance to SDG-9 (Eg, Pattern Recognition, Satellite Communication, Sensors, Navigation and Guidance, MEMS, VLSI design, Introduction to Robotics, Aerospace

Vehicle Design, Aerospace Propulsion, Space Flight Mechanics).

- A course on **Research Methodology** is offered and mandatory for all IIST doctoral students. It covers the methodology and ethics to be followed by the scientific community.
- **The projects, field visits, and tribal studies** undertaken by students provide opportunities to collect empirical data from society and the field of study, enabling them to understand the challenges faced by different groups, including women, children, transgender groups, differently-abled groups, and marginalized communities.

File Description	Document
Upload Additional information	View Document

1.3.2

Number of certificate/value added courses/Diploma Programme offered by the institutions and online courses of MOOCs, SWAYAM/e Pathshala/ NPTEL and other recognized platforms (without repeat count) where the students of the institution have enrolled and successfully completed during the last five years

Response: 51

File Description	Document
List of students and the attendance sheet for the above mentioned programs	View Document
Institutional programme brochure/notice for Certificate/Value added programs with course modules and outcomes	View Document
Institutional data in the prescribed format (data template)	View Document
Evidence of course completion, like course completion certificate etc.	View Document

1.3.3

Percentage of programmes that have components of field projects / research projects / internships during the last five years.

Response: 100

1.3.3.1 **Total Number of programmes that have components of field projects / research projects / internships (without repeat count) during the last five years**

Response: 20

1.3.3.2 **Total Number of programmes offered (without repeat count) during the last five years**

Response: 20

File Description	Document
Sample Internship completion letter provided by host institutions	View Document
Program and course contents having element of field projects / research projects / internships as approved by BOS	View Document
Institutional data in the prescribed format (data template)	View Document

1.4 Feedback System

1.4.1

Structured feedback for curriculum and its transaction is regularly obtained from stakeholders like Students, Teachers, Employers, Alumni, Academic peers etc., and Feedback processes of the institution may be classified as follows:

Response: A. Feedback collected, analysed, action taken & communicated to the relevant bodies and feedback hosted on the institutional website

File Description	Document
Institutional data in the prescribed format (data template)	View Document
Feedback analysis report submitted to appropriate committee/bodies	View Document
At least 4 filled-in feedback form from different stake holders like Students, Teachers, Employers, Alumni etc.	View Document
Action taken report on the feedback analysis and its report to appropriate committee/bodies	View Document

Criterion 2 - Teaching-learning and Evaluation

2.1 Student Enrollment and Profile

2.1.1

Enrolment percentage

Response: 78.21

2.1.1.1 **Number of sanctioned seats year wise during last five years**

2022-23	2021-22	2020-21	2019-20	2018-19
439	337	310	304	290

2.1.1.2 **Number of seats filled year wise during last five years (Only first year admissions to be considered)**

2022-23	2021-22	2020-21	2019-20	2018-19
301	268	282	246	217

File Description	Document
Provide the relevant information in institutional website as part of public disclosure	View Document
Institutional data in the prescribed format (data template)	View Document
Document relating to sanction of intake as approved by competent authority	View Document
Admission extract signed by the competent authority (only fresh admissions to be considered)	View Document

2.1.2

Percentage of seats filled against reserved categories (SC, ST, OBC etc.) as per applicable reservation policy for the first year admission during the last five years

Response: 82.4

2.1.2.1 **Number of actual students admitted against the reserved categories in the first year of the programme year-wise during the last five years**

2022-23	2021-22	2020-21	2019-20	2018-19
134	127	145	150	109

2.1.2.2 **Total number of seats earmarked for reserved category as per GOI or State Government rule year-wise during the last five years**

2022-23	2021-22	2020-21	2019-20	2018-19
227	161	160	141	118

File Description	Document
Provide the relevant information in institutional website as part of public disclosure	View Document
Institutional data in the prescribed format (data template)	View Document
Final admission list indicating the category as published by the HEI and endorsed by the competent authority.	View Document
Copy of the letter issued by the State govt. or Central Government Indicating the reserved categories(SC, ST, OBC, Divyangjan, etc.) to be considered as per the state rule (Translated copy in English to be provided as applicable)	View Document

2.2 Catering to Student Diversity

2.2.1

The institution assesses the learning levels of the students and organises special Programmes to cater to differential learning needs of the student

Response:

Assessing learning levels of students

- IIST adopts a continuous evaluation scheme for assessing students learning levels and academic performance.
- **Continuous assessment forms 50% of each course, comprising two quizzes (15% each) and 20% of assignments/ tests/seminars/mini projects**. In comparison, an **end-semester**

examination contributes to the remaining **50%** (during the pandemic period, the institute had followed a 60-40 % model).

- Based on the performance in the continuous assessment, students are classified as advanced learners and slow learners.
- At the commencement of each programme at the undergraduate level, a faculty member is identified as a mentor for a group of three or four students, and he/she interacts with them frequently. This helps the students to communicate the difficulties if any- both academic and personal- to the mentor.
- In each semester, for each batch of students undergoing different programmes, a Class Committee -comprising the Head of the Department, all course instructors and student representatives- meets in the middle of the semester to assess the progress of the academic session and address students' concerns or grievances related to the ongoing classes.

Special initiatives for Slow Learners

- Slow learners are supported in all possible ways. Underperformers in the first year are offered summer courses through a short set of lectures and tutorials to help them appear for supplementary examinations.
- For slow learners in the first year UG, a third quiz is also conducted as part of continuous assessment, and the best two among three are considered for the evaluation.
- The Department of Humanities helps students acquire good communication skills and prepares different modules for learners at different levels to improve their communication skills.
- The institute has professional student counsellors to give necessary support and guidance to those students in need.

Special Programs for Advanced Learners

- **Merit scholarship** is provided as per the IIST rules and regulations. https://www.iist.ac.in/sites/default/files//academic/rulesregulations/ug2022_02112022.pdf (see page 8).
- The Institute allows advanced learners to engage in project work associated with Small-spacecraft Systems and PAyload CEntre (**SSPACE)**, set up by the institute. **SSPACE** is involved in realising payloads, small satellites, related electronics, testing, and integration.
- The toppers of each of the branches of the undergraduate programme earn an opportunity to do their **Masters at California Institute of Technology (Caltech)**, USA, along with an additional two-month internship at JPL-NASA, whose academic expenses are fully borne by the institute under the **DoS-Caltech Professor Satish Dhawan Endowment scheme**.
- The institute has signed an **MOU with the Australian National University (ANU)** under which more than 10 internship positions, with fellowship, have been identified for IIST students, ranging from UG to PhD, as per the selected criteria based on their performance.
- The **toppers** in each stream of the UG programme can **change their branch** if they wish.
- UG students with a **CGPA greater than 7.5 are absorbed directly by ISRO** as scientists/engineers through interviews.
- The facilities set up by the institute, like a ground station for satellite data collection and analysis, as well as a **Climate Observatory on the Ponmudi campus**, help students work with real-time data and hence extract more information about the earth and the atmosphere.

File Description	Document
Upload Any additional information	View Document

2.2.2

Student - Full time teacher ratio (Data for the latest completed academic year)

Response: 8.77

File Description	Document
List showing the number of students in each of the programs for the latest completed academic year across all semesters	View Document
Certified list of full time teachers along with the departmental affiliation in the latest completed academic year.	View Document

2.3 Teaching- Learning Process

2.3.1

Student centric methods, such as experiential learning, participative learning and problem solving methodologies are used for enhancing learning experience and teachers use ICT- enabled tools including online resources for effective teaching and learning process

Response:

Experiential and participative learning

To complement the theoretical studies, laboratory sessions are offered in connection with science, engineering and language courses. As a unique feature of IIST, all programmes are tagged with projects and certain long-term projects, such as satellite development, ground station data handling, and instrumentation. While students are encouraged to take up internships during their semester breaks, a credited summer internship is mandatory for all UG students at the end of their 6th semester. Upon completion, internship projects are assessed based on seminars and credited accordingly. Students must make presentations based on their internship studies and are encouraged to lead discussions in graduate courses, helping them to enhance their critical thinking skills. In keeping with the larger goals of the Department of Space, students actively participate in R&D projects, some of them right from the first year of their undergraduate programme on satellite payload development, launch vehicles and related subsystems in the different ISRO/DoS centres. IIST promotes students' visits to facilities in ISRO centres to collaborate with scientists and engineers in the respective areas. This helps them get accustomed to the research culture at ISRO and the latest research. Five payloads developed by students and faculty of IIST with the support from ISRO have successfully flown in PSLV missions.

As part of the social science and economics papers, students regularly visit rural schools and villages,

which helps them understand the real-life situations of people in society. The different clubs in IIST provide a forum for students to discuss ideas and research critically yet constructively. Some of the active clubs in the institute include the Yoga Club, Nirmaan - the social outreach club of IIST, Robotics Club, Astronomy Club and the Aero Club.

Problem-solving methodologies

IIST follows a framework that helps students analyze problems logically and systematically. In this direction, faculty use a combination of lectures, tutorials, simulations, case studies and group projects in which software tools are effectively used. **High-performance computing (HPC)** facility allows students to analyse complex problems. Acquiring knowledge on how to use this type of computational tool helps students build up good computational skills, which will play a crucial role in shaping their future careers.

ICT-enabled tools used for effective teaching and learning process

For the courses related to astronomy, remote sensing, etc., advanced software tools are being used to teach students how to handle and perform analyses of data collected at the **ground station, climate observatory,** etc. The institute uses the open-source MOODLE as an LMS tool to interact seamlessly with students. Learning resources and tutorials are shared with students over this platform, which is highly beneficial, especially in the pandemic era. During this period, online examinations were conducted both in **MOODLE and WHEEBOX**. Licensed Microsoft Teams and Zoom platforms were extensively used for conducting classes, discussions and academic meetings. The institute facilitates software such as **LSRemote and Remote Xs** for accessing e-resources subscribed by IIST remotely, irrespective of place and time.

File Description	Document
Upload any additional information	View Document

2.3.2

The institution adopts effective Mentor-Mentee Schemes to address academics and student-psychological issues

Response:

The mentorship system at IIST is intended to foster the specific objective of assisting students in developing into independent individuals. The institute has had an actively functioning mentors committee under the Students Activity Board (SAB) since 2014. The objective is to offer amicable assistance to newcomers experiencing their first time living independently from their parents. IIST has students from different parts of India with different economic and social backgrounds. Many students find the transition difficult, and mentoring supports finding footing in the institute. The mentoring system at IIST assists first-year students in adapting to the new system, helping them to solve multiple issues, be it administration, language issues, logistics, personal problems, academics and so on. Each faculty is assigned 3-4 students each year. The students are advised to meet the assigned faculty regularly and discuss their difficulties at various levels. Mentors bridge between the mentees, faculty, counsellors, and

parents in case a situation arises. Opportunities are provided for the mentees' parents to interact with the mentors during the counselling. The mentors ' personal contact numbers are given to the students and parents for any further interaction in the future. To ease communication with the parents, the mentors collect the mentees' profiles, including the parents' contact numbers. Mentors meet once a month with the faculty to discuss the issues of their mentees, collectively make quality decisions, and develop strategies to further help the students. The department/faculty arranges remedial courses and tutorials and also communicates with the respective mentors. Peer group learning and buddy mentoring systems are also in place to support students.

Slow learners are provided with personal support, and the institute counsellor provides the necessary guidance. Mentors continued to support the students in the following years, too. The committee of mentors is chaired by the Dean (Student Affairs and Student Welfare), and based on the input given by mentors, possible changes are implemented in the academics, administration, hostel, etc.

File Description	Document
List of Active mentors	View Document

2.4 Teacher Profile and Quality

2.4.1

Average percentage of full time teachers appointed against the number of sanctioned posts year wise during the last five years

Response: 85

2.4.1.1 **Total Number of Sanctioned year wise during the last five years**

2022-23	2021-22	2020-21	2019-20	2018-19
114	114	114	114	114

File Description	Document
Sanction letters indicating number of posts sanctioned by the competent authority (including Management sanctioned posts).	View Document
Provide the relevant information in institutional website as part of public disclosure	View Document
Institutional data in the prescribed format (data template merged with 2.4.3 and 2.4.4)	View Document

2.4.2

Percentage of full time teachers with Ph.D./D.M/M.Ch./D.N.B/ Superspeciality/L.L.D/D.S.C/D.Litt. during the last five years

Response: 100

2.4.2.1 **Number of full time teachers with Ph.D./D.M/M.Ch./D.N.B/ Superspeciality/L.L.D/D.S.C/D.Litt Superspecialist during the last five years**

Response: 99

File Description	Document
Provide the relevant information in institutional website as part of public disclosure	View Document
List of faculty having Ph.D./D.M/M.Ch./D.N. Superspeciality/ along with particulars of the degree awarding university, subject and the year of award per academic year.	View Document
Institutional data in the prescribed format (data template)	View Document
Copies of Ph.D./D.M/M.Ch./D.N.B Superspeciality awarded by UGC recognized universities	View Document

2.4.3

Average teaching experience of full time teachers (Data to be provided only for the latest completed academic year, in number of years)

Response: 14

2.4.3.1 **Total teaching experience of full-time teachers as of latest completed academic year**

Response: 1344

File Description	Document
Provide the relevant information in institutional website as part of public disclosure	View Document
Institutional data in the prescribed format (data template)	View Document

2.5 Evaluation Process and Reforms

2.5.1

Average number of days from the date of last semester-end/ year- end examination till the last date of declaration of results during the last five years

Response: 18.6

2.5.1.1 **Number of days from the date of last semester-end/ year- end examination till the last date of declaration of results year wise during the last five years**

2022-23	2021-22	2020-21	2019-20	2018-19
20	15	20	19	19

File Description	Document
Provide the relevant information in institutional website as part of public disclosure	View Document
Institutional data in the prescribed format (data template)	View Document

2.5.2

Percentage of student complaints/grievances about evaluation against total number of students appeared in the examinations during the last five years

Response: 0

2.5.2.1 Number of complaints/grievances about evaluation year-wise during the last five years

2022-23	2021-22	2020-21	2019-20	2018-19
0	0	0	0	0

2.5.2.2 **Number of students appeared in the examination conducted by the institution year wise during the last five years**

2022-23	2021-22	2020-21	2019-20	2018-19
788	738	718	665	641

File Description	Document
List the number of students who have applied for re- valuation/re-totalling program wise and the total certified by the Controller of Examinations year-wise for the assessment period.	View Document
Institutional data in the prescribed format (data template)	View Document

2.5.3

Status of automation of Examination division along with approved Examination Manual/ordinance

Response: A. 100% automation of entire division & implementation of Examination Management System (EMS)

File Description	Document
The screenshot should reflect the HEI name and the name of the module.	View Document
The report on the present status of automation of examination division including screenshots of various modules of the software.	View Document
Institutional data in the prescribed format (data template)	View Document
If the EMS is outsourced, copy of the relevant contract and copies of bills of payment to be provided.	View Document
Copies of the purchase order and bills/AMC of the software.	View Document

2.6 Student Performance and Learning Outcomes

2.6.1

The institution has stated learning outcomes (Program and Course outcomes)/graduate attributes which are integrated into the assessment process and widely publicized through the website and other documents and the attainment of the same are evaluated by the institution

Response:

The institute provides an outcome-based education framework with **Programme Outcomes (POs)**, **Programme Specific Outcomes (PSOs)**, and **Course Outcomes (COs)**. Along with the syllabus revision, the course outcomes are prepared for the different courses and reviewed in the corresponding

department. The course outcomes are prepared based on the guidelines of NBA and satisfy Bloom's taxonomy, displayed along with the syllabus on the website. The program-specific outcomes (PSO) and program educational objectives (PEO) are prepared for undergraduate programs. In addition, the program's educational objectives and outcomes are also formulated for the different post-graduate programs, internally reviewed by the departments, and published on the website. The course outcomes are also formulated and reviewed for the laboratory courses.
These outcomes are meticulously crafted to develop a broad range of skills and abilities in students, encompassing both disciplinary and interdisciplinary knowledge.

IIST has adopted a comprehensive and continuous assessment strategy for its courses, including quizzes 1 and 2, the end-semester examination, and internal assessments. Internal assessments include homework, assignments, viva, seminars, and course projects. These components are designed to align with the learning objectives defined in the course outcomes.

The teacher regularly evaluates laboratory tasks to ensure that the goals and objectives of the lab courses are met through lab reports, lab exams and viva sessions. Students are expected to plan, carry out, analyze their experiments and present their findings. In addition to coursework, undergraduate students must complete a two-month-long research internship programme overseen by IIST faculty members and external experts. The Subject Board Committee evaluates UG and PG project work through oral presentations and written reports, which are uploaded to the IIST website via the iCampus interface.

PhD students must pass a comprehensive viva to complete the registration process after finishing their coursework. Their performance is assessed annually through presentations to the doctoral committee.

The POs, PSOs, PEOs and COs are communicated to students and stakeholders and are publicly available on the institute's website (https://events.iist.ac.in/IQAC/peo.php). This transparency ensures that all parties know the educational goals and the processes to achieve them. Currently, the course outcomes are assessed by the feedback mechanism done at the end of each semester and the student's satisfactory survey (SSS) at the end of each academic year. The feedback and SSS are regularly analyzed, after which corrective measures are taken. The institute also regularly collects and analyzes feedback from alumni and other stakeholders. This continuous feedback loop and evaluation process provide a foundation for curriculum revision, ensuring that the educational programs remain relevant and effective in meeting their objectives.

File Description	Document
Upload COs for all courses (exemplars from Glossary)	View Document

2.6.2

Pass percentage of students (excluding backlog students) (Data to be provided only for the latest completed academic year)

Response: 92.94

2.6.2.1 **Total number of final year students who passed the examination conducted by Institution.**

Response: 237

File Description	Document
percentage of students of the final year (final semester) eligible for the degree program-wise / year wise	View Document
Institutional data in the prescribed format (data template)	View Document
Certified report from the Controller of Examinations indicating the pass	View Document
Annual report of COE highlighting the pass percentage of students	View Document

2.7 Student Satisfaction Survey

2.7.1

Online student satisfaction survey regarding teaching learning process

Response: 3.28

File Description	Document
Upload any additional information	View Document

Criterion 3 - Research, Innovations and Extension

3.1 Promotion of Research and Facilities

3.1.1

The institution’s Research facilities are frequently updated and there are well defined policy for promotion of research which is uploaded on the institutional website and implemented

Response:

IIST has a well-defined research policy **that encourages faculty members to take up fundamental and applied research to benefit society.** https://events.iist.ac.in/IQAC/pdf/policies/Researchpolicy.pdf

IIST encourages all its faculty members t**o supervise Masters/ PhD and PDF students. Research Council (RC) chaired by the Dean (R & D) promotes and nurtures IIST's research activities, oversees the research scholars' progress in a periodic phase, and updates the regulations relating to research activities.**

The institute has established 92 laboratories with state-of-the-art facilities to support academic and research activities. The prominent labs include the Cryogenics and Heat Transfer Lab, Advanced Propulsion and Laser Diagnostic Lab, Gas Sensor Lab, MEMS & Micro Electronics Characterization Lab, Gas Sensor Lab, Anechoic Chamber Facility, Electric Propulsion Diagnostic Lab, Space Technology Innovation and Characterization Lab, Applied and Adaptive Optics Lab, Remote Sensing Lab, Astronomy Lab, Earth Science Lab, Atmospheric Science Lab, Ponmudi Lab, Laser Absorption Facility, Machine Learning and Computing Lab, Battery Fabrication Lab and Material Characterization Lab. These facilities are frequently updated using funding from the Department of Space and also from extramural research projects sponsored by government agencies like DST, DBT, DRDO, KSCSTE, DoAE, Ministry of Earth Sciences, Ministry of Electronics and Information Technology, ICSSR, UGC and INAE.

The Advanced Space Research Group (ASRG) is constituted at IIST to promote collaborative research initiatives with ISRO centres.

https://www.iist.ac.in/innovation/asrg-vision

ASRG, headed by the Chief Technology Officer and with members from all the academic departments and a member from the Capacity Building Programme Office (CBPO, ISRO), aims to co-ordinate all joint Research activities between IIST and ISRO centres. To this end, ASRG link units have been established at all participating ISRO centers. Under this initiative, deliverables/ technology have been transferred to different DoS/ISRO centres for their space-related missions through 37 projects.

As part of updating the research facilities at IIST, Small-spacecraft Systems and PAyload CEntre (SSPACE) and ground station for conceptualising the design and development of small spacecraft systems were established. The centre has accomplished five space missions during the last five years. The ground station is used to carry out satellite mission tracking, telemetry and commanding (TT and C) operations. It is also utilized for balloon launch operations for

atmospheric science studies and validating satellite retrievals.

IIST has established Centres of Excellence in advanced research areas such as Propulsion and laser diagnostics, nanoscience, and virtual reality.

IIST has also been instrumental in exploring national and international research collaborations to exchange scientific ideas. This includes collaborations such as Memoranda of- Understanding (MoU) at the Institute and individual levels of faculty-to-faculty collaboration. IIST currently has 55 functional MoUs.

IIST also encourages students and faculty towards the generation of intellectual property. Towards this, the IPR cell is established. IIST also aims to catalyze innovation-driven entrepreneurship, thereby addressing the nation's strategic goals and the needs of global society.

IIST supports research activities by providing

- **Seed money to faculty for establishing research labs,**
- **Fellowship for PhD students at par with national agencies and fellowship of Rs.40,000/- pm for scholars after thesis submission, allowing them to work as research associates**
- **Publication grants (in Q1 and Q2 journals, Rs.10 lakhs during the assessment period), unlimited travel grants for attending national conferences and charges for patent filing and maintenance.**

File Description	Document
Upload COs for all courses (exemplars from Glossary)	View Document
Upload any additional information	View Document
Provide links as Additional Information	View Document

3.1.2

The institution provides seed money to its teachers for research (average per year)

Response: 67.02

3.1.2.1 **Amount of seed money provided by institution to its teachers for research year wise during last five years (INR in lakhs)**

2022-23	2021-22	2020-21	2019-20	2018-19
146.75	63.3	29	46.07	50

File Description	Document
Sanction letters of seed money to the teachers is mandatory	View Document
List of faculty who have been provided with seed money for research along with the title of the project, duration and amount year-wise	View Document
Institutional data in the prescribed format (data template)	View Document
Audited Income-Expenditure statement highlighting the expenditure towards seed money endorsed by the Finance Officer	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

3.1.3

Percentage of teachers receiving national / international fellowship / financial support by various agencies for advanced studies / research during the last five years.

Response: 22.22

3.1.3.1 **Number of teachers who received national/ international fellowship/financial support from various agencies, for advanced studies / research; year-wise during the last five years**

Response: 22

File Description	Document
List of teachers who have received the awards along with the nature of award, the awarding agency etc.	View Document
Institutional data in the prescribed format (data template)	View Document
E-copies of the award letters of the teachers.	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

3.1.4

Percentage of JRFs, SRFs among the enrolled PhD scholars in the institution during the last five years

Response: 82.81

3.1.4.1 **The Number of JRFs, SRFs among the enrolled PhD scholars in the institution during the last five years**

Response: 236

3.1.4.2 **Number of PhD Scholars enrolled during last five years**

Response: 285

File Description	Document
List of JRFs, SRFs, Post Doctoral Fellows, Research Associates and other research fellows along with the details of the funding agency is to be provided.	View Document
Institutional data in the prescribed format (data template)	View Document
E copies of fellowship award letters (mandatory)	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

3.2 Resource Mobilization for Research

3.2.1

Total Grants research funding received by the institution and its faculties through Governme006Et and non-government sources such as industry, corporate houses, international bodies for research project, endowment research chairs during the last five years (INR in Lakhs)

Response: 6170

File Description	Document
List of Extramural funding received for research, Endowment Research Chairs received during the last five years along with the nature of award, the awarding agency and the amount.	View Document
Institutional data in the prescribed format (data template)	View Document
E-copies of the letters of award for research, endowments, Chairs sponsored by non-government sources	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

3.2.2

Number of research projects per teacher funded by government, non-government , industry, corporate houses, international bodies during the last five years

Response: 2.02

3.2.2.1 **Number of research projects funded by government and non-government agencies during the last five years**

Response: 200

File Description	Document
List of project titles with details of Principal Investigator, amount sanctioned and sanctioning agency etc.	View Document
Institutional data in the prescribed format (data template merged with 3.2.1)	View Document
E-copies of the grant award letters for research projects sponsored by government agencies.	View Document

3.3 Innovation Ecosystem

3.3.1

Institution has created an ecosystem for innovations, Indian Knowledge System (IKS),including awareness about IPR, establishment of IPR cell, Incubation centre and other initiatives for the creation and transfer of knowledge/technology and the outcomes of the same are evident

Response:

As part of the ecosystem for innovation, IIST has established a Space Technology Innovation and Incubation Centre(STIIC) to foster the spirit of innovation and to mould successful entrepreneurs.

By admitting the aspiring companies/entrepreneur teams, **STIIC** would facilitate and support product innovations and development, simulation and prototyping, pilot experimentation, product software testing, training, and other technology-related work in which there is considerable overlap with the institute's mandate. In addition to mentoring and providing infrastructure support, STIIC would facilitate the startups' investment search processes by organizing meet-ups and demo-day events, including pitch deck competitions, with larger participation from the ISRO experts so that their companies get better visibility and find suitable investments. While the STIIC emphasizes space-related innovations/technologies, it covers all areas of science and technology in harmony with the nation's interests.

Currently, **nine companies** are incubated with STIIC, viz; Vashishtha Research Pvt Ltd, SPACETIME 4D printing Solutions LLP, BhuhPramaan Pvt Ltd, InterCosmos Space Exploration Technologies Pvt Ltd, Specrule Scientific Pvt Ltd, Zeroing in, Fluxx Ev Electric Pvt Ltd, Space Curve India Pvt Ltd and Hathor Rockets. These companies work in diverse fields, from robotics-assisted NDT, custom-built 3D printers, geospatial technologies, and novel propellants to develop laser diagnostic tools, science popularisation, electric vehicles and rocket engines. The startup companies provide opportunities for collaboration for our students through internships.

IIST has established an **IPR cell** with well-defined policies and procedures. IPR cell guides and processes the applications for obtaining IPR protection, such as patents and copyrights. Awareness sessions on IPR were conducted for students and faculty. **Sixteen patents** have been granted, and **four more** were published during the assessment period.

The institute offers a course on **Indian Knowledge Systems** for the final-year BTech students. This course aims to empower learners by connecting them with the contributions from the past and enabling the students to connect them to the present knowledge, which may shape their future in alignment with the ethos of the knowledge traditions created earlier. Further, specialized courses such as **History of Indian Rocketry** and **Philosophy of Science** are also offered to students.

Faculty at IIST is involved in **creating documentaries** on the history of Travancore Observatory, ka-ta-pa-ya-adi, an ancient Indian system of encoding numbers into letters of the Sanskrit alphabet, Indian Mathematician Bhaskaracharya, on the architecture and antiquity of the Padmanabha Swamy temple, with special reference to the days of equinox. These documentaries helped students comprehensively understand ancient **knowledge by exploring India's contributions to mathematics and astronomy and their applications in allied fields** and embracing the principles of inquiry and innovation inherent in the syllabus offered under Indian knowledge systems. In addition, yoga trainers provide **talks and sessions on yoga** for students as a regular event under the ageis of the **Yoga Club** of IIST.

File Description	Document
Upload any additional information	View Document
Link for Additional Informationa	View Document

3.3.2

Total number of awards received for *research*/innovations by institution/teachers/research scholars/students during the last five years

Response: 191

File Description	Document
Institutional data in the prescribed format (data template)	View Document
e- Copies of award letters issued by the awarding agency	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

3.4 Research Publications and Awards

3.4.1

The institution ensures implementation of its stated Code of Ethics for research

The institution has a stated Code of Ethics for research and the implementation of which is ensured through the following:

1. **Inclusion of research ethics in the research methodology course work**
2. **Presence of institutional Ethics committees (Animal, chemical,bio-ethics etc.,)**
3. **Plagiarism check through sofware**
4. **Research Advisory Committee**

Response: A. All of the above

File Description	Document
Institutional data in the prescribed format (data template)	View Document
Copy of the syllabus of the research methodology course work to indicate if research ethics is included	View Document
Constitution of the ethics committee and its proceedings as approved by the appropriate body.	View Document
Constitution of research advisory committee and its proceedings as approved by the appropriate body.	View Document
Bills of purchase of licensed plagiarism check software in the name of the HEI.	View Document

3.4.2

Total number of Patents awarded during the last five years

Response: 18

File Description	Document
Patents granted / published in the name of the faculty with the institutional affiliation to the university working during the assessment period only to be given.	View Document
Institutional data in the prescribed format (data template)	View Document
e-copies of letter of patent grant	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

3.4.3

Number of Ph.Ds awarded per recognized guide during the last five years

Response: 1.35

3.4.3.1 **How many Ph.D s were awarded during last 5 years**

Response: 131

3.4.3.2 ***Number of teachers recognized as guides during the last five years***

Response: 97

File Description	Document
PhD Award letters to PhD students.	View Document
Letter from the university indicating name of the PhD student with title of the doctoral study and the name of the guide.	View Document
Institutional data in the prescribed format (data template)	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

3.4.4

Number of research papers published per teacher in the Journals as notified on UGC CARE list during the last five years

Response: 9.23

3.4.4.1 **Number of research papers published in the Journals as notified on UGC CARE list during the last five years**

Response: 914

File Description	Document
List and links of the papers published in journals listed in UGC CARE list and	View Document
Institutional data in the prescribed format (data template)	View Document
Link to the institutional website where the first page/full paper (with author and affiliation details) is published	View Document

3.4.5

Number of books and chapters in edited volumes published per teacher during the last five years

Response: 3.74

3.4.5.1 **Total Number of books and chapters in edited volumes published during the last five years**

Response: 370

File Description	Document
List of chapter/book with the links redirecting to the source website	View Document
Institutional data in the prescribed format (data template)	View Document
E-copy of the Cover page, content page and first page of the publication indicating ISBN number and year of publication for books/chapters	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

3.4.6

E-content is developed by teachers :

1. ***For e-PG-Pathshala***
2. ***For CEC (Under Graduate)***
3. ***For SWAYAM***
4. ***For other MOOCs platform***
5. ***Any other Government initiative***
6. ***For institutional LMS***

Response: B. Any 4 of the above

File Description	Document
Supporting documents from the sponsoring agency for the e- content developed by the teachers need to be provided.	View Document
Institutional data in the prescribed format (data template)	View Document
For institution LMS a summary of the e-content developed and the links to the e-content should be provided	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

3.4.7

Bibliometrics of the publications during the last five years based on average Citation index in Scopus/ Web of Science

Response: 6.62

File Description	Document
Bibliometrics of the publications during the last five years	View Document
Any additional information	View Document

3.4.8

Bibliometrics of the publications during the last five years based on Scopus/ Web of Science – h-index of the Institution

Response: 35.5

File Description	Document
Bibiliometrics of publications based on Scopus/ Web of Science - h-index of the Institution	View Document
Any additional information	View Document

3.5 Consultancy

3.5.1

Revenue generated from consultancy and corporate training during the last five years

Response: 5.36

3.5.1.1 **Total amount generated from consultancy and corporate training year-wise during the last five years (INR in lakhs).**

2022-23	2021-22	2020-21	2019-20	2018-19
0.7	0	0	2.714	1.947

File Description	Document
Letter from the corporate to whom training was imparted along with the fee paid	View Document
Institutional data in the prescribed format (data template)	View Document
Audited statements of accounts indicating the revenue generated through and corporate training/consultancy.	View Document

3.6 Extension Activities

3.6.1

Outcomes of extension activities in the neighborhood community in terms of impact and sensitizing the students to social issues and holistic development, and awards received if any during the last five years (Showcase at least four case studies to the peer team)

Response:

1) The Social Outreach Club, **Nirmaan**, IIST, is pivotal in fostering community development through various initiatives. The club **organizes science camps and remedial classes for students in government schools and tribal communities.** The **lecture and demo sessions** explain the science behind everyday activities, astronomy, optics, rocket science, value education, and career guidance. **Dhwani**, a program to audio record textbooks, was also implemented to help visually challenged students at Jagathy Blind School. These interventions helped raise the confidence levels of children from underprivileged sections and raised their hopes for the future. Some schools benefitted from the activities include Govt Girls High School Nedumangad, Govt. High School, Karippoor, VK Kani Govt. High School Panacode and Govt., Govt. High school Ponmudi, Tribal High School, Meenankal and the tribal communities of Villumala, Njaruneeli and Athirapalli.

The club extends a helping hand during times of need, such as disasters. During the 2018 flood in Kerala, students from Nirmaan Club volunteered to provide financial and materialistic support to the needy. One of the well-appreciated initiatives by the club members includes **providing in-house made power-banks** using batteries to the affected people in Wayanad.

In collaboration with an NGO from Thiruvananthapuram, Nirmaan volunteers undertook a **beach cleaning drive and offered an awareness program** on the damaging effects of plastic waste. The students establish a strong bond with the local population by offering assistance and support. The club prioritizes mental health and well-being by providing counselling services for those in need, addressing issues ranging from academic stress to substance abuse. The club organises **regular visits to orphanages** nearby and spends time with the inmates, providing them with the required supplies. The beneficiaries include Asha Bhavan, a shelter home for men and Sathya Sai orphanage.

Details of the activities may be found at https://www.iist.ac.in/administration/nirmaan

2) **IIST @ schools** is another initiative by the institute to encourage scientific temper amongst the children from the Govt. schools and the underprivileged sections. Over **1000 students across the state have benefitted through this programme** during the assessment period. A few children who attended this programme as school students later joined IIST and are now pursuing their careers as scientists/engineers at ISRO.

3) IIST **regularly conduct orientation programmes** for students such as Young Talent Nurture and NuMATS(Department of Mathematics), Astronomy School and GeoConnect (Department of Earth and Space Sciences) for selected college students to familiarise them with advanced areas of science and technology. The students are provided accommodation on the campus during these programmes. **More than 500 students from across the country** have undergone these training programmes.

4) Apart from the above-mentioned activities, **IIST provides opportunities for motivated students from other academic institutions nationwide to do internships and course projects** utilizing the advanced research facilities at IIST. **Over 400 students** have been hosted in IIST for internships and projects during the assessment period. IIST does not charge any fee for the internship.

IIST also provides **opportunities for students from colleges and schools to visit the campus,** interact with faculty members and visit research labs. During the assessment period, **more than 1800 students** have visited IIST.

These activities embody the institute's commitment to social responsibility and the holistic development of the students.

File Description	Document
Upload any additional information	View Document
Provide the link for additional information	View Document

3.6.2

Number of extension and outreach programs conducted by the institution through organized forums like NSS/NCC with involvement of community year wise during the last five years

Response: 116

3.6.2.1 **Number of extension and outreach programs conducted by the institution through organized forums including NSS/NCC with involvement of community year wise during the last five years.**

2022-23	2021-22	2020-21	2019-20	2018-19
39	5	18	15	39

File Description	Document
Institutional data in the prescribed format (data template)	View Document
Geo-tagged Photographs and any other supporting document of relevance should have proper captions and dates.	View Document
Detailed list and report for each extension and outreach program to be made available, with specific mention of number of students participated and the details of the collaborating agency	View Document

3.7 Collaboration

3.7.1

Number of functional MoUs/linkages with institutions/ industries in India and abroad for internship, on-the-job training, project work, student / faculty exchange and collaborative research during the last five years

Response: 113

File Description	Document
Summary of the functional MoUs/linkage/collaboration indicating start date, end date, nature of collaboration etc.	View Document
List of year wise activities and exchange should be provided	View Document
List and Copies of documents indicating the functiona MoUs/linkage/collaboration activity-wise and year-wise	View Document
Institutional data in the prescribed format (data template)	View Document

Criterion 4 - Infrastructure and Learning Resources

4.1 Physical Facilities

4.1.1

The institution has adequate infrastructure facilities for

a. teaching - learning. viz., classrooms, laboratories,

b. ICT enabled facilities such as smart classes, LMS etc.

c. Facilities for cultural and sports activities , yoga centre, games (indoor and outdoor) gymnasium, auditorium etc.

Describe the adequacy of facilities within a maximum of 500 words

Response:

Established in 2007, **IIST spans 120 acres of greenery with a built-up area of 86,141 sq. m.** (out of which 5,300 sq. m. were built during 2018–2023), fostering innovation and creativity, with **seven** academic departments housed in **four** academic buildings supporting UG/Dual-degree/PG/PhD/Post-doctoral programs.

a. Teaching - learning:

IIST features **32 classrooms with varying seating capacities,** three large seminar halls, and nine mini-conference halls, all equipped with modern ICT facilities, an **open amphitheatre for 1000 people** and **a multipurpose hall for 450 people** for enhancing the academic and cultural environment.

IIST's academic departments feature **92 laboratories** tailored to their teaching/research/interdisciplinary needs. The **Small-spacecraft Systems and PAyload CEnter (SSPACE)** enables students to design and develop payloads like ARIS-101F, 102F, INSPIRESAT-1, and PILOT. A **satellite ground station** is also operational at IIST. Additional research facilities include electric propulsion, atomic layer deposition, micro-gravity experiments for Gaganyaan, advanced propulsion, an astronomical observatory, and sensors/MEMS labs. IIST houses a **six-storeyed air-conditioned library.**

b. ICT-enabled facilities:

The Multidisciplinary Computing Center (MCC) supports the institute's scientific computing with 120 teraflops, 40 workstations, 2 GPU servers, and 200 TB of storage. It provides academic and research software licenses for tools like Microsoft Suite, MATLAB, LABVIEW, ANSYS, CATIA, OpenFOAM, VSIM, and TRIM. MCC complements the 830 computers available in departmental labs. The IT infrastructure includes a core OFC connecting to a central network room, which ensures **WiFi, Ethernet (1 GBPS + 100 MBPS)**, and dedicated internet access via the One-GBPS National Knowledge Network (NKN) through BSNL.

The audio-visual lab employs professional video recording and editing software for capturing lectures alongside **ICT-equipped** classrooms, seminar halls, council rooms, and conference halls. **MOODLE, an open-source LMS,** facilitate seamless communication and online exams during lockdown (https://moodle.iist.ac.in/).

c. Facilities for cultural and sports activities:

The institute has the following **indoor** and **outdoor sports facilities:**

- **Football cum cricket field with a dimension of 110x110m**
- **Mini-football ground**
- **200-meter track**
- **Flood-lit volleyball and basketball courts**
- **Five basketball posts**
- **Cricket-nets**
- **Badminton courts (two wooden and four cemented)**
- **Squash court (85 sq. m.)**
- **12 Table Tennis tables**
- **Recreation hall (315 sq. m.) featuring chess, billiards, and carrom**
- **3 gymnasiums (One open and two closed)**
- **Open multi-purpose ground**
- Multipurpose hall/ seminar hall for **Yoga** sessions/ cultural programs
- **Hall with glass-mounted walls** for dance practice
- **Music room**
- **Five rooms** for club activities
- **The amphitheatre**, which seats 1000 people

d. Other facilities:

- **11 hostels (9 for boys and 2 for girls) with 564 rooms**
- **Four mess halls with varying seating capacity**
- **Kitchen with mechanized food-making equipment**
- **Cafeteria, Coffee shop**
- **24x7 medical facility with doctors, two nurses, and an ambulance** service
- **Counselling centre**
- **Transport Operations and Maintenance Division (TOMD)** with **automobile service station** (Buses/LMV/e-vehicles/traveller), **workshop**, **fuel station** and **Car wash**
- **Bank with ATM**
- Courier and postal services
- **Rainwater-harvesting ponds**
- **Water treatment plant** with disinfection and ultrafiltration capabilities
- **Sewage treatment plant**
- **No-waste incinerator**
- **Biogas plant**
- **Compost pit**
- **Solar panel** 500kW @ peak
- **UPS power backup,** 520kVA throughout the campus
- **Separate parking areas** for four-wheelers and two-wheelers

- **Napkin incinerator**
- **Two 11 kV substations**
- **Diesel generator** up to 3280 kVA backup power
- **210 CCTV cameras**
- **Butterfly Garden**
- **Biodiversity park**
- **Three CISF-guarded gates**

File Description	Document
Upload any additional information	View Document

4.1.2

Percentage of expenditure excluding salary, for infrastructure development and augmentation year wise during the last five years

Response: 29.93

4.1.2.1 **Expenditure for infrastructure development and augmentation, excluding salary year wise during last five years (INR in lakhs)**

2022-23	2021-22	2020-21	2019-20	2018-19
2219.48	1033.51	1050.71	2596.12	1524.51

File Description	Document
Institutional data in the prescribed format (data template)	View Document
Audited income and expenditure statement of the institution to be signed by CA and counter signed by the competent authority (relevant expenditure claimed for infrastructure augmentation should be clearly highlighted)	View Document

4.2 Library as a Learning Resource

4.2.1

Library is automated with digital facilities using Integrated Library Management System (ILMS), adequate subscriptions to e-resources and journals are made. The library is optimally used by the faculty and students

Response:

IIST library is a six-floor building with a 4,371.51 sq.m. area. The library has been automated since 2007 using NewGenLib software. **Presently, the library uses Koha ILMS (V. 20.11.06.000)**. All library operations, such as acquisition, cataloguing, serial control, circulation, administration, etc, are automated with OPAC facility to search and suggest books. AMC is in place to ensure support for Koha as and when required. The **'Spacenet' connection is available in the library to search the OPAC of other DoS/ISRO libraries and to access e-resources. The library works from 8.45 AM to 12 midnight.**

The library comprises 35,438 books, 8,116 e-books, 6,000 plus e-journals, 147 print journals, and 1,391 bound volumes. The library subscribes to e-resources **(i) through Antariksh Gyaan Consortium, (ii) through eSS Consortium rate, and (iii) through direct subscription**. The library facilitates access to e-resources from publishers - AIAA, ACM, AIP, APS, and American Math. Society, American Meteorological Society, ASME, Annual Reviews, CUP, IEEE, IOP, JSTOR, Nature, OPTICA, OUP, RSC, SPIE, Sage, Springer, Wiley, Taylor& Francis. Writing assistance tool '**Grammarly**', remote access tools '**RemoteXs**' (till 2021)/'**LSRemote** (later)', plagiarism checking tool '**Turnitin**' and current awareness tool '**JournalTOCs**' are also subscribed. **Hindi books and magazines are purchased as per the rule.** E-resources can be accessed campus-wide and remotely through the '**IIST Virtual Library**' from anywhere. The library provides services such as **Book Bank, Book Grant** (till 2020 batch - a portal developed to automate the process), **Lecture Note Publishing, Patent Priot-Art-Search (ILL)**, Social media Management, IIST-IRINS, Books on Call Service, **Graphic Design Facility**, Printing Facility and Binding Facility, and NDL Co-ordination, in addition to regular library services. The library portal provides details of services and showcases e-resources.

The library acts as the nodal office to **upload PhD theses to the Shodhganga** and hosts the same on the institute website. A portal is available to deposit the B.Tech reports and M. Tech theses. The library archives the photographs of institute events. One **multi-functional production printer cum scanner** (purchased in 2021 as a replacement) and one tabletop scanner are available to meet the printing and digitisation requirements. The graphic design, printing, and binding facilities help the library prepare documents such as annual reports, newsletters, conference proceedings, etc. Research scholars and students can print and bind two copies of their theses/project reports free of cost.

During the assessment period, 37,863 books were issued, and 86,712 users visited the library. **IIST stood as the top user of IEEE (in 2022 and 2023), and Scientific American (2022) among the libraries of Antariksh Gyaan Consortium. The usage is second highest for Nature Journals (2022 and 2023), Springer (2023), AIAA (2022 and 2023), Scientific American (2023), SPIE Digital Library (2023) and third highest for Wiley Journals (2023). The average annual download of articles from all e-resources is 1,05,555**. Usage and expenditure statistics of the library are prepared and submitted to the Director every month.

The library provides orientation during the induction programme and occasionally conducts Resource Awareness Programmes and workshops. Library Week is organised annually with programmes such as webinars, read-and-share programmes, paper bag making, etc. **2,080 books collected through the read-and-share programme were donated to one college library that lost its books in the flood. Ramps, lifts, headsets, book trolleys, vehicles for transferring books to the hostel and special toilets are available for differently-abled persons.** The library has a space museum and a mini-conference hall.

File Description	Document
Upload any additional information	View Document

4.2.2

Percentage of expenditure for purchase of books/ e-books and subscription to journals/e-journals year wise during the last five years

Response: 4.47

4.2.2.1 Annual expenditure for purchase of books and journals year-wise during the last five years (INR in Lakhs)

2022-23	2021-22	2020-21	2019-20	2018-19
267.11	258.15	219.75	269.21	243.28

File Description	Document
Institutional data in the prescribed format	View Document
Audited income and expenditure statement of the institution to be signed by CA and counter signed by the competent authority (relevant expenditure claimed for purchase of books/ e-books and subscription to journals/e-journals should be clearly highlighted)	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

4.3 IT Infrastructure

4.3.1

Institution frequently updates its IT facilities and provides sufficient bandwidth for internet connection

Describe IT facilities including Wi-Fi with date and nature of updation, available internet bandwidth within a maximum of 500 words

Response:

The **Computer Systems Group (CSG)** sets up, operates, and maintains the institute's information technology (IT) infrastructure and services. CSG has developed a network infrastructure that spans the

entire institute campus. This infrastructure interconnects all academic facilities, administrative offices, residential hostels, library and student facilities. This infrastructure extends over a core of optical fibre cables to a central network room, enabling privileged intranet/internet access for **all IISTians** through **WiFi and Ethernet (1 GBPS + 100 MBPS). Spacenet interconnects ISRO/DoS centres** through **MPLS VPN** by **the National Knowledge Network (NKN)** to access and communicate academic and research resources in a **highly secure manner.** The **NKN** offers **1 GBPS of internet services through BSNL. Optical fibre cables (10 km) c**onnected all the academic, library, administrative, hostel, and student activity blocks. The network infrastructure included routers (3 numbers) and network switches (186 numbers) at various locations. IIST utilise powerful servers to provide, control, and monitor internet access. This 1 **GBPS network caters to the 24×7 internet services** to host the IIST website, the learning management system (MOODLE), and the undergraduate/postgraduate/doctoral/research fellow recruitment system. It provides seamless internet connectivity to over 800 official computers at IIST and around 1200 ‘bring-your-own-devices’ (BYOD), such as student’s/permanent staff’s computers/ mobiles. IIST has 830 desktop, workstation, and server computers distributed across its departments to meet the needs of the student community.

IIST has sufficient network-based academic and research software licenses (commercial/open source) to promote research activities. Students primarily use computational resources for analysis/design and acquiring, monitoring, and recording engineering data from various equipment and custom-made rigs. These resources are available at various labs for course/laboratory/internship and project work. IIST also has a multi-disciplinary computing center with powerful workstations and a central computing server (120 teraflops) to cater to all academic research needs. IIST also has dedicated computers stationed at various departments for e-procurement-related activities through a secure intranet connection. IIST equips all departmental offices with dedicated computers to gather and manage diverse departmental data. The institute's multi-disciplinary computing centre stores all its data in a network-assisted storage device.

A dedicated **Software Support Group (SSG)** develops digital applications like iCampus, allowing students to mark their attendance, mark entries, grade finalisation, and publish results. Other applications include webmail, online food booking, leave applications, UG/PG/PhD admission, a thesis submission and evaluation portal, a data collection portal, a personal information system, and an asset management system. Other digital resources, such as Koha (the library portal), e-procurement (which operates only through a secured intranet), book grant management, TEAMS meetings, **COWAA/COINS** digital payments, and short-messaging services, are available for authorised access. ID card/biometric access is a must for all to access IIST and its facilities. The campus is under the surveillance of CCTV cameras.

Authentic **antivirus and firewall software** are mandatory for all computers to improve security and privacy. We conduct regular training sessions for students and staff to raise awareness about copyrighted and open-source software. Grammar and plagiarism-checking tools are available across the institute to promote positive and quality research articles. DoS and IB audits are conducted regularly to monitor the use of IT facilities inside the campus.

File Description	Document
Upload any additional information	View Document
Provide the link for additional information	View Document

4.3.2

Student - Computer ratio (Data for the latest completed academic year)

Response: 1.01

4.3.2.1 **Number of computers available for students usage during the latest completed academic year:**

Response: 833

File Description	Document
Stock register/extracts highlighting the computers issued to respective departments for student's usage	View Document
Purchased Bills/Copies	View Document

4.3.3

Institution has the following Facilities for e-content development and other resource development

1. **Audio visual center, mixing equipment, editing facilities and Media Studio**
2. **Lecture Capturing System(LCS)**
3. **Central Instrumentation Centre**
4. **Animal House**
5. **Museum**
6. **Business Lab**
7. **Research/statistical database**
8. **Moot court**
9. **Theatre**
10. **Art Gallery**
11. **Any other facility to support research**

Response: A. Any 7 or more of the above

File Description	Document
Videos and geo-tagged photographs of each of the facilities available in the HEI. Details of the structures of each of the facilities available in the HEI.	View Document
Purchase Bill / stock register, entry for lecture capturing system, mixing equipment, software for editing	View Document
Institutional data in the prescribed format (data template)	View Document
Copy of the subscription letter for database is essential for Option Research/Statistical Databases	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

4.4 Maintenance of Campus Infrastructure

4.4.1

Percentage expenditure incurred on maintenance of physical facilities and academic support facilities excluding salary component, during the last five years

Response: 8.28

4.4.1.1 ***Expenditure incurred on maintenance of physical facilities and academic support facilities excluding salary component year - wise during the last five years (INR in lakhs)***

2022-23	2021-22	2020-21	2019-20	2018-19
589.90	471.67	323.36	551.28	394.81

File Description	Document
Institutional data in the prescribed format (data template)	View Document
Audited income and expenditure statement of the institution to be signed by CA and counter signed by the competent authority (relevant expenditure claimed for maintenance of infrastructure should be clearly highlighted)	View Document

4.4.2

There are established systems and procedures for maintaining and utilizing physical and academic support facilities – laboratory, library, sports complex, computers, classrooms etc.

Describe policy details of systems and procedures for maintaining and utilizing physical, academic and support facilities within a maximum of 500 words

Response:

IIST has a well-organized mechanism for maintaining and effectively utilising its facilities. Construction and Maintenance Division (CMD), which maintains all facilities in the institute, is headed by a dedicated engineer at the senior level, three separate wings with technical staff, and outsourced/ subcontracted staff.

Design Coordination and Planning Section (DCP): plans activities for Capital civil works, minor works, maintenance and preparation of budget estimates.

Civil and Public Health section (CPH): attends to Civil PH maintenance works, Water Treatment Plant (WTP) and Sewage Treatment Plant and is responsible for realizing the self-reliant Rain Water storage and treated water supply (2 Lakh Litres/day).

Electrical and Air-conditioning Section (EAC): deals with installation and maintenance works, capital electrical works, minor works, and air conditioning systems. CMD maintains two 11kV sub-stations and a 500kWp Solar Power Plant. The Air Conditioning unit oversees the operation and maintenance of VRF Units, Ductable Split Units, Split A/Cs at various Academic Blocks and Chilled Water Systems at the Library Building.

CMD has a dedicated horticulture unit responsible for the planned landscaping on campus. Various trees are planted through mass afforestation programs (around 6800 saplings). CMD has an important role in implementing Energy conservation measures and Swatchh Bharath activities. The infrastructure facilities of Medical, water, sports, and CISF security establishments are also maintained by CMD.

The Stores Division maintains records of the institute's physical assets in asset register/inventory/COWAA-MIS. All indentors can log in and verify the status of their assets through COWAA-MIS (http://cowaamis.iist.ac.in/). A well-defined purchase procedure advocated by the Department of Space is scrupulously followed in IIST. Each official who indents for a particular asset item is designated as the custodian and is responsible for its maintenance and upkeep. Each lab has a f**aculty member in charge, technical staff,** and **tutors** responsible for the smooth running and maintenance of the lab. **HoDs** are responsible for the maintenance and upkeep of classrooms under the respective departments. A register is maintained in each academic building for lodging complaints, which the CMD addresses daily. AMC covers all institutes' high-value equipment and computers. Annual asset verification is conducted to update the status of the assets. A **condemnation committee** evaluates the condemnation requests and recommends the condemnation or scraping of obsolete or damaged items through the MSME portal after approval by the Director.

The transport section caters to operating and maintaining buses, LMVs, and ambulance services. Computer Systems Group manages and maintains computer systems, networking, and related electronic infrastructure in IIST for provisioning and facilitating IT and non-IT services. **Software**

Support Group (SSG), led by a team of IT professionals, provides various software services and technical assistance in the institute. On occasions of repair/replacement of computers and peripherals, the complaint can be lodged through a portal where a ticket is raised, leading to an effective solution.

The **canteen and hostel committee** comprises faculty and students, and the canteen/ hostel head keeps the CMD updated about the issues of the canteen and hostel. Each hostel has a WhatsApp group with faculty wardens and students, where complaints are raised, which are then addressed by the Council of Wardens, comprising of Registrar, faculty wardens, members from CMD, and CSG. The housekeeping facility, with 56 staff, takes care of cleaning and maintenance of all buildings.

File Description	Document
Upload any additional information	View Document

Criterion 5 - Student Support and Progression

5.1 Student Support

5.1.1

Percentage of students benefited by scholarships and freeships provided by the institution, government and non-government bodies, industries, individuals, philanthropists during the last five years

Response: 69.48

5.1.1.1 ***Number of students benefited by scholarships and freeships provided by the institution, Government and (NGOs)non-government bodies, industries, individuals, philanthropists year-wise during the last five years***

2022-23	2021-22	2020-21	2019-20	2018-19
436	514	636	632	507

File Description	Document
Year-wise list of beneficiary students in each scheme duly signed by the competent authority	View Document
Upload Sanction letter of scholarship and free ships (in English).	View Document
Upload policy document of the HEI for award of scholarship and freeships.	View Document
Institutional data in the prescribed format (data template)	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

5.1.2

Efforts taken by the institution to provide career counselling including e-counselling and guidance for competitive examinations during the last five years

Response:

Over the past five years, the IIST has made significant strides in providing its students with comprehensive career counselling and guidance. The institute created a talent pool of young scientists/engineers who could contribute to the Indian Space programme and the nation. Hence, many of the activities of the **Placement and Career Guidance Cell** were directed towards moulding students into

future scientists and engineers of ISRO. In addition to the internships and hands-on projects offered as part of the curriculum, the placement cell organizes workshops, visits to ISRO centres, interactions with ISRO scientists and engineers, and talks by alumni working in ISRO, which prepare students for successful careers in space science and technology.

The placement and guidance cell also grooms students to meet the demands of industries, face competitive exams, and progress to higher education. The cell collaborated with companies like **Cranes Software International Limited**, a leader in hands-on technical training, **M/s Pinnacle Software and Services Pvt. Ltd**, who covered various aspects of software development and services, **M/s Sharp Skills** for exam skills and placement training, **M/s Santamonica** for career guidance and opportunities in industries and **M/s Growware Global** who has played a significant role in providing online training and doubt-clearing sessions, on exam/soft skills/ interviews skills. As a result, students have gained hands-on experience and industry-relevant skills, making them well-prepared for exams, interviews and future careers in these technical fields.

The **IIST Alumni Association (IISTAA)** and Vaave, the software group of the Alumni Association, have organized talks and interactive sessions on topics such as “Entrepreneurship Opportunities in the Space Sector" and "Space Entrepreneurship." These sessions have inspired many students to consider entrepreneurial ventures and pursue innovative projects. Talks on "Things you need to know for the graduating batch," "Life after graduation and "A Guide to MBA: Applications, Courses & Jobs". were also organized, providing comprehensive information on tips for clearing CAT, GMAT, various career paths and higher education opportunities. These efforts have helped graduates navigate the next phase of life with confidence and clarity.

Meetings with **industry leaders**, such as M/s Satsure Co-founder Mr Prateep Basu, and interactions with representatives from M/s Accenture and officials from the Indian Armed Forces have provided students with insights into different competitive exams, career opportunities and the skills required to succeed in various sectors. These interactions have been highly beneficial, offering students a broader perspective on career possibilities.

Overall, IIST's comprehensive approach to career counselling, which includes training to join the Indian Space organization, guidance from industry experts, and a blend of tips to clear competitive exams, technical training, and soft skills development, has significantly contributed to the professional development of its students. The positive outcomes of these programmes are evident in 1316 students successfully placed in various ISRO/DoS centres making significant contributions to recent space missions, few working in government civil services, while companies like **L&T** employ many, few have launched their own start-ups, others pursuing higher education, and the like.

File Description	Document
Upload any additional information	View Document
Provide the link for additional information	View Document

5.1.3

Following capacity development and skills enhancement activities are organised for improving students' capability

1. **Soft skills**
2. **Language and communication skills**
3. **Life skills (Yoga, physical fitness, health and hygiene, self-employment and entrepreneurial skills)**
4. **Awareness of trends in technology**

Response: A. All of the above

File Description	Document
Report with photographs on soft skills enhancement programs	View Document
Report with photographs on Life skills (Yoga, physical fitness, health and hygiene) enhancement programs	View Document
Report with photographs on Language & communication skills enhancement programs	View Document
Report with photographs on ICT/computing skills enhancement programs	View Document
Institutional data in the prescribed format (data template)	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

5.1.4

The institution adopts the following for redressal of student grievances including sexual harassment and ragging cases

1. **Implementation of guidelines of statutory/regulatory bodies**
2. **Organisation wide awareness and undertakings on policies with zero tolerance**
3. **Mechanisms for submission of online/offline students' grievances**
4. **Timely redressal of the grievances through appropriate committees**

Response: A. All of the above

File Description	Document
Report of Organisation wide awareness and undertakings on policies with zero tolerance	View Document
Proof related to Mechanisms for submission of online/offline students' grievances	View Document
Proof for Implementation of guidelines of statutory/regulatory bodies	View Document
Institutional data in the prescribed format (data template)	View Document
Details of statutory/regulatory Committees (to be notified in institutional website also)	View Document

5.2 Student Progression

5.2.1

Percentage of placement of outgoing students during the last five years

Response: 75.75

5.2.1.1 ***Number of outgoing students placed year wise during the last five years***

2022-23	2021-22	2020-21	2019-20	2018-19
201	191	108	113	143

File Description	Document
Number and List of students placed along with placement details such as name of the company, compensation, etc and links to Placement order (the above list should be available in institutional website)	View Document
Institutional data in the prescribed format (data template)	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

5.2.2

Percentage of graduated students who have progressed to higher education year-wise during last five years

Response: 34.24

5.2.2.1 **Number of outgoing students progressing to higher education**

2022-23	2021-22	2020-21	2019-20	2018-19
27	36	24	20	19

File Description	Document
List of students progressing for Higher Education, with details of program and institution that they are/have enrolled along with links to proof of continuation in higher education. (the above list should be available in institutional website)	View Document
Institutional data in the prescribed format (data template)	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

5.2.3

Percentage of students qualifying in state/ national/ international level examinations out of the graduated students during the last five years

(eg: NET/SLET/ Civil Services/State government examinations etc.)

Response: 5.16

5.2.3.1 ***Number of students qualifying in state/National/International level Examination during last five years (eg. SLET, NET, UPSC etc)***

Response: 58

File Description	Document
List of students qualified year wise under each category and links to Qualifying Certificates of the students taking the examination	View Document
Institutional data in the prescribed format (data template)	View Document

5.3 Student Participation and Activities

5.3.1

Number of awards/medals won by students for outstanding performance in sports/cultural activities at inter-university/state/national/international events (award for a team event should be counted as one) during the last five years

Response: 54

5.3.1.1 Number of awards/medals won by students for outstanding performance in sports/cultural activities at inter-university/state/ national/international level (award for a team event should be counted as one) year-wise during the last five years

2022-23	2021-22	2020-21	2019-20	2018-19
14	1	0	21	18

File Description	Document
list and links to e-copies of award letters and certificates	View Document
Institutional data in the prescribed format (data template)	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

5.3.2

Presence of an active Student Council & representation of students on academic & administrative bodies/committees of the institution.

Describe the Student Council activity and students' role in academic & administrative bodies within a maximum of 500 words

Response:

The **Student Activity Board (SAB)** of IIST is the vibrant epicentre of student life, fostering a dynamic and inclusive campus culture. The **Dean of Student Activities and Student Welfare chairs the Student Activity Board (SAB)**, with the Registrar of IIST, heads of various departments and chairpersons of institute committees such as Sports, Technical, Cultural, Hostel, and Canteen committees and student representatives as members.

The board convenes every month or as and when necessary to address specific needs. SAB assumes

responsibility for coordinating student events at IIST, which include **Dhanak, the intercollegiate cultural fest, Conscientia, the inter-collegiate Tech Fest, the Annual Sports Day of IIST, Model United Nation**s and all celebrations of students within the institution. SAB also ensures that IIST's commitment to outreach extends beyond its campus to communities, with programs designed to inspire the next generation of scientists and engineers. Furthermore, SAB oversees the management of various student clubs and organizes Induction programmes.

It has been observed that many students at IIST require personalized attention both within the classrooms and in the hostels. In the mentoring programme coordinated by SAB, the faculty members provide friendly guidance and academic support to the students. SAB has also made sure that the services of a professional counsellor are made available for those students who face serious emotional issues during their stay in IIST. Under SAB, faculty members are designated Wardens for each IIST hostel. This aims to foster a sense of community within IIST, ensuring a stronger support system for our students and promoting their overall well-being during their stay at IIST.

A senior faculty member leads each of the committees under **SAB and includes both faculty members and student members**. The student representatives of various committees play a crucial role by offering feedback and suggestions on all matters concerning the student. They ensure that the student's voices are heard and collaboratively work with the faculty members and the institute's administration to implement necessary changes and improvements. The decisions taken in SAB related to student life are implemented directly with the approval of the Director, and those related to academics form inputs for discussions and decisions taken by the higher statutory bodies of IIST. Students are part of class committees that provide input to the departments on academic matters. Each department makes necessary curriculum teaching and learning changes based on the inputs.

The students meticulously organise and manage every aspect, from the festivals to the outreach programs and clubs. They are responsible for fundraising for festivals, overseeing hospitality arrangements, and coordinating various events. The students play a crucial role in shaping the canteen menu and providing ongoing feedback on the quality of food services. Beyond these responsibilities, they actively participate in important **committees such as the IQAC, where academic matters are discussed, the library committee, the gender sensitization committee, the internal complaint committee, the anti-ragging committee**, etc., contributing to a vibrant and inclusive campus environment.

File Description	Document
Upload any additional information	View Document
Provide the link for additional information	View Document

5.3.3

The institution conducts / organizes following activities:

1. **Sports competitions/events**
2. **Cultural competitions/events**
3. **Technical fest/Academic fest**

4. Any other events through Active clubs and forums

Response: A. All four of the above

File Description	Document
Report of the Technical fest/academic fests along with photographs appropriately dated and captioned year- wise.	View Document
Report of the Sports competitions/events along with photographs appropriately dated and captioned year- wise.	View Document
Report of the Cultural competitions/events along with photographs appropriately dated and captioned year- wise.	View Document
Report of the Any other events through active clubs and forums along with photographs appropriately dated and captioned year- wise.	View Document
List of students participated in different events year wise signed by the head of the Institution.	View Document
Institutional data in the prescribed format (data template)	View Document
Copy of circular/brochure indicating such kind of activities	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

5.4 Alumni Engagement

5.4.1

Alumni contribution during the last five years to the University through registered Alumni Association

Response: 0.61

5.4.1.1 **Total Amount of alumni contribution during the last five years (INR in lakhs) to the institution year wise through registered Alumni association:**

2022-23	2021-22	2020-21	2019-20	2018-19
0	0.40490	0.09600	0.07500	0.03500

File Description	Document
List of alumnus/alumni with the amount contributed year-wise	View Document
Annual audited statements of accounts of the HEI highlighting the Alumni contribution duly certified by the Chartered Accountant/Finance Officer.	View Document

5.4.2

Alumni contributes and engages significantly to the development of institution through academic and other support system

Describe the alumni contributions and engagements within a maximum of 500 words

Response:

IIST has a **registered Alumni Association (IISTAA)**, a vibrant and integral part of the institution's legacy. Comprising a network of accomplished and passionate individuals who have graduated from IIST, the association connects the institution's past, present, and future. Within 13 years, IIST has produced successful alumni like **Dr Ashok, Associate Director of VSSC; Dr Senthil Kumar, Deputy Director, SAC; and Prateep Basu, Co-founder of Satsure**.

One of the key roles of IISTAA is to provide a platform for professional and personal growth. Over the last five years, the association has organized 15 career development programs independently or in coordination with the IIST placement and guidance cell, covering a broad spectrum of options like **entrepreneurship**, **life in ISRO** and essential considerations during their student years. Such initiatives have equipped students with the knowledge and insights to make informed career decisions.

The IISTAA is dedicated to maintaining a lifelong relationship between the institution and its alumni, promoting the spirit of innovation and exploration that defines IIST. As part of this, IISTAA conducts talks on specific topics by experts, including accomplished alumni and notable personalities from outside the institution. Some of these talks, like the Science Podcast series and series of talks on Quantum Computing, served to get a deeper understanding of these subjects. Moreover, the association organizes sports events (**Fustal Reloaded, 2021 & 2022**) that foster a sense of camaraderie between students and alumni, making it easier for students to approach alumni in times of need. The association also ensures that alumni remain actively involved in the growth and development of their alma mater by contributing to the curriculum revision workshops.

This connection is not just symbolic but manifests in various tangible initiatives as well. IISTAA has been proactive in **supporting students from financially disadvantaged backgrounds**. Initiatives such as **laptop donation drives (DONATE- 2021)** have been conducted to help needy students. The association also provides financial assistance to students who require it, further emphasizing their commitment to the welfare of the IIST community.

The IISTAA plays an active role in campus placement by recruiting students from IIST (**Satsure, Rocketers and other start-up**s) and is active in the induction program for new batches, helping freshers

acclimate to the institution's environment. Alumni often act as judges for technical and cultural fests, bringing their expertise and experience to these events. Furthermore, they offer remedial courses for students facing difficulties with their exams, ensuring that no student is left behind in their academic journey.

Through its diverse range of activities and initiatives, the association keeps the alumni connected, nurtures the institution’s global impact, and promotes the spirit of space innovation and exploration. The IISTAA is more than just an association; it is a testament to the enduring bond between the institution and its graduates, committed to advancing space science and technology.

https://alumni.iist.org.in/

File Description	Document
Upload any additional information	View Document
Provide the link for additional information	View Document

Criterion 6 - Governance, Leadership and Management

6.1 Institutional Vision and Leadership

6.1.1

The institutional governance and leadership are in accordance with the vision and mission of the Institution and it is visible in various institutional practices such as NEP implementation, sustained institutional growth, decentralization, participation in the institutional governance and in their short term and long term Institutional Perspective Plan.

Response:

IIST was conceived with a vision "**to be a world-class educational and research institution contributing significantly to Space endeavours**". In tune with the same, the Mission was thus formulated:

• Create a unique learning environment enriched by the challenges of the Space Programmes.

• Nurture the spirit of innovation and creativity.

• Establish Centres of Excellence in niche areas.

• Provide ethical and value-based education.

• Promote activities to address societal needs.

• Network with national and international institutions of repute.

The Motto, "**Vidya Sandhi hi Pravachanam Sandhanam**" translates to "**Education is the conjunction between the Acharya and the disciple where teaching acts as a catalyst".**

IIST functions under the Department of Space, Government of India. **Institutional governance focuses on the vision of emerging as a world-**class research institution. Action plans reveal that mission statements contribute to policies and decision-making.

The Governing Body and other statutory bodies work together to create a Centre of Excellence in niche areas, with policies in place for good governance.

Consequent to the **implementation of NEP 2020,** which is approved by the IIST Board of Management after getting concurrence from the Governing Body, the institute implemented the action plans with a focus on the four pillars of NEP, which are achieved through:

Multidisciplinary learning with a focus on:

- **Research/collaborative projects**
- **Choice of institute electives from other departments**
- **Connect among disciplines of aerospace, avionics, astronomy, and material sciences, along**

with basic sciences and social sciences, was established.

- **Implementation of Dual Degree programme, choice of specialization for Masters programme**
- **Academic Bank of Credit to ensure flexibility in learning and credit transfer.**
- **Lifelong learning through Space Technology Incubation and Innovation Centre (STIIC).**
- **Research projects related to telemedicine and cultural mapping of tribal cuisines encourage preserving and documenting indigenous knowledge and heritage.**

IIST aims to achieve **sustainable institutional growth** through space science and technology that aligns with government policies. **ASRG has implemented 27 projects through 17 International MoUs and 38 National MoUs**. Small Spacecraft System and Payload Centre **(SSPACE**), developed payloads like InspireSat-1, PSLV In orbitaL Obc and Thermals (PILOT), and Advanced Retarding potential analyzer for Ionospheric Science (ARIS) for PS-4 POEM platform of PSLV C-55 mission.

Decentralization is evidenced by the decision-making approach adopted, where committees and Boards constitute the bottom line in the planning process, and inputs derived support policy formulation. The student-centric approach is widely practised with representation at every level. Dean (Student Activities, Student Welfare & Outreach) heads the Student Activity Board (SAB), which comprises faculty and student representatives. Issues identified by the student representatives are discussed, and decisions made by SAB act as inputs for higher bodies. Students represent the committees on technical, cultural, sports, canteen, hostel, placement, library, anti-ragging, grievance, gender sensitization and Internal Complaint Cell.

Institutional Perspective Plan

Centre of Excellence in Space Science is aligned to meet the Government’s aspiration of Vikasit Bharath @2047.

Decadal Plan (2017-2027, 2020-2030) focuses on:

- **Payload SSPACE, Planet Exploration, Propulsion, Space Robotics, Human Space Flight**
- **Bio-astronautics, NEMS, space materials, quantum technology and energy storage materials**
- **IoT and Communication networks**
- **Research Park for Innovation and Incubation,**
- **Creation of customizable hangar workspace**
- **Augmentation of labs to suit open-ended research & innovation, battery fabrication, space radiation simulation**
- **Innovative Interdisciplinary programmes and proposal for a new department in Computer Science**
- **International Student Facilitation Centre**
- **Enhancement of sports facilities**

File Description	Document
Upload any additional information	View Document
Provide the link for additional information	View Document

6.2 Strategy Development and Deployment

6.2.1

The institutional perspective plan is effectively deployed and functioning of the institutional bodies are effective and efficient as visible from policies, administrative setup, appointment, service rules, and procedures, etc

Response:

Institutional Bodies

The apex executive body of the institute is the **Governing Body (GB)**, chaired by the **Secretary of the Department of Space** (DoS). The Joint Secretary-DoS (Personnel) and the Scientific Secretary-DoS are its members, the Joint Secretary-DoS (Finance) is an invitee, and the Director, IIST, serves as member secretary. This is followed by the **Board of Management**, **Academic Council, and Board of Studies**. The **Director IIST** heads the institute, under whom **Deans, Registrar, Heads of Departments, faculty, officers, and staff** dispense their duties. The Director of IIST oversees academic programs and makes strategic administrative decisions. The **Dean (Academic)** manages academic activities, while the **Dean of R&D and IPR** handles project and patent-related activities. The **Dean (Student Activities, Student Welfare, and Outreach)** leads student support activities and the Registrar heads administration of the institute.

Administrative set-up

IIST's administrative hierarchy includes the Director, Registrar, Deputy Registrars, Deans, Associate Deans, Faculty, Officers, Staff, and non-academic personnel. https://www.iist.ac.in/sites/default/files/IIST_ORG_STRU.pdf

Appointment, service rules, procedures

The institute assesses its manpower requirements for academic, administrative, and research activities, notifying vacancies in leading media and the IIST website (https://www.iist.ac.in/career/opportunity). The institute has well-defined fundamental and supplementary rules specified in the bylaws. https://events.iist.ac.in/IQAC/naac/SSR-2024/cr6/6.3.1_wel/6.3.1%20supp_byelaw.pdf

Institutional Perspective Plan and Deployment

Institutional bodies ensure the deployment of the plan through several measures, which include:

- **Clearance from DoS/Governing bodies**
- **Collaborations based on functional MoUs**

- **Review progress in plan implementation**
- **Use of vertical pathway clearance for academics, research and infrastructure.**

The effective implementation of Plans is evidenced by the implementation highlights in terms of:

- **NEP implementation**
- **Institutional Policies** formulated for Research, IPR, IT, and academic programmes (https://events.iist.ac.in/IQAC/policy.php)
- **Student Mobility and Research Plan:**
  - IIST has a more than 75 % placement record and high progression to higher learning. Moreover, it has a very effective start-up ecosystem with 9 start-ups. Students and faculty are actively engaged with ASRG projects and collaborations.
- **Effective use of Research facilities, as evidenced by**
  - Creation of a **S**mall spacecraft **S**ystem and **PA**yload **CE**ntre (SSPACE)
  - The launch of a student satellite on the PSLV C52 mission in February 2022, supported by INSPIRE partners. ARIS 201F, an advanced retarding potential analyzer for ionospheric studies, on PSLV C55 on the PS4 stage. PILOT, and a payload designed for the fourth stage of PSLV.

- **Human Resources Management**
  - Monitoring the best use of human power is ensured through biometric attendance in classrooms and automated data migration from the biometric system to the campus web portal, digitizing academic and administrative activities (https://icampus.iist.ac.in/app)
  - Employees' welfare is ensured through the policies of DoS support systems. Appointment rules and regulations are per DoS guidelines, and the Governing Body ensures compliance.
- **Infrastructure Augmentation:**
  - Institutional bodies create a congenial teaching, learning and research ecosystem, which is reflected in the massive investment infrastructure of the campus and is available on the link: (https://events.iist.ac.in//IQAC/naac/SSR-2024/cr6/6.2.1/6.2.1_add_doc_new.pdf).

File Description	Document
Upload any additional information	View Document
Strategic Plan and deployment documents on the website	View Document
Provide the link for additional information	View Document

6.2.2

Institution implements e-governance in its operations. e-governance is implemented covering the following areas of operations:

1. **Administration including complaint management**
2. **Finance and Accounts**

3. **Student Admission and Support**
4. **Examinations**

Response: A. All of the above

File Description	Document
Screen shots of user interfaces of each module reflecting the name of the HEI	View Document
Institutional expenditure statements for the budget heads of e-governance implementation ERP Document	View Document
Institutional data in the prescribed format (data template)	View Document
Annual e-governance report approved by the Governing Council/ Board of Management/ Syndicate Policy document on e-governance	View Document

6.3 Faculty Empowerment Strategies

6.3.1

The institution has performance appraisal system, effective welfare measures for teaching and non-teaching staff and avenues for career development/progression

Response:

Performance appraisal system

IIST follows a three-tier review system to assess its employees. An **Annual Performance Assessment Report (APAR)** is submitted to the reporting officer, who forwards it to the next levels for assessment and approval. A copy of the APAR with grading will be communicated to the concerned employee from the Registrar's office. Grievances can be represented within 15 days from the date of the receipt. IIST follows a Limited Flexible Complement Scheme (LFCS) for its permanent staff.

IIST follows the DoS **Merit Promotion Scheme for faculty promotion**, where they are promoted to higher grades after a pre-defined residency period. Performance Appraisal for faculty is based on parameters, which include research, publications, projects, Intellectual property, and academics. The rationalized review and effective date of promotion will be January 1st and July 1st of every year.

Employers receive **Performance Relative Incentive Scheme Organizational** (@ 10 to 16 % of basic salary) and **Group** (@ 7 to 9.5% of basic salary).

Career development/progression:

The career path of faculty ranges from Assistant Professor to Distinguished Professors. All faculty members receive **Professional Update Allowance,** officers receive **Launch Campaign Allowance,** and technical staff receive **Space Technology Allowance**. During the assessment period, an amount of Rs. 2.1 crores was incurred for disbursing these allowances. IIST has financially supported faculty to attend more than 220 events nationally and internationally. The faculty are allowed to go on **sabbatical** based on the policies of IIST.

IIST encourages its faculty, staff and officers to pursue higher education. Since its inception, three officers have gained a Post Graduate Diploma in Educational Administration, Governance and GST, two finished LLB courses, four finished MBA, and two finished Masters in Hindi and Public Administration. Yet another technical staff has finished the Senior Technician programme. Two technical staff completed B.Tech, and four have finished the M. Tech programme. The Library Officer, Deputy Registrar(Academics), Deputy Registrar(Purchase), received doctoral degrees during the tenure. Currently, one technical staff and a senior scientist are pursuing doctoral programmes at BITS Pilani and IIIT Kottayam, and 5 technical staff are also pursuing PhD programmes. The Hindi Section, through the Official Language Implementation Committee (OLIC), periodically conducts Hindi language skill enhancement programmes to monitor proficiency and provide incentives and cash awards. (https://events.iist.ac.in/IQAC/naac/SSR-2024/cr6/6.3.1_wel/6.3.1_ol_office_order.pdf)

DoS's Contributory Health Service Scheme (CHSS) covers all employees, dependents and eligible family members. In addition, a 24x7 Health centre and Polyclinic facility are also available.

The two welfare schemes of **Vikram A. Sarabhai Trust (VAST) viz SAFE (Scheme for Assistance to Families in Exigency) and VISWAS (VAST Insurance Scheme Whenever Accident Strikes)** of the DoS/ISRO, are available for permanent employees. It is a voluntary, contributory, and multi-purpose welfare scheme to provide beneficiaries with Financial Assistance in Exigency (FAE). The institute also provides **ESI, EPF (full contribution from the institute), subsidised canteen and transport facility and medical insurance of 2 Lakhs for the contract employees.**

Welfare programs include:

- **Leave Travel Concession (LTC) Scheme**
- **Financial support for purchasing computers**
- **Housing Loan Scheme**
- **Transport allowance/conveyance facility**
- **Financial support for membership in scientific and Professional bodies**
- **Reimbursement of telephone/internet bill**
- **Pension scheme (GPF/NPS/CPS)**
- **Earned leave encashment**
- **Maternity leave for 6 months, leave following miscarriage, adoption leave**

- **Paternity leave for 15 days**
- **Child care leave**

File Description	Document
Upload any additional information	View Document

6.3.2

Percentage of teachers provided with financial support to attend conferences/workshops and towards membership fee of professional bodies during the last five years

Response: 95.71

6.3.2.1 **Number of teachers provided with financial support to attend conferences/workshops and towards membership fee of professional bodies year wise during the last five years**

2022-23	2021-22	2020-21	2019-20	2018-19
92	92	96	96	93

File Description	Document
Policy document on providing financial support to teachers	View Document
Institutional data in the prescribed format (data template)	View Document
E-copy of letter/s indicating financial assistance to teachers and list of teachers receiving financial support year-wise under each head	View Document
Audited statement of account highlighting the financial support to teachers to attend conferences/workshops and towards membership fee for professional bodies.	View Document

6.3.3

Percentage of teachers undergoing online/ face-to-face Faculty Development Programmes (FDPs)/ Management Development Programmes (MDPs) during the last five years

Response: 8.98

6.3.3.1 **Total number of teachers who have undergone online/ face-to-face Faculty Development Programmes (FDP)/ *Management Development Programs (MDP)* during the last five years**

2022-23	2021-22	2020-21	2019-20	2018-19
5	14	15	7	3

File Description	Document
Refresher course/Faculty Orientation or other programmes as per UGC/AICTE stipulated periods, as participated by teachers year-wise.	View Document
Institutional data in the prescribed format (data template)	View Document
E-copy of the certificates of the program attended by teachers.	View Document
Annual reports highlighting the programmes undertaken by the teachers	View Document

6.4 Financial Management and Resource Mobilization

6.4.1

Institutional strategies for mobilisation of funds other than salary and fees and the optimal utilisation of resources

Describe the resource mobilisation policy and procedures of the Institution within a maximum of 500 words

Response:

Fund Mobilization:

The major funding is from DoS for recurring and non-recurring expenses. It is an annual Grant-in-Aid for meeting Capital, General, and Salary expenditures. IIST receives funds from other ISRO centers through the project proposal submitted by faculty and approved under the **Advanced Space Research Group (ASRG)**. In addition, faculty members are encouraged to submit external project proposals. From the project proposals, IIST has received extramural funds from national agencies/society/departments (**DST-SERB, ICSSR, MoES, DBT, Ministry of Electronics and Information Technology -MeitY, DRDO, KSCSTE**). In the assessment years, IIST has received approximately Rs.62 crores from projects, of which 10% has been used as overhead charges for infrastructure development. IIST also receives funds from other institutes/professional bodies as part of collaborative conferences and international

seminars\ Faculty Development Programs submitted to AICTE-ATAL. Faculty also conduct collaborative academic conferences/workshops and seminars with other national institutes and universities.

In addition, IIST receives funds through academic support from national institutes like DRDO and the Military College of Electronics and Mechanical Engineering by conducting courses like Introduction to Space Technology and Satellite Communication, which are relevant to space technology. IIST also has MOU, patents, incubation and startup. Rent from cafeterias, shops, and guest houses also generate revenue.

Fund Utilization:

Regarding the optimal utilization of the available resources, IIST follows the biannual model BE (Budget Estimate)-RE (Revised Estimate). In the beginning of every budget year, budget requirements from the departments/sections are consolidated, reviewed, and recommended to DoS for allocation. On receipt of the budget allocation from DoS, the expenditure is being incurred in tune with the approved budget/line item. A senior-level committee comprised of the Director, Deans, and Registrar takes utmost care to achieve the expenditure targets. The committee conducts regular reviews of the fund utilization. It also monitors the financial status and fund distribution for various activities of the different departments, under various heads.

Moreover, the DoS conducts a budget review of all ISRO/DoS centers to ensure the proper utilization of funds. Based on the expenditure, the DoS will release the funds every quarter (22%,23%,25%,30%). There is an institute budget coordinator to monitor the overall management of funds. The Department/section budget coordinators monitor and facilitate effective utilization of the allocated budget within the time frame.

The institute prepares a road map for each financial year to complete the technical reviews and financial appraisals of major technology development programs, facilities, research labs, and projects. Funds generated through other resources like Extramural Grants, etc., are utilized as per applicable guidelines of IIST and Funding Agencies.

Regarding the optimal utilization of resources, IIST has research scholars in different categories: internal (institute-funded), external (through outside agencies like UGC, CSIR, etc.), sponsored (DoS, DRDO, etc) and also project fellows who have joined as part of various projects and research programs. Major equipment purchases, lab establishments and infrastructure development have been made from the funds received through external projects. Most of the facilities are centralized to avoid duplication of laboratory facilities. In-house fabrication and design are encouraged. Solar energy and water conservation are done for energy conservation. Effective utilization of funds is ensured by a three-tier audit system viz CAG, internal, and external audits.

File Description	Document
Upload any additional information	View Document

6.4.2

Funds / Grants received from government bodies/non government and philanthropists during the last five years for development and maintenance of infrastructure (not covered under Criteria III and V)

Response: 25744.2

6.4.2.1 **Total Grants received from government and non-government bodies and philanthropists for development and maintenance of infrastructure (not covered under Criteria III and V) year-wise during the last five years (INR in *Lakhs*)**

2022-23	2021-22	2020-21	2019-20	2018-19
3650	7000	3625	6352	5117.20

File Description	Document
Institutional data in the prescribed format (data template)	View Document
Copy of the sanction letters received from government/ nongovernment bodies and philanthropists for development and maintenance of infrastructure	View Document
Annual audited statements of accounts highlighting the grants received.	View Document

6.4.3

Institution regularly conducts internal and external financial audits regularly

Enumerate the various internal and external financial audits carried out during the last five years with the mechanism for settling audit objections within a maximum of 500 words

Response:

IIST has a well-framed financial auditing system with expertise and guidance provided on a timely basis by the parent Department, i.e., the Department of Space. The institution has three different audits: **Statutory Audit, Internal Audit, and Comptroller and Auditor General (CAG) Audit.**

IIST conducts statutory financial audits by CAG-employed chartered accountants. Besides the financial audit, IIST has regular audits from CAG and internal audits conducted by the Department of Space.

Statutory Audit: It is carried out annually by CAG-employed chartered accountants. The Annual Financial statements are certified by the respective Chartered Accountant, and Auditor's Reports detailing qualified opinions, if any, are issued. Compliance with applicable laws, regulations, and standards is ensured. The audited financial statements and the Auditor’s Report are included in the

Annual Report for the respective year, providing a comprehensive view of the organization's financial status and compliance efforts. The audited financial statements are tabled in the Parliament regularly along with the Annual Report. As of the audit conducted up to 31st March 2023, the financial statements have been audited, and the respective Auditor's Report has been issued. [Uploaded at https://www.iist.ac.in/library/annual]

Internal Audit: – Internal Audit is systematically conducted by the Department of Space regularly, ensuring that the organization's internal processes and controls are thoroughly examined and evaluated. The focus of these audits encompasses procedural compliance and the robustness of internal control mechanisms across key areas such as finance, procurement, and administration. The primary objective of the internal audit is to serve as an advisory role, providing insights and recommendations that help enhance the efficiency, effectiveness, and integrity of these processes. During each audit cycle, the team scrutinizes financial records, procurement practices, and administrative procedures to ensure they align with established policies, regulatory requirements, and best practices. As suggested by the audit, corrective measures are implemented to ensure better compliance and stronger internal control processes. As on date, Internal Audit up to 31st March 2024 has been completed.

In addition, a senior-level committee composed of the Director, Deans, and Registrar takes utmost care to achieve the expenditure targets. Moreover, the DoS conducts a budget review of all ISRO/DoS centers to ensure the proper utilization of funds. Based on the expenditure, the DoS will release the funds every quarter (22%,23%,25%,30%). There is an institute budget coordinator to monitor the overall management of funds. Department/section budget coordinators monitor and facilitate effective utilization of the allocated budget within the time frame.

CAG Audit: – The CAG Audit is carried out by the Office of the Director General of Audit, Central Expenditure, Environment, and Scientific Departments. This comprehensive audit is conducted regularly, emphasising propriety, efficiency, and governance. The auditors meticulously review the economy, efficiency, and effectiveness during the audit. The Institute's annual financial statements are prepared based on the format recommended by CAG. Vouchers are verified on a random sampling basis, allowing for a thorough yet efficient examination of financial data. When audit objections are raised, the Institute promptly provides clarifications and implements corrective measures as needed to address any issues. Additionally, the Institute supplies interim information as requested by the CAG for comprehensive risk assessment.

File Description	Document
Upload any additional information	View Document

6.5 Internal Quality Assurance System

6.5.1

Internal Quality Assurance Cell (IQAC)/ Internal Quality Assurance System (IQAS) has contributed significantly for institutionalizing the quality assurance strategies and processes, by

constantly reviewing the teaching-learning process, structures & methodologies of operations and learning outcomes, at periodic intervals

Internal Quality Assurance Cell (IQAC) has contributed significantly for institutionalizing the quality assurance strategies and processes visible in terms of –

- **Incremental improvements made for the preceding five years with regard to quality (in case of first cycle)**
- **Incremental improvements made for the preceding five years with regard to quality and post accreditation quality initiatives (second and subsequent cycles)**

Describe two practices institutionalized as a result of IQAC initiatives within a maximum of 500 words

Response:

IQAC@IIST, established in **2012**, aims to improve education and research quality by developing strategies to improve academic and administrative performance. It supports institutional quality enhancement by fostering a quality culture and institutionalized two best practices.

A) Digital Environment at IIST: IQAC has significantly enhanced digitalizing academic and administrative activities through the **Software Support Group (SSG)**. The digital transformation is facilitated through https://icampus.iist.ac.in, which includes **UG/PG/PhD admissions, attendance management, academic record-keeping, GEM-procurement, Personal Information System, stores-related procedures and E-procurement porta**l.

Under IQAC's guidance, the SSG developed the application portal https://icampus.iist.ac.in/app/, which includes:

- **PhD Admission**
- **Access Control System**
- **IIST Committee Data Collection**
- **CHSS Monitoring System**
- **GTE-PLR Data Management System**
- **Leave Management System**
- **IIST Attendance Management System**
- **Personal Information System (PIS)**
- **IT Services**
- **Book Grant Management System**
- **Canteen Booking System**
- **Online admission portal**

Digital Data Portal, https://icampus.iist.ac.in/app/, collects and preserves comprehensive data, including publications, conferences, awards, workshops, and other academic activities.

During the COVID-19 pandemic, IQAC recommended the customization of the Moodle Learning Management System (LMS), https://moodle.iist.ac.in, which was deployed in the odd semester of 2021-2022 to facilitate online assignments, quizzes, and evaluations/exams. An online induction program

for B.Tech, M.Tech, and PhD scholars was also conducted, featuring sessions with alumni to inspire new students.

IQAC also launched a dedicated webpage, https://events.iist.ac.in/IQAC, to showcase its activities, audit reports (Academic, Green, IT, Environmental, Energy, Gender), and national rankings. In 2022, IQAC reviewed the teaching-learning processes and outcomes through a Student Satisfaction Survey (SSS) to identify areas for improvement and recommend educational reforms.

B) Research Enhancement at IIST:

IQAC, in collaboration with the IIST Research Council, enhances research activities and technologies, encouraging faculty engagement and implementing strategies to strengthen research across disciplines. Key achievements under IQAC's initiatives include:

- **Fostering collaboration of 55 active national/international MoUs and over 100 individual collaborations.**
- **Enabling support systems for PhD work and research projects**
- **Initiating deliberations on establishing three Centers of Excellence in propulsion, nano-science, and virtual reality.**
- **Creation of an Intellectual Property Rights (IPR) cell, resulting in 16 patents granted and 4 published.**
- **Formation of the Space Technology Innovation and Incubation Centre (STIIC), hosting 9 innovation units.**
- **Internships free of charge for 400 students**
- **Collaboration with Australian National University (ANU) for 15 annual internships with fellowships.**
- **Operational support: Implemented 27 projects with ISRO and DoS centers under the ASRG initiative.**
- **Establishment of the Small Spacecraft System and Payload Centre (SSPACE), developing notable payloads for the PSLV C-55 mission.**
- **Feedback Analysis from stakeholders –students, alumni, employers**

C) Other IQAC Initiatives:

IQAC also identified and addressed strengths and weaknesses through feedback and reviews, leading to several quality enhancements, including:

- **Phased implementation of NEP 2020 recommendations, beginning with a workshop in May 2023.**
- **Adopting the Academic Bank of Credit (ABC) system as per NEP 2020.**
- **Introduction of an elective course on the Indian Knowledge System.**
- **Support through the Buddy Mentoring System significantly reduces ragging incidents.**
- **Induction and online admission support**
- **Organizing workshops and seminars to raise quality assurance awareness.**

File Description	Document
Upload any additional information	View Document

6.5.2

Institution has adopted the following for Quality assurance:

1. **Academic and Administrative Audit (AAA) and follow up action taken**
2. **Conferences, Seminars, Workshops on quality conducted**
3. **Collaborative quality initiatives with other institution(s)**
4. **Orientation programme on quality issues for teachers and students**
5. **Participation in NIRF and other recognized ranking like Shanghai Ranking, QS Ranking Times Ranking etc**
6. **Any other quality audit recognized by state, national or international agencies**

Response: A. Any 5 or more of the above

File Description	Document
Supporting documents pertaining to NIRF (along with link to the HEI's ranking in the NIRF portal) / NBA / ISO as applicable and valid for the assessment period.	View Document
List of Orientation programmes conducted on quality issues for teachers and students along with geotagged photos and supporting documents	View Document
List of Conferences / Seminars / Workshops on quality conducted along with brochures and geo-tagged photos with caption and date.	View Document
List of Collaborative quality initiatives with other institution(s) along with brochures and geo-tagged photos with caption and date.	View Document
Institutional data in the prescribed format (data template)	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

6.5.3

Incremental improvements made for the preceding five years with regard to quality (in case of first cycle NAAC A/A)

Post accreditation quality initiatives (second and subsequent cycles of NAAC A/A)

Response:

Following the first accreditation in **2013, IQAC@IIS**T has taken various initiatives, which include the implementation of NAAC peer-team recommendations to enhance academic excellence, introduction of new academic programs, enhancement/commencement of UG/PG/research facilities, the establishment of startups and incubation centres and improvement of administrative efficiency. They are summarised as follows:

No	1st Cycle Recommendation	Action Taken	Status
1	Frequent Curricula revision, including recent advances in the field	Adopted. The last revisions were in 2019, 2021 and 2023	Implemented
2	Focus of Chemistry and Physics departments on other areas	Dept. of Physics started an M.Tech. Program in Quantum Technology Dept. of Chemistry started working on Astrobiology, biomaterials, nanomaterial	Implemented
3	Planning of Inter-Departmental collaborations and interdisciplinary courses	Started centres and labs such as SSPACE, STIIC, and ASRG. Interdisciplinary courses started	Implemented
4	Establishing of Computer-Sciences and Chemical-Engineering departments	Proposed a new Computer Science department and a computing and AI program.	Pending
5	Mandatory tutorials for all the courses	Tutorials are an integral part of most of the courses. It is compulsory for first and second-semester courses.	Implemented
6	Use of ICT for instructions	All classrooms and seminar halls are ICT-enabled.	Implemented
7	Provide sufficient space for research laboratories	The number of academic/research labs has been increased to 92.	Implemented
8	Establish a mechanism to address the grievances of all	Established. https://www.iist.ac.in/grie	Implemented

		vredressal	
9	Increase collaborations	**55 MoUs(MoAs) and 100**+ individual to individual collaborations.	Implemented
10	Extend Canteen hours	The hours have been extended.	Implemented
11	IIST- ISRO coordination for effective placement of students	The number of placements increased, and collaborations were effective	Implemented
12	The student's activity centre may be provided as soon as possible.	The Student Activity Centre (SAC), which has a gymnasium, indoor courts, and recreation centres, has been established.	Implemented
13	Residentially-facility for faculty/staff	Administrative sanction is obtained	Pending

The other major actions are:

- In 2018, the Space Technology Innovation and Incubation Cell was inaugurated, 9 startups are operational (https://www.iist.ac.in/stiic)
- In 2019, SSPACE was established, which designed, developed and successfully launched student satellites like INSPIRESat-1, PILOT, ARIS.
- During the pandemic, customized Moodle (LMS) in 2020 and various online platforms such as LMS, ZOOM, and Microsoft Teams are functional.
- The IIST-Procurement process has been utilized for non-GeM procurements through the e-procurement platform since 2022.
- ASRG started in 2020 and has expanded its activities with various ISRO centres, resulting in 27 projects.
- Integrated M.Tech-Ph.D. programs in various disciplines have been introduced in 2022-23 for employees from centrally funded institutions.
- M.Tech (Manufacturing Engineering) is approved.
- The curriculum has been updated per NEP and will be offered from 2024-25 admissions.
- Increased student outreach/exchange programs, Astronomy-School (IIST-funded), Young Talent Nurture-YTN (IIST-funded), Nurturing Mathematics Talent Search-NuMATS (Govt. of Kerala), and YUVIKA (Govt. of India), Nirmaan of IIST.
- Constructed a multipurpose Student Activity Centre, multipurpose hall, and an under passage with a new entrance, new hostels, canteen building, gymnasium, indoor stadium (badminton and squash courts), and mini-football ground.
- 10 % of the supernumerary seats are allotted to economically weaker sections and women candidates.
- Conducted 74 National/State level workshops/conferences/ seminars/webinars, etc, using external/internal funds.
- Regional Centre for Geodesy-established at ESS Department, where IIT Kanpur is the nodal centre.
- Two experimental payloads for the human space program are approved.

File Description	Document
Upload any additional information	View Document

Criterion 7 - Institutional Values and Best Practices

7.1 Institutional Values and Social Responsibilities

7.1.1

Institution has initiated the Gender Audit and measures for the promotion of gender equity during the last five years.

Describe the gender equity & sensitization in curricular and co-curricular activities, facilities for women on campus etc., within 500 words

Response:

Gender Audit: The Institute Gender Sensitization Committee conducts gender audit, and its recommendations are submitted to institute officials for further improvement and involvement of all genders equally in academic and administrative roles and thus helps to ensure a safe and secure environment for the female employees,students and scholars to stay/work and study.

Steps to promote gender equity: The Gender audit found that female numbers were generally less in almost all academic and administrative areas.The Gender Audit Report also advocated for strict measures for Gender Equity Promotion. The institute is committed to providing equal opportunity in all aspects of admission and employment. Hence, no discrimination is based on gender. As a measure to increase the numbers, the super numeracy posts for female students (10% of the total number of seats) advised by the Government of India in all educational institutions for women's empowerment were strictly implemented in undergraduate programs starting in 2022. Women faculty, officers, and staff are duly represented in all statutory bodies and all academic and administrative committees. As part of fulfilling social responsibility for the upliftment of women of nearby communities, cleaning attendants in the housekeeping contract are fully restricted to women employees.

In line with the gender policy of the Government of India, our institute facilitated an inclusive environment to support and ensure gender equity, justice, self-respect, and a safe, secure, and comfortable working ambiance for female scholars and employees.

Academic Initiatives

- The Department of Humanities offers gender studies as electives and core courses.
- Research publications on gender studies are published by faculty and scholars.
- Many books on gender and gender studies are available in the library.

The following measures are also in place to ensure gender equity and justice.

- **The institute's gender sensitization committee is active, with representatives from all genders.**
- **ICC in IIST actively supports students and employees, sensitizes them about safe working environment rules, and gives confidence to the women on campus.**

- **Utilization of Labs and accessing library timing is gender-neutral.**
- **Women's washrooms and restrooms are available in each academic/administrative building.**
- **Napkin incinerator facility in washrooms.**
- **Women wardens and security personnel in women's hostels.**
- **Maternal/paternal Leave benefits for employees and students.**
- **Female employees and students attended training on self-defence.**
- **The Institute's mechanism allows female students to work 24/7 in a secure environment.**

The institute also conducts awareness programs for employees and students to promote gender equity and create a good, inclusive environment for all genders through institute activities.

- **International Women's Day celebrations and motivating talks**
- **Periodic talks are conducted on gender equality and domestic violence against women.**
- **Talks on transgender rights and ethics**
- **Personal Hygiene awareness session for girls.**
- **Health camps for women**
- **Encouraging women in skill development.**
- **Organizing talks related to domestic violence, sexual harassment act, Internal complaints committee, cybersecurity, etc.,**
- **Gender equity and SHIS Act Awareness talk for newly joined students during the induction programme.**

File Description	Document
Upload any additional information	View Document
Provide the link for additional information	View Document

7.1.2

The Institution has facilities for alternate sources of energy and energy conservation measures
1. Solar energy
2. Biogas plant
3. Wheeling to the Grid
4. Sensor-based energy conservation
5. Use of LED bulbs/ power efficient equipment
6. Wind mill or any other clean green energy

Response: A. Any 4 or more of the above

File Description	Document
Institutional data in the prescribed format (data template)	View Document
Geo-tagged photographs of the facilities.	View Document
Bills for the purchase of equipment’s for the facilities created under this metric	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

7.1.3

Describe the facilities in the Institution for the management of the following types of degradable and non-degradable waste (within 500 words)

- **Solid waste management**
- **Liquid waste management**
- **Biomedical waste management**
- **e-Waste management**
- **Waste recycling system**
- **Hazardous chemicals and radioactive waste management**

Response:

Solid Waste Management:

A **no-waste incinerato**r is maintained on the campus for proper waste disposal, with a 150 kg/hr capacity and a 1.5 cubic meters/53 CFT volume.

Napkin Incinerators are also installed in all ladies' toilets of ladies' hostels and one ladies' toilet in all academic/ administrative buildings, which can burn 50 pads at a time.

A **Bio Gas plant** is operated and maintained by Canteen Services, and biogas byproducts are used as fertilizer.

A compost pit has been made where dry leaves are collected, disposed and used for gardening purposes.

Food waste, polythene covers, and paper waste are collected and disposed of separately in separate dustbins on each building floor.

The campus has banned the use of plastic. Still, it comes to the campus, and some purchases are made by the students staying in hostels. Plastic bottles, disposed of on the campus, are reused for planting.

As part of the Green Kerala Mission policy, the plastic waste generated on the campus is also disposed of

through **Haritha Karma Sena**, an authorized/ registered recycler. The generated paper waste is shredded using **paper shredders** on campus and disposed of through authorized recyclers.

The following measures are taken to avoid the use of plastic in the campus:

- The use of plastic flex boards for functions stopped completely.
- The lamination of files and plastic folders will be stopped in the future.
- Single-use plastics (SUPs) stopped in all activities
- Canteen Services and all offices in the institute utilize glass/steel bottles for water storage and consumption.
- The outsourced cafeteria uses paper cups/ plates.

Liquid Waste Management:

- A **sewage treatment plant** has been made in IIST to produce clean, odourless water for reuse. The recycled water is used for gardening. It has a capacity of 350 KLD.

Water recycling system:

- **Water treatment plants** are installed inside the campus to recycle used water. The recycled water is used for drinking and daily usage by meeting a demand of 200m3/day.
- An **ultrafiltration system with a disinfection unit** is installed on the campus with a capacity of 22m3/hr.

E-Waste Management:

Since the campus is relatively new, the amount of e-waste generated is less, which includes UPS, inverters, industrial refrigerators, printer cartridges, and water dispensers. It is managed with utmost care by promoting buy-back options and scraping mechanisms per the guidelines.

Hazardous Chemical Waste Management:

The chemical wastes are disposed of as per the safety guidelines of the hazardous chemicals waste management regulations. Purchase orders are released to the recognized external agent for waste disposal. Till now, 700 litres of chemical waste have been disposed of from the institute.

File Description	Document
Relevant documents like agreements/MoUs with Government and other approved agencies	View Document
Geo-tagged photographs of the facilities	View Document

7.1.4

Water conservation facilities available in the Institution:

1. **Rain water harvesting**
2. **Borewell /Open well recharge**
3. **Construction of tanks and bunds**
4. **Waste water recycling**
5. **Maintenance of water bodies and distribution system in the campus**

Response: A. Any 4 or more of the above

File Description	Document
Institutional data in the prescribed format (data template)	View Document
Green audit reports on water conservation by recognised bodies	View Document
Geo-tagged photographs of the facilities.	View Document
Bills for the purchase of equipment’s for the facilities created under this metric.	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

7.1.5

Green campus initiatives include

Describe the Green campus initiative of the institution including Restricted entry of automobiles, Use of Bicycles/ Battery powered vehicles , Pedestrian Friendly pathways , Ban on use of Plastic, landscaping with trees and plants etc in 500 words

Response:

IIST follows strict regulations to have a sustainable, eco-friendly, lush green campus with ornamental plants and shade-giving trees.

- Four Ponds situated in the campus provide an aesthetic view and cater to the institute's water

requirement. Pedestrian pathways with shade-giving trees connecting buildings provide a safe and enjoyable walkway for all.

- **Separate parking areas** are provided for two-wheelers and four-wheelers outside the Institute gates.
- Vehicle movement is restricted on the campus. Only department vehicles and faculty vehicles are permitted on campus.
- **Electric Vehicles (two-wheelers)** are provided to the Civil Maintenance Department/Computer System Group for movement to various areas of the campus**.**
- **World Environment Day** is celebrated yearly by planting many saplings, resulting in today's lush green campus.
- **Landscaping with trees and plants** in all free areas is also a major part of the campus development agenda.
- **A full-time functional Sewage treatment** plant provides treated water for the plants on the campus.
- The institute is making the utmost efforts to promote the Net Zero campus for carbon neutrality.
- Strict restrictions are in place on using plastics in and around the campus. All offices in the institute utilize glass/steel bottles for water storage and consumption.
- **ECO club** is keen on maintaining a Green campus.
- **Butterfly Gardens and Bio-diversity Park** are present on the campus.

A Green Audit of the campus was completed with the help of officials from **Haritha Keralam Mission, Nava Keralam Karma Padhathi, Suchitwa Mission, Government of Kerala, and Nedumangad Municipality**.

Green Campus Awards

- **A++ grade** awarded by Haritha Keralam Mission, Nava Keralam Karma Padhathi, Suchitwa Mission, Government of Kerala, and Nedumangad Municipality.
- **Received Certificate of appreciation from AICTE** for the "**One Student, One Tree" initiative in the year 2019**

Canteen Services uses Steel/ glass plates & glasses. Digital banners are preferred over flex boards for official functions. The outsourced cafeteria uses paper cups. Plastic bottles are used for planting as a measure of recycling. Cloth bags and seed pens are preferred to be distributed during conferences and workshops.

Cut flowers/Bouquets are replaced with potted plants to welcome visitors and guests. Potted plants are used for stage decoration in the institute.

IIST has a very active **Swachh Bharat Abhiyaan Implementation Committee and Eco Club,** which organizes awareness programs for students, staff, and faculty.

Swachhata Pakhwada is organized every year with various programs, including plogging, which involves the active participation of students, faculty members, and staff. Cleaning drives in neighbouring communities, such as schools and Padyatra, with banners showcasing the importance of a clean environment, are organized as part of the campaign. Prizes are also distributed to hostel rooms, laboratories, and offices that are kept. Clean.

Students also participated in the special beach cleaning drive '**Swachh Sagar, Surakshit Sagar' o**n International Coastal Cleanup Day, organized as part of Azadi Ka Amrit Mahotsav celebrations on September 17 th, 2022, in Kovalam beach and other beach cleaning drives organized by NGOs. No waste incinerator is installed for waste disposal on the campus. All ladies' hostel and academic blocks are provided with napkin incinerators.

File Description	Document
Policy document on the green campus/plastic free campus.	View Document
Geo-tagged photographs/videos of the facilities.	View Document
Circulars and report of activities for the implementation of the initiatives document	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

7.1.6

Quality audits on environment and energy are regularly undertaken by the institution

The institutional environment and energy initiatives are confirmed through the following

1. **Green audit / Environmental audit**
2. **Energy audit**
3. **Clean and green campus recognitions/awards**
4. **Beyond the campus environmental promotion and sustainability activities**

Response: A. All of the above

File Description	Document
Report on environmental promotional activities conducted beyond the campus with geo-tagged photographs with caption and date	View Document
Policy document on environment and energy usage Certificate from the auditing agency.	View Document
Institutional data in the prescribed format (data template)	View Document
Green audit report of all the years from recognized bodies	View Document
Certificates of the awards received from recognized agency (if any).	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

7.1.7

The Institution has Differently-abled (Divyangjan) friendly, barrier free environment

Write description covering the various components of barrier free environment in your institution in maximum of 500 words

- **Built environment with Ramps/lifts for easy access to classrooms**
- **Divyangjan friendly washrooms**
- **Signage including tactile path, lights, display boards and signposts**
- **Assistive technology and facilities for Divyangjan accessible website, screen-reading software, mechanized equipment**
- **Provision for enquiry and information: Human assistance, reader, scribe, soft copies of reading material, screen reading**

Response:

IIST ensures equality and freedom for all students and employees, including the differently abled.

- The buildings of IIST premises are equipped with facilities to enhance accessibility for differently-abled individuals, including **disabled access ramps, elevators, Divyangjan-friendly washrooms, and 1 Wheelchair**.
- Ramps are provided in **academic blocks, administrative buildings, libraries, canteens, hostels, and medical facilities, including gate complexes, ensuring inclusivity for all.**
- **The Student Activity Centre, hostels, and mess building also offer accessible toilets and ramps, further exemplifying our commitment to providing a barrier-free environment for**

individuals with disabilities.

- The institute has replaced **ordinary push buttons of passenger lifts with braille buttons to assist differently-abled people**.
- **Transport facilities are provided to the disabled students** from the hostel to the academic blocks/offices daily. On special request, vehicles are provided to take them outside the campus when they are in need.
- Even though IIST does not have a separate wing of inquiry and information for the **divyangjan**, it extends its support whenever such people inquire about information.

IIST follows the government guidelines with 5% reservation on the horizontal level for PwD students in UG and PG programs.

With the limited applications, 2 PhD and 2 BTech students are currently admitted in this category.

File Description	Document
Upload supporting document	View Document

7.1.8

Describe the Institutional efforts/initiatives in providing an inclusive environment i.e., tolerance and harmony towards cultural, regional, linguistic, communal socioeconomic and such other diversities (within 500 words).

Response:

IIST, housing a pan-Indian residential community of students and faculty members, always strives to provide a healthy environment for the students to excel in academic pursuits and deliver a wholesome and responsible citizen to society.

IIST has students from 21 states of India, and 50% of the faculty are from outside Kerala**, which is one of the important aspects of the institute's pan-Indian nature.**

Celebration of National/International days/festivals.

- IIST supports students and staff in celebrating all national and regional festivals like **Diwali, Onam, Pongal, Holi, Ugadi, Christmas, and Ramzan** on campus. It also observes days of national importance like **Independence Day and Republic Day**.
- Special feasts with special delicacies associated with each festival are served during such days.
- Even during the COVID period, IIST managed to keep the spirit of these festivities alive by organizing online programs.

Official Language Implementation /Activities

- **Official Language Implementation Committee (OLIC)** upholds the importance of the national language, Hindi, by organizing Hindi Pakwada, celebrating World Hindi Day, and organizing

national/state-level seminars and competitive programmes for students, faculty members, and staff. Special language classes/workshops are organized for students and staff who are weak in the same.

- To encourage and support students who took their secondary school education in their mother tongue, the Department of Humanities offers various programs to enhance students' English proficiency. Faculty members identify students who lack English proficiency, and special support and training are given every year, especially in the first year.

Support to Economically and socially challenged students:

ICC, Gender Sensitization Cell and SC/ST Cell address issues relating to gender, communal, and socio-economic diversities and provide support and awareness for a harmonious existence on the campus.

- 10% of seats are reserved for Economically Weaker Section (EWS) students for the UG and PG programs starting in 2019 in IIST.
- SC/ST/PWD students get a 66% fee waiver if the parental income is 1L to 5L and a 100% fee waiver if the income is less than 1L.

Social responsibilities

With a will to demystify science among the less privileged sessions of society, the social outreach club of **IIST-Nirmaan** organizes science camps for tribal and school students. They also organize regular blood donation camps on the campus to provide blood to needy hospitals like the Regional Cancer Centre.

Student Clubs and campus festivals

- **Events organized as part of the students club, the mesmerizing cultural programs** such as under the auspices of the Society for the Promotion of Indian Classical Music And Culture Amongst Youth (**SPIC MACAY**), a voluntary youth movement that promotes intangible aspects of Indian cultural heritage by promoting Indian classical music, classical dance, folk music, yoga, meditation, crafts and other aspects of Indian culture,t**he Annual Technical and Cultural Fests and Annual Sports Day,** all helps to bring students together irrespective of their religion cast, class, gender, and socioeconomic background and helps to promote an inclusive environment within the campus**.**

File Description	Document
Supporting documents on the information provided (as reflected in the administrative and academic activities of the Institution)	View Document
Any other relevant information	View Document

7.1.9

Sensitization of students and employees of the Institution to the constitutional obligations: values, rights, duties and responsibilities of citizens

Describe the various activities in the Institution for inculcating values for being responsible citizens as reflected in the Constitution of India within 500 words.

Response:

IIST not only focuses on technical education but also believes in the wholesome development of its students, inculcating values and responsibilities and making them not just brilliant scientists/engineers but good citizens of the country.

- **Independence Day and Republic Day** are celebrated yearly with dignity and fervour, which helps inculcate the values of harmony and national integrity.
- **Observing Rashtriya Ekta Diwas, Sadbhavana Diwas, and Vigilance Awareness Week**
- **Vigilance Awareness Week brings** together all stakeholders to participate in the collective corruption prevention and fight against it.
- **Constitution Day** is celebrated in IIST with the solemn reading of the **Preamble of the Constitution**, followed by a relevant talk on constitutional values and duties by an eminent personality. Dr. B R Ambedkar, the father of the Indian constitution, is also remembered on his birth anniversary every year with talks and providing lunch for all employees of the Institute.
- IIST also joined the nation in celebrating **Azadi Ka Amrit Mahotsav, an initiative of the Government of India t**o celebrate and commemorate 75 years of independence and the glorious history of its people, culture, and achievements. The official journey of Azadi Ka Amrit Mahotsav commenced on 12th March 2021, which started a 75-week countdown to our 75th anniversary of independence and ended on 15th August 2023. The five themes of Azadi Ka Amrit Mahotsav were Freedom struggle, Ideas@75, Resolve@75, Actions@75, and Achievements@75.
- **PadaYatra and Cycling events** were jointly organized with other ISRO centers in Thiruvananthapuram, highlighting 75 important milestones leading to Indian Independence. “Space on Wheels” vehicle for the exhibition of a timeline of India’s 75 major achievements of the space program was parked in IIST and display of 75 images captured from Chandrayaan-1, Mars Orbiter Mission, Astrosat and Chandrayaan-2 spacecraft, which attracted students and staff alike. “Lecturer on the success story of the Indian Indian Space Programme over 75 years” was also conducted in the significance of the Birth Anniversary of Sir C.V. Raman.
- IIST also organizes **Model United Nations (MUN),** where the participants authentically simulate negotiations of various committees and organs of the United Nations every year, which attracts students from other colleges and academic institutions.
- **Swachh Bharat Implementation Committee organizes Swachata Pakhwada** annually, involving students and faculty members in cleaning drives within and outside the campus.
- Various clubs of IIST organize campaigns on tree plantation, environmental sustainability, and cleanliness to ensure social responsibility,
- The humanities department often organises talks on professional Ethics and human values in IIST.
- Professional Ethics and Environmental Science are the core courses for UG students, and MTech DSP has a Human value course.

- Faculty members and students can exercise their votes in state and central elections.

File Description	Document
Details of activities that inculcate values necessary to nurture students to become responsible citizens	View Document

7.1.10

The Institution has a prescribed code of conduct for students, teachers, administrators and other staff and conducts periodic programmes in this regard.

1. **The institutional Code of Conduct principles are displayed on the website**
2. **There is a committee to monitor adherence to the institutional Code of Conduct principles**
3. **Institution organizes professional ethics programmes for students, teachers, administrators and other staff**
4. **Annual awareness programmes on Code of Conduct are organized**

Response: A. All of the above

File Description	Document
Report on the student attributes facilitated by the Institution	View Document
Policy document on code of ethics.	View Document
Institutional data in the prescribed format (data template)	View Document
Document showing the Code of Conduct for students, teachers, governing body and administration as approved by the competent authority.	View Document
Constitution and proceedings of the monitoring committee.	View Document
Circulars and geo-tagged photographs with date and caption of the activities organized under this metric for teachers, students, administrators and other staff.	View Document
Provide Links for any other relevant document to support the claim (if any)	View Document

7.2 Best Practices

7.2.1

Describe two best practices successfully implemented as per NAAC format provided in the Manual.

Response:

I. Title of the Practice – Learning through Real-time Application in the Small-spacecraft Systems and Payload Centre (SSPACE) at IIST.

Objectives of the Practice - SSPACE at IIST aims to provide students with practical experience in conceptualizing, designing, and developing small spacecraft systems and payloads, educating students in spacecraft engineering through live space missions, creating industry-ready professionals, collaborating with industries to build space products and facilitate technology transfer, and designing subsystems and systems with maximum indigenous content to promote Make-in-India products for the space industry.

The Context - India's advancements in space technology have created a demand for skilled professionals in satellite design and development. As a unique space institute, IIST provides hands-on training to students in space system design, ensuring self-reliance and self-sufficiency in space technology.

The Practice -

SSPACE has initiated several small satellite projects to design and implement space-borne hardware. These initiatives involve students' collaborative efforts and guidance from faculty members and ISRO scientists. UG students are introduced to spacecraft engineering in the third semester and can join a voluntary space mission design contest. Students work on specific subsystems until graduation, fostering deep expertise and teamwork to develop TRL 9-level products. These projects include the IIST Cubesat (AHAN), INSPIRE missions, ISAT2, XNAV, For the Venus mission nanosatellites, MOM-2, RPA (Retarding Potential Analyzer) and PILOT for the PS4 platform, MOM-2,

Evidence of Success

- **ARIS**

A technology demonstration mission with an RPA capable of measuring ion velocity, temperature, and velocity as a PS4 orbital stage payload flew successfully in the C-49 mission in April 2019.

- **InspireSat-1**

A jointly developed small satellite mission between IIST, University of Colorado, Boulder, USA, NCU, Taiwan, and NTU, Singapore with Compact Ionospheric Payload (CIP) and Dual Axis X-ray Solar Spectrometer (DAXSS). Launched as a secondary payload on the PSLV C52 Mission on Feb. 14. 2022, science data is made public to Inspire Partners. **https://www.iist.ac.in/inspiresat1**

- **PILOT**

PILOT (Pslv InorbitaL Obc and Thermals), a PS-4 payload developed for the PSLV C-55 mission launched on April 22, 2023, demonstrated a 3D-printed metal structure for satellite applications, validated thermal simulation models using onboard sensor data, tested an indigenously designed OBC and flight software for future missions, and showcased RS485 telemetry communication.

- **ARIS-II**

ARIS 201F, launched on PSLV C55 as a POEM payload, is an upgraded version of ARIS 101F featuring high-sensitivity sensors and optimized parameters for improved data collection in the Earth's ionosphere, including Dual-RPA and four electronic cards for comprehensive data acquisition.

- **Small satellite subsystems**

The goal of developing space missions at IIST is to build capacity in spacecraft engineering by having students design and develop subsystems. The onboard Computer and Electrical Power System for InspireSat-1 and InspireSat-2, designed at IIST, achieved TRL 9 qualification, demonstrating the institute's ability to produce high-quality, reliable subsystems. Development of a communication board, altitude determination and control system, and cold gas thrusters is ongoing and provides hands-on learning experience and advancing indigenous spacecraft technology.

- **Ground Station**

A fully operational satellite ground station facility facilitates learning and hands-on experience in radio communication, satellite tracking, antenna positioning/ control systems, telemetry data visualization/ processing, real-time commanding, and mission operations.

Problems Encountered and Resources Required

Implementing student-driven satellite projects faces challenges of continuous student commitment, effective knowledge transfer, and interdisciplinary demands. Essential resources include ample lab space, computing equipment/workstations, safety measures, collaboration tools, and adequate funding and institutional support.

II. Title of the practice: ISRO – the live laboratory of IIST students

Objectives

- Enhance Practical skills and knowledge in cutting-edge technologies at ISRO, complementing their theoretical knowledge.
- Research and Innovation: Equip students with research skills in innovative research and development activities contributing to the space missions of ISRO
- Collaborative network with ISRO scientists and engineers
- Development of problem-solving abilities and working with complex and multidisciplinary problems related to space activities

- Cultivating professional ethics and standards at a younger age.
- Talent nurturing: helps identify and nurture talents through the mentorship of ISRO scientists and develop their potential to become future leaders of the space industry.

The context that required the initiation of the practice:

As a premier institution dedicated to nurturing the next generation of space scientists and engineers, IIST emphasizes the importance of practical experience and theoretical knowledge. Being an autonomous body under the Department of Spac, IIST has unique access to ISRO entities. The various entities in ISRO, India's apex space research organization, serve as perfect laboratories for enhancing practical knowledge. Taking full advantage of this opportunity, IIST initiated internships and projects for IIST students in ISRO entities. This practical experience bridges the gap between academic knowledge and industrial application, preparing students for a successful professional career.

The Practice

The UG internship program offers diverse interdisciplinary topics sourced from all departments and ISRO centres through the Internship Planning and Coordination Committee. Students select available topics based on their interests and collaborate with faculty members. They work in real-time laboratoires for the execution of the projects/ internships. Each student is assigned an industry supervisor and an internal supervisor from their department. Students work closely with both supervisors to develop a solution methodology, maintaining continuous communication throughout the internship. Students must summarize their findings and present the outcomes before the assessment panel; their grades are assigned based on their performance. This process ensures that students gain practical experience, understand industrial challenges, and apply their theoretical knowledge, preparing them for successful careers in their respective fields.

Evidence of Success- Impact of the Practice

These internships and projects of IIST students in ISRO entities have yielded significant success and positive impact. The students who have done internships and projects have been associated with innovative research and recognized through publications in reputed journals and conferences. Their work has addressed critical areas such as propulsion systems, satellite communication, remote sensing, and space exploration technologies. This unique experience has significantly enhanced the employability of IIST graduates who have secured prominent positions within ISRO and other leading aerospace organizations in India and internationally. Their ability to apply practical skills and knowledge gained through ISRO internships and projects have made them highly sought-after graduates by the industries. Most graduates can join as Scientists/engineers in their areas of interest. Around **1316 IIST graduates** have been absorbed into **ISRO centers/Units** till the reporting period.

File Description	Document
Best practices as hosted on the Institutional website	View Document
Any other relevant information	View Document

7.3 Institutional Distinctiveness

7.3.1

Portray the performance of the Institution in one area distinctive to its priority and thrust within 1000 words

Response:

Title: Generating highly skilled human resources and real-time participation in the Indian Space Sector

IIST was established to nurture skilled human resources for ISRO and other space industries; IIST provides a comprehensive educational framework spanning undergraduate, graduate, doctoral, and post-doctoral programs. IIST's commitment to advancing space science is reflected in its innovative approach to teaching and research, positioning it as a leading institution in the global space research community.

The following real-time achievements hold testimony to its vision and mission statements

- **Providing specially skilled Manpower in Space science and technology to ISRO :**

IIST has, to date, delivered 1316 scientists /engineers to ISRO, especially those skilled in the field, as the curriculum is tailor-made to meet the requirements of ISRO.

- **Contributions to Space Missions**

The collaborative research efforts of IIST faculty and students, along with ISRO Scientists, have provided a unique opportunity for the students to participate in and contribute to major space missions.

Vyom- First student-built sounding rocket, launched on 11th May 2012 from TERLS, VSSC

ARIS -1 (Advanced Retarding Potential Analyzer for Ionosphere Studies), launched in April 2019.

INSPIRESat – 1 was successfully launched in PSLV C-52 on 14th February 2022. It is a student satellite jointly developed by the Small-spacecraft Systems and PAyload Centre (SSPACE), IIST, and Laboratory of Space Physics, the University of Colorado, Boulder, USA, to provide education and space science research to the students of collaborating universities such as NTU, Singapore and NCU, Taiwan.

ARIS -2, a PS4 payload for LEO Ionosphere studies, launched on the POEM2 platform of PSLV C55 in April 2023

PILOT (Pslvln-orbitalL Obc and Ttc), scheduled to be launched in April 2024.

PSLV-PS4- POEM platform based-microgravity experimentations and associated missions

- **ISRO team excellence awards for Space Mission from IIST**The team from IIST involved in Advanced Retarding Potential Analyzer for Ionosphere Studies (ARIS-1), received ISRO team excellence award, which is a unique one for an academic community.
- **Opportunity for the students and faculty to work in collaborative – Inter/Multi-disciplinary mode in actual space programs**
- **Small-Spacecraft Systems and Payload Centre (SSPACE)** established in 2018 at IIST is a central facility that fosters student-led small satellite projects with active involvement from IIST faculty, ISRO centers, Startups and other R&D organizations. It promotes interdisciplinary collaboration, subsystem specialization, and hands-on training. Students benefit greatly from this unique platform, including participation in space mission design contests and credit internships, which are integral to developing industry-ready skills and advancing space research.
- **Indigenously developed Satellite Ground Station at IIST**

Ground Station (probably one of its kind in an academic institute) **successfully** manages telecommand, telemetry, and data reception for various missions. It is used for ***IIST's own missions, such as INSPIRESat-1, etc., and to support some of the external missions, including some startup initiatives***. Equipped with UHF and S-band operations, the IIST Ground station handles telecommand and telemetry at 9.6 kbps, while the S-band is used for transmitting payload data at 2 Mbps.

- ***Initiatives of a Space Eco-System with Academia-Industry-Startup Collaboration for space missions facilitated by IIST***

Typical initiatives have been made by industries such as L&D for the combined development of a satellite. Ground station facilities have been offered per the norms of IIST to support startups such as Dhruva Space.

In the PSLV C-58 XPoSat mission, IIST was pivotal in extending telemetry and telecommand support to the space start-up Dhruva Space. With this, IIST has entered into the domain of services for reliable ground station tracking systems and small satellites, providing opportunities for universities and space startups to exploit these facilities on a mutually agreeable basis.

- ***Establishment of an Advanced Space Research Group (ASRG) with dedicated link units in each ISRO centers for IIST-ISRO collaborative research*** https://www.iist.ac.in/innovation/asrg-vision

ASRG in IIST coordinates and oversees collaborative research between IIST and ISRO's R&D centers. More than 25 active projects under ASRG in various/related space science and technology domains exist. The unique attraction is the PhD students working under joint supervision of IIST and ISRO scientists/faculty.

- ***R&D contributions and technology development for Space missions***

1. **Atomic Layer Deposition Techniques and Hard coatings for improving the lifetime of ball bearings in ISRO Spacecrafts.**

2. **Surface discharge spark plug technology for space applications**
3. **Plasma Sources, test facilities, and electric propulsion-related sensor developments and supports.**
4. **Gas Sensor developments**
5. **Simulation and prototyping supports**

- **Propulsion Research:** The Advanced Propulsion and Laser Diagnostics (APLD) Facility stands as a significant performance marker supporting ISRO's goals by designing injectors for supercritical conditions and investigating combustion instability, contributing to developing more efficient and reliable space missions. It is a testament to IIST's dedication to propulsion research.
- **Central Facility for Hyperspectral Remote Sensing**

A DST-sponsored in IIST, equipped with advanced instruments such as hyperspectral spectroradiometers, a plant canopy analyzer, and a laser distance meter, is available to researchers and students from south Indian states.

- **Notable research activities which require special mention for their relation to the Institute's thrust area of Space Science and Technology are**

The Integrated Diagnostics Module(IDM) payload is for the upcoming electric propulsion satellite, which will be launched by PSLV this year.

A MEMS-based Cardio sensor, called Seismo-cardiogram, which has 1000 times more resolution compared to an ECG

Space Biology Payload and Real-time gas sensors for crew module for the first GAGANYAAN flight,

Droplet characterization tests of the Scramjet fuel injection struts of ISRO's Dual Fuel Scramjet (DFS) engine

- **Promotion of Space Startups:**

Space Technology Innovation and Incubation Cell (STIIC) is yet another initiative that proclaims the performance of the Institute in its distinctive area of space research as out of 9 incubated companies, 5 foster innovative space technologies. (https://events.iist.ac.in/iprcell/incubation.html)

In summary, IIST's performance in encouraging space research exemplifies its diverse and advanced facilities, interdisciplinary approach, and commitment to hands-on training. This commitment is reflected in the high placement rate of students, often recruited by ISRO (with a CGPA above 7.5). Through its various research centers, labs, and collaborative projects, IIST continues to push the boundaries of space exploration and technological innovation.

File Description	Document
Appropriate webpage in the Institutional website	View Document
Any other relevant information	View Document

5. CONCLUSION

Additional Information :

- The institute offers **high-quality undergraduate, graduate, doctoral, and post-doctoral education** with a focus on Space Sciences, Space Technology, and Space Applications.
- The institute has **96 faculty** members from **11 states**, suitably supported by skilled non-teaching staff.
- In concurrence with the **gender supernumeraries**, **women faculty** members account for about **23%** of the total faculty strength, while **22%** of the total **student community** on the campus are female students.
- Research at IIST is built on the foundations of various academic programmes run by the Department of **Aerospace, Avionics, Chemistry, Earth and Space Sciences, Humanities, Mathematics and Physics**.
- The major thrust of the research portfolio is the application of cutting-edge science to **develop new technology**. The Institute recognizes the importance of research in developing prospective technologies and applications of space research. Research at IIST is carried out in the effective sync of theory and experiments.
- The institute is setting up **state-of-the-art department facilities** to encourage advanced research activities. The institute's focus is to bolster **interdisciplinary and collaborative work**, both within the departments and across the various centres of ISRO.

Concluding Remarks :

In conclusion, the Indian Institute of Space Science and Technology (**IIST**) is a **leading institution** dedicated to promoting **space science and technology** through an exemplary combination of rigorous academic programmes and **high-end research**. With a **unique** and close **partnership with ISRO**, IIST provides students with great opportunities for practical experience, academic ventures and industry engagement. Its eclectic facilities, highly competent faculty, and strong prioritization of innovation and entrepreneurship prepare graduates for successful careers in the space sector. IIST’s official **interactions with international universities and space agencies** and its vibrant **alumni network** and **outreach programmes** augment the academic and professional environment. The establishment of **centres of excellence**, the **Advanced Space Research Group, and startups and entrepreneurship** underscores IIST’s commitment to pioneering research and its crucial role in India’s space exploration.

By diversifying academics to include **interdisciplinary programmes** that intersect with **Artificial Intelligence, Biological Sciences, Social Sciences, Robotics, Data Science, Environmental Science**, etc., IIST intends to solicit a wide cross-section of students and foster outstanding innovation. Reinforcing **partnerships with national and international companies** will enhance **internship, employment, and research opportunities**. The New Space Policy of India, 2023, presents a timely opportunity for IIST to promote entrepreneurship and support start-ups to stimulate innovation and job creation in the space sector. While IIST excels in its specialization in space science and technology, this focus can limit opportunities for students seeking a broader range of engineering or science disciplines. Broadening the course spectrum to include more diverse programmes would fulfil the expectations of prospective students and attract brilliant students to IIST. In addition, it is pertinent to admit international students and faculty at IIST to enhance **exposure, diversity of perspectives and experiences within the academic community**. Despite its smaller size compared to other universities, with around 1200 students and nearly 100 faculty members across seven

departments, IIST has the **potential to broaden its influence and create a more inclusive and unique academic environment.**

The Institute Gender Sensitization Committee conducted a gender audit and found the institute exceeding national standards. The Haritha Keralam Mission, the Government of Kerala, conducted a Green Audit of the campus, while a committee of approved officials conducted energy audits. A team of academicians and administrators performed academic and administrative audits. These audits have approved the institute’s learning, teaching, research, environmental, energy, and gender activities, along with their management and adoption of policies and protocols. The teams **praised the institute's commitment to the quality and adherence to its policies, awarding an A++ grade in the green audit, excellence in the energy audit, and high appreciation in all other audits conducted.**

6.ANNEXURE

1.Metrics Level Deviations

<table>
<tr><td>Metric ID</td><td>Sub Questions and Answers before and after DVV Verification</td></tr>
<tr><td>2.4.1</td><td>Average percentage of full time teachers appointed against the number of sanctioned posts year wise during the last five years

2.4.1.1. Total Number of Sanctioned year wise during the last five years
Answer before DVV Verification:
<table><tr><td>2022-23</td><td>2021-22</td><td>2020-21</td><td>2019-20</td><td>2018-19</td></tr><tr><td>100</td><td>100</td><td>100</td><td>100</td><td>100</td></tr></table>
Answer After DVV Verification :
<table><tr><td>2022-23</td><td>2021-22</td><td>2020-21</td><td>2019-20</td><td>2018-19</td></tr><tr><td>114</td><td>114</td><td>114</td><td>114</td><td>114</td></tr></table>
Remark : Input edited as per supporting documents</td></tr>
<tr><td>2.5.3</td><td>Status of automation of Examination division along with approved Examination Manual/ordinance

Answer before DVV Verification : D. Only result processing
Answer After DVV Verification: A. 100% automation of entire division & implementation of Examination Management System (EMS)
Remark : Input edited as per supporting documents</td></tr>
<tr><td>3.1.2</td><td>The institution provides seed money to its teachers for research (average per year)

3.1.2.1. Amount of seed money provided by institution to its teachers for research year wise during last five years (INR in lakhs)
Answer before DVV Verification:
<table><tr><td>2022-23</td><td>2021-22</td><td>2020-21</td><td>2019-20</td><td>2018-19</td></tr><tr><td>97.1</td><td>63.3</td><td>29</td><td>46.07</td><td>50</td></tr></table>
Answer After DVV Verification :
<table><tr><td>2022-23</td><td>2021-22</td><td>2020-21</td><td>2019-20</td><td>2018-19</td></tr><tr><td>146.75</td><td>63.3</td><td>29</td><td>46.07</td><td>50</td></tr></table>
Remark : Input edited as per supporting documents</td></tr>
<tr><td>3.2.2</td><td>Number of research projects per teacher funded by government, non-government , industry, corporate houses, international bodies during the last five years</td></tr>
</table>

3.2.2.1. **Number of research projects funded by government and non-government agencies during the last five years**

Answer before DVV Verification : 201
Answer after DVV Verification: 200

Remark : Input edited as per supporting documents

3.4.2 **Total number of Patents awarded during the last five years**

Answer before DVV Verification :
Answer After DVV Verification :18

Remark : Input edited as per supporting documents

3.4.4 **Number of research papers published per teacher in the Journals as notified on UGC CARE list during the last five years**

3.4.4.1. **Number of research papers published in the Journals as notified on UGC CARE list during the last five years**

Answer before DVV Verification : 1116
Answer after DVV Verification: 914

Remark : Input edited as per supporting documents and as per calendar year

3.4.5 **Number of books and chapters in edited volumes published per teacher during the last five years**

3.4.5.1. **Total Number of books and chapters in edited volumes published during the last five years**

Answer before DVV Verification : 682
Answer after DVV Verification: 370

Remark : Input edited as per calendar year and considering books having ISBN nos

4.2.2 **Percentage of expenditure for purchase of books/ e-books and subscription to journals/e-journals year wise during the last five years**

4.2.2.1. Annual expenditure for purchase of books and journals year-wise during the last five years (INR in Lakhs)

Answer before DVV Verification:

2022-23	2021-22	2020-21	2019-20	2018-19
273.28	257.78	201.19	266.54	319.27

Answer After DVV Verification :

2022-23	2021-22	2020-21	2019-20	2018-19
267.11	258.15	219.75	269.21	243.28

4.4.1 **Percentage expenditure incurred on maintenance of physical facilities and academic support facilities excluding salary component, during the last five years**

4.4.1.1. ***Expenditure incurred on maintenance of physical facilities and academic support facilities excluding salary component year - wise during the last five years (INR in lakhs)***

Answer before DVV Verification:

2022-23	2021-22	2020-21	2019-20	2018-19
520.39	481.64	325.63	567.49	390.96

Answer After DVV Verification :

2022-23	2021-22	2020-21	2019-20	2018-19
589.90	471.67	323.36	551.28	394.81

6.3.3 **Percentage of teachers undergoing online/ face-to-face Faculty Development Programmes (FDPs)/ Management Development Programmes (MDPs) during the last five years**

6.3.3.1. **Total number of teachers who have undergone online/ face-to-face Faculty Development Programmes (FDP)/** ***Management Development Programs (MDP)*** **during the last five years**

Answer before DVV Verification:

2022-23	2021-22	2020-21	2019-20	2018-19
9	28	33	12	17

Answer After DVV Verification :

2022-23	2021-22	2020-21	2019-20	2018-19
5	14	15	7	3

6.4.2 **Funds / Grants received from government bodies/non government and philanthropists during the last five years for development and maintenance of infrastructure (not covered under Criteria III and V)**

6.4.2.1. **Total Grants received from government and non-government bodies and philanthropists for development and maintenance of infrastructure (not covered under Criteria III and V) year-wise during the last five years (INR in *Lakhs*)**

Answer before DVV Verification:

2022-23	2021-22	2020-21	2019-20	2018-19
6662.06	4504.81	4143.94	7038.25	5794.97

Answer After DVV Verification :

2022-23	2021-22	2020-21	2019-20	2018-19

3650	7000	3625	6352	5117.20

Remark : Input edited as per supporting documents

2.Extended Profile Deviations

Extended Profile Deviations
No Deviations