



Indian Institute of Space Science and Technology

Research Policy Document 2022-2023

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Research forms a significant part of the goals envisaged for this premier and unique institute. The major theme of our research portfolio is the application of cutting - edge science to generate new technology in space. Research in IIST is built on the foundations of various academic programme run by the Departments of Aerospace, Avionics, Chemistry, Earth and Space Sciences, Humanities, Mathematics and Physics. The Institute recognizes the importance of research in developing future technologies and applications of space research. IIST envisages to be a global leader in the areas of science and technology related to the space sector in the days to come by building capacity in terms of infrastructure and human capital.

Mission: To seamlessly integrate research and development with academics and encourage faculty members to carry out research in their respective areas of interest.

Scope: The scope of the research is to develop strong interdisciplinary and collaborative work both within the departments as well as across the various centres of ISRO. This will enable the generation of technologies by responding to the needs of local, national and global interest. IIST is instrumental in exploring research collaborations and exchange of scientific ideas with international academic and research organizations.

1. Research Council (RC)

The overall research activities are coordinated and monitored by the Research Council constituted by Director IIST. IIST Research Council (RC) is formed to enable, promote and nurture research activities, meeting the requirements and research challenges of Space Science and Technology. RC meets periodically as well as based on need to discuss on research related activities and other academic matters of Research Scholars and give recommendations to Director for further approval/ proceedings.

Role of RC in

i. Research Projects

RC receives proposals of Research Projects from IIST Faculty in the prescribed format and refer them to respective Peer Review Committees (PRC). Based on the evaluation Reports and Recommendations from the department Peer Review Committee, RC decides on the appropriate action on Project. Work out the procedures for periodic evaluation of the progress of Research Projects and closure of Research Projects. Consider any proposal for extension of Research project tenure and additional funds requirement.

ii. PhD admission

RC initiates PhD admissions every semester by receiving PhD scholars' requirements from faculty members, consolidating the submitted areas based on IIST PhD rules and recommending to Director for approval and then releasing the advertisement through Academic Division. RC involves in monitoring screening and admission related activities.

iii. Monitoring Progress of Research Scholars

RC recommends Doctoral Committee (DC) formation and course Work of PhD Scholars, confirming PhD Registration after Comprehensive Viva Examination, recommending for enhancement of Scholarship after 2 years of Research period based on the recommendation of DC and the respective department. RC monitors the procedures for completion of PhD programme. and also recommends for workshops/conferences for the Research Scholars.

iv. Related Activity

RC recommends for approval of IIST/DoS Supervisors/Co-Supervisors, Co-Supervisor to other National Organization/Institute as per institute PhD norms. To enhances the research environment quality of IIST RC promote/frame/amend norms and procedures for approval. RC recommends for approval of publication charges (Partial/Full) for Journal of Higher Repute for papers published by Faculty members through projects/Research.

2. Research Collaborations/Research projects

IIST encourages faculty to actively carry out projects of ISRO and other government and private organization to enhance generation of resources, patents, and research

collaborations across different organizations and to solve societal problems through cutting edge technology. IIST faculty members can submit project proposals as internal proposals (IIST Funded Research Projects) or to external agencies for funding. Peer Review Committee (PRC) is constituted by Dean R&D for each department to review the technical depth of the IIST funded project proposal and its funding requirement and recommend the same to Research Council for official recommendations, which must be finally approved by Director, IIST. PRC is responsible for periodic review and evaluation of the project. PIs of the project are requested to submit detailed periodic review report to Dean R&D and fund utilization annually. Closure report of the project with recommendations of PRC shall be submitted to Dean R&D with full budget utilization certificate.

2.1 IIST Funded Projects

IIST funded projects are available under the following category.

i. IIST Research Project

IIST Faculty members are encouraged to submit Research Project proposals to Dean R&D office to extend their research activities through IIST funding as per the prescribed format.. The submitted research proposals are reviewed by IIST Peer Review Committee(PRC).

ii. IIST Fast Track Research Project

IIST Research scheme also promotes newly joined faculty members by providing seed money based on Research Proposals during their first year of joining, to establish their research at IIST.

iii. IIST-ISRO funded Research Project

IIST being a sister institute of ISRO, the faculty members are encouraged to take up live research problems in the area of space science and technology. To facilitate such projects the institute has established Advanced Space Research Group (ASRG) under the research and development section at IIST. Advanced Space Research Group (ASRG) is headed by Chief Technology Officer (CTO) The main responsibility of ASRG is to coordinate and support collaborative research activities of IIST with all R&D centres of ISRO. ASRG will ensure smooth coordination and oversee effective implementation of ISRO-IIST joint research activities. An Empowered Overseeing Committee (EOC) which comprises of members from all research centres of ISRO is the apex body to ASRG. EOC will review and decide on all actions related to the activities of ASRG to ensure smooth functioning of the joint research activities. IIST Link Unit at ISRO Centres is also established to have

effective coordination of the joint research programme. The link unit at each Centre is headed by the member representing that Centre in EOC and is supported by a committee identified by the Centre Director. This unit functions as a single window agency for all joint research programme with IIST for providing the necessary inputs and also for ensuring the smooth coordination.

2.2 IIST Research Projects with other National/International institutes/organizations

Institute promotes research collaborations with national and international institutes through proper MoU signed. MoU signing process need to be processed through Institute MoU Committee constituted by Director, IIST. Funding for such projects depends on the MoU terms and conditions.

2.3 Externally funded Research Projects

IIST promotes faculty members to submit project proposal to other external agencies (DST/SERB/DBT etc.,). The draft of the project proposal needs to be submitted to Dean R &D's office with the relevant check list request form for further approval from Director/IIST for submission.

3. Resources in support of Research:

IIST enables extensive research support for the smooth conduct of research activities for the faculties and students involved in research. **IIST subscribes most important research journals which are inevitable for research work of scholars and faculty members**

3.1 IIST Fellowships:

IIST supports Junior Research Fellowship/Senior Research Fellowships/Research Associates/Post Doctoral Fellowships to carry out research .

3.2 Publication Grant:

Article Processing charge for peer review journal publications will be provided to students and faculty in the institute to promote publication in high impact journals. An article publication charge committee constituted by Director IIST will review the accepted papers and the standard of the journal for recommendations for funding.

3.3 Faculty /Student Travel grant to attend conferences/workshops:

IIST encourages and provides travel grant to support student and faculty to attend/present paper in National/International conferences/workshops. Application for

National conferences/Workshops need prior approval for funding through proper channel. IIST funded research scholars may be supported for Conferences / Seminars / Workshops / Schools within the country once per year (as per enrolment) subject to approval by Director, IIST. After the first two years, it is mandatory to have a paper / poster presentation in conferences in order to avail support from IIST. Research scholars may be supported for Conferences / Seminars / Workshops / Schools as per contingency funds specified by the funding agencies.

For approval of funding to international conferences/Workshops a foreign deputation Committee constituted by Director IIST reviews the request and recommend for suitable funding for international conferences/workshop. PhD scholars with one peer-review journal publication is eligible to receive funding for one international conference in their entire duration of PhD research. Faculty members of IIST is supported for international conferences for every three years based on availability of fund and approval from DoS.

3.4 Patent filing

IIST provides financial and administrative support for filing inventions from faculty/students for patent filing. (Details in IISTIPR policy)

3.5 Support to innovation and Incubation activities

IIST supports innovation and incubation activities to promote research which leads to foster the spirit of innovation and bring up successful entrepreneurs through Space Technology Innovation and Incubation Cell (STIIC) in IIST. STIIC will promote (i) Innovation and entrepreneurship by converting and translating technology ideas. (ii) Translation of results in various disciplines of science and engineering into products, processes and services for commercial exploitation. (iii) Integrating teaching, learning, research, and innovation with real-world needs, and efforts to accelerate our nation's ability to innovate and lead a knowledge-driven economy for the larger benefit of humanity. STIIC will provide incubatees physical, technical and networking supports and services to assist 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. The activities of STIIC shall be monitored by the IPR and ICMC constituted by Director IIST and the policies shall be governed by Board of Management IIST. IIST Website STIIC Policy)

4 PhD Admission Policy

Objective: To seek scholars of good academic background and to develop highly caliber, intellectual and enthusiastic academicians and researchers through this PhD programme in the area of basic space sciences and technology by extending research support through fellowship and facilities.

4.1 PhD Rules and Guidelines: IIST encourages all its faculty members to guide and supervise young scholars under the PhD programme as well as for the post-Doctoral programme. The PhD admission rules are structured by the Research council as per the UGC guidelines and approved by IIST Governing Council/Board of Management. IIST PhD admission rules are revised from time to time by the Research Council as per the guidelines. (<https://www.iist.ac.in/research/rules-and-regulations>)

4.1.1 Ph.D. Programme Categories

Full Time PhD programme and Part time PhD Programme. In Full time Programme research scholar pursue research work within the institute or in an identified DoS Center/Unit on a full-time basis. In the part time programme the research scholar pursue research work on a part-time basis. The part time candidates are from employees of DoS centers and other industry sponsored employees as per institute MoUs.. (Details <https://www.iist.ac.in/research/rules-and-regulations>).

4.1.2 Selection Procedure

Ph.D. scholars for full time Ph.D. programme will be selected and admitted twice in a year for January-May session and July -December session, based on open advertisement in national newspapers and the institute website and identified selection procedure. The total number and area-wise distribution of full-time research scholars to be admitted for each of the two sessions in a year will be determined by the institute.

- For candidates with Master's Degree in Engineering/Technology as their highest qualifying degree or Master's degree in Sciences /Master of Science in Engineering/ Master's degree in Humanities/Management/Social Sciences as their highest qualifying degree selection to the PhD programme will be based on a written screening test followed by an interview. However, candidates with a valid fellowship such as CSIR/NET-

JRF/KSCSTE/ UGC-CSIR-NET-JRF/Lectureship or NBHM/JEST/GATE fellowships, will be directly called for the interview.

For candidates with Bachelor's Degree in Engineering/Technology/ as their highest qualifying degree, selection to the PhD programme will be based on a written screening test followed by an interview.. **They should have a valid GATE score.** For candidates applying with their Bachelor's degree with four year duration in Sciences/Humanities/Management as their highest Qualifying degree, having valid score card/certificate in any of the National level eligibility tests **UGC-CSIR-NET-JRF/Lectureship or NBHM/JEST/GATE**, selection to the programme will be based on an interview to be conducted at IIST. Bachelor's Degree in Engineering/Technology/ Dual degree (Bachelors in Engineering and Masters in Science from IITs and Indian Institute of Space Science and Technology with 8.00 CGPA (CGPA of 7.50 for OBC/EWS/SC/ST/PwD) on a scale of 10 or equivalent in the Qualifying Bachelor's degree are exempted from Written Examination.

- Candidates having fellowship from the National/State government funding agencies such as DST, CSIR, MeITY, INAE, NBHM, UGC, KSCSTE Fellowship etc may also apply in response to the rolling advertisement. If selected they shall only avail the respective external funding.
- The candidate recruited as JRF for the externally funded project will be assessed for PhD admission through written test cum interview /interview whichever applicable, for the suitability of the Ph.D. programme as per IIST PhD admission norms, if it is mentioned in the open advertisement for JRF that, the JRF may be considered for registering for Ph.D. at IIST if the candidate satisfies the norms of PhD admission criteria.
- The JRF under a research project may apply for Ph.D. enrolment if the research project with approved funding for a minimum of three years. The applicant will be evaluated through screening written test cum interview/interview whichever applicable, for the suitability of the Ph.D. programme.

4.1.3 Part Time Research Scholars

- Selection of research scholars for part-time Ph.D. programmes will be done twice in a year, for January admission and July admission, through advertisements in the Institute website and official communication to ISRO / DoS Centres/Units.
- The Part-time Ph.D. programme is open to scientist/engineers, faculty members working in any of the centres/units of ISRO/DoS including employees of IIST. Industry sponsored other than DoS a MoU need to be signed between IIST and other industries before sponsoring /admitting a scholar for Part time PhD.
 - All DoS/ISRO Sponsored candidates/industry sponsored candidates shall undertake a screening written test in order to qualify for PhD admission interview.
 - DOS sponsored candidates seeking admission based on Bachelor's Degree in Engineering/ Technology or Bachelor's Degree in Science/ Arts/ Management with four-year duration as their highest qualifying degree are exempted from PhD admission test conducted by institute if they have qualified any national level eligibility test such as UGC-NET/UGC-CSIR NET/GATE/CEED and similar National level tests

4.1.4 DoS Sponsored Dual Degree (Masters and Ph.D.) Programme

ISRO sponsored candidates applying for the Dual Masters and Ph.D. programme at the time of admission to PG programme, will be interviewed for suitability for Ph.D., and also for MTech/Master of Science. Switching to the dual Masters and Ph.D. programme can be initiated by the candidate after the 1st or 2nd semester results are declared by submitting a sponsorship letter. Switching to the dual Masters and Ph.D. programme can also be initiated by the candidate after the 1st or 2nd semester results are declared by submitting a sponsorship letter (if not submitted already) and proposing names of supervisors (from IIST and from respective ISRO centre) and broad research area. They will also be interviewed for their suitability to the Ph.D. programme. The sponsored candidates under this category on completion of the minimum requirements of PG Programme shall be permitted to register and undergo course work. Other rules are the same as those of sponsored part time Ph.D.

4.2 Eligibility for Ph.D. Admission

The applicant should be an Indian National

4.2.1 Minimum Qualification

Full Time PhD Programme: Applicants with Master's Degree in Engineering / Technology / Science/ Humanities/ Management as their highest qualifying degree must have 60% marks or 6.5 CGPA on a scale of 10 or equivalent (55% marks or 6.00 CGPA for OBC/EWS/SC/ST/PwD) in the qualifying master's degree.

Applicants with Bachelor's Degree of 4-year duration in Engineering/ Technology/ Science/ Humanities/ Management as their highest qualifying degree must have 75% marks or 8.0 CGPA on a scale of 10 or equivalent (70% marks or 7.50 CGPA for OBC/EWS/SC/ST/PwD) in the Qualifying Bachelor' degree. They must have cleared a National level eligibility test, such as a valid UGC-CSIR-NET-JRF/Lectureship or NBHM/JEST/GATE in the relevant discipline. The minimum GATE/JEST score will be decided by the IIST PhD admission committee.

Part-time Applicants from IIST / DoS centres/units/other than Dos centres : Applicants must have Master,s degree with a minimum of 60% marks or CGPA 6.5 out of 10 / (55% marks or 6.00 CGPA for OBC/EWS/SC/ST/PwD) in the qualifying master's degree. Applicants with Bachelor's Degree in Engineering/ Technology/ Science/ Arts/ Management (4 year duration) must have secured 75% marks or 8.0 CGPA on a scale of 10 or equivalent (70% marks or 7.50 CGPA for OBC/EWS/SC/ST/PwD) in the Qualifying Bachelor' degree.

DoS Sponsored Dual Degree (Master's and Ph.D.) Programme applicants: Applicants should secure a minimum 8 (in a scale of 10) CGPA in each semester during which the application is made. Even after admission to Ph.D. programme, 8 CGPA has to be obtained in all MTech/Master of Science theory and lab courses taken together.

4.3 Age Limit

Applicant should be below 35 years as on the last date of closing of application (as per the advertisement) for full-time scholars. Part-time scholars from IIST and DoS centres/units should be below 48 years as on the last date of closing of application (as per the advertisement) and 46 years for M.Tech & PhD Dual Degree. Age Relaxation as per government of India norms will be applicable to specific categories of applicants for all type of PhD Programme

4.4 Duration

Category	Normal Duration		Extension (with approval)
	Minimum	Maximum	
Full-time	Three years	Four years	Up to Six years
Part-time	Three years	Five years	Up to Seven years

4.5 Research Fellowship

The research fellowship in IIST is through IIST Funded Fellowship/Externally funded/sponsored and project funded Fellowship. All research scholars Selected under IIST funded Ph.D. fellowship will receive Institute fellowship following DST Guidelines (and upon DOS approval) for emoluments for research personnel pursuing Ph.D. in Central Government Departments/ Agencies. All the Fellowship amounts shall be revised from time-to-time as per Government norms. Fellowship shall be for a period of 4 years. Under exceptional circumstances with the recommendation of Doctoral Committee and evaluation by institute fellowship extension committee extension up to maximum of twelve months could be granted. Fellowship is tenable till submission of thesis or maximum period whichever is earlier. The scholars will be required to assist the Department in academic activities minimum of 6 hours per week. All research scholars selected under externally funded and project funded Ph.D. fellowship will receive their fellowship as per the norms of their funding agencies. The duration of fellowship for such Ph.D. scholars will be till the time funding agencies provide them the fellowship. The

institute will not assume any financial responsibility for continuation of fellowship on completion of the fellowship / project tenure. The scholars will be required to assist the Department in academic activities minimum of 6 hours per week. After two years of research PhD fellowship enhancement may be given to scholars as per institute funding policies for IIST funded scholars and as per the project sponsoring agency norms for externally funded scholars.

Part-time research scholars (from IIST and from DoS centres/units) will not receive any Research Fellowship in addition to their applicable emoluments as DoS employees. The scholars will be required to assist the Department in academic activities minimum of 6 hours per week.

4.6 Research Supervisor and Doctoral Committee

For each full-time research scholar, an IIST faculty member of the enrolling Dept. will function as the Ph.D. supervisor. For project funded Research scholars, the Project Investigator (PI) of the project shall function as the supervisor and the Co-PI (from IIST) may be considered as Co-Supervisor as per the guidelines norms of IIST with prior approval from the RC. For Part-time Research scholars from DoS centers/units/industry, in addition to the Internal Ph.D. Supervisor from IIST faculty, an External Supervisor from the respective DoS center /unit/industry shall also be identified and approved by the RC. The minimum prescribed norms to become IIST Research Supervisor/Co-Supervisor is in IIST PhD rule book. ((Details <https://www.iist.ac.in/research/rules-and-regulations>)).

4.7 Doctoral Committee

Within one month of the joining date of the Research Scholar a separate Doctoral Committee (DC) will be proposed by the Supervisor along with HoD of the department and submitted to the Research Council for approval. The approved DC recommends course work of the scholar based on the area of research and will annually evaluate the progress of the Research Scholar based on work report and presentation and will recommend on any mid-course corrections needed. The composition of the DC shall be the following and have at least four members.

1	HoD of the department or a senior Faculty member from Dept. chosen by the HoD in consultation with the Supervisor	Chairperson
2	One faculty member from the Dept. with similar / overlapping research interests	Member
3	One faculty from another Dept. of IIST	Member
4	One Expert in the Area from outside IIST*	Member
5	Supervisor	Convener

4.8 Course Work and Evaluation

The minimum course work will be of 12 credits for the PhD Scholars with PG degree or 24 credits for PhD scholars with UG degree. All research scholars are required to credit the following compulsory courses, namely (i) Research Methodology I (3 credits), (ii) Research Methodology II (1 credits) and (iii) Mathematical Methods (3 Credits), apart from the courses related to their area of research recommended by DC and approved by Director IIST. The PhD Scholars who have not done mathematics in the UG level only can opt for O-Level Critical Theories and Statistical Techniques course. PhD Scholars pursuing research in the areas of linguistics/language is permitted to do a foreign language course (German/French) if recommended by the DC in lieu of O-level Critical Theories and Statistical Techniques. (Details in IIST PhD rule book)

4.9 Thesis Submission, Evaluation and Award of Degree

Research scholars can submit the thesis after a minimum of three years from the initial date of enrolment for the Ph.D. Programme. At least two papers must be published /accepted for publication in refereed journals of repute. The concerned Doctoral Committee will have the authority to decide upon the quality of journal, standard of publications and its equivalence. Prior to the thesis submission and synopsis thereof, the DC shall make a

comprehensive assessment of the research work via a Pre-synopsis Seminar and Viva-Voce by the research scholar. This seminar shall be open to all in the institute through adequate notification by the Supervisor. The Pre-synopsis evaluation report by the DC will be submitted by the Supervisor to the Offices of the Dean (R & D) and Dean (Academic) duly forwarded by the HoD. The evaluation sheet shall also contain the confirmed title of the thesis. Within ten days of Pre-synopsis seminar the synopsis need to be submitted to Dean (Academics).

The DC of the Ph.D. candidate shall recommend a panel of 8 internationally renowned researchers (4 from within India and 4 from outside India) as external examiners for thesis evaluation.

4.10 Thesis Evaluation

The Synopsis of the thesis will initially be sent to first two examiners. The third, fourth and or fifth examiners are subsequently invited in that order as alternatives, if one or more of the first two examiners indicate their non-availability to examine the thesis. From the submitted panel of external examiners, the Director, IIST or his nominee will choose five names in order of preference. After receiving acceptance from the two examiners, Dean (Academic) will mail the thesis to the examiners for their evaluation. The examiner is expected to send the report on the thesis within two months from the date of receipt of the thesis.

- If an examiner suggests resubmission of the thesis after revision, the Research Scholar will be allowed to resubmit the thesis within the time stipulated by the DC.
- If one of the two thesis examiners declares the thesis as not recommended, the thesis shall be referred to a third examiner from the panel for the evaluation.
- If two examiners, after referral to a third examiner, if necessary, report the thesis as not commended, the registration of the candidate shall stand cancelled.
- If reports of two examiners, after referral to a third examiner, if necessary, declare the thesis as 'recommended, Viva-Voce Examination will be conducted.

4.11 Viva-Voce Examination

The Viva-voce Examination shall be conducted on receiving suitable recommendation from the examiners. A Viva-Voce board shall be constituted by the Dean (Academic) with approval from Director, IIST. The board shall comprise of the following

1.	DC Chairperson	Chairperson
2.	One of the Examiners of the Thesis nominated by the Director	Member
3.	Ph.D. Supervisor	Convener

- a) The Viva-Voce shall be conducted in the Institute and shall be open to all through adequate notification by the Supervisor. The DC members will be invited to the open Viva-Voce Examination. The Research Scholar will give a presentation of the thesis.
- b) The Viva-Voce Board shall (i) examine the thesis (ii) examine if necessary modifications suggested by the thesis examiners have been incorporated (iii) elicit the candidate's replies to the questions raised by the thesis examiners (iv) authenticate the work as the candidate's own (v) judge the presentation of the work by the candidate and the answers to the questions asked in the open Viva-Voce presentation and (vi) submit a report of the examination in the prescribed format.
- c) If the Viva-Voce Board declares the performance of the research scholar as not satisfactory, he/she may be asked to reappear for Viva-voce Examination again at a later date (not earlier than three months and not later than six months from the date of the first Viva-Voce).

4.12 Award of Degree

On successful completion of the Viva-Voce Examination,

- a) Soft copy and harcopies of the thesis should be submitted to Dean (academics) through Supervisor for digital archive (inhouse as well as inflibnet).
- b) The Research Scholar will be awarded a Provisional Ph.D. Degree. The Ph.D. Degree will be awarded with the approval of the Board of Management in the next subsequent Convocation of the Institute. (Detail in PhD IIST rule book).

4.13 Publication and Database

Abstracts of all PhD theses and full text of theses without embargo restriction are given on the IIST website. IIST library acts as the nodal office to upload the full text of PhD theses from IIST to the Shodhganga repository maintained by UGC/INFLIBNET. A consent form is collected from the research scholar with the endorsement of the research guide and the Dean, R&D.

In the case of PhD theses with embargo restrictions (for want of journal publication, patent etc), a letter from the Registrar, IIST, will be sent to the Director, INFLIBNET, requesting to mask the full text until the embargo period ends. Metadata of such theses will be updated on the Shodhganga website.



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