



INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
(Declared as Deemed to be University under section 3 of the UGC act 1956)
Thiruvananthapuram – 695547

IIST Ph.D. Programme – January 2024 Admissions

Indian Institute of Space Science and Technology envisions basic and applied research for meeting the national R&D requirements of Science and Technology in general and the Indian Space Programme in particular. The institute provides a vibrant research atmosphere and offers doctoral and post-doctoral programmes.

Applications are invited from highly motivated applicants for admission to the Ph.D. Programme starting in January 2024, in the departments given below: -

- (i) [Aerospace Engineering](#)
- (ii) [Avionics](#)
- (iii) [Chemistry](#)
- (iv) [Earth and Space Sciences](#)
- (v) [Humanities](#)
- (vi) [Mathematics](#)
- (vii) [Physics](#)

Eligibility

1. **Nationality:** Applicant should be an Indian citizen.
2. **Age Limit:** Applicant should be **below 35 years*** as on **31st October, 2023**. *Age relaxation is applicable as per Government Rules.

Minimum Qualifications:

1. **Applicants with Master's Degree in Engineering/Technology as their highest qualifying degree**
 - ME/M.Tech with 60% marks or its equivalent grade in a point scale, if grading system is followed. (55% marks or equivalent CGPA for OBC/EWS/SC/ST/PwD) in the qualifying master's degree.
 - Master of Science in Engineering or equivalent from leading foreign Universities with minimum CGPA 8.00/10 or 3.60 /4 or equivalent.

2. Applicants with Bachelor's Degree in Engineering/Technology as their highest qualifying degree

- BE/B.Tech with 75% marks or its equivalent grade in a point scale, if grading system is followed. (70% marks or equivalent CGPA for OBC/EWS/SC/ST/PwD) in the Qualifying Bachelor's degree. **They should have a valid GATE score.**

Candidates in the following categories are exempted from the requirement of GATE score: -

- i) BE/B.Tech from Indian Institute of Technology (IIT) /Indian Institute of Space Science and Technology (IIST) 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
- ii) Dual degree (Bachelors in Engineering and Masters in Science from IITs and Indian Institute of Space Science and Technology) with minimum score in Bachelor's degree as mentioned above
- iii) Applicants who have qualified **UGC-CSIR-NET-JRF/LS or NBHM/JEST** in the relevant disciplines. (JEST rank should be within the first 400).

3. Applicants with Master's Degree in Science/Humanities/Management/Social Sciences as their highest qualifying degree

- Master's in the relevant area with a minimum of 60% marks or its equivalent grade in a point scale, if grading system is followed. (55% marks or equivalent CGPA for OBC/EWS/SC/ST/PwD) in the Qualifying Master's degree. They must have qualified a National Eligibility Test, such as a valid **UGC-CSIR-NET-JRF/Lectureship or NBHM/JEST/GATE** in the relevant discipline.
- Applicants with GATE/JEST should have a valid GATE score of ≥ 300 (285 for OBC / EWS /SC/ST/PwD) and JEST rank, within the first 400.

4. Applicants with Bachelor's Degree with four-year duration in Science Humanities/Management/Social Sciences as their highest qualifying degree

- Bachelor's Degree (4 years' duration) with 75% marks or its equivalent grade in a point scale, if grading system is followed. (70% marks or equivalent CGPA for OBC/EWS/SC/ST/PwD).
- They must have cleared a National Eligibility Test, such as a valid UGC-CSIR-NET-JRF/LS or NBHM/JEST/GATE in the relevant discipline.
- Applicants with GATE/JEST should have a valid GATE score of ≥ 300 (285 for OBC / EWS /SC/ST/PwD) and JEST rank, within the first 400.

IMPORTANT DATES		
Sl. No.	Event	Date
1.	Opening of IIST website for online submission of applications	12 October 2023 (Thursday)- 1600 hrs
2.	Closing of IIST website for online submission of applications	November 09, 2023 - 2359hrs (Thursday)
3.	Display of shortlisted candidates for Online Screening Test & Direct Interview	November 16, 2023 (Thursday) - 1600hrs
4.	Date of online screening test	November 24, 2023 (Friday)
5.	Publishing of screening test results	November 30, 2023 (Thursday)-1700hrs
6.	Interview Dates (Venue: IIST Campus, Valiamala)	December 12 - 15, 2023
7.	Display of provisionally selected candidates	December 21, 2023 (Thursday) - 1700hrs
8.	Reporting date at the Institution	January 01, 2024 (Monday)
9.	Classes begin for Ph.D Programme	January 08, 2024 (Monday)
10	Last date of Admission	January 15, 2024 (Monday)

Selection Procedure:

For **M.E/M.Tech./B.E/B.Tech**, selection to the PhD programme will be based on **online screening test** followed by an interview. For **M.E/M.Tech./B.E/B.Tech** with a valid **UGC-CSIR-NET-JRF/LS/NBHM/JEST** selection is through direct interview.

For candidates with **Master's in Sciences, Humanities, Management, Social Sciences/Dual Degree applicants (B.Tech and M.Sc from IITs/IIST)/ four years' bachelor's degree in Sciences, Humanities, Management, Social Sciences** and having a valid score card/certificate in any of the National Eligibility Test (listed in the minimum qualifications), **selection will be through direct interview.**

Ph.D scholars with Bachelor's degree as their highest qualification need to undergo additional course work, as prescribed by the institute

Applicants who are employed in Government/ Semi Government/ PSUs/ Autonomous Bodies should produce a "No Objection Certificate (NOC)" from the current employer at the time of Interview.

RESEARCH FELLOWSHIP:

- 1) All scholars selected to the PhD programme (listed in Table 1) shall receive a fellowship of ₹ 37,000/- per month. (Research Scholars selected with UGC/CSIR/NET-JRF/NBHM and State Government Science and Technology Scheme etc., shall draw fellowship from the concerned organizations). For all research scholars with external fellowship, the concerned rules and regulations of the funding agency apply.
- 2) The fellowship will be enhanced to ₹ 42,000/- per month based on a performance review after two years of the programme.
- 3) The scholars will be required to assist the Departments in tutorials, practical training in labs or similar academic activities normally limited to 6 hours per week.
- 4) The scholars will have to pay applicable fees as well as charges for the services provided by the Institute like boarding/lodging/medical facilities etc., as per IIST rules.
- 5) For those who receive fellowship from agencies such as DST, CSIR, NBHM, UGC and candidates who have been provided research fellowship by State Government Science and Technology Scheme through competitive written test etc., the Institute will not bear the fellowship of the student if the same is stopped due to any reasons by the concerned agency.
- 6) The Institute is completely residential and will provide accommodation to all the regular Ph.D students. However, in the event of shortage of rooms in the hostels, for room allotment, preference will be given to candidates whose fellowships are borne by the Institute.

FEE STRUCTURE:

(To be paid at the beginning of every semester)

Description of Fees	Amount (Rs.)
Tuition Fees(*)/ Semester	Rs.2500(*)
Other Fees/Semester	Rs.4950
Total Fee(A)	Rs.7450
Hostel Fee/ Semester	Rs.10250
Admission Fee (Non-Refundable) One-time	Rs.1500
Caution Deposit (Refundable)(One-time)	Rs.5000
Total Fee(B)	Rs.16750(**)
Mess Bill/(Nominal) in advance	Rs.18000 (#)
Grand Total 1 st Semester (A+B)	Rs.42200
2 nd Semester onwards (A+B-one time)	Rs.35700

Note:

- **A candidate who confirms the seat has to remit Seat Acceptance fee of Rs. 4950/-**
- (*) SC/ST/PD students are exempted from payment of Tuition Fees.

- **(**) Will be collected at the time of physical reporting at the Institution.**
- **(#)3000 p.m. X 6 months as advance will be collected after the student physically reports to the Institute by Canteen Office**
- Additional fees: Supplementary Examination fees - Rs.100/- per paper and Thesis Submission - Rs.1000/- and Convocation fees - Rs.2000/- & Alumni Registration fees - Rs.500/-, which will be collected with the final semester fee.

GENERAL INFORMATION:

- 1) Applications will be received through on-line only (at <https://admission.iist.ac.in>).
- 2) **Candidates are permitted to apply up to maximum four broad research areas only, including research areas across different departments, if eligible**
- 3) Candidates are advised to visit the department profile in www.iist.ac.in for more details on the areas of research.
- 4) Candidates with valid fellowship from Government funding agencies shall upload a scanned copy of the fellowship award letter and indicate the period of fellowship validity.
- 5) A short-list of applicants for Online screening test or interview will be displayed in IIST admission portal.
- 6) **Online screening test will be held on November 24, 2023**
- 7) Shortlisted candidates will be called for an interview **which will be conducted in IIST campus, Valiamala, Thiruvananthapuram.**
- 8) Outstation applicants will be reimbursed to-and-fro sleeper class train fare/bus fare by the shortest route from the place mentioned in the online application to Thiruvananthapuram, or actual fare paid (whichever is less) for attending the interview. The applicants are advised to make their own arrangements for their stay at Thiruvananthapuram
- 9) **Selection Criteria based on screening test & Interview:**
 - (i) The candidates who have participated in the screening test will be shortlisted if they secure a minimum of 50 % combined for Section A (Section A comprises questions based on Aptitude and class 12 Mathematics) and Section B (the research area).
 - (ii) There will be a relaxation of 5 % for SC/ST/PD and OBC / EWS candidates, i.e., SC/ST/PD and OBC / EWS candidates require a combined mark of 45 % and above for Section A and Section B together.
 - (iii) There will be a 70 % weightage for the PhD screening test and 30 % weightage for the interview.
 - (iv) Candidates securing less than 10 marks out of 30 marks in the interview will not be selected irrespective of category and irrespective of the performance in the screening test.

- (v) The combined mark for the PhD screening test and interview for a UR candidate should be 60 % and above to be selected and for the SC/ST/PD and OBC / EWS candidates, the combined mark should be 55 % and above.
- 10) Provisionally selected candidates list, after the interview, will be displayed in the IIST admission portal.
- 11) Admissions are governed by Ph.D Rules and Regulations of IIST. (<https://www.iist.ac.in/academics/rules-regulations>).
- 12) **The date of the Online screening test will not be changed under any circumstances. The date of interview span over a period of several days. In case the date and time of the interview clashes with the applicant's End semester examination in his/her qualifying examination, the Institute will consider shifting the date and time of interview within the overall window available.**
- 13) During interview, candidates will be tested in their main research area and not restricted to the syllabus of the online screening test.

HOW TO APPLY:

- 1) Applications received online at the IIST website: <https://admission.iist.ac.in> only will be considered.
- 2) No changes will can be done in the registration profile once submitted. Hence utmost care should be taken by the applicants while filling their profile.
- 3) The application fee should be paid through online after completing the process of registration.
- 4) Application fee for General/EWS/OBC candidates who are male is Rs. 700/- (for SC/ST/PD and Women applicants - Rs.350/-). **The application fee is non-refundable.**
- 5) SC/ST/OBC (Non-Creamy Layer)/EWS/Persons with Disabilities (PD) candidates shall upload the relevant certificates as per the format available in admission portal before the last date of online application. **GEN-EWS/OBC-NCL candidates need to produce updated certificate issued on or after 01st April, 2023 during the reporting at the Institute.**
- 6) **Applications of GEN-EWS/OBC-NCL/SC/ST/PD candidates will be processed only after the receipt of the relevant proof online. In other words, non-submission of proof online will lead to rejection of application.**

Research Areas for January 2024 PhD Admission

Table 1 (Funded by IIST)

Department of Aerospace Engineering - Number of research positions available : 13 Nos				
SI No	Department code	Broad Area	Number of research positions	Eligibility
1	PAE01	Mechanics of Bio-inspired composites	1	Master's degree in Mechanical /Aerospace/ Civil/ Applied Mechanics/ Materials or allied areas with Solid Mechanics background OR Bachelor's degree in Mechanical/ Aerospace/ Civil/ Applied Mechanics/ Materials or allied areas with Solid Mechanics background
<u>Syllabus for screening test – PAE01</u> Please click this link for syllabus.				
2	PAE02	Aerodynamics, Propulsion and Fluid Mechanics (Experimental and computational analysis)	11	ME/M.Tech/MS in Aerospace/ Mechanical/ Chemical/ Biomedical/Applied Mechanics or equivalent areas OR BE/ B.Tech in Aerospace / Mechanical / Chemical / Engineering Mechanics, or equivalent.
<u>Syllabus for screening test – PAE02</u> Please click this link for syllabus.				
3	PAE03	Design and analysis of Flight Dynamics and Control of Unmanned Aerial Vehicles	1	ME/ M.Tech in Aerospace/ Mechanical/ Robotics/ Automation/ Mechatronics or equivalent specializations associated in the aforementioned broad areas OR BE/B. Tech in Aerospace/ Mechanical/ Robotics/ Automation/ Mechatronics or equivalent
<u>Syllabus for screening test – PAE03</u> Please click this link for syllabus.				
Department of Avionics– Number of research positions available : 16 Nos				
1	PAV01	Modeling of Physiological systems	1	M.Tech/ MS in Signal Processing / Control Systems / Applied Electronics / Biomedical Engineering / Instrumentation / and equivalent areas OR B.E./ B.Tech in Electronics and

				Communication Engineering / Electrical and Electronics Engineering / Electronics and Instrumentation / Biomedical Engineering / Avionics or equivalent areas
2	PAV02	Control Systems / Satellite Mission Design	1	M. Tech / MS in Control Systems , Signal Processing, Avionics, or MSc Maths / Physics, Flight Dynamics and Controls/ Computer Science and Engineering or Equivalent OR B. E / B. Tech in Electronics and Communication Engineering / Avionics OR related Areas B. E / B. Tech in Engineering Physics/ Computer Science and Engineering or Equivalent
<u>Syllabus for screening test – PAV01 & PAV02</u> Please click this link for syllabus for Test code TAV01.				
3	PAV03	Signal processing for 6G wireless communication	1	M.Tech / ME communication system / Electronics and Communication / Signal processing or equivalent area OR B.E./B.Tech in / Electronics and Communication Engineering / Electrical and Electronics Engineering / Electronics and Instrumentation Avionics or equivalent areas
4	PAV04	Statistical Signal Processing/Machine with applications to Communications, Radar systems, Imaging Systems	1	ME / M.Tech in ECE OR BE / B.Tech ECE
<u>Syllabus for screening test – PAV03 & PAV04</u> Please click this link for syllabus for Test code TAV03.				
5	PAV05	Artificial intelligence driven 6G Satellite Networks	1	M.Tech in Computer Science and Engineering, Information Technology, Telecommunication Engineering, Electronics and Communication Engineering or equivalent OR B.Tech in Computer Science and Engineering, Information Technology, Telecommunication Engineering, Electronics and Communication Engineering, or equivalent.
<u>Syllabus for screening test – PAV05</u> Please click this link for syllabus for Test code TAV05.				

6	PAV06	Power Electronics and Drives	2	ME / M.Tech in Power Electronics / Power Systems / Control Systems/Industrial Electronics/Electrical Engineering or equivalent OR B.E/B.Tech in Electrical Engineering / Electrical and Electronics Engineering or equivalent
7	PAV07	Power Electronics in Distributed Generation/ Distributed Power supplies	1	ME / M.Tech in Power Electronics / Power Systems / Control Systems or equivalent. Prospective candidate must have done final year M.Tech dissertation in the area of Power Electronics. Experience in designing and building hardware setup would be preferred. OR B.E / B.Tech in Electrical Engineering / Electrical and Electronics Engineering or equivalent
<u>Syllabus for screening test – PAV06 & PAV07</u> Please click this link for syllabus for Test code TAV02.				
8	PAV08	RF and Microwave Engineering	2	M.Tech/ ME in VLSI/ Microelectronics/ Electronics/ Electronics & Communication/ Instrumentation/ RF & Microwave Engg or equivalent OR B.Tech/ B.E. in Electronics & Communication Engineering/ Electronics Engineering/ Instrumentation Engineering/ Electrical Engineering or equivalent
9	PAV09	Microwave Wireless Power Transfer and Antenna Engineering	1	M.Tech./M.E in Communication/ Microwave/ Power Electronics/ VLSI and Microsystems/ Wireless Technology or equivalent OR B.Tech/ B.E. in Electronics & Communication Engineering/ Electronics Engineering/ Avionics/ Electrical Engineering/ Engineering Physics or equivalent
<u>Syllabus for screening test – PAV08 & PAV09</u> Please click this link for syllabus for Test code TAV04.				
10	PAV10	Analog Signal Processing, Sensor Circuits and Embedded Systems, Instrumentation, Industrial Electronics	1	M. Tech/ M. E. / M. S. or equivalent in Applied Electronics and Instrumentation/ Embedded Systems/ Electronics and Communication/ Instrumentation and Control/ Instrumentation & Signal Processing/ VLSI/ Biomedical Instrumentation or related fields.

				OR B.E./B.Tech in Applied Electronics and Instrumentation/ Electronics and Communication Engineering / Electrical and Electronics Engineering / Electronics and Instrumentation / Biomedical Engineering / Avionics or equivalent areas
<u>Syllabus for screening test – PAV10</u> Please click this link for syllabus for Test cod TAV07.				
11	PAV11	MEMS and Microelectronics Devices and Sensors	1	ME/M-Tech/MS in Microelectronics/ Microsystems/ VLSI/ Electronics/ Applied electronics/ Solid State Technology/ Material Science/ optoelectronics or equivalent. OR B.Tech/ B.E. in Electronics & Communication Engineering/ Electronics Engineering/ Instrumentation Engineering/ Electrical Engineering/Engineering Physics or equivalent
<u>Syllabus for screening test – PAV11</u> Please click this link for syllabus for TAV07 or TAV08.				
12	PAV12	Digital VLSI Circuit Design/ VLSI Signal Processing and Image Processing/ /Computer Vision and Machine learning	1	M.Tech/ ME/ MS in Electronics and Communications Engineering / Digital Design/ VLSI Design / Signal Processing/ Communication / Embedded system/ Machine learning or equivalent OR B.Tech/B.E or equivalent in Avionics, Electronics and communication, Electrical Engineering/ Electronics or equivalent
<u>Syllabus for screening test – PAV12</u> Please click this link for syllabus for Test code TAV03 or TAV08.				
13	PAV13	Micro and nanotechnology for sensors	1	M.Tech/ ME/ MS or equivalent in electronics/ Instrumentations/ VLSI/ nanotechnology OR B.E./ B.Tech in Applied Electronics and Instrumentation/ Electronics and Communication Engineering / Electrical and Electronics Engineering / Electronics and Instrumentation / Biomedical Engineering / Avionics or equivalent areas

14	PAV14	Analog/ Mixed-signal/ RF IC design	1	M.Tech / ME in VLSI/ Microelectronics / Electronics / Electronics & Communication / Instrumentation / RF & Microwave Engg or equivalent OR B.Tech / B.E. in Electronics & Communication Engineering / Electronics Engineering / Instrumentation Engineering / Electrical Engineering or equivalent
<u>Syllabus for screening test – PAV13 & PAV14</u> Please click this link for syllabus for Test code TAV08.				
Department of Chemistry– Number of research positions available : 4 Nos				
1	PCH01	Nano materials/ functional materials/polymeric materials for energy/environmental/sensing applications/ Smart and functional materials	4	MSc/ BS-MS in Chemistry (all branches) or equivalent / MSc Materials Science and allied areas / M.Tech in Materials Science, Nanoscience& Technology, Polymer Technology, Chemical Engineering, Mechanical Engineering and related areas or equivalent OR B.Tech / BS in Materials Science, Nanoscience& Technology, Nanotechnology, Polymer Technology, Chemical Engineering, Mechanical engineering or equivalent
<u>Syllabus for screening test – PCH01</u> Please click this link for syllabus.				
Department of Earth and Space Sciences– Number of research positions available : 4 Nos				
1	PES01	Astronomy & Astrophysics	2	Master of Science in Physics / Astronomy & Astrophysics / Space Physics / Integrated MS (Physics) / BS-MS (Physical Sciences) or equivalent OR B. Tech in Engineering Physics/ Physical Science or equivalent
2	PES02	(Atmospheric Science) Machine learning technique for aerosol-cloud interaction	1	M.Sc. in Physics/ Integrated MS (Physics) / BS-MS (Physical Sciences), M.Sc. in Atmospheric Science, M. Tech in Earth System Science or Integrated MS (Physics) / BS-MS (Physical Sciences) or equivalent.

3	PES03	Remote Sensing and GIS , Satellite Image Processing , 3D LiDAR point cloud processing, Drone/ UAV Remote Sensing	1	ME / M.Tech / MS/ MSc in Geoinformatics, Remote Sensing, GIS, Computer Science, Machine Learning, Information Technology, Signal Processing, Image Processing, ECE, Mathematics, Physics, Natural Resource Management or relevant fields OR BE/ B.Tech in Geoinformatics, Remote Sensing, GIS, Computer Science, Machine Learning, Information Technology, Signal Processing, Image Processing, ECE, Mathematics., Physics, Physical Sciences, Engineering Physics or equivalent
<u>Syllabus for screening test – PES03</u> Please click this link for syllabus.				
Department of Humanities– Number of research positions available : 2 Nos				
1	PHS01	Cultural Studies, Gender Studies	1	M A/ M. Phil (English Literature) or equivalent
2	PHS02	Economics	1	M A / MSc Economics / Economics or equivalent
Department of Mathematics– Number of research positions available : 5 Nos				
1	PMA01	Differential Equations (Non Linear Dynamics/ Suspension Rheology)	1	BS-MS/MSc in Mathematics / Applied Mathematics/ Computational Mathematics or equivalent.
2	PMA02	Computational Methods and Analysis of Partial Differential Equations	1	
3	PMA03	Stochastic Processes and Queueing Theory	1	MSc in Mathematics / Applied Mathematics/ BS- MS in Mathematics / equivalent.
4	PMA04	Machine Learning	1	M.Tech. /M.E. or equivalent degree in Computer Science/ Electronics/ Electrical/ Machine Learning or related fields. M.Sc. or equivalent degree in Computer Science/ Mathematics / Statistics or related fields.
<u>Syllabus for screening test – PMA04</u> Please click this link for syllabus.				

5	PMA05	Numerical Analysis of Partial Differential Equations	1	MSc / MS or equivalent degree in mathematics or applied mathematics.
Department of Physics– Number of research positions available : 4 Nos				
1	PPH01	Quantum Information	1	M.Sc/ MS/ M.Tech in Physics/ Solid-State Physics/ Optical Engineering/ Quantum Technology or related areas OR 4 year Bachelor's Degree in Physics/ B.Tech in Engineering Physics or related areas
2	PPH02	Experimental Quantum Optics and Quantum Technology	1	MSc/ MS/ MTech in Physics/ Applied Physics/ Applied Optics/ Photonics/ Optical Engineering/ Solid-State Physics/ Solid-State Technology/Quantum Technology or related areas. OR 4 year Bachelor's Degree in Physics/ B.Tech in Engineering Physics or related areas
3	PPH03	Theoretical condensed matter physics	1	MSc in physics or related areas OR B.Tech in Engineering physics or related areas, 4- year BS in physics or related areas.
4	PPH04	Holography and Diffractive Optics	1	M.Sc/ MS/ M.Tech in physics / Applied physics/ Photonics/ Optical Engineering / Solid State physics or related areas OR B.Tech./ B.E./ B.S./ B.Sc.(4years) in Engineering physics/ Physical Sciences/ Physics or related areas.

Table 2: External Fellowship Holders

Candidates **having a valid fellowship from** Government agencies such as DST, CSIR, NBHM, UGC or State Government Science and Technology Scheme etc. only are eligible to apply for the positions given in this list. They should have a valid score card/certificate in any of the National level eligibility tests (listed in the minimum qualifications. Such candidates will be selected based on an Interview.

Sl. No.	Department code	Broad Area		Eligibility
Department of Avionics– Number of research positions available : 9 Nos				
1	EAV01	Study of Sun's solar Spectrum in Soft Xrays	1	M. Tech / MS in Control Systems , Signal Processing, Avionics, or MSc Maths / Physics or Equivalent

				OR B. E / B. Tech in Electronics and Communication Engineering / Avionics OR related Areas B. E / B. Tech in Engineering Physics or Equivalent
2	EAV02	Ionospheric Studies of Earth and other planets	1	M. Tech / MS in Control Systems , Signal Processing, Avionics, or MSc Maths / Physics or Equivalent OR B. E / B. Tech in Electronics and Communication Engineering / Avionics or related Areas B. E / B. Tech in Engineering Physics or Equivalent
3	EAV03	Power Electronics and Drives	2	ME / M.Tech in Power Electronics / Power Systems / Control Systems/Industrial Electronics/Electrical Engineering or equivalent OR B.E/B.Tech in Electrical Engineering / Electrical and Electronics Engineering or equivalent
4	EVA04	Power Electronics in Distributed Generation	1	ME / M.Tech in Power Electronics / Power Systems / Control Systems/Industrial Electronics/Electrical Engineering or equivalent OR B.E / B.Tech in Electrical Engineering / Electrical and Electronics Engineering or equivalent
5	EAV05	MEMS and Microelectronics Devices and Sensors	1	ME/M.Tech/MS in Microelectronics/ Microsystems/ VLSI/Electronics/ Applied electronics/Solid State Technology/ Material Science/optoelectronics or equivalent. (OR) MS/M.Sc Electronics, MS/M.sc Physics or equivalent. Interest and experience in semiconductor or microelectronics device or sensor design/micro fabrication is desirable. OR B.Tech/ B.E. in Electronics & Communication Engineering/ Electronics Engineering/ Instrumentation Engineering/ Electrical Engineering/Engineering physics or equivalent.
6	EAV06	Signal Processing/Image Processing/ Digital VLSI Circuit Design/Computer Vision	1	M.Tech/ME/MS in Electronics and Communications Engineering/ Digital Design/ VLSI Design/Signal

		/ Machine learning		Processing/Communication/Embedded system/Machine learning/Computer Science or equivalent OR B.Tech/B.E or equivalent in Avionics, Electronics and communication, Electrical Engineering/Electronics or equivalent
7	EAV07	Brain-computer interface data analysis for human space missions	1	ME/M.Tech/MS or MSc in Computer Science, Electronics and Communication Engineering, Information Technology, or equivalent OR BE/B.Tech/BSc in Computer Science, Electronics and Communication Engineering, information technology or equivalent
8	EAV08	Artificial intelligence for Brain-computer interface data analysis	1	ME/M.Tech/MS or MSc in Computer Science, Electronics and Communication Engineering, Information Technology, or equivalent OR BE/B.Tech/BSc in Computer Science, Electronics and Communication Engineering, information technology or equivalent
Department of Chemistry– Number of research positions available : 6 Nos				
1	ECH01	Nano materials/ functional materials/polymeric materials for energy/environmental/sensing applications/Smart and functional materials	6	MSc/BS-MS in Chemistry (all branches) or equivalent /MSc Materials Science and allied areas, M.Tech in Materials Science, Nanoscience & Technology, Polymer Technology, Chemical Engineering, Mechanical Engineering and related areas or equivalent OR B.Tech/BS in Materials Science, Nanoscience & Technology, Nanotechnology, Polymer Technology, Chemical Engineering, Mechanical engineering or equivalent
Department of Earth and Space Sciences– Number of research positions available : 3 Nos				
1	EES01	Astronomy & Astrophysics	2	Master of Science in Physics / Astronomy & Astrophysics / Space Physics / Integrated MS (Physics) / BS-MS (Physical Sciences) or equivalent. OR B. Tech in Engineering Physics/Physical Science or equivalent.

2	EES02	Remote Sensing and GIS , Satellite Image Processing , 3D LiDAR proing cloud processing, Drone/ UAV Remote Sensing	1	ME/M.Tech/M S/ MSc in Geoinformatics, Remote Sensing, GIS, Computer Science, Machine Learning, Information Technology, Signal Processing, Image Processing, ECE, Mathematics, Physics, Agriculture, Forestry, Natural Resource Management , Environmental, Geology, or relevant fields. OR B.E/ B.Tech in Geoinformatics, Computer Science, ECE, Engineering Physics/ Physical Sciences
Department of Humanities– Number of research positions available : 4 Nos				
1	EHS01	Cultural Studies	2	MA (Literature/Gender Studies/Cultural Studies/Mass Communication or Equivalent
2	EHS02	Economics	1	MA / M.Sc Economics/ Economics or Equivalent
3	EHS03	Operations and Supply Chain Management	1	M.B.A (Any Specialization) MS (By research) / M.E / M.Tech/(Any Specialization)/ Related Areas
Department of Mathematics– Number of research positions available : 5 Nos				
1	EMA01	Differential Equations (Non Linear Dynamics/ Suspension Rheology)	1	BS-MS/MSc in Mathematics / Applied Mathematics/ Computational Mathematics or equivalent.
2	EMA02	Numerical Analysis	1	MSc in Mathematics
3	EMA03	Stochastic Processes and Queueing Theory	1	MSc in Mathematics / Applied Mathematics/ BS- MS in Mathematics / equivalent.
4	EMA04	Topological Data analysis / Riemannian Geometry in Machine Learning.	1	M.Tech. /M.E. or equivalent degree in Computer Science/Electronics/Electrical/Machin e Learning or related fields. M.Sc. or equivalent degree in Computer Science/Mathematics / Statistics or related fields.
5	EMA05	Numerical Analysis of Partial Differential Equations	1	MSc / MS or equivalent degree in Mathematics or Applied Mathematics.
Department of Physics– Number of research positions available : 2 Nos				
1	EPH01	Quantum Information	1	M.Sc/ MS/ M.Tech in Physics/ Solid-State Physics/ Optical Engineering/ Quantum Technology or related areas OR 4 year Bachelor's Degree in Physics/ B.Tech in Engineering Physics or related areas

2	EPH02	Theoretical condensed matter physics	1	MSc in physics or related areas OR B.Tech in Engineering physics or related areas, 4- year BS in physics or related areas.
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Table 3: External Projects

Sl. No	Department code	Broad Area& Project Title		Eligibility
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Department of Avionics - Number of research positions available : 7 Nos

1	EPAV01	Application of Fractional order calculus to BioSignal Processing	1	M.Tech/MS in Signal Processing / Control Systems / Applied Electronics / Biomedical Engineering / Instrumentation / and equivalent areas And B.E./B.Tech in Electronics and Communication Engineering / Electrical and Electronics Engineering / Electronics and Instrumentation / Biomedical Engineering / Avionics or equivalent areas
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Syllabus for screening test – EPAV01

[Please click this link for syllabus for Test code TAV01.](#)

2	EPAV02	Power Electronics in Distributed Power Supply Systems	1	M.Tech - Power Electronics / Power Systems / Control Systems or equivalent. Prospective candidate must have done final year M.Tech dissertation in the area of Power Electronics. Experience in designing and building hardware setup would be preferred.
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3	EPAV03	Power Electronics and Electric Drives	1	M.Tech - Power Electronics / Power Systems / Control Systems/Industrial Electronics/Electrical Engineering or equivalent
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4	EPAV04	Novel high power integrated battery chargers for electric cars and e-bikes (KSCSTE)	1	M.Tech - Power Electronics / Power Systems / Control Systems/Industrial Electronics/Electrical Engineering or equivalent OR BE/ B.Tech in Electrical Engineering, or Electronics and Communication, or Electronics and Instrumentation Engineering, or related areas.
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Syllabus for screening test – EPAV02, EPAV03 & EPAV04

[Please click this link for syllabus for Test code TAV02.](#)

5	EPAV05	Thermal Engineering for conventional and cryo-cooled electric motor	1	ME/M.Tech in Mechanical Engineering or related areas. Specialization: Thermal Engineering
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<u>Syllabus for screening test – EPAV05</u> Please click this link for syllabus.				
6	EPAV06	"Design and Development of Low Power, Low Cost, High-Performance Gas Sensor Array for Exhale Breath analyzer: A Point-of- care based Non-Invasive Early Detection and Prognosis of Cardiovascular Diseases."	2	M.Tech in any discipline with GATE or M.Sc in physics with GATE.
<u>Syllabus for screening test – EPAV06</u> Please click this link for syllabus Test code TAV06.				
Department of Earth and Space Sciences -Number of research positions available: 3 Nos				
1	EPES01	Atmospheric Modelling and Data Assimilation	2	Masters in Atmospheric Science/ Meteorology/ Physics/ Earth System Science, Dual Degree in Earth Science or Equivalent
<u>Syllabus for screening test – EPES01</u> Please click this link for syllabus.				
2	EPES02	Hyperspectral imaging system development	1	Masters degree in Signal Processing / Optical Engineering/ Microelectronics / Instrumentation/ Applied Electronics or in similar domain
<u>Syllabus for screening test – EPES02</u> Please click this link for syllabus.				