

Funded by IIST				
Department of Aerospace Engineering				
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
<b><u>Syllabus for screening test – PAE01</u></b> <a href="#">Please click this link for syllabus.</a>				
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.
<b><u>Syllabus for screening test – PAE02</u></b> <a href="#">Please click this link for syllabus.</a>				
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
<b><u>Syllabus for screening test – PAE03</u></b> <a href="#">Please click this link for syllabus.</a>				
Department of Avionics				
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
<b><u>Syllabus for screening test – PAV01 &amp; PAV02</u></b> <a href="#">Please click this link for syllabus for Test code TAV01.</a>				
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
<b><u>Syllabus for screening test – PAV03 &amp; PAV04</u></b> <a href="#">Please click this link for syllabus for Test code TAV03.</a>				
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.
<b><u>Syllabus for screening test – PAV05</u></b> <a href="#">Please click this link for syllabus for Test code TAV05.</a>				
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
<b><u>Syllabus for screening test – PAV06 &amp; PAV07</u></b> <a href="#">Please click this link for syllabus for Test code TAV02.</a>				
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
<b><u>Syllabus for screening test – PAV08 &amp; PAV09</u></b> <a href="#">Please click this link for syllabus for Test code TAV04.</a>				
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
<b><u>Syllabus for screening test – PAV10</u></b> <a href="#">Please click this link for syllabus for Test cod TAV07.</a>				

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
<b><u>Syllabus for screening test – PAV11</u></b> <a href="#">Please click this link for syllabus for TAV07 or TAV08.</a>				
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
<b><u>Syllabus for screening test – PAV12</u></b> <a href="#">Please click this link for syllabus for Test code TAV03 or TAV08.</a>				
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
<b><u>Syllabus for screening test – PAV13 &amp; PAV14</u></b> <a href="#">Please click this link for syllabus for Test code TAV08.</a>				
<b>External Fellowship Holders</b>				
Candidates <b>having a valid fellowship from</b> 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.				

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 / Machine learning	1	M.Tech/ME/MS in Electronics and Communications Engineering/ Digital Design/ VLSI Design/Signal Processing/Communication/Embedded

				<p>system/Machine learning/Computer Science or equivalent OR</p> <p>B.Tech/B.E or equivalent in Avionics, Electronics and communication, Electrical Engineering/Electronics or equivalent</p>
7	EAV07	Brain-computer interface data analysis for human space missions	1	<p>ME/M.Tech/MS or MSc in Computer Science, Electronics and Communication Engineering, Information Technology, or equivalent OR</p> <p>BE/B.Tech/BSc in Computer Science, Electronics and Communication Engineering, information technology or equivalent</p>
8	EAV08	Artificial intelligence for Brain-computer interface data analysis	1	<p>ME/M.Tech/MS or MSc in Computer Science, Electronics and Communication Engineering, Information Technology, or equivalent OR</p> <p>BE/B.Tech/BSc in Computer Science, Electronics and Communication Engineering, information technology or equivalent</p>
<b>External Projects</b>				
	EPAV01	Application of Fractional order calculus to BioSignal Processing	1	<p>M.Tech/MS in Signal Processing / Control Systems / Applied Electronics / Biomedical Engineering / Instrumentation / and equivalent areas And</p> <p>B.E./B.Tech in Electronics and Communication Engineering / Electrical and Electronics Engineering / Electronics and Instrumentation / Biomedical Engineering / Avionics or equivalent areas</p>
<p><b><u>Syllabus for screening test – EPAV01</u></b></p> <p><a href="#">Please click this link for syllabus for Test code TAV01.</a></p>				
	EPAV02	Power Electronics in Distributed Power Supply Systems	1	<p>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.</p>

	EPAV03	Power Electronics and Electric Drives	1	M.Tech - Power Electronics / Power Systems / Control Systems/Industrial Electronics/Electrical Engineering or equivalent
	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.
<b><u>Syllabus for screening test – EPAV02, EPAV03 &amp; EPAV04</u></b> <a href="#">Please click this link for syllabus for Test code TAV02.</a>				
	EPAV05	Thermal Engineering for conventional and cryo-cooled electric motor	1	ME/M.Tech in Mechanical Engineering or related areas. Specialization: Thermal Engineering
<b><u>Syllabus for screening test – EPAV05</u></b> <a href="#">Please click this link for syllabus.</a>				
	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.
<b><u>Syllabus for screening test – EPAV06</u></b> <a href="#">Please click this link for syllabus Test code TAV06.</a>				
Department of Chemistry				

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
<b><u>Syllabus for screening test – PCH01</u></b>  <a href="#">Please click this link for syllabus.</a>				
<b>External Fellowship Holders</b>				
Candidates <b>having a valid fellowship from</b> 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.				
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
<b>Department of Earth and Space Sciences</b>				
1	PES01	Astronomy & Astrophysics	2	Master of Science in Physics / Astronomy & Astrophysics / Space Physics / Integrated MS (Physics) / BS-MS (Physical Scienes) 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
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**Syllabus for screening test – PES03**

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

**External Fellowship Holders**

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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

**External Projects**

1	EPES01	Atmospheric Modelling and Data Assimilation	2	Masters in Atmospheric Science/ Meteorology/ Physics/ Earth System Science, Dual Degree in Earth Science or Equivalent
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**Syllabus for screening test – EPES01**

[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
<b><u>Syllabus for screening test – EPES02</u></b> <a href="#">Please click this link for syllabus.</a>				
<b>Department of Humanities</b>				
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
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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
<b>Department of Mathematics</b>				
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.
5	PMA05	Numerical Analysis of Partial Differential Equations	1	MSc / MS or equivalent degree in mathematics or applied mathematics.
<b>External Fellowship Holders</b>				

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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/Machine 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.
	<b>Department of Physics</b>			
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.
<b>External Fellowship Holders</b>				
	Candidates <b>having a valid fellowship from</b> 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			
	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
	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.